

Hydronics Technical Reference Book



Aquatrol Hydronic Boiler Controls

Honeywell

Hydronic Technical Reference Book Contents

Aquatrol Hydronic Boiler Controls

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Control Modules

AQ25A Series Programmable Boiler Control Panels

PRODUCT DATA



PRODUCT DESCRIPTION

The AQ25A Series of Programmable Boiler Control Panels consists of a transformer, a boiler/DHW Control Module, and a 4-zone Zoning Module, all contained within an AQ2000 panel enclosure. The boiler/DHW Control Module, controls the boiler and domestic hot water (DHW) functions, as well as coordinating the overall operation of the hydronic system.

AQ25A Control Panels can control a maximum of 16 zones by connecting additional Expansion Zoning Panels to the AQ25A Control Panel. Each Expansion Zoning Panel is configured with its own bank of DIP switches.

FEATURES

The AQ25A Series Programmable Boiler Control Panels have the following features:

- **Boiler supply and return temperature sensors**
- **Outdoor temperature sensor**
- **Zoning equipment (zone valves or pumps)**
- **Availability of two Zoning Modules: the AQ15740B, for zoning with 24 Vac zone valves with end switches, and the AQ15540B, for zoning with either line voltage circulators or 24 Vac zone valves without end switches.**
- **An AQ10X38 transformer (power supply module), which connects to 120 Vac power and supplies 24 Vac power to the Control Module and Zoning Modules**
- **4-zone or 8-zone Expansion Zoning Panels, up to a maximum of 16 zones**
- **Communications between components via the AQUATROL® network, using communication bus wiring.**
- **AQ15A Boiler/Domestic Hot Water Control Module, which controls boiler and DHW functions, as well as provides overall management of the hydronics system**

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SPECIFICATIONS

The AQ25A Programmable Boiler Control Panels and corresponding attached equipment are listed in Table 1.

Table 1. AQ25A Series Control Panel Models.

Control Panel	Corresponding Control Module	Corresponding Zoning Module
AQ25A42B	AQ15A10B	AQ15540B
AQ25A44B	AQ15A10B	AQ15740B

Application: Controls zoning operations, and provide boiler and DHW management for hydronic zoning systems.

Power and Electrical Ratings:

Power Supply: 120 Vac / 60Hz

Auxiliary Pump Output Rating: Dry contact output, 120 to 240 Vac, 5A, 1/3 HP

Auxiliary Low Voltage Output Rating: 24 Vac, 0.5A, 12VA

Boiler (T-T) Output Rating: 24 Vac, 0.5A, 12VA

Boiler Pump (C1-C2) Output Rating: 120 Vac 5A, 1/3HP

DHW Pump/Valve Output Rating: 120 Vac 5A, 1/3HP

B-B Communication Bus Terminals: Low voltage, Class II, 2-wire polarity-insensitive, digital communicating link to other Control or Zoning modules

Electrical Connections (Line Voltage): Wire-clamp screw terminals; maximum 2 x 14 AWG each on line voltage terminals

Environmental Ratings:

Control and Zoning Panel Temperature Rating: 32°F to 130°F (0°C to 55°C)

Operating Humidity Range (% RH): 5 to 90% RH, non-condensing

Temperature Ratings:

Boiler Differential: 2° to 41° F (1° to 23° C), or AUTO

Boiler (Supply) Minimum Control Temperature: OFF, 59° to 180° F (OFF, 15° to 82° C)

Boiler (Supply) Maximum Control Temperature: OFF, 120°F to 225°F (OFF, 49°C to 107°C)

Return Minimum Control Temperature: OFF, 80°F to 180°F (OFF, 27°C to 82°C)

Sensor Temperature Rating: -58°F to 230°F (-50°C to 110°C)

Sensor Temperature Rating: -58°F to 230°F (-50°C to 110°C)

Warm Weather Shut Down (WWSD) Temperature:

OFF, 35°F to 100°F (OFF, 1°C to 38°C)

Cold Weather Shut Down (CWSD) Temperature: OFF, 32°F to 100°F (OFF, 0°C to 38°C)

Inputs/Outputs:

Auxiliary (Demand) Input: External dry contacts connection only

DHW Demand Input: External dry contacts connection only

Heat Demand (Thermostat R-W) Input: External dry contacts connection only

Heat Demand Input External dry contacts connection only

Modulating Output: 0-10 or 2-10 Vdc for modulating boiler

R-C Input (on Control and Zoning Modules): 24 Vac Class II

R-C Output (on transformer): 38 VA, 24 Vac Class II

Interface and Timings:

User Interface (Setting, Programming): LCD Display and a 7-button keypad

Setback Program: 7 day, up to 2 setback periods/day.

DHW Valve Open: 0-230 seconds, before boiler loop pump is energized.

DHW Purge: Yes/No; selects whether purge is applied after a DHW demand is served

Boiler Heat Post Purge: Off, 10 seconds to 30 minutes (factory default is 30 seconds)

Pump/Valve exercise: 30 seconds per 2 weeks of space heating inactivity

Thermostat Compatibility: Digital thermostats and/or AQ1000 Series 2-wire communicating thermostats

Supply/Return Sensor: 10K ohm NTC thermistor at 77°F (25°C) ± 0.5°F (±0.3°C). Lead Length: 10 ft. (3.0 m); up to 500 ft. (150 m) using 18 AWG or larger wire, beta=3892.

Outdoor Sensor: 10K ohm NTC thermistor at 77°F (25°C) ± 0.5°F (±0.3°C). Lead Length: 15 ft. (4.6 m); up to 500 ft. (150 m) using 18 AWG or larger wire, beta=3892

ORDERING INFORMATION

When purchasing replacement and modernization products from your TRADELINE® wholesaler or distributor, refer to the TRADELINE® Catalog or price sheets for complete ordering number.

If you have additional questions, need further information, or would like to comment on our products or services, please write or phone:

1. Your local Honeywell Automation and Control Products Sales Office (check white pages of your phone directory).
2. Honeywell Customer Care
1885 Douglas Drive North
Minneapolis, Minnesota 55422-4386

In Canada—Honeywell Limited/Honeywell Limitée, 35 Dynamic Drive, Toronto, Ontario M1V 4Z9.

International Sales and Service Offices in all principal cities of the world. Manufacturing in Australia, Canada, Finland, France, Germany, Japan, Mexico, Netherlands, Spain, Taiwan, United Kingdom, U.S.A.

Dimensions (HxWxD): 8 x 16 1/2 x 3 3/8 in. (20.3 x 42 x 8.5 cm) approximate

Weight: 4.9 lb. (2.3 kg)

Approvals: Canadian Standards Association: Certified, File No. LR76030

1 INSTALLATION PREPARATION

NOTES: Throughout these instructions, the following terminology conventions are used:

- **AQ155** refers to the AQ15540B Zoning Module
- **AQ157** refers to the AQ15740B Zoning Modules.
- **AQ15A** refers to the AQ15A10B Control Module within an AQ25A Series Control Panel.
- **AQ25A** refers to the AQ25A42B and AQ25A44B Control Panels. Where there are specific instructions or details relating to the -42B or -44B Control Panels, the full model number (i.e., AQ25A44B) is used.
- **AQ255** refers to all of the AQ25542B, AQ25582B and AQ25742B Expansion Zoning Panels
- **AQ257** refers to the AQ25744B Expansion Zoning Panel Where there are specific instructions or details, the full model number (i.e., AQ25744B) is used;
- **Control Module** refers to the component within an AQ25A Series Control Panel that performs the master control operations. See Table 1 on page 2 for specific models.
- **Control Panel** refers to an assembled product, consisting of a transformer, Control Module and Zoning Module, all contained within an AQ2000 panel enclosure;
- **Expansion Zoning Panel** refers to an assembled product, consisting of a Zoning Module and (if applicable) a transformer, contained within an AQ2000 panel enclosure. Expansion Zoning Panels are available in either 4-zone or 8-zone configurations.
- **Zoning Module** refers to the component within the AQ25A Series Control Panel that controls zoning operations.

When Installing this Product...

1. **Read these instructions carefully. Failure to follow them could damage the product or cause a hazardous condition.**
2. **Check the ratings given in the instructions and on the product to make sure the product is suitable for the application.**
3. **Installers must be trained, experienced, and licensed service technicians.**
4. **Follow local codes for installation and application.**
5. **After installation is complete, check out the product operation as printed in these instructions.**

WARNING

**Risk of electrical shock.
Can cause severe injury, property damage or death.**
Disconnect power supply before installation and before servicing.

Check That You Have All the Necessary Equipment For a Successful Installation

- AQ2000 Series components
 - AQ25A Control Panel
 - AQ Expansion Zoning Panels (if more than four space heating zones in the system)
 - Digital thermostats (one for every space heating zone being controlled)
- Boiler supply and return temperature sensors (included with the AQ25A Control Panel)
- Outdoor temperature sensor (included with AQ25A Control Panel)
- Low voltage thermostat wire
- Zoning equipment (zone valves or pumps)

Read All Instructions Carefully Before Proceeding

The AQ25A Control Panels are a part of a totally new family of hydronic controls. And although they - and other AQ2000 system components - are very easy to install and operate, they are different than other hydronic controls that you have previously installed. Take a moment to read through this quick installation guide before beginning the installation. Failure to follow them could damage the product or cause a hazardous condition.

Familiarize Yourself With the AQ25A Control Panel Layout

Refer to Fig. 1 on page 4. All AQ25A Control Panels consist of three functional components:

1. the AQ10X38 transformer (power supply module), which connects to 120 Vac power and supplies 24 Vac power to the Control Module and Zoning Modules; and
2. the AQ15A boiler/DHW Control Module, which controls the boiler and DHW functions as well as coordinating the overall operation of the hydronic system, and
3. One of two different 4-zone Zoning Modules:
 - AQ15740B (part of the AQ25A44B Control Panel) for zoning with 24 Vac zone valves with end switches.
 - AQ15540B (part of the AQ25A42B Control Panel) for zoning with either line voltage circulators or 24 Vac zone valves without end switches.

AQ25A Control Panels can control a maximum of 16 zones by connecting additional Expansion Zoning Panels to the AQ25A Control Panel. Each Expansion Zoning Panel is configured with its own bank of DIP switches, located in the left-most section of each Zoning Module.

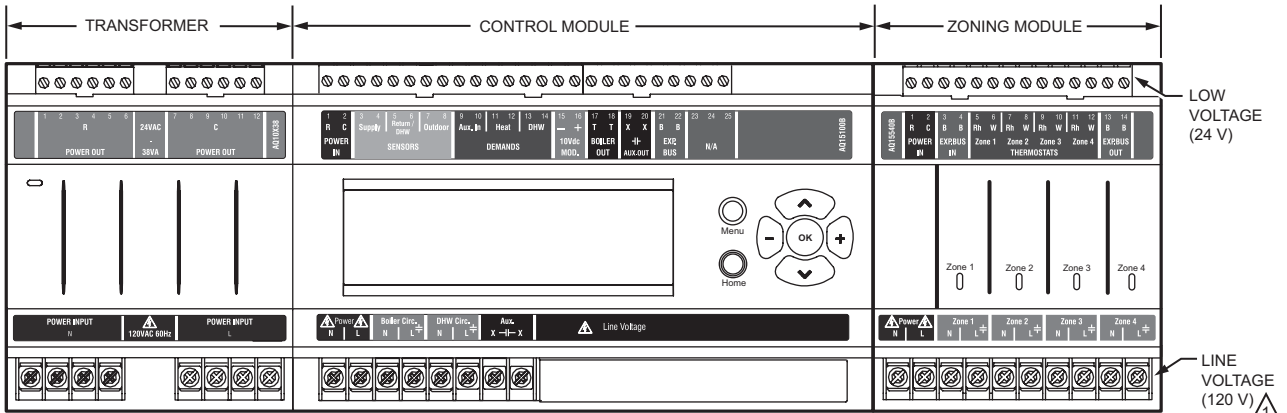
AQ25A SERIES PROGRAMMABLE BOILER CONTROL PANELS

In general, the top terminals of the AQ2000 Series components carry low voltage (24 Vac) power and the bottom terminals carry line voltage (120 Vac) power. This is illustrated in Fig. 1. The two exceptions to this are:

1. AQ15740B Zoning Module for use with zone valves with end switches.
2. AQ15540B Zoning Module when used with low voltage zone valves without end switches.

For these the two exceptions, the bottom terminals of the Transformer and Control Module carry line voltage (120 Vac), but the bottom terminals of the Zoning Module will carry low voltage (24 Vac) power.

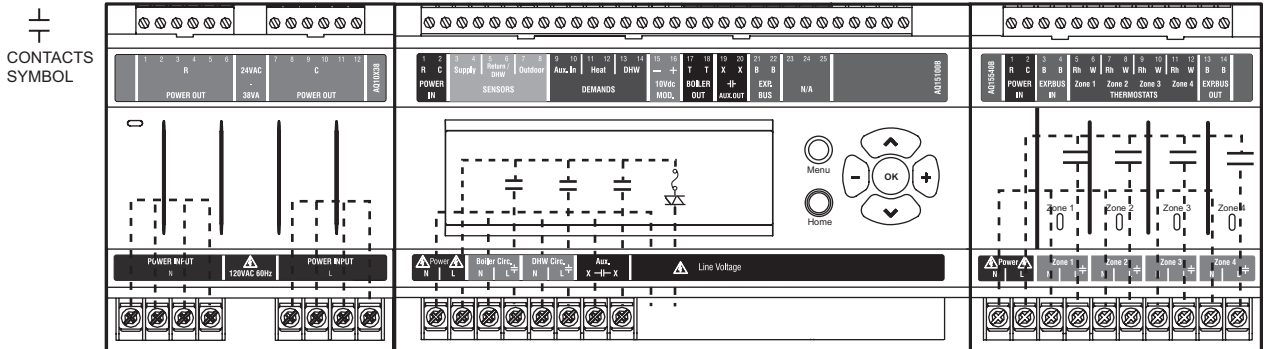
The powered terminals on the bottom of the AQ2000 Series Control Modules and Zoning Modules are connected internally as shown in Fig. 2. The voltage supplied to the N and L terminals is also available at the adjacent terminal pairs when the hot (\pm) relays are switched.



1 FOR THE AQ25A42B TERMINALS CAN BE LINE VOLTAGE (IF USED WITH PUMPS) OR LOW VOLTAGE (IF USED WITH ZONE VALVES)

M27753A

Fig. 1. AQ25A Series Programmable Boiler Control Panel layout (AQ25A42B shown).



M27754A

Fig. 2. Internal wiring for AQ2000 Series components line voltage relays.

2 MOUNTING

This section describes how to mount the Control Panel, Expansion Zoning Panels, and the Thermostats.

Mount AQ25A Control Panel

Mount the control panel on the wall:

1. Use the template supplied with the AQ25A Series Programmable Boiler Control Panel to mark mounting holes for panels.
2. Install two top screws, mount the panel, and install the two lower screws.

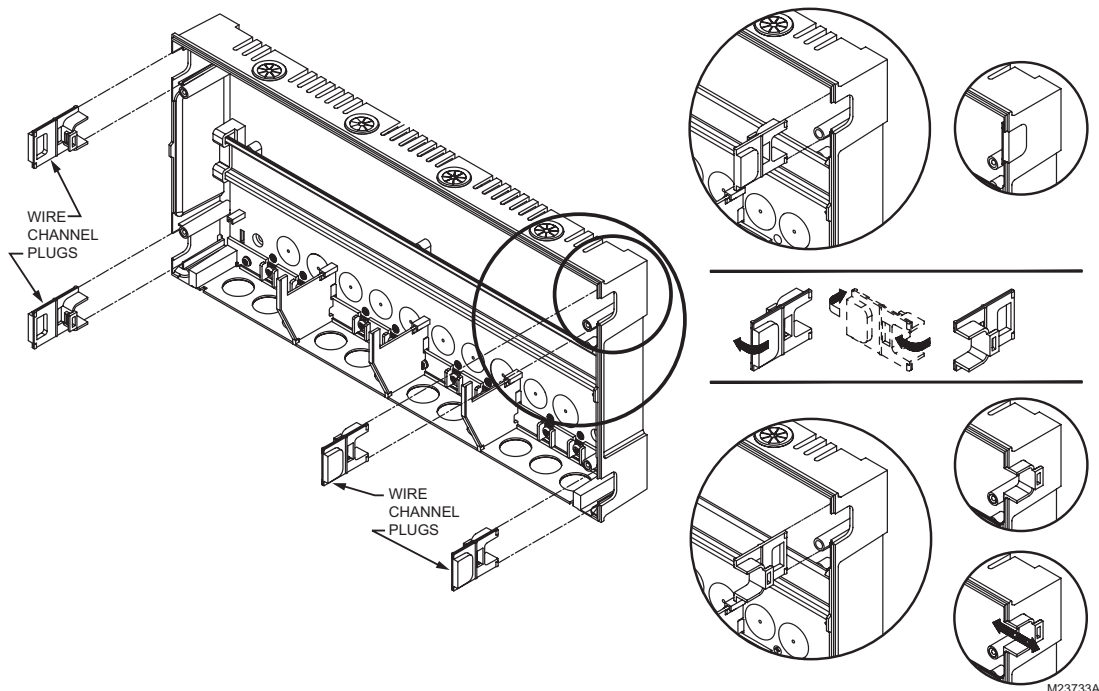


Fig. 3. Orientation of wire channel plugs for creating pass-through wire channel and for joining Control Panel to Expansion Zoning Panels.

Mount and Wire Thermostats in the Zones

Install the thermostats on the walls in the zones that are to be controlled by the AQ251 Control Panel.

When using AQ1000 thermostats, refer to the installation instructions included with the AQ1000 thermostats.

If not done already, run low voltage thermostat wire (24 gauge or heavier) from the thermostats back to the AQ25A Control Panel.

NOTE: If not otherwise specified, low voltage wiring should be run with 18 gauge thermostat wire and line voltage wiring should be run with 14 gauge wire. AQUATROL line voltage screw terminals are approved for use with 22 to 12 gauge copper conductors.

Several wiring diagrams are included in this document. For additional information, refer to <http://customer.honeywell.com> or your local distributor.

Mount Expansion Zoning Panel(s)

If there are Expansion Zoning Panels to install, they should be mounted on the wall now.

1. Remove wire channel plugs from the AQ25A Control Panel and any Expansion Panels (see Fig. 3).
2. Mount Expansion Zoning Panel on the right-hand end of the AQ25A Control Panel. Install two top screws of the Expansion Zoning Panel, ensuring it is level with the adjoining Control Panel, and install two lower screws.
3. Reverse wire channel plugs and re-insert them into their slot to form a wiring channel between the Control Panel and the Expansion Zoning Panel (see Fig. 3) and to connect the two panels together.
4. Repeat steps 1–3 for any additional Expansion Zoning Panels.

3 WIRING PROCEDURE

The AQ25A Control Panel is pre-wired at the factory, making for faster installation.

For all models, the low voltage output terminals located at the top of the transformer secondary are wired to the R and C input terminals of the Control Module, as well as the R and C inputs of the Zoning Module. The B-B Exp. Bus terminals (21 and 22) of the Control Module are wired to the B-B Exp. Bus IN terminals of the Zoning Module.

Beginning with the top left of Fig. 4 on page 6 and moving clockwise around the panel, wire components to the AQ25A Control Panel and Expansion Zoning Panels (if installed) in the following six steps:

- “Step 1 – Transformer Wiring” on page 6
- “Step 2 – Control Panel Wiring” on page 6
- “Step 3 – Thermostats Wiring” on page 9
- “Step 4 – Zoning Equipment Wiring” on page 9
- “Step 5 – Line Voltage System Outputs” on page 12
- “Step 6 – Connection to Line Voltage Power” on page 13

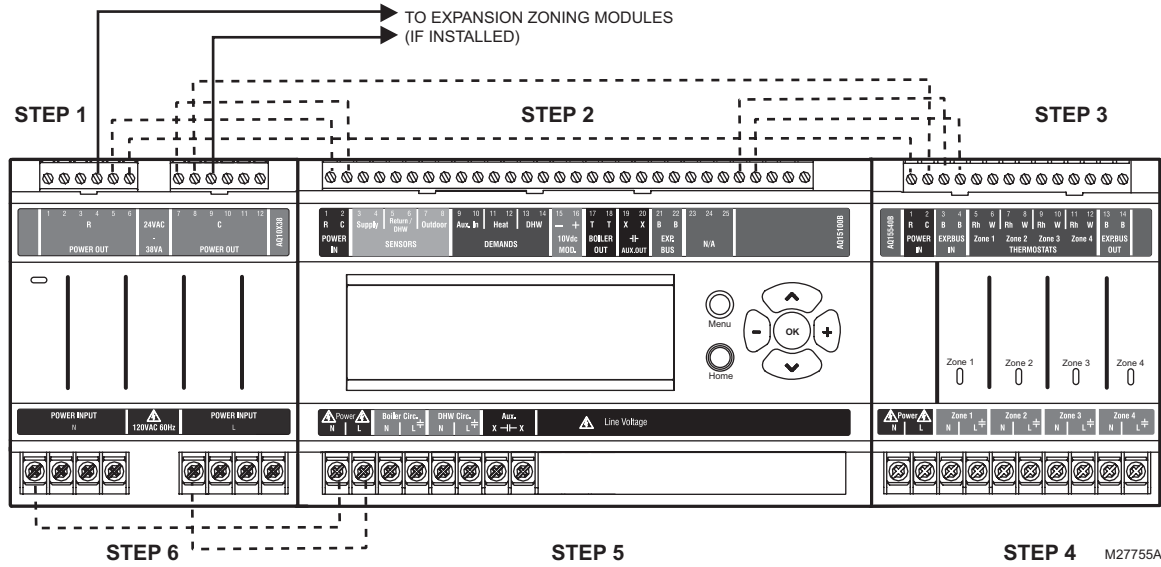


Fig. 4. Wiring sequence.

Step 1 – Transformer Wiring

Factory pre-wiring of the Control Panels is shown as dotted lines in Fig. 4.

In addition to the pre-wiring, run low voltage jumper wires from available R and C terminals to the R and C terminals of any Expansion Zoning Panel.

Step 2 – Control Panel Wiring

Wire the Temperature Sensors, System Demands, Low Voltage Outputs, and Communication Bus (Refer to Fig. 5 for wiring terminals on the top of the AQ25A):

- “Temperature Sensor Wiring”
- “System Demands Wiring” on page 7
- “Low Voltage Outputs Wiring” on page 8
- “Communication Bus Wiring” on page 8

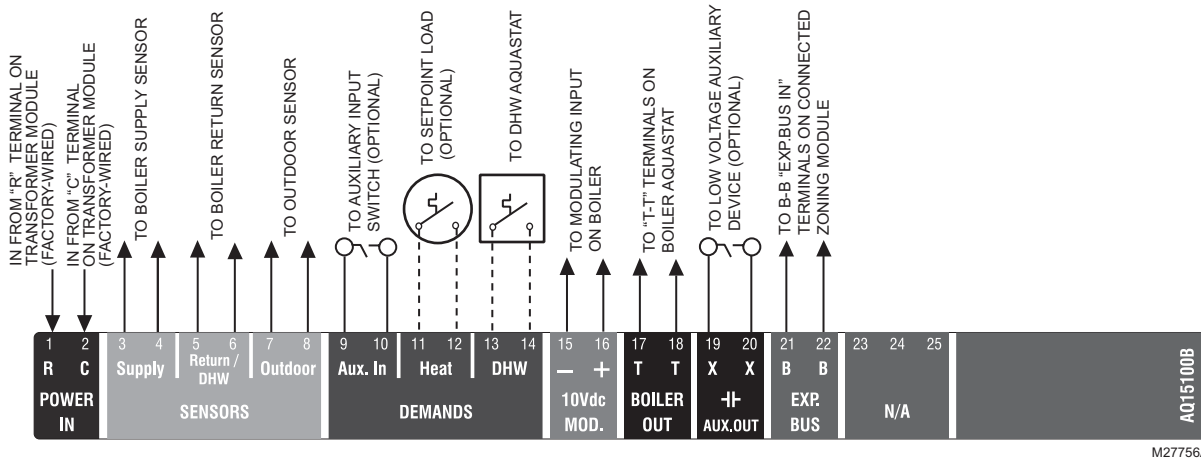


Fig. 5. Low voltage wiring for the AQ15A10B Control Module.

Temperature Sensor Wiring

Connect the lead wires of each sensor to the corresponding terminals on top of the AQ15A Control Module. See Fig. 5.

The Boiler Supply and Return sensors can be installed either as strap-on sensors or inserted into an immersion well that is packed with thermally conductive paste.

BOILER SUPPLY AND RETURN SENSORS.

Both the Supply and Return Sensors should be installed on the supply and return piping of the boiler for proper operation of the AQ25A Control Panel. Even if the AQ25A is connected to a modulating condensing boiler with its own supply and/or return sensors, the AQ25A's sensors should still be installed for the control to operate.

The Boiler Supply water sensor should be installed on the supply piping close to the exit port of the boiler, using one of the AQ12C11 strap-on sensors supplied with the AQ25A (see Fig. 6 on page 7).

The Boiler Return sensor should be installed on the return piping as close to the entrance port to the boiler as practical, using the other AQ12C11 strap-on sensor supplied with the AQ25A.

The correct location is one that will measure the temperature of all combined sources of water returning back to the boiler.

Insulate strap-on sensors with pipe wrap to ensure accurate boiler temperature sensing.

The Boiler Supply and Return water sensors come with 10 ft. (3m) of wire to minimize the need for splicing.

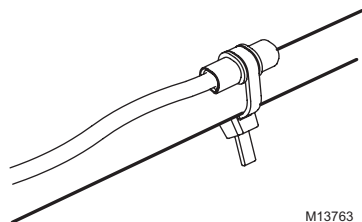


Fig. 6. Strap-on temperature sensor installation.

OUTDOOR SENSOR: FOR USE WITH AQ1000 THERMOSTATS

IMPORTANT

The AQ25A is not an Outdoor Reset Boiler Control Panel. The purpose of the outdoor sensor is to communicate the outdoor temperature to the AQUATROL network for display on all AQ1000 thermostats.

The outdoor sensor should be located:

- in a shady location out of direct sunlight
- at least three feet from dryer, bathroom, or other vents
- above the expected snow line where ice and debris cannot cover it
- on the North side of the building.

See Fig. 7 for typical placement. Outdoor sensor comes with 10 ft. (3 m) of wire to facilitate splicing the sensor on the interior of the building. Alternatively, if the building is equipped with a continuous fresh air supply using, for example, an air-to-air heat exchanger, the outdoor sensor may be installed in the insulated portion of the ventilation intake duct, taking care not to expose the sensor to direct or indirect sunlight.



Fig. 7. Outdoor temperature sensor installation.

IMPORTANT

Do not run sensor wires parallel, or close, to telephone, Ethernet, or power cables. Cross all power, Ethernet, and telephone wiring at right angles. If sensor wires are located in an area with strong sources of electromagnetic interference, or EMI, (e.g., if sensor wires are run in the same electrical chase as line voltage wiring) use twisted pair, shielded cable, or run wires in a grounded metal conduit. This is important, since the calculated temperature - based on the sensor's resistance reading - can be distorted by high EMI, potentially causing the AQ25A to not operate properly. If using shielded cable or conduit, connect the shield wire to earth ground only at the AQ25A panel. do not ground the shield or conduit at any other location or electromagnetic shielding will be ineffective. If shielded cable is used, Honeywell recommends the use of shielded cable with a continuous ground plane, such as foil, with an integral drain wire for bonding to earth ground.

System Demands Wiring

Additional information about settings for the various System Demands is discussed in Table 6 on page 30.

AUX-IN

If the optional Aux In. contacts (terminals 9 and 10) will be used, wire them now. These inputs are powered with 24 Vdc and must connect only to a dry closure contact (unpowered switch).

The Aux-In contact closure sets the system into a specific state as determined by the installer setup using the EQUIPMENT SETUP > AUXILIARY I/O sub-menu (see Fig. 25 on page 38).

HEAT DEMAND

If the optional Heat Demand (terminals 11 and 12) will be used, wire them to a system setpoint demand (dry contact closure), such as a pool or spa Aquastat®.

The HEAT contact closure drives the system to control either at the Reset temperature or the Setpoint temperature as determined by the installer setup using the EQUIPMENT SETUP > ZONING > HEAT DMND selection (see Fig. 25 on page 38). Heat Demand priority allows only heat for the first 30

minutes of a call for heat and then allows the space heating needs to be added in for the next 30 minutes. This cycle continues until the call for heat is satisfied.

DOMESTIC HOT WATER

Wire the DHW (terminals 13 and 14) to the Aquastat or thermostat on the domestic hot water tank.

DHW priority allows only DHW heat for the first 30 minutes of a call for DHW and then allows the space heating needs to be added in for the next 30 minutes. This cycle continues until the call for DHW is satisfied.

NOTE: If the AQ25A is connected to a modulating condensing boiler with built-in DHW management, the DHW tank's Aquastat should be connected to the AQ25A's DHW (terminals 13 and 14). The AQ25A's Aux. Out (terminals 19 and 20) should be wired to the boiler's DHW input terminals to the AQ25A.

Low Voltage Outputs Wiring

10 VDC

The 10 Vdc terminals (15 and 16) of the AQ25A produce a modulating (0-10 Vdc or 2-10 Vdc) signal that can drive a modulating boiler's combustion fan to maintain a constant supply temperature from the boiler (generally equal to the Boiler High Limit setting in the EQUIPMENT SETUP > BOILER SETTINGS sub-menu).

Boiler Signal: If the AQ25A panel is configured to send a 0-10V or 2-10V signal to a modulating/condensing boiler, connect the AQ25A's modulating output terminals (15 and 16) to the modulating signal input on the boiler control.

BOILER

Wire the Boiler dry contact output (terminals 17 and 18) to the T-T terminals on the boiler Aquastat or the boiler's control panel. See Fig. 15 on page 12 for wiring connections to a typical boiler Aquastat.

These contacts are made any time the system has a request for boiler operation, unless the water supply temperature is above the target temp at that time, at which time the system primary boiler pump would come on.

AUX-OUT

If the Auxiliary Out low voltage output will be used, wire it now to the device that will be switched when the Auxiliary Out's dry contacts close. Wire the hot leg of the device through the Aux. Out connection (terminals 19 and 20).

The Aux-Out relay contacts close to correspond with an action as determined by the installer setup using the EQUIPMENT SETUP > AUXILIARY I/O sub-menu (see Fig. 25 on page 38).

NOTE: The Aux. Out contacts are rated for low voltage devices only.

Communication Bus Wiring

All AQ2000 components communicate with each other on the AQUATROL network using communication bus wiring. This wiring must connect all AQ2000 components. Otherwise features that depend on this networked communication (e.g., zone synchronization, outdoor temperature displayed on thermostats, etc.) will not function.

The communication bus wiring is polarity insensitive. The installer does not need to worry about a +ve or -ve orientation of the wires. If there are two wires connected between the B-B Bus Exp. In on one module and B-B Bus Exp. Out on another module, there will be communication. See example in Fig. 8 for how this wiring is to be installed.

The communication bus connections are pre-wired at the factory for AQ25A Control Panels.

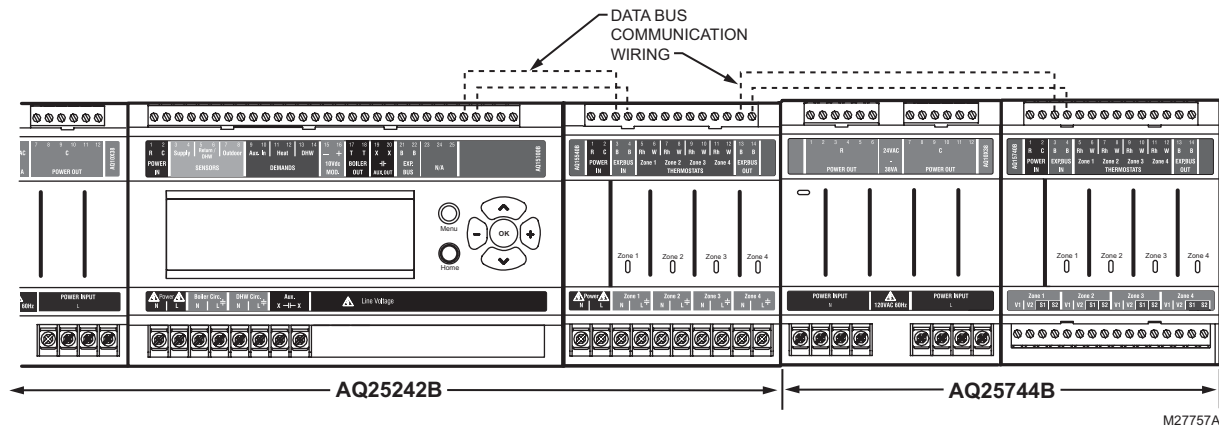


Fig. 8. Wiring for communication bus.

Step 3 – Thermostats Wiring

NOTE: The new AQ2000 panels will work with digital (electronic) non-communicating thermostats. AQ1000 thermostats are not required.

WHEN USING AQ1000 THERMOSTATS:

- Using low voltage thermostat wire, connect one AQ1000 communicating thermostat from each zone to the corresponding TH inputs on top of the Zoning Module (see Fig. 9 on page 9).
- If there are additional zones (on Expansion Zoning Panels) connected to this Zoning Module, run low voltage thermostat wiring from the B-B Exp. Bus Out connection (terminals 13 and 14) of the Zoning Module to the B-B Exp. Bus. In connection (terminals 3 and 4) on the Expansion Zoning Panel.

IMPORTANT

Do not run thermostat wires parallel, or close, to telephone, Ethernet, or power cables. Cross all power, Ethernet, and telephone wiring at right angles.

If thermostat wires are located in an area with strong sources of electromagnetic interference, or EMI, (e.g., if thermostat wires are run in the same electrical chase as line voltage wiring) use twisted pair, shielded cable, or run wires in a grounded metal conduit.

This is important because the AQ1000 thermostats are communicating thermostats which send and received data via the two wires connecting them to the Zoning Module. This data can be distorted by the EMI, potentially causing the AQ25A to not operate properly.

- Run low voltage thermostat wiring from the R and C terminals on the AQ25A Control Panel's transformer to the R and C terminals on the Expansion Zoning Panel. As an alternative, you can run low voltage thermostat wiring from the R and C terminals on the Zoning Module to the R and C terminals on the Expansion Zoning Panel.

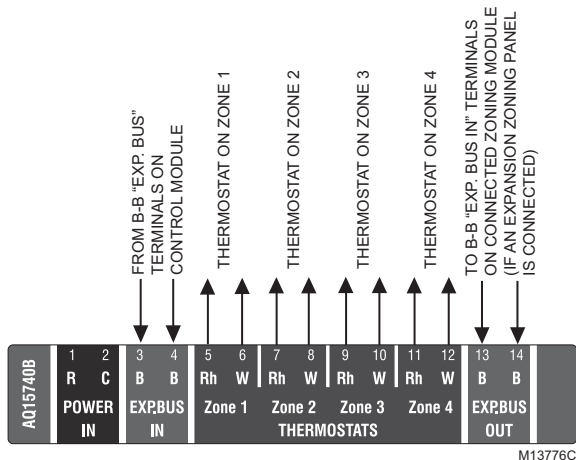


Fig. 9. Connecting AQ1000 thermostats.

Step 4 – Zoning Equipment Wiring

Because the Zoning Module of the AQ25A Control Panel can be used with either line voltage pumps or valves, or low voltage zone valves (with or without end switches), field installed wiring of the correct voltage needs to be connected to the zoning equipment terminals on the bottom left portion of the Zoning Module.

Line Voltage – Circulators or Zone Valves

Refer to Fig. 10. Remove the plastic wiring barrier that is located in the bottom wiring channel between the AQ15A Control Module and the Zoning Module. Run jumper wires from the N and L terminals on the bottom of the AQ25A Control Panel's transformer, through the wiring channel across the bottom of the Control Panel, and to the corresponding N and L terminals of the Zoning Module.

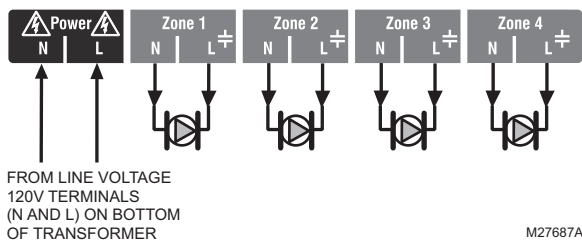


Fig. 10. Wiring an AQ15540B Zoning Module for use with line voltage circulators.

Low Voltage – Zone Valves With or Without End Switches

Wire using step 1 for zone valves without end switches or use step 2 for zone valves with end switches:

- Low voltage zone valves without end switches: Using Fig. 12 as a guide, run jumper wires from the R and C terminals on the top left of the AQ25A's transformer through the wiring channel across the top of the Control Panel, down through the wiring channel on the right side of the panel and over to the R and C terminals on the bottom of the Zoning Module

IMPORTANT

If low voltage zone valves are used with the AQ25A Control Panel, the supplied Low Voltage Output sticker (shown in Fig. 11) must be applied over the line voltage output sticker (see Fig. 10) that is already attached to the Zoning Module.

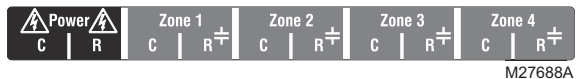


Fig. 11. Low voltage output sticker.

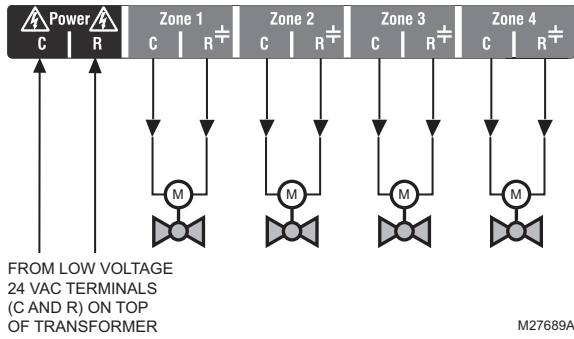


Fig. 12. Wiring an AQ15540B Zoning Module for use with low voltage zone valves without end switches.

2. Low voltage zone valves with end switches:
See Fig. 13 on page 10. 24 Vac power is pre-wired between the transformer secondary at the top left of the AQ25A's transformer and the AQ15740B Zoning Module. No field wiring is required.

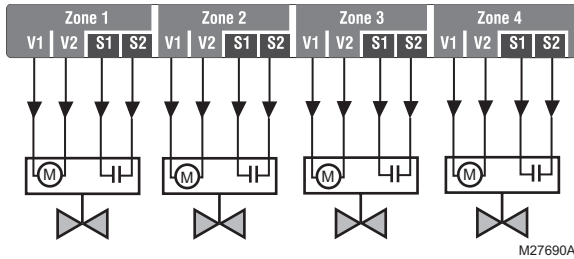


Fig. 13. Wiring an AQ15740B Zoning Module for use with low voltage zone valves with end switches.

NOTE: When wiring zone valves with end switches, note the transformer's VA:

If low voltage zone valves with end switches are used for zone control, make sure the selected zone valves do not draw more power (VA) than the 38 VA capacity of the AQ10X38 transformer supplied with the AQ25A Control Panel. This integral transformer has enough power to operate 4 motorized zone valves (such as Honeywell V8043E valves or 4 valves using low-amperage draw, heat motor actuators such as Honeywell MV100 actuators), plus power the electronics of the AQ25A's Control Module and up to 16 AQ1000 thermostats.

If zone valves with high-amperage draw, heat motor actuators are used, such as Taco 500 series zone valves, additional 24 Vac transformer capacity will need to be wired to the Zoning Module to power the valves. See Fig. 14 on page 11 for recommended wiring of additional low voltage VA capacity to AQ2000 Series Zoning Modules.



CAUTION

Equipment Damage Hazard.

Can damage internal circuitry of Zoning Module.

The ES1 and ES2 terminals of the AQ15740B Zoning Module are powered terminals and must only be connected to a set of dry contacts, such as a zone valve motor's end switch. If power is applied to these contacts (for example, by running line voltage through the zone valves' end switches to bring on a circulator feeding those valves), the internal circuitry of the Zoning Module will be damaged, in which case the warranty for this product will be voided.

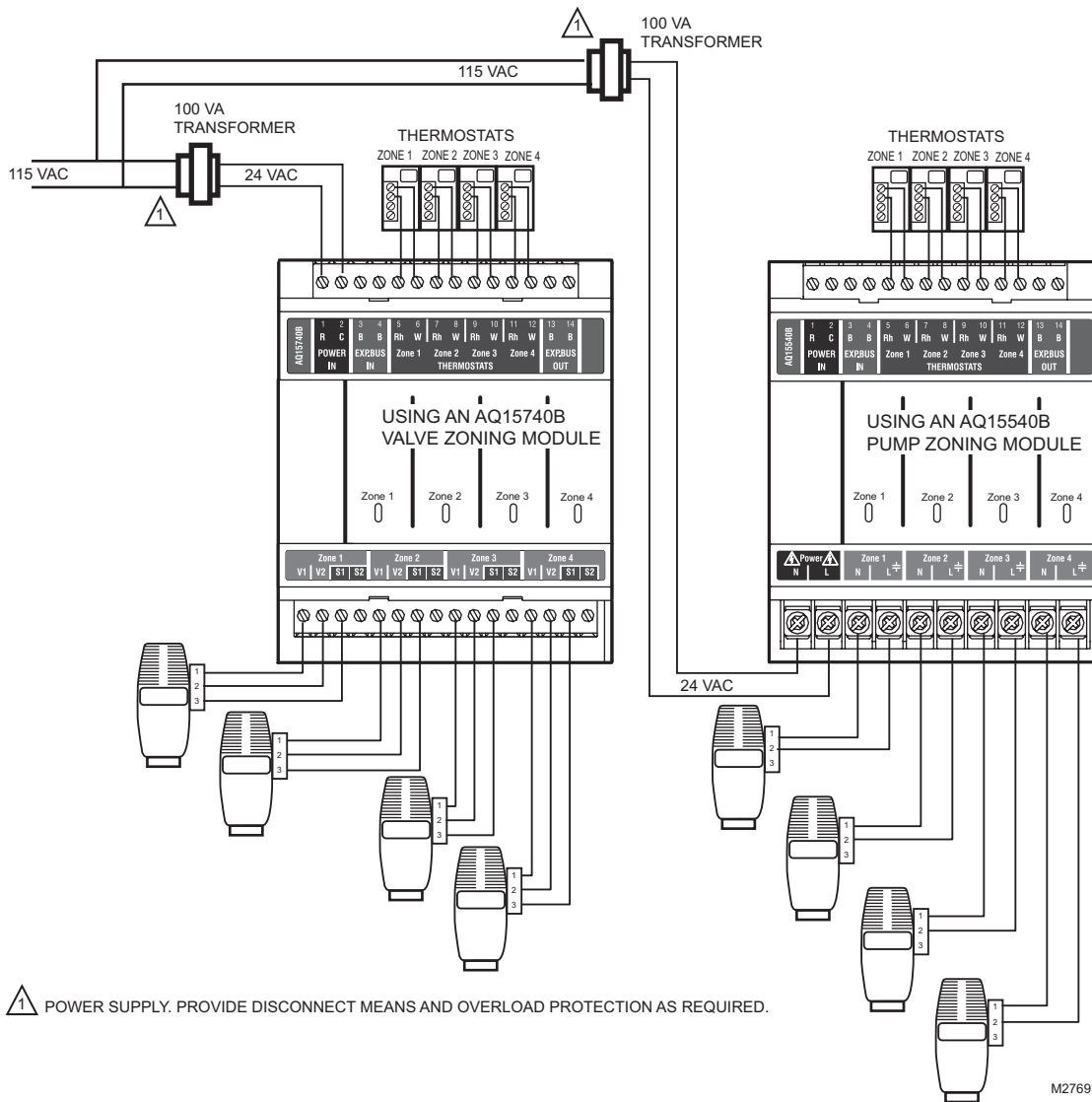


Fig. 14. Wiring of additional low voltage VA capacity.

Step 5 – Line Voltage System Outputs

Refer to Fig. 15 and follow the steps in this section to wire these devices to the AQ25A Control Module.

- “1. Boiler Pump”
- “2. DHW Device”
- “3. Line Voltage Rated Aux Output (Aux. Pump)” on page 13

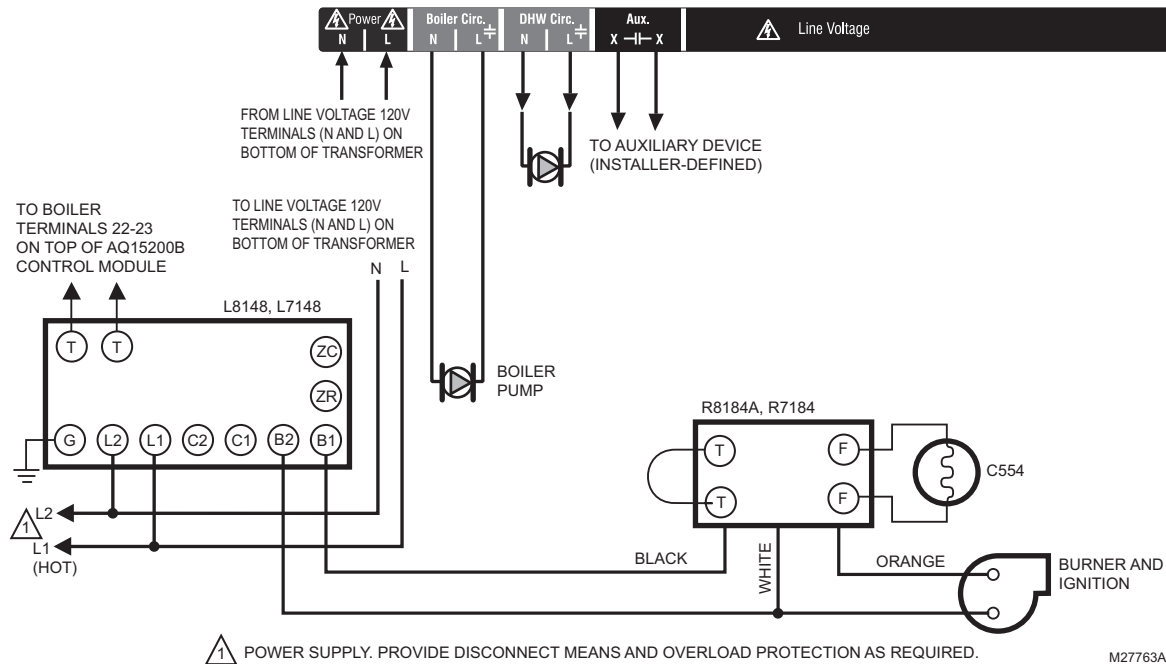


Fig. 15. Line Voltage Connections for AQ25A.

1. Boiler Pump

Connect the N and L wires of the boiler loop pump to the N and switched hot ($\frac{\pm}{\pm}$) terminals of the line voltage Boiler output, shown in Fig. 17 on page 13. The ground wire of the pump can be connected to any of the 8 ground screw terminals located on the back surface of the Control Panel enclosure.

The boiler pump contacts are made after any one of the following occur:

- A call for heat has occurred from any heating zone.
- The Heat input is shorted on terminals 11 and 12.
- The DHW input is shorted and the DHW type is configured as a valve.

The pump is delayed for the FIRE DELAY programmed in the EQUIPMENT SETUP > BOILER OPERATION sub-menu (see Fig. 25 on page 38). The boiler pump and the last zone calling remain on in order to move heat out of the boiler for the period of time programmed in the Purge time menu under the fire delay. Manually adjusting thermostats affects the operation of this software so it can not be tested manually, you must observe it under normal operating conditions.

NOTE: If the AQ25A is connected to a modulating condensing boiler, the boiler pump may need to be connected to the boiler, not the AQ25A. Confirm this with the boiler’s installation manual.

2. DHW Device

Wire the DHW pump or line voltage zone valve to the N and switched hot ($\frac{\pm}{\pm}$) terminals of the DHW output as shown in Fig. 17 on page 13. If using a low voltage zone valve, wire the primary of a spud-mounted transformer (115V to 24V) to the DHW line voltage contacts and connect the low voltage zone valve to the secondary terminals of this transformer. A spud-mounted transformer may be located in one of the conduit knockouts on the bottom of the AQ25A Control Panel.

Alternatively, a 24 Vac zone valve can be connected to the Aux. pump line voltage-rated dry contacts which can be configured to close on a DHW call. This configuration is defined in the Installer Equipment Setup menu beginning on page 30.

The DHW contacts are made when the DHW inputs on terminals 13 and 14 are shorted by the controlling Aquastat. This is a line voltage output designed to go to the DHW pump. If 24 Vac is needed for a low voltage valve, you can mount a step-down transformer on the conduit opening and wire the valve from the transformer. When DHW is enabled, the system has a 30 minute priority over all calls for heat. After 30 minutes, calls for heat are added back in to the operation for 30 minutes and then turned off again. This repeats until the DHW is satisfied.

NOTE: If the AQ25A is connected to a modulating condensing boiler, the DHW pump will probably need to be connected to the boiler, not the AQ25A. Confirm this with the boiler’s installation manual.

3. Line Voltage Rated Aux Output (Aux. Pump)

To connect a line voltage auxiliary device to these contacts, such as a group pump or a boiler bypass pump, power the pump from the N and L terminals on the bottom of the AQ15A Control Module, running the L (hot) lead through the AUX.Pump contacts. See Fig. 16 for details.

The Aux Pump is a line voltage rated dry contact that is controlled by the selection in the EQUIPMENT SETUP > AUXILIARY I/O sub-menu (see Fig. 25 on page 38).

NOTE: Use of this output is optional. The Aux. pump dry contacts are line voltage-rated but unpowered. A low voltage device can be connected to these programmable contacts, but the wire's insulation must meet applicable codes for use in line voltage enclosures.

See page 30 for programming options for the Aux. Pump dry contacts.

Wire the Installer-defined AUXiliary output to the line voltage AUX terminals, as shown in Fig. 17. The exact wiring schematic will depend on what is connected to these dry contacts.



Fig. 16. Wiring of the Aux. pump line voltage rated dry contacts [example shown is for a by-pass pump].

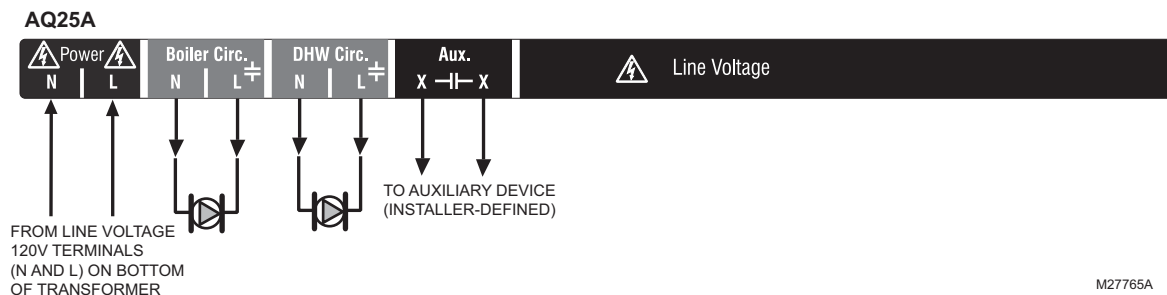


Fig. 17. Wiring for Boiler Pump, DHW Device, and Aux Output.

Step 6 – Connection to Line Voltage Power

Connect the N and L line voltage inputs of the primary on the AQ25A transformer to the electrical distribution panel and power up the Control. A service switch should be installed on the hot (L) lead to the distribution panel.

If multiple Zoning Modules are connected to the AQ25A Control Panel, the line voltage wiring can either be run directly from the N and L terminals on the transformer to each Zoning Module (Fig. 18) or run in a daisy chain fashion from the N and L terminals of one AQ2000 component to the N and L terminals of the next AQ2000 (see Fig. 19 on page 14).

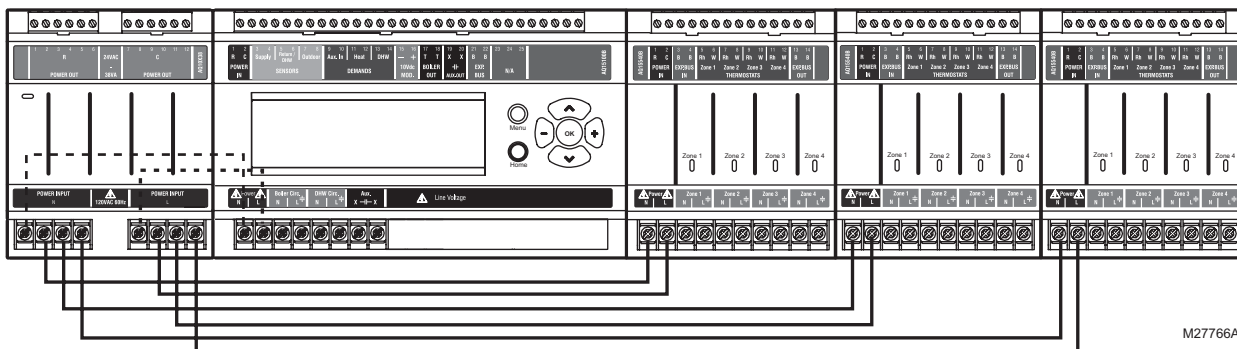


Fig. 18. Connections for multiple Zoning Panels - parallel wiring.

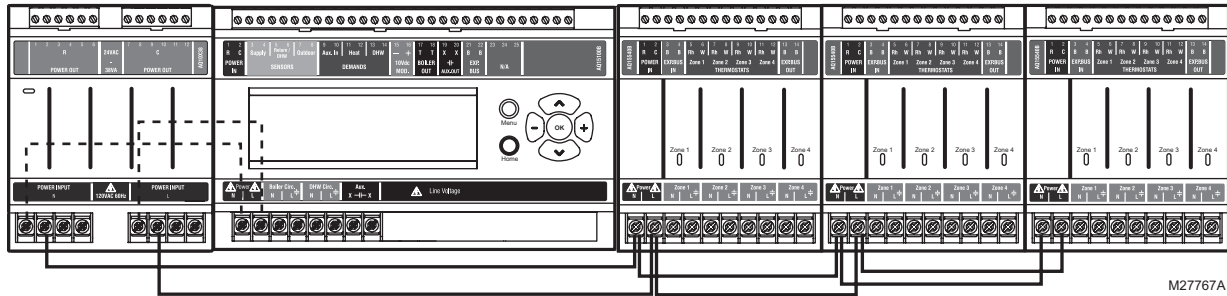


Fig. 19. Alternate Connections for multiple Zoning Panels - daisy chain wiring.

! CAUTION

Electrical Shock or Equipment Damage Hazard. Can shock individuals or short equipment circuitry. When line voltage is applied to the AQ25A Control Panel and the front cover of the Panel is removed, there is a risk of electrocution. Be careful to avoid contact with the line voltage (N and L) terminals, either with your fingers or with metal tools (such as a screwdriver) when power is applied to the Control Panel.

4 PROGRAM AND CONFIGURE THE CONTROL PANEL

Only two steps are required to set up the AQ25A Series Control Panel:

1. Check the program settings for the Control Module: Operation of the AQ25A's Control Module is set by the menu selections accessible through the Control Module's LCD screen. See "AQ25A – System Programming" on page 16 for instructions.
2. Check the DIP switch settings for each Zoning Module.

Control Panel Defaults

Operation of the AQ25A Control Module is set by the menu selections accessible through the Control Module's LCD screen. See "AQ25A – System Programming" on page 16 for instructions.

The AQ25A Control Panels are shipped from the factory with pre-defined values for all program settings. These factory default settings are commonly used by hydronics contractors across North America. Usually, most of the settings only need to be checked by the installing contractor to make sure they are suitable for the job, rather than having to input all the settings from scratch.

Although these factory default values for the Control Module and each Zoning Module are suitable for many installations, Honeywell recommends that they be reviewed, and changed as necessary, to get optimal performance of the hydronic system controlled by the AQ2000 Series products.

Zoning Module DIP Switch Location

The AQ15540B (pump Zoning Module) and AQ15740B (valves with end switches Zoning Module) both have DIP switches in 8-switch banks and are concealed behind snap-on covers as shown in Fig. 20.

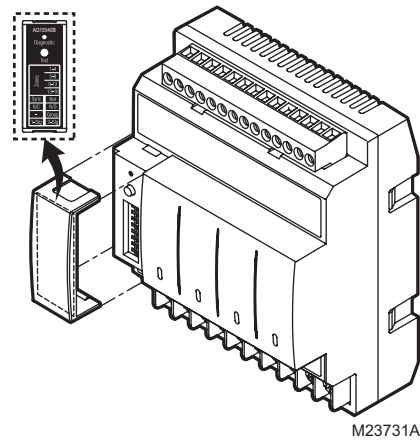


Fig. 20. Location of Zoning Modules DIP switches.

Zoning Module DIP Switch Settings

A chart of the different settings for each DIP switch is attached to the inside of each DIP switch cover.

Refer to Table 2 on page 15, and check all DIP switch settings. If necessary, change the switch settings to suit the desired operation of the hydronic installation.

NOTES:

1. To set DIP switches 1 through 4, which identify the unique address of each zone on the AQUATROL network): Refer to the descriptions in Table 2 for the correct DIP switch settings for the Pump or Valve Zoning Module. Unpredictable zone behavior may occur if more than one Zoning Module has DIP switches (1-4) set to the same address.
2. To set DIP switch 5:
 AQ15540B Zoning Module – DIP switch 5 must be set to PUMP or VALVE, according to whether this Zoning Module will be used for zoning with pumps or zone valves without end switches.
 AQ15740B Zoning Module – DIP Switch 5 is not used on this Zoning Module, as this Module can only be used for valve zoning.

Review the settings of all DIP switches for each Zoning Module connected to an AQ15A, to ensure they are correct before system start-up.

When you finish setting the DIP switches for all the Zoning Modules, replace the front cover of the AQ25A Control Panel and the cover of each Expansion Zoning Panel.

NOTE: The snap-on DIP switch covers are designed so they cannot be removed (exposing the DIP switches) when the front cover of the AQ25A Control Panel is in place.

Table 2. AQ15540B Zoning Module (Pump Zoning Module) DIP Switch Arrangement.

DIP Switch	Switch Description	Label and Factory Settings
1 2 3 4	<p>Zone Address: The positions of these 4 DIP switches define the unique address for each zone on the AQUATROL network. For each group of 4 zones, there can be only one DIP switch in the right hand (ON) position.</p> <p>The correct DIP switch settings for each zone module are:</p> <ul style="list-style-type: none"> • First Zone (1-4) Module: 1 = ON position; 2, 3, and 4 = OFF position • Second Zone (5-8) Module: 2 = ON position; 1, 3, and 4 = OFF position • Third Zone (9-12) Module: 3 = ON position; 1, 2, and 4 = OFF position • Fourth Zone (13-16) Module: 4 = ON position; 1, 2, and 3 = OFF position 	
5	<ul style="list-style-type: none"> • If set to SYNC, zone synchronization is enabled. • If set to NOT, zone synchronization is disabled. 	
6	<ul style="list-style-type: none"> • If zone valves are normally closed (N.C.), set the NC/NO DIP switch to the OFF position. • If zone valves are normally open (N.O.), set the NC/NO DIP switch to the ON position. 	
7	<ul style="list-style-type: none"> • If set to Group (ON position), the AUX Pump contacts on the Control Module are switched when any of the zones on this Zoning Module are active. • If set to - (OFF position), the AUX Pump contacts are not affected by activity on these zones. 	
8	<ul style="list-style-type: none"> • If set to 2-stage (ON position), then 2-stage operation is activated on thermostat inputs. The zoning module operates as two 2-stage zones. • If set to 1-stage (OFF position), then operates as four 1-stage zones. 	

AQ25A – System Programming

This section describes how to navigate the user interface using the keypad and LCD display, and how to program the AQ25A Control Panel, which begins on page 17.

Keypad

The AQ25A User Interface consists of an LCD screen (16 characters by 3 rows) and a 7-button keypad for navigating the menus, as illustrated in Fig. 22. Fig. 21 provides an isolated view of the keypad.

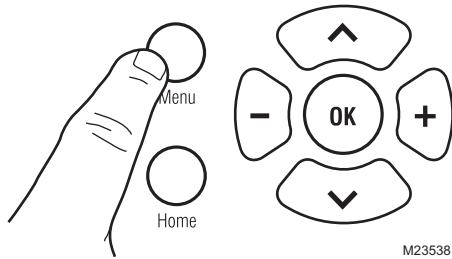


Fig. 21. AQ25A keypad.

- Menu** Press this button to access the User Menu. When pressed while in a sub-menu, the sub-menu's values are saved before going up one level in the current menu.
- Home** Press this button to leave the User or Installer Menu and return to the Home Page display screen.
- OK** Press this button to enter a sub-menu of the active menu item. A menu item is active when the indicator arrow (←) is positioned beside the item.

- ^ and v Press these buttons to scroll up/down in the menu items. Pressing one of these buttons automatically saves your current selection, exits the edit mode, and moves to the previous or next menu item.
- and + Press these buttons to decrease/increase the value of a selected menu item, or to scroll through a list of pre-defined options.
 - If the menu item being modified is a number, the displayed value will decrease/increase by pressing these buttons. When holding the - or + button for more than a second, the values automatically decrease/increase at a faster pace, similar to setting the time on a digital clock radio.
 - If the menu item is an option, pressing these buttons scrolls through the list of available options one at a time.

LCD Display

The LCD on the AQ25A Control Panel is used to:

- Monitor system status and performance.
- Select and/or modify control settings for the hydronic system.
- Diagnose and troubleshoot system problems.

The layout of the display is logical and simple to navigate. The information displays so that the installer can see at a glance the system's operating temperatures as well as the status of the system equipment such as a Call for heat, DHW pump On, Boiler T-T terminals energized, etc. In addition, all system information displays in simple, straightforward English for quick system diagnosis. Fig. 22 illustrates the layout and features of the LCD display panel and keypad.

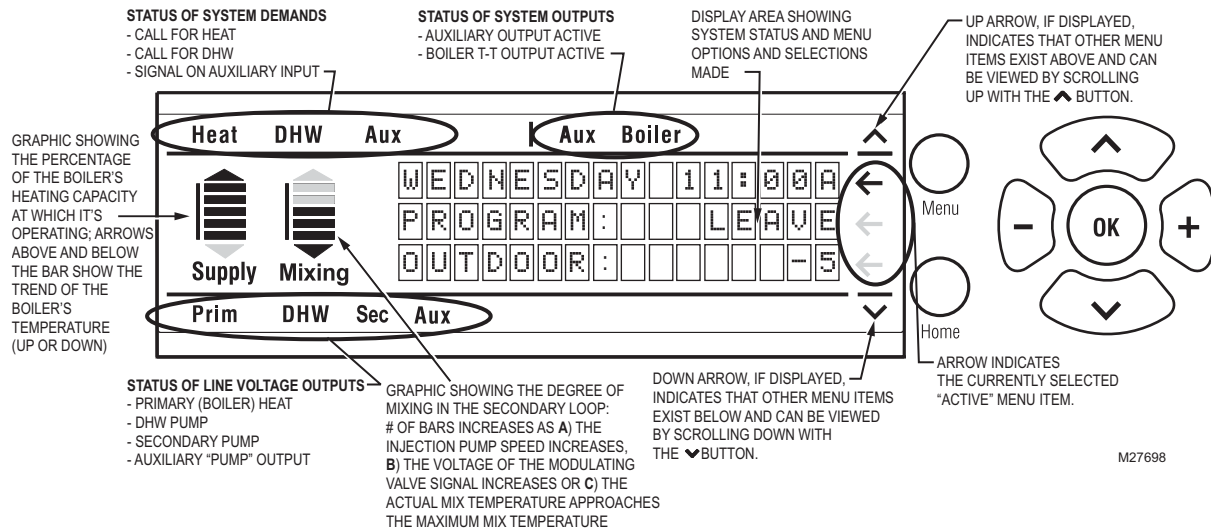


Fig. 22. LCD display and keypad layout.

LCD Display Navigation

This section describes how the keypad is used to navigate the LCD display and menus.

- The LCD displays up to three lines of text at a time. For menus with more than three lines, use the up and down buttons (∧ or ∨) to scroll through the menu options.
- As the menu is scrolled up or down, the indicator arrow (←) shows which menu item is active.
- If the active menu item is part of a list of predefined options (e.g., Day of the Week) press the – or + button to scroll through the available options until the preferred option is displayed. The option is automatically saved when the indicator arrow is scrolled away from the value being edited.
- If the active menu item requires you to define a value (e.g., a setpoint), use the – or + button to decrease or increase the value until the desired value is displayed. The selection will be saved when the indicator arrow is scrolled up or down.

NOTES:

1. When setting times for the setback schedule, you must use the – or + button to change the time.
 2. The OK button, when pressed, defaults the time setting to “--:--” (midnight).
- If the active menu item leads to a further sub-menu, pressing the OK button displays the sub-menu options on the LCD. Scroll through this sub-menu to position the indicator arrow (←) beside the desired menu item to input or modify. Choose one of the options provided or input the desired value for the menu item. When satisfied, scroll to another item and your selection will be saved.
 - To define or modify another item within the same menu, scroll the up and down buttons (∧ or ∨) until the indicator arrow (←) is beside the desired option. Use the – or + buttons to set the value for that item.
 - To move back (up) one level within a menu, press the Menu button.
 - To return to the Home Page display, press the Home button.

NOTE: The AQ25A automatically returns to the Home Page display after 60 minutes of inactivity on the keypad.

HOME PAGE DISPLAY

The Home Page is the default view displayed on the AQ25A Control Panel's LCD screen.

There are two Home Page views - Simple and Detail.

- Simple view shows 3 lines of text and is a brief description of the system operation: Day, Time of Day, Current Program and Outdoor temperature.
- Detail view includes the same 3 lines plus up to 10 lines of additional information, including Boiler Supply and Return temperatures, Secondary (Mixed loop) temperature, Boiler Supply Target temperature, Secondary Loop Target temperature, Zone Count, and DHW temperature (if configured for DHW sensor use). Detail view is the factory default setting for the Home Page.

The choice of the Simple or Detail Home Page view is made from the USER MENU > PREFERENCES/TIME menu option.

The Home Page together with the System Status information (a selection from the User Menu), provide a service contractor extensive diagnostic information for troubleshooting the installation.

NOTES: Home Page display upon restart after a power failure of more than four hours:

1. Upon restarting the AQ25A following a power disruption of greater than 4 hours, the message PLS SET DAY/TIME OF DAY displays on the top line of the Home Page screen. The message disappears after the DAY and TIME OF DAY are updated.
 - If the power failure parameter is set to Backlight (USER MENU > PREFERENCES), the LCD backlight flashes repeatedly, along with the message.
2. The AQ25A starts up with its clock settings as: DAY = MONDAY, TIME OF DAY = 12:00 midnight, and program = OCCUPIED.
3. Until the DAY and TIME OF DAY settings are adjusted, the control remains in permanent setpoint (comfort) mode.
4. When the DAY and TIME OF DAY settings are adjusted, the AQ25A follows the four programs of WAKE, LEAVE, RETRN (return), and SLEEP.

Refer to “Home Page” on page 23 in the “Appendix” for illustrations of the Simple and Detail displays.

Programming the AQ25A

Program the AQ25A by using the keypad and LCD display to select parameters from the User and Installer menus. Refer to Fig. 22 on page 16 for an illustration of the LCD screen and keypad.

NOTE: The figures in “Menu Structure” on page 37 provide a graphical layout of the AQ25A's User and Installer menus.

When a new AQ2000 component is connected on the AQUATROL network, it is seamlessly integrated in the system after a few seconds. If one or more components are disconnected or stop providing data to the network, a message will appear on the System Status display until the fault is corrected.

User Menu

The User Menu is intended for use by the building owner to choose the LCD display preferences, Zone Settings (including setpoint temperatures and setback times for each zone), and temperatures for the WAKE, LEAVE, RETRN (return), and SLEEP programs.

The Home Page and User Menu allow the building owner to:

- View the status of the system.
- Set up preferences for how the system information is displayed.
- Set target temperatures for each zone.
- Program times of the day when the system will set back the temperatures for all zones.

NOTE: If there are any problems with the system's operation, the AQ25A displays error codes on the System Status Page display of the LCD panel. For details on these, refer to “Troubleshooting” on page 20.

TO ACCESS THE USER MENU:

Press the Menu button on the keypad at any time to access the User Menu.

Refer to Table 5 on page 24 in the “Appendix” for all of the User Menu options for the AQ25A Control Panel, the factory default values and permissible ranges for each option, and a brief description of each setting.

Installer Menu

The Installer Menu is used to:

- Set up and modify the Equipment Settings (for boiler operation, DHW management, zoning, auxiliary input/output operation, and options such as pump/valve exercise, freeze protection, and Save/Restore settings)
- Access the Test and Purge functions to facilitate quick and simple commissioning of the hydronic system.

TO ACCESS THE INSTALLER MENU:

1. Press the Home button to return to the Home Page display.
2. Press and hold the OK button for 3 seconds until the message, INSTALLER MODE – ARE YOU SURE?, displays.
3. Select YES.
4. Press and release the OK button to display the Installer Menu.

Refer to Table 6 on page 30 in the “Appendix” for all of the Installer Menu options for the Control Panel, the factory default values and permissible ranges for each option, and a brief description of how each setting affects the AQ25A’s operation.

5 TEST AND CHECK OUT THE INSTALLATION

Startup

IMPORTANT

Apply power to the AQ25A Control Panel only after all of the AQ2000 SERIES components (Control Panel, thermostats, sensors, Zoning Panels) have been connected to the other equipment in the hydronic heating system (boiler, zone valves or pumps, DHW, Aquastat, etc.).

When powered, the AQ25A Control Panel begins its start-up routine, establishing communication with all other AQ2000 Series components on the AQUATROL network.

Test

The TEST feature enables the installer to checkout all of the system’s outputs, sensors, and zone equipment as part of system commissioning (Checkout).

The TEST operation is accessed from the Installer Menu option EQUIPMENT SETUP >TEST AND PURGE. To begin testing the installation, position the indicator arrow (←) beside the equipment group to be tested (OUTPUTS, SENSORS, or ZONES) and press the OK button.

TEST OUTPUTS

- When TEST OUTPUTS is selected, the AQ25A LCD displays a list of all outputs that can be tested. To select an output to test, position the indicator arrow (←) beside that output and press the + button to activate the output’s relay. As each output is activated, a word icon for that output is

displayed at the top or bottom of the LCD display (refer to Fig. 22 on page 16). The test routine activates the output relay until the “–” button is pressed to turn off that output.

- To test additional outputs, navigate the list using the up and down arrows (^ or v), position the indicator arrow (←) beside that output and press the + button to begin testing. Press the “–” button to de-activate the output relay and stop its test.
- Any combination of outputs can be activated at the same time when testing the outputs.
- When finished testing the outputs, press the Menu button to return to the TEST AND PURGE sub-menu.

TEST SENSORS

When TEST SENSORS is selected, the AQ25A LCD displays the temperature that each of the SUPPLY, RETURN, SECONDARY and OUTDOOR sensors is measuring. If a sensor is malfunctioning or is not properly connected to the AQUATROL network, the value “- -” displays beside that sensor on the LCD, instead of its temperature. If any of the sensors reports a temperature that is illogical, investigate further by referring to “Troubleshooting” on page 20.

TEST ZONES

- When TEST ZONES is selected, the Installer can test all space heating zones connected to the AQ25A simultaneously or individually.
- If zones are tested simultaneously (TEST ALL ZONES), all zone outputs energize immediately (with a delay of 1/10th of a second between each pump or valve to minimize the chance of electrical circuit overloads caused by the inrush currents from the pumps’ motors).
- A zero (0) displayed after a zone’s ID address (e.g., Zone A1 0, A2 0, A16 0) indicates that the AQ25A Control Module has received confirmation that the zone’s pump or valve is closed, or OFF. Similarly, a one (1) displayed after a zone’s ID address (e.g., Zone A1 1, A2 1, A16 1) indicates that the AQ25A has received confirmation that the zone’s pump or valve is open, or ON.
 - For zone pumps or zone valves without end-switches, a 1 is displayed as soon as the pump is energized.
 - For zone valves with end-switches, a 1 is displayed only after the valve’s end switch makes or the valve’s Time To Open delay has expired (for use with 2-wire valves).
- To test zones individually, position the indicator arrow (←) beside a selected zone and press the + button to energize it, and press the – button to de-energize it. As each zone is tested, the Status LED on the Zoning Module associated with that zone illuminates. To test additional zones, position the indicator arrow (←) beside the zone to be tested, press the “+” button to energize the zone’s pump or valve, and then press the “–” button to de-energize it.
- Any combination of zones can be activated at the same time when testing the zones.
- When finished testing the zones, press the MENU button to return to the SETUP >TEST AND PURGE menu.

Checkout

1. From the Installer Menu, select Boiler Settings and reduce the Warm Weather Shut Down (WWSD) temperature setting until it is disabled and the display shows “- -”. This way, the WWSD will not interfere with the zone operation during checkout.
2. Turn down the DHW Aquastat, if present, to avoid interfering with space heating control operation.

3. Turn up the setpoint of one of the thermostats.
 - a. The zone valve or pump associated with that zone turns on.
 - b. The Boiler T-T relay activates (Boiler displays in the demands section of the LCD screen and the Boiler pump relay activates (PRIMary displays in the outputs section of the LCD screen).

NOTE: See Fig. 22 on page 16 for the demands and outputs display areas on the LCD.

- c. Depending on the settings for the AUX.PUMP (line voltage rated dry contacts) and the AUX OUT (low voltage rated dry contacts), either or both of these relays may also close.
4. Turn down the set point of one thermostat. The zone valve or pump associated with that zone should turn off. The Boiler T-T and Boiler pump relay outputs should deactivate.
5. Repeat steps 3 and 4 for all zones to verify each zone is operating correctly. Thermostats may be exercised individually or all together to accelerate the check out process.
6. Turn up the DHW Aquastat to simulate a call for hot water.
 - a. If the DHW device is a pump, the DHW relay output energizes immediately. The Boiler pump relay remains off.
 - b. If the DHW device is a valve, the Boiler pump relay energizes after a delay to allow the zone valve to fully open. This delay is selected from the EQUIPMENT SETUP>DHW>DHW VLV.OP menu option.
 - c. Turn up the set point of one thermostat.
 - (1) If the DHW relay is configured to control a pump, and DHW PRIOrity is selected, the Boiler and the associated zone pump's relay remain off.
 - (2) If the DHW relay is configured to control a valve, and DHW PRIOrity is selected, the Boiler pump activates after a delay for the DHW zone valve to open, but the associated zone relays remain off.
 - (3) If DHW PRIOrity is disabled, space heating zone pumps and valves should operate during a call for DHW.
7. Turn down the DHW Aquastat to end the call for hot water. Space heating operation should continue (if DHW priority is disabled) or resume (if DHW PRIOrity is enabled).

6 PURGE AIR FROM ALL SYSTEM AND ZONE PIPING

The PURGE operation on the AQ25A Control Panel allows the installer to purge all zones (loops) sequentially, or each zone individually, for a period of time, PURGE TIME, which selected from the EQUIPMENT SETUP>TEST AND PURGE>PURGE sub-menu. The purge time can be adjusted in increments of 1 minute, up to a maximum of 30 minutes per loop to be purged.

After you have defined which loops to purge (all loops, or an individual loop) and for how long (using the AQ25A's menus), position the indicator arrow (←) beside the START PURGE option and press the OK button. The START PURGE display will change to STOP PURGE and the AQ25A display begins counting down the time remaining for the purge cycle.

Purging All Loops

When the purge time has elapsed for the first loop, the control proceeds to the next loop and performs the purge operation on each loop in sequential order. After all selected loops have been purged, the display shows PURGE COMPLETED.

7 DOCUMENT AND KEEP A RECORD OF ALL SYSTEM SETTINGS

After the AQ25A Series Control Panel has been set up, and the entire hydronic installation is operating properly, it is important to document all the system settings for future reference.

Job Records

All AQ2000 Series Panels are shipped with Installation Job Records for documenting these settings. These should be filled out completely and saved in the Installing Contractor's files.

NOTES: There are two classes of settings used by the AQ25A to control the operation of the heating system, Zone Settings and System (or Equipment) Settings. Both types of settings are stored in non-volatile memory and are not lost following an extended power disruption.

WHEN USING AQ1000 THERMOSTATS

1. Zone Settings are designed to be adjustable by the user or the installer and are stored in the faceplate of each zone's AQ1000 thermostat. These settings are not saved with the SAVE SETUP operation. If the faceplates of two AQ1000 thermostats are switched, the settings (setpoints, zone minimum, zone maximum, etc.) will also be switched.
2. System Settings are designed to be adjustable only by the system installer and are stored in the AQ15A Control Module. These are the settings that are saved with the SAVE SETUP operation.

SAVE Feature

In addition to the hardcopy Installation Job Records, the AQ25A Control Panel has a convenient SAVE feature that allows the installing contractor to save the specific equipment setting for this installation in the AQ25A's memory for future recall, in case the system's settings are inadvertently changed. This feature is found in the EQUIPMENT SETUP > SAVE/RESTORE sub-menu.

There are three levels of settings in the AQ25A's memory – CURRENT, FACTORY and SETUP.

- **CURRENT** settings are the settings that are currently displayed in any of the menus and are the settings that the AQ25A uses to operate. Any time a value is changed in any of the menus, the CURRENT settings are changed and these new settings are instantly used by the AQ25A Control Panel.
- **FACTORY** settings are the default values loaded at the factory and are the starting point for programming the AQ25A. These values are permanently stored in memory and cannot be over-written or erased. The AQ25A can be restored to factory settings through the RESTORE FACTORY option in the SAVE / RESTORE sub-menu. A warning prompt, RESTORE FACTORY—ARE YOU SURE?, displays and YES or NO must be chosen before proceeding. If YES is selected, the FACTORY settings are

be copied to the AQ25A's CURRENT settings and the Control Panel begins to operate with these values immediately.

- **SETUP** settings are the specific settings for this installation which an installer has saved after the AQ25A is set up and operating well. These are saved for future recall, in case the system's settings are inadvertently changed.
 - To save this installation's settings for the first time, go to the EQUIPMENT SETUP > SAVE/RESTORE sub-menu. Position the indicator arrow (←) beside SAVE SETUP and press OK. This saves the current system settings to the SETUP values.
 - To retrieve the SETUP values at any time in the future, go to the EQUIPMENT SETUP > SAVE/RESTORE sub-menu and select RESTORE SETUP to load those values into the AQ25A as the CURRENT settings. The system will now operate according to these retrieved settings.
 - If the current settings are modified after a RESTORE SETUP operation is performed, simply select SAVE SETUP again to overwrite these new settings into the SAVE settings memory.



CAUTION

If you change any system settings after a RESTORE SETUP operation, you change the current settings that the AQ25A uses as its basis of operation.

TROUBLESHOOTING

The following information helps the installer correctly identify system problems, making troubleshooting much faster.

Table 3 and Table 4, beginning on page 21, describe the possible error codes and status notices that can be communicated on the AQ155 / AQ157 Zoning Modules' diagnostic LEDs.

System Status Information

To aid in troubleshooting hydronic systems controlled by an AQ25A, the operational status of the system is shown on the System Status page. Status notices and error messages display here as appropriate, i.e., only those that are pertinent to the system's current operation will be displayed. See Table 4 on page 21 for a complete list of status notices and error messages. The System Status page is available from the User Menu.

When a new AQ2000 component is connected on the AQUATROL network, its settings are communicated to the AQ25A Control Module within 10 seconds of being connected. If the component is an AQ1000 thermostat, the setpoints for that zone thermostat can be modified from the AQ25A Control Module as soon as it is recognized.

When an AQ1000 thermostat is disconnected from the AQUATROL network, a message displays on the System Status page of the AQ25A indicating "Lost Zone A-xx", where "xx" is the specific identity, or address, of the lost zone. This helps the servicing contractor quickly identify the lost zone and fix its wiring to re-establish communication with the AQ25A Control Module.

This diagnostic information is very valuable and the System Status page is the first place a contractor should look for information when troubleshooting system problems.

Communications Loss

Because all AQ2000 Series components communicate with each other via the dedicated AQUATROL network when controlling a hydronic system, one possible failure mode of the AQ25A would be loss of communication between the AQ15A Control Module and any connected Zoning Modules, or between a Zoning Module and any zone thermostats connected to the AQUATROL network. In general, the Control Module:

- Periodically tries to re-establish communication with any lost components on the network.
- Initializes any component that re-establishes its communication.
- Displays an error code on the AQ25A's System Status page, until the error is corrected and/or communication is re-established.

Control Module Reaction

When the AQ15A Control Module loses communication with any number of zones for more than one minute (as long as there's still at least one zone communicating on the AQUATROL network), the AQ25A continues to deliver heat to the other non-communicating zones and the address of each lost zone (e.g., A-7, B-4) displays on the System Status page.

When communication is lost with all zones, the AQ25A enters BOILER FREEZE PROTECTION mode, in which it fires the boiler and then activates the Boiler (supply) pump and zone equipment for a period of 10 minutes every hour. This should provide sufficient heat to the system to prevent a building from freezing up until communication is re-established between the AQ2000 Series components.

BOILER FREEZE PROTECTION mode is disabled when the outdoor temperature is above the warm weather shutdown (WWSD) temperature setting.

Zoning Module Reaction

When a Zoning Module loses communication with the Control Module (as long as there is at least one other Zoning Module communicating with the Control Module), the Zoning Module operates its pumps or valves in a conventional, non-synchronized zoning fashion. That is, it operates according to the demands from the thermostats, without zone synchronization or waiting for permission from the AQ15A Control Module to operate. This allows the zones to extract any heat provided by the boiler.

When using AQ1000 thermostats and communication is lost between a Zoning Module and any of its thermostats, that zone enters Single Zone Freeze Protection mode. In this mode, the zoning equipment is operated for an amount of time equal to one-half of the maximum demand of all other zones on the network. This helps prevent the lost zone from freezing. This is especially helpful if a zone's thermostat is removed from the wall while a room is being painted. When used with 2-stage thermostat operation, only the first stage will be activated in the freeze protection mode.

When using digital, non-communicating thermostats other than the AQ1000, the Single Zone Freeze Protection is disabled for those zones.

Single Zone Freeze Protection mode is disabled when the outdoor temperature is above the warm weather shutdown (WWSD) temperature setting.

The AQ25A provides Zoning Module diagnostic information via the DIAGNOSTIC LEDs located above the DIP switches on its Zoning Module(s), as well as on the System Status menu of the LCD display.

If a zone becomes disconnected from the Control Module or is malfunctioning (i.e., lost), this can be seen in the ZONE COUNT value on the AQ25A's Home Page display (Detail view only). The ZONE COUNT represents the number of zones on the AQUATROL network at any given time. When a zone is lost, the ZONE COUNT decreases by one. Because an installer knows how many zones are installed, if there is a difference between the actual number of installed zones and the ZONE COUNT, the installer will know to look for the zone(s).

The identity of lost zones displays in the System Status page as LOST ZONE A-X:

- A identifies the Control Module of the lost zone, and B, C, or D identify an AQ25400B Add-A-Temperature Expansion Control Panel. This prefix can be set or changed on the AQ254 Panels.
- X identifies the lost zone (1 through 16).

Boiler Freeze Protection (not network communication related)

If the boiler supply temperature sensor measures 50°F (10°F) or less, the boiler fires and the boiler pump, secondary pump etc. operate until the target temperature is achieved, as

measured by the supply temperature sensor. This target temperature is the reset temp (if the boiler RESET parameter = OUTDOOR). Or it is the AQ25A's BOILER HIGH LIMIT (if the boiler RESET parameter = LOAD or NONE). DHW and Heat Demand calls are ignored when the system is in freeze protection mode.

Power Disruption

The AQ25A's system and thermostat parameters are stored in non-volatile memory and are updated as they are changed.

When a power disruption occurs, the system configuration is retained in memory. When power is restored, the AQ25A Control Panel enters auto-detection mode, reads its previously-stored settings, and initializes all AQUATROL network components according to their saved parameters.

Power Disruption Greater Than 2 Hours

If a power disruption lasts for more than 2 hours, the AQ25A will have discharged its internal super capacitor, and the DATE and TIME OF DAY settings will need to be reset.

Upon restart, the AQ25A displays its clock settings as: YEAR = 2008, MONTH = JAN, DATE = 1. The message PLS SET DAY/TIME displays and optionally, the AQ25A's backlight flashes repeatedly. This displayed message continues until the DATE and TIME OF DAY are updated. The AQ25A remains permanently in OCCUPIED (or Comfort) mode until the DATE and TIME OF DAY are updated.

Table 3. AQ155 / AQ157 Zoning Module LED Display and System Condition.

DIAGNOSTIC LED Status		System Condition	Action Required
Steady (no blinking)		No system problem detected	None
Fast blinking (4 blinks per second)		Auto Test is in operation	None. Allow the control to finish its Auto Test routine.
Slow blinking (2 blinks every 3 seconds)		Auto Test has been paused.	Press the Test button to resume the Auto Test routine.
Coded blinking = ERROR	2 blinks, then pause	Freeze protection activated across the entire AQUATROL network	All zones have lost communication with the Control Module. Check B-B wiring between the Control Module and each Zoning Module.
	3 blinks, then pause	Communication lost with <u>all</u> thermostats on the Zoning Module	Check thermostat wiring to each Zoning Module.

Table 4. LCD Status Notices and Error Messages.

LCD Display	Parameter	Meaning
AUX IN EM. SHUT	n/a	Auxiliary Input's Emergency Shut Down is active.
BOILER:	EM SHUT	Boiler is disabled, because the AQ25A is in Emergency Shut Down mode.
	FRZ PROT	Boiler freeze protection activated: <ul style="list-style-type: none"> • Communication between Control Module and Zoning Module has been lost for more than 1 minute or • Boiler supply temperature is less than 50°F (10°C)
	HEAT DHW	Boiler is active to serve DHW.

Table 4. LCD Status Notices and Error Messages. (Continued)

LCD Display	Parameter	Meaning
	HEATING	Boiler is active to serve zones.
	IDLE	Boiler is not active.
BOILER: (continued)	INIT	Boiler contacts (terminals 22-23) on the AQ152A, which are connected to the boiler's T-T terminals, have been shorted and the boiler is beginning its firing sequence.
	INST PURG	Boiler is active while the AQ25A is conducting the PURGE operation in the Installer Setup.
	INSTALL	Boiler is in ready mode during Installer Setup.
	PMP EXER	Boiler is disabled while the AQ25A is exercising all pumps and valves connected to the AQUATROL network.
	POST PURG	Boiler is active with Post Purge operation and is sending the purged water to the Boiler (Primary) loop.
	PURGE DHW	Boiler is active with Post Purge operation and is sending the purged water to the DHW tank.
CALL FOR COOL	n/a	At least one zone with a programmable thermostat requires cooling.
CALL FOR DHW	n/a	The DHW requires heat.
CALL FOR HEAT	n/a	At least one zone requires heat.
CWSD ACTIVE	n/a	Zone calls for cooling are not served because CWSD (Cold Weather Shutdown) is in progress.
DHW DISABLE	n/a	DHW call is not served because it is disabled.
LOST ZONE A-1 ... LOST ZONE D-16	n/a	Lost communication with a zone (A-1 to A-16, B-1 to B-16, C-1 to C-16, or D-1 to D-16).
NO DHW PROBE	n/a	No DHW sensor connected or it is defective.
NO OUTDOOR PROBE	n/a	No outdoor sensor connected or it is defective.
NO RETURN PROBE	n/a	No return sensor connected or it is defective.
NO SUPPLY PROBE	n/a	No supply sensor connected or it is defective.
SHORT CYCLE PROT	n/a	There is a call for heat, but less than two minutes have elapsed since the last firing of the boiler (prevents short cycling).
VALVE INIT	n/a	Motorized mixing valve controlling the secondary loop is being initialized and repositioned (opening or closing) to meet the secondary loop target temperature.
WATER READY	n/a	Boiler Supply Water temperature is at or above the target temperature calculated by the AQ25A.
WWSD ACTIVE	n/a	Zone calls for heat is not served because WWSD (Warm Weather Shutdown) is in progress.

APPENDIX

The appendix provides AQ25A Control Panel user interface information for the:

- The Home Page
- Programming menus (User and Installer)
- Programming menu structure (User and Installer). See page 37.

Home Page

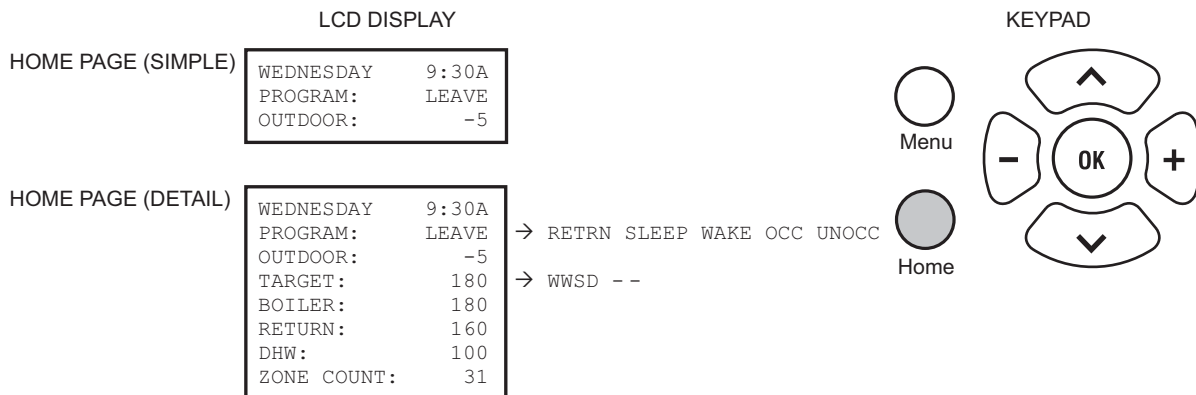
The Home Page is the default display for the control panel. It provides general information on system water and outdoor temperatures, and program schedule mode and day and time.

The Home Page display may be Simple (3-line) or Detailed (8-line), as illustrated in Fig. 23. The Home Page display type is configured from the Installer Menu.

Press the Home button on the keypad to display the Home Page.

NOTES:

1. PLS SET DAY/TIME displays after a power outage of more than 4 hours.
2. PROGRAM displays the current active program (Leave, Return, Sleep, Wake, Occ, or Unocc).
3. TARGET displays the current temperature or indicates the system is in a warm water shutdown (WWSD) status.
4. When “- -” is displayed instead of a temperature value (e.g., TARGET: - -), this means that there is no call for heat from either space heating, DHW, or Heat Demand zones at the moment.



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Fig. 23. Home Page display (Simple and Detail) and keypad.

Programming Menus

There are two programming menus, User and Installer. The Installer Menu begins on page 30.

User Menu

The User Menu can be accessed at any time by pressing the Menu button on the keypad.

This menu allows the building owner to:

- View the System Status and Statistics.
- Set the display preferences, date, and time.
- Edit the Zone settings, including setpoint temperatures for each zone.
- Edit the Setback temperatures for each zone for the WAKE, LEAVE, RETRN (return), and SLEEP programs.

Refer to Table 5 beginning on page 24 for the following User Menu selections:

- System Status (page 24)
- Preferences/Time (page 24)
- Zone Settings (page 24)
 - All zones
 - Single zone for Ambient, Floor, or Ambient/Floor settings
- Program Settings (page 28)

NOTE: An illustration of the complete User Menu is on page 37.

Table 5. User Menu.

Menu Option	Range	Factory Default	Description
SYSTEM STATUS		Identifies what is happening within the system.	
See Table 4 on page 21	n/a	n/a	Multiple status and alarm messages can display on this page. This diagnostic information is for troubleshooting purposes. However, only the status and messages pertinent to the system's current operating condition will display.
PREFERENCES/TIME		Allows you to set up the AQ25A Control Panel with preferred display, time, date, and temperature settings.	
BOILER UNITS	°F or °C	°F	Choice of temperature units (F or C) for displaying temperatures on the AQ25A LCD display.
ZONE UNITS	°F or °C	°F	Choice of temperature units (F or C) for displaying temperatures (on the AQ1000 zone thermostats).
TIME DISP	12H or 24H	12H	Choice of time format display: 12 hour format (e.g., 2:00 P) or 24 hour format (e.g., 14:00).
D.S.T.	ENABLE or DISABLE	ENABLE	Enables / disables automatic change to and from Daylight Savings Time.
YEAR	2000 - 2099	2008	Select the year when the control is commissioned.
MONTH	JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DEC	JAN	Select the month of the year when the control is commissioned.
DATE	01 to 31	01	Select the date (01-31) of the month when the control is commissioned.
DAY	MONDAY, TUESDAY, WEDNESDAY, ... SUNDAY	MONDAY	Select the day of the week when the control is commissioned.
TIME	00:00A to 12:59P (00:00 to 23:59)	12:00A (midnight)	Select the time of day when the control is commissioned. You can change the time with the + and – buttons, just as with a clock radio.
HOME PAGE	SIMPLE or DETAIL	DETAIL	Select the 3 line (Simple) display or the 10 line (Detail) display for the Home Page.
BACKLIGHT	AUTO or ON	AUTO	<ul style="list-style-type: none"> • Auto mode = backlight illuminates when any button on the display is pressed. It turns off after 1 hour. • ON mode = backlight stays on constantly.
POWER FAILURE NOTICE	BACKLIGHT or MSG.ONLY	BACKLIGHT	<p>The building owner can be notified in one of two ways that the AQ25A's DATE and TIME OF DAY settings need to be reset:</p> <ol style="list-style-type: none"> 1. By displaying the message, PLS SET DAY/TIME, on the first line of the Home Page 2. By repeated flashing of the AQ25A's LCD backlight and displaying the message PLS SET DAY/TIME, on the first line of the Home Page

Table 5. User Menu. (Continued)

Menu Option	Range	Factory Default	Description
ZONE SETTINGS	Displays all information pertaining to the selected zone(s). There are four possible sub-menu displays: 1. EDIT ALL ZONES 2. EDIT SINGLE ZONE - Ambient Style (see page 26) 3. EDIT SINGLE ZONE - Floor Style (see page 27) 4. EDIT SINGLE ZONE - Ambient/Floor Style (see page 27)		
EDIT ALL ZONES	YES or NO	NO	Prompts with EDIT ALL ZONES ARE YOU SURE? Selecting YES displays the following options:
SETPOINT	Between SETPOINT MIN and SETPOINT MAX	70°F (21°C)	Target temperature set for the zone.
SETBACK	0°F to 16°F (0°C to 9°C)	7°F (4°C)	Amount of temperature (number of degrees) setback from occupied to unoccupied modes for this zone.
SETPOINT MAX	41°F to 100°F (5°C to 38 °C)	100°F (38°C)	Maximum setpoint temperature allowed for this zone's thermostat. The SETPOINT MAX cannot be set below the SETPOINT MIN setting.
SETPOINT MIN	41°F to 100°F (5°C to 38 °C)	41°F (5°C)	Minimum setpoint temperature allowed for this zone's thermostat. The SETPOINT MIN cannot be set above the SETPOINT MAX setting.
FLOOR LIMIT HI ^a	41°F to 100°F (5°C to 38 °C)	100°F (38°C)	Maximum floor temperature allowed for a given zone that is controlled by a floor / slab sensor connected to that zone's AQ1000 thermostat. At Floor MAX, the zone equip is turned off. The FLOOR MAX cannot be set below the FLOOR MIN setting.
FLOOR LIMIT LO ^a	41°F to 100°F (5°C to 38 °C)	41°F (5°C)	Minimum floor temperature allowed for a given zone that is controlled by a floor / slab sensor connected to that zone's AQ1000 thermostat. At Floor MIN, the zone equip is energized. The FLOOR MIN cannot be set above the FLOOR MAX setting).
SETPOINT VACANCY HEAT	Between SETPOINT MIN and SETPOINT MAX	41°F (5°C)	Target heating temperature for the zone when system is in VACANCY mode.
SETPOINT VACANCY COOL	Between SETPOINT MIN and SETPOINT MAX	100°F (38°C)	Target cooling temperature for the zone when system is in VACANCY mode. Only displays when cooling is enabled for that zone.
CHANGEOVER	2°F to 9°F (1°C to 5°C)	2°F (1°C)	Temperature deadband that determines the changeover from heating to cooling and from cooling to heating: <ul style="list-style-type: none"> The thermostat switches from heating to cooling mode when the indoor temperature is <u>higher</u> than the setpoint by more than the changeover band setting for 15 minutes. The thermostat switches from cooling to heating mode when the indoor temperature is <u>lower</u> than the setpoint by more than the changeover band setting for 15 minutes.
KEYBOARD	LOCK or UNLOCK	UNLOCK	Controls the zone thermostat's keyboard. <ul style="list-style-type: none"> If set to LOCK, settings cannot be changed at that zone's thermostat. If set to UNLOCK, the thermostat's settings can be changed within the respective limits.

Table 5. User Menu. (Continued)

Menu Option	Range	Factory Default	Description
EDIT SINGLE ZONE	Ambient Style — Selecting this menu item displays the following options:		
ZONE #A-X	A-1 to A-16 ... D-1 to D-16	A-1	Each zone on the AQUATROL network has a unique identity (address). This address consists of a Control Module ID and the Zone related to that controller. <ul style="list-style-type: none"> • Module ID: The Boiler Controller is A, and the 1st through 3rd Add-A-Temperature Expansion Control Modules (i.e., AQ25400B) are B, C, and D. • Zone: From 1 to 16 for each Module ID. A total of four controllers (one Boiler Control Module and up to three Add-A-Temperature Expansion Control Modules), each having 16 associated zones can be connected on the AQUATROL network. The AQ25A Control Panel itself can control one Boiler loop water temperature and one secondary loop water temperature.
ROOM TEMP	32°F to 158°F (0°C to 70°C)	n/a	Display only – Temperature measured by the zone thermostat.
SETPOINT	Between SETPOINT MIN and SETPOINT MAX	70°F (21°C)	Target temperature set for the zone.
H/C STATUS	HEAT or COOL	n/a	Display only – Status is received from each programmable zone thermostat every 10 seconds.
SETBACK	0°F to 16°F (0°C to 9°C)	7°F (4°C)	Amount of temperature (number of degrees) setback from occupied to unoccupied modes for this zone
SETPOINT MAX	41°F to 100°F (5°C to 38 °C)	100°F (38°C)	Maximum setpoint temperature allowed for this zone's thermostat. The SETPOINT MAX cannot be set below the SETPOINT MIN setting.
SETPOINT MIN	41°F to 100°F (5°C to 38 °C)	41°F (5°C)	Minimum setpoint temperature allowed for this zone's thermostat. The SETPOINT MIN cannot be set above the SETPOINT MAX setting.
SETPOINT VACANCY HEAT	41°F to 100°F (5°C to 38 °C)	41°F (5°C)	Target HEATING temperature for the zone when system is in VACANCY mode
SETPOINT VACANCY COOL	41°F to 100°F (5°C to 38°C)	100°F (38°C)	Target COOLING temperature for the zone when system is in VACANCY mode. Only displayed when cooling is enabled for that zone.
CHANGEOVER	2°F to 9°F (1°C to 5°C)	2°F (1°C)	Temperature deadband that determines the changeover from heating to cooling and from cooling to heating: <ul style="list-style-type: none"> • The thermostat switches from heating to cooling mode when the indoor temperature is <u>higher</u> than the setpoint by more than the changeover band setting for 15 minutes. • The thermostat switches from cooling to heating mode when the indoor temperature is <u>lower</u> than the setpoint by more than the changeover band setting for 15 minutes.
KEYBOARD	LOCK or UNLOCK	UNLOCK	Controls the zone thermostat's keyboard. <ul style="list-style-type: none"> • If set to LOCK, settings cannot be changed at that zone's thermostat. • If set to UNLOCK, the thermostat's settings can be changed within the respective limits.

Table 5. User Menu. (Continued)

Menu Option	Range	Factory Default	Description
EDIT SINGLE ZONE	Floor Style — Selecting this menu item displays the following options:		
FLOOR TEMP	32°F to 158°F (0°C to 70°C)	n/a	Display only. This is the temperature measured by the floor temperature sensor.
FLOOR SETPT	41°F to 100°F (5°C to 38 °C)	70°F (21°C)	This menu option displays only when the AQ1000 thermostat is set to FLOOR ONLY mode.
SETBACK	0°F to 16°F (0°C to 9°C)	7°F (4°C)	Amount of temperature (number of degrees) setback from occupied to unoccupied modes for this zone.
SETPOINT MAX	41°F to 100°F (5°C to 38 °C)	100°F (38°C)	Maximum setpoint temperature allowed for this zone's thermostat. The SETPOINT MAX cannot be set below the SETPOINT MIN setting.
SETPOINT MIN	41°F to 100°F (5°C to 38 °C)	41°F (5°C)	Minimum setpoint temperature allowed for this zone's thermostat. The SETPOINT MIN cannot be set above the SETPOINT MAX setting.
SETPOINT VACANCY HEAT	41°F to 100°F (5°C to 38 °C)	41°F (5°C)	Target HEATING temperature for the zone when system is in VACANCY mode.
KEYBOARD	LOCK or UNLOCK	UNLOCK	Controls the zone thermostat's keyboard. <ul style="list-style-type: none"> • If set to LOCK, settings cannot be changed at that zone's thermostat. • If set to UNLOCK, the thermostat's settings can be changed within the SETPOINT MAX and SETPOINT MIN limits.
EDIT SINGLE ZONE	Ambient/Floor Style — Selecting this menu item displays the following options:		
ZONE #A-X	A-1 to A-16 ... D-1 to D-16	A-1	Each zone on the AQUATROL network has a unique identity (address). This address consists of a Control Module ID and the Zone related to that controller. <ul style="list-style-type: none"> • Module ID: The Boiler Controller is A, and the 1st through 3rd Add-A-Temperature Expansion Control Modules (i.e., AQ25400B) are B, C, and D. • Zone: From 1 to 16 for each Module ID. <p>A total of four controllers (one Boiler Control Module and up to three Add-A-Temperature Expansion Control Modules) each having 16 associated zones can be connected on the AQUATROL network. The AQ25A Control Panel itself can control one Boiler loop water temperature and one secondary loop water temperature.</p>
ROOM TEMP	32°F to 158°F (0°C to 70°C)	n/a	Display only. This is the temperature measured by the zone thermostat.
FLOOR TEMP	32°F to 158°F (0°C to 70°C)	n/a	Display only – Temperature measured by the floor temperature sensor.
SETPOINT	Between SETPOINT MIN and SETPOINT MAX	70°F (21°C)	Target temperature set for the zone.
H/C STATUS	HEAT or COOL	n/a	Display only – Status is received from each zone thermostat every 10 seconds.
SETBACK	0°F to 16°F (0°C to 9°C)	7°F (4°C)	Amount of temperature (number of degrees) setback from occupied to unoccupied modes for this zone.
SETPOINT MAX	41°F to 100°F (5°C to 38 °C)	100°F (38°C)	Maximum setpoint temperature allowed for this zone's thermostat. The SETPOINT MAX cannot be set below the SETPOINT MIN setting.
SETPOINT MIN	41°F to 100°F (5°C to 38 °C)	41°F (5°C)	Minimum setpoint temperature allowed for this zone's thermostat. The SETPOINT MIN cannot be set above the SETPOINT MAX setting.

Table 5. User Menu. (Continued)

Menu Option	Range	Factory Default	Description
EDIT SINGLE ZONE			
Ambient/Floor Style (continued)			
FLOOR LIMIT HI ^a	41°F to 100°F (5°C to 38 °C)	100°F (38°C)	Maximum floor temperature allowed for a given zone that is controlled by a floor / slab sensor connected to that zone's AQ1000 thermostat. At floor maximum, the zone equipment is turned off. The FLOOR MAX cannot be set below the FLOOR MIN setting.
FLOOR LIMIT LO ^a	41°F to 100°F (5°C to 38 °C)	41°F (5°C)	Minimum floor temperature allowed for a given zone that is controlled by a floor / slab sensor connected to that zone's AQ1000 thermostat. At Floor MIN, the zone equip is energized. The FLOOR MIN cannot be set above the FLOOR MAX setting.
SETPOINT VACANCY HEAT	41°F to 100°F (5°C to 38 °C)	41°F (5°C)	Target HEATING temperature for the zone when system is in VACANCY mode.
SETPOINT VACANCY COOL	41°F to 100°F (5°C to 38 °C)	100°F (38°C)	Target COOLING temperature for the zone when system is in VACANCY mode. Only displays when cooling is enabled for that zone.
CHANGEOVER	2°F to 9°F (1°C to 5°C)	2°F (1°C)	Temperature deadband that determines the changeover from heating to cooling and from cooling to heating: <ul style="list-style-type: none"> • The thermostat switches from heating to cooling mode when the indoor temperature is <u>higher</u> than the setpoint by more than the changeover band setting for 15 minutes. • The thermostat switches from cooling to heating mode when the indoor temperature is <u>lower</u> than the setpoint by more than the changeover band setting for 15 minutes.
KEYBOARD	LOCK or UNLOCK	UNLOCK	Controls the zone thermostat's keyboard. <ul style="list-style-type: none"> • If set to LOCK, settings cannot be changed at that zone's thermostat. • If set to UNLOCK, the floor thermostat's settings can be changed within the FLOOR MAX and FLOOR MIN limits.
PROGRAM SETTINGS			
Displays, and allows for editing of, the temperature setpoints for each of the four time periods (or programs) within a 24-hour period (WAKE, LEAVE, RETRN (return), and SLEEP).			
MODE	AUTO, OCC, or UNOCC	AUTO	<ul style="list-style-type: none"> • AUTO = Automatically follow the four time periods (or programs) within a 24 hour period, as set up in the Edit All Days or Edit Daily sub-menus. The four programs are WAKE, LEAVE, RETRN (return), and SLEEP. • OCC = Observe the program settings only for WAKE and RETRN (return). • UNOCC = Observe the program settings only for LEAVE and SLEEP.
EDIT ALL DAYS	ALL WAKE, ALL LEAVE, ALL RETRN, or ALL SLEEP	WAKE=6:00AM LEAVE=8:00AM RETRN=6:00PM SLEEP=10:00PM	Allows Installer to set the WAKE, LEAVE, RETRN (return), and SLEEP times once, and apply the settings to all 7 days. NOTE: The programs will be copied to the individual days <u>only</u> when the COPY TO ALL DAYS option is selected.
EDIT DAILY	WAKE, LEAVE, RETRN, or SLEEP	WAKE=6:00AM LEAVE=8:00AM RETRN=6:00PM SLEEP=10:00PM	Allows Installer to set the WAKE, LEAVE, RETRN (return), and SLEEP times for all 7 days individually.

Table 5. User Menu. (Continued)

Menu Option	Range	Factory Default	Description
STATISTICS	Displays the summary and zone relay activity (hours of operation or cycles since last reset).		
LAST DATA RESET	Max. 24,855 days (68 years)	2000 JAN 01	Date of last reset formatted as YYYY MMM DD.
BOILER FIRE ACTIV	Maximum of 596,523 hours (68 years)	0H	Hours of operation of the relay since last reset.
BOILER PUMP ACTIV	Maximum of 596,523 hours (68 years)	0H	Hours of operation of the relay since last reset.
DHW PUMP ACTIV	Maximum of 596,523 hours (68 years)	0H	Hours of operation of the relay since last reset.
AUX PUMP ACTIV	Maximum of 596,523 hours (68 years)	0H	Hours of operation of the relay since last reset.
AUX OUT ACTIV	Maximum of 596,523 hours (68 years)	0H	Hours of operation of the relay since last reset.
ZONE A-1 ACTIV	Maximum of 596,523 hours (68 years)	0H	Hours of operation of the zone's relay (e.g., zone A-1) since last reset. The zone Identifier is A-1 through D-16.

^a The FLOOR LIMIT values can be set in the User Menu of AQ25A Control Panel or the Installer Menu of the AQ1000 thermostat. These programming options only display when an AQ1000 thermostat is configured for Air/ Floor or Floor control operation. Refer to the AQ1000 thermostat Instruction Sheet.

Installer Menu

The Installer Menu allows you to set up and modify system settings that typically would be adjusted by a trained installer. These include equipment settings (for boiler operation, DHW management, zoning, auxiliary input/output operation) and option settings, such as pump/valve exercise, freeze protection, and Save/Restore settings.

System statistics and the installer tools (Test and Purge) are also available from the Installer Menu.

The two Installer Menu options are:

- Equipment Setup (including Statistics) – refer to Table 6
- Test and Purge – refer to Table 7 on page 35

NOTE: Illustrations of the complete Installer Menu begin on page 38.

To access the Installer Menu:

1. Press the Home button to return to the Home Page display.
2. Press and hold the OK button for 3 seconds until the message, INSTALLER MODE – ARE YOU SURE?, displays.
3. Select YES, then press and release the OK button to display the Installer Menu.

NOTE: To exit Installer Mode, select the Installer Exit menu option.

Table 6. Installer Menu – Equipment Setup.

EQUIPMENT SETUP			
Menu Option	Range	Factory Default	Description
BOILER SETTINGS	Installer-defined settings for the system design parameters (e.g., boiler supply and return temperatures, reset mode, and outdoor low temperature)		
HIGH LIMIT	120°F to 225°F (49°C to 107°C)	190°F (88°C)	Maximum temperature that the control can use as a target for the boiler supply water (HIGH LIMIT cannot be set below the LOW LIMIT setting).
LOW LIMIT	60°F to 180°F (15°C to 82°C)	150°F	Minimum temperature that the control can use as a target for the boiler supply water (LOW LIMIT cannot be set above the HIGH LIMIT setting).
BOILER DIFF	2°F to 41°F (1°C to 23°C) / AUTO	AUTO	The temperature differential used by the control when operating the boiler. The same differential is used for both the HIGH LIMIT and the LOW LIMIT. <ul style="list-style-type: none"> • If AUTO is selected, the differential is calculated automatically by the AQ25A to maximize comfort and minimize boiler short cycling. • If a specific boiler differential (BOILER DIFF) is selected, the AQ25A will apply 1/2 of this differential above the AQ25A's HIGH LIMIT boiler setting and the other 1/2 below the HIGH LIMIT setting when controlling the boiler supply water temperature. • For example, if the High Limit = 190°F and the Boiler Diff = 10°F, the High Limit range becomes 185-195°F. NOTE: This formula also applies to the boiler differential around the AQ25A's LOW LIMIT.
W.W.S.D.	-- 35°F to 100°F (2°C to 38°C)	70 °F (21°C)	Warm Weather Shut Down is the outdoor temperature above which the AQ25A will not allow hot water to be sent to a space heating zone. The boiler still operates to supply hot water to DHW or a setpoint (HEAT) demand. The WWSD feature can be disabled by reducing the WWSD temperature below 35°F (2°C), at which point the display will read "--". NOTE: Disabling WWSD is not advisable. This will increase the average reset temperature for the Boiler Supply water, resulting in higher energy consumption and less even heating.
MIN. RETURN	-- / 80°F to 180°F (27°C to 82°C)	140 °F (60°C)	Minimum temperature (or OFF) that the control allows for water returning to the boiler. If the temperature of the boiler return water is below the selected temperature, <u>and</u> the AUX pump is set to operate as a boiler bypass pump (EQUIPMENT SETUP > AUXILIARY I/O > AUX.PUMP option is set to BYPASS), the AUX dry contacts close, allowing the separately-powered AUX pump to energize. <ul style="list-style-type: none"> • "--" means Off (not used).

Table 6. Installer Menu – Equipment Setup. (Continued)

EQUIPMENT SETUP			
Menu Option	Range	Factory Default	Description
BOILER OPERATION			
CYCLES/HOUR	2 to 6	4	The number of heating cycles per hour that the control will operate the boiler
FIRE DELAY	0 seconds to 3 minutes (in 5 second increments)	10 (seconds)	Time period that AQ25A control expects between closing the T-T relay and the boiler firing up. Referring to the boiler's instruction manual, set this value equal to the boiler's pre-purge time, if available for the boiler.
PURGE TIME	OFF, 10 seconds to 30 minutes (in 10 second increments)	30 (seconds)	Length of time the Boiler pump (or Boiler pump plus zone valve) will continue to operate (remain open) after the boiler stops firing. Adjustable from 10 seconds to 30 minutes or OFF.
EXERCISE	YES / NO	YES	Option can be set to YES or NO. When set to YES, all pumps and valves in the system are energized for 30 seconds following a period of 2 weeks of no zone equipment activity. The boiler is not fired during this operation.
FREEZE PROT	YES / NO	YES	Option can be set to YES or NO. When set to YES, all pumps and valves in the system are energized for 4 minutes every hour. The boiler is operated at high fire during this operation.
10V MOD. SELECT Operating settings for the analog 0-10V (2-10V) modulating signal			
10V MOD	0-10V / 2-10V	0-10V	The analog signal provided by the control to the boiler is proportional to the target firing rate of the boiler calculated by the AQ25A. This firing rate will produce a constant boiler supply water temperature (typically equal to the BOILER HIGH LIMIT) for as long as any zone is calling for heat.
USAGE	NONE / BOILER	NONE	This setting assigns the device which the analog signal will drive. The NONE option disables a signal from the 10V output.
DOMEST.HOT WATER Settings that the AQ25A uses to manage Domestic Hot Water generation			
DHW	ENABLE / DISABLE	ENABLE	Identifies whether Domestic Hot Water Management function is enabled. DHW is typically disabled only if a separate source of domestic hot water (e.g., oil, or gas-fired hot water heater) is used.
DHW PRIO	YES / NO	NO	Displays only if DHW = ENABLE. Selects whether DHW generation can take priority over space heating. If yes, set to YES; if not, set to NO.
PRIO.OVER.	YES / NO	YES	Displays only if DHW PRIO = YES. Selects whether (following a 30 minute uninterrupted call for DHW Demand) the priority given to DHW generation can be overridden to minimize the chance of freeze up or excessive cool down of the space heating zones. <ul style="list-style-type: none"> • YES = On = Allow DHW Priority override. • NO = Off = Do not allow DHW Priority override. If DHW Priority is selected, Honeywell strongly recommends setting the DHW PRIOR.OVER to YES.
DHW DEVICE	PUMP / VALVE	PUMP	Displays only if DHW = ENABLE. Selects whether the DHW loop is supplied by a zone valve or zone pump.
DHW VLV.OP	0 - 230 seconds (in 5 second increments)	15 (seconds)	Displays only if DHW DEVICE = VALVE. Time required for the DHW zone valve to fully open before boiler loop pump is energized. The 15 second default is typical for motorized valves.

Table 6. Installer Menu – Equipment Setup. (Continued)

EQUIPMENT SETUP			
Menu Option	Range	Factory Default	Description
DOMEST.HOT WATER (continued)			
DHW PURGE	YES / NO	YES	Displays only if DHW = ENABLE. Selects whether or not a purge should be applied after a DHW demand has been served. If YES is selected, the DHW pump or valve is kept running for the amount of time programmed in the PURGE TIME option of the BOILER OPERATION menu.
DHW SENSOR	YES / NO	NO	Selects whether or not the Return sensor will be used as a DHW tank sensor. YES = use as the DHW sensor.
DHW SETPOINT	-- 60°F to 160°F (16°C to 71°C)	140°F (60°C)	Displays only if DHW SENSOR = YES. Target temperature set for the DHW tank. • "--" means Off (not used).
DHW DIFF	-- 5°F to 40°F (2.5°C to 22°C)	20°F (-7°C)	Displays only if DHW SENSOR = YES. • "--" means Off (not used). • A call for DHW begins when the measured DHW temperature = DHW SETPOINT - DHW DIFF and ends when the DHW temperature = DHW SETPOINT. • For example, if the DHW setpoint = 140°F and the DHW Diff = 20°F, a call for DHW begins when the DHW temperature falls below 120°F and ends when the DHW temperature increases to 140°F.
DHW VACANCY	-- [41°F + DHW DIFF] to 160°F ([5°C + DHW DIFF] to 71°C)	45°F (7°C)	Displays only if DHW SENSOR = YES. Target DHW temperature when system is in VACANCY mode. • "--" means Off (not used).
ZONING	Settings which the AQ25A uses specifically for Zone operation		
HT DMND PRIO	YES / NO	NO	Selects whether a HEAT DEMAND (device connected to the Heat terminals on the AQ control module) can take priority over space heating. If yes, set to YES; if not, set to NO. • If both DHW Priority and Heat Demand Priority are set to YES and both are active at the same time, DHW Priority takes priority over Heat Demand Priority.
PRIO.OVER	YES / NO	NO	Displays only if HT DMND PRIO = YES. Selects whether (following a 30 minute uninterrupted call for Heat Demand) the priority given to the Heat Demand can be overridden to minimize the chance of freeze up or excessive cool down of the space heating zones. • YES = On = Allow Heat Demand Priority override. • NO = Off = Do not allow Heat Demand Priority override.
ZONING VALVES TIME TO OPEN	5 - 230 (seconds)	15 (seconds)	Time required for the zone valves installed on space heating zones to fully open.

Table 6. Installer Menu – Equipment Setup. (Continued)

EQUIPMENT SETUP			
Menu Option	Range	Factory Default	Description
AUXILIARY I/O	Settings which the AQ25A uses to control the system based on input to the AUX. IN terminals or to control the activation of the AUX.OUT and AUX.PUMP outputs.		
AUX.IN (optional)	SETBACK / VACANCY / EM. SHUT / NONE	SETBACK	Based on the setting chosen, the AQ25A sets the system in one of 3 different levels of setback for as long as the Aux. In terminals are shorted. Refer to instruction sheet for AQ1000 thermostat (69- 2005EF) for setting the Vacancy (Freeze Protection) temperature setpoint.
AUX.OUT (optional)	BOILER / SETBACK / ZONE OP. / ALARM / AUX.IN / DHW IN / HEAT IN / HT DMND / COOL / NONE	BOILER	Based on the setting chosen, the AQ25A closes the AUX. Out dry contact terminals when: <ul style="list-style-type: none"> • BOILER: The boiler pump energizes. • SETBACK: The system program is in setback mode (either SLEEP or LEAVE). • ZONE OP.: The end switch of a zone valve connected to a Zoning Module closes or a zone pump energizes. • ALARM: An alarm is detected on the system. • AUX.IN, DHW IN, HEAT IN, or HEAT DMND: An input signal is detected on the respective terminals. • COOL: There is a call for cooling from a programmable AQ1000 thermostat. The COOL option is available <u>only</u> if central A/C is present; see the “A/C SETTINGS” and “A/C EQUIP CONFIG” menu options in this table. • NONE: indicates that the Aux Out terminals are not used.
AUX.PUMP (optional)	BOILER / GROUP / OCC / BYPASS / FAN / NONE / AUX.IN / DHW IN / HEAT IN / HT DMND	BOILER	Based on the setting chosen, the AQ25A closes the Aux. Pump dry contacts when: <ul style="list-style-type: none"> • BOILER: The boiler pump energizes. • GROUP: Any of the thermostats in a Group of zones (identified by the Zoning Module's DIP switch #7 [AUX] being switched to YES) energize. • OCC: The system program is in Occupied mode (either WAKE or RETRN). • BYPASS: The boiler return sensor measures a water temperature less than the value defined for the EQUIPMENT SETUP > BOILER SETTING > MIN RETURN setting. • FAN: There is a call for cooling from a programmable AQ1000 thermostat. The FAN option is available <u>only</u> if central A/C is present; see the “A/C SETTINGS” and “A/C EQUIP CONFIG” menu options in this table • AUX.IN, DHW IN, HEAT IN, or HEAT DMND: An input signal is detected on the respective terminals. • NONE: indicates that the Aux Pump terminals are not used.
A/C SETTINGS	Central A/C – Available only if no AQ158 controller is present on the network.		
CYCLES/HOUR	2 / 3 / 4 / 5 / 6	4	The maximum number of times the controller will permit the central A/C to cycle in each hour.
MIN.OFF TIME	2 to 10 (minutes)	5M	The length of time that must elapse after the AC compressor shuts off before the Aux. Out relay is permitted to close, to energize the compressor again.
C.W.S.D.	-- 32°F to 100°F (0°C to 38°C)	65°F (18°C)	The temperature at which cold weather shutdown is activated. <ul style="list-style-type: none"> • “--” means Off (not used).
FAN MODE	AUTO / ON	AUTO	Selects whether or not the fan serving the A/C system operates constantly (ON) or operates only when there is a call for cooling (AUTO). FAN MODE displays only if the FAN option is selected for AUX.PUMP. See “AUX.PUMP” menu option in this table.

Table 6. Installer Menu – Equipment Setup. (Continued)

EQUIPMENT SETUP			
Menu Option	Range	Factory Default	Description
A/C EQUIP CONFIG	Central A/C – Available only if no AQ158 controller is present on the network.		
ZONE	A-1 to D-16	A-1	Selects the desired zone.
A/C UNIT	NONE / 1	1	Defines which A/C compressor is associated with each zone thermostat. NOTE: At this time, only one zone of A/C can be handled by the AQ2000 controls. The options are 1 (if the zone uses an AQ1000TP2 programmable thermostat and can call for cooling), or NONE.
COOLING	ENABLE / DISABLE	ENABLE	Enables or disables the cooling functions of the zone's programmable thermostat (AQ1000TP2). NOTE: This item is always set to DISABLE when a non-programmable thermostat (AQ1000TN2) is used in the selected zone.
STATISTICS	Displays the summary and Zone relay activity (hours of operation or cycles since last reset)		
LAST DATA RESET	Max. 24,855 days (68 years)	2000 JAN 01	Date of last reset formatted as YYYY MMM DD.
RESET ALL DATA ARE YOU SURE?	YES / NO	NO	Selecting YES resets all of the summary and zone activity values to zero.
BOILER FIRE ACTIV	Maximum of 596,523 hours (68 years)	0H	Hours of operation of the relay since last reset.
BOILER PUMP ACTIV	Maximum of 596,523 hours (68 years)	0H	Hours of operation of the relay since last reset.
DHW PUMP ACTIV	Maximum of 596,523 hours (68 years)	0H	Hours of operation of the relay since last reset.
AUX PUMP ACTIV	Maximum of 596,523 hours (68 years)	0H	Hours of operation of the relay since last reset.
AUX OUT ACTIV	Maximum of 596,523 hours (68 years)	0H	Hours of operation of the relay since last reset.
ZONE A-1 ACTIV	Maximum of 596,523 hours (68 years)	0H	Hours of operation of the zone's relay (e.g., zone A-1) since last reset. The zone Identifier is A-1 through D-16.
ENVIRACOM	Not used - reserved for future use.		
Modules ID:	n/a	n/a	n/a
SAVE / RESTORE	Options for saving settings or restoring previously-saved settings		
RESTORE FACTORY	n/a	n/a	Selecting this option restores all settings to their factory defaults
RESTORE SETUP	n/a	n/a	Selecting this option restores all settings to those saved by the Installer with the SAVE SETUP operation. RESTORE SETUP is only displayed as a menu option if installer settings have previously been saved using the SAVE SETUP menu option. Only displays if the installer has previously saved his (non-factory default) settings using the SAVE SETUP feature.
SAVE SETUP	n/a	n/a	Enables installer to SAVE system settings once the system has been set up and is working well; Designed to facilitate quick recovery to proper system operation in the event of inadvertently changing control settings (e.g., tampering with the system settings by an inexperienced user).

Table 7. Installer Menu – Test and Purge.

TEST and PURGE			
Menu Option	Range	Factory Default	Description
TEST OUTPUTS	Tests the individual system outputs to ensure correct operation.		
BOILER PUMP	ON / OFF	OFF	Energizes / de-energizes the line voltage terminals marked Boiler when switched to ON / OFF respectively.
AUX PUMP	ON / OFF (close / open)	OFF (open)	Closes / opens the line voltage rated dry contacts marked Aux. when switched to ON / OFF, respectively.
DHW PUMP	ON / OFF	OFF	Energizes / de-energizes the line voltage rated terminals marked DHW when switched to ON / OFF respectively.
BOILER T-T	ON / OFF (close / open)	OFF (open)	Closes / opens the low voltage rated dry contacts (terminals 17 and 18) marked Boiler T-T when switched to ON / OFF respectively.
AUX OUT	ON / OFF (close / open)	OFF (open)	Closes / opens the low voltage rated dry contacts (terminals 19 and 20) marked Aux. Out. when switched to ON / OFF respectively.
10V MOD	0V to 10V	0V	Produces voltage on the 10 Vdc low voltage terminals (15 and 16), according to the setting chosen (0V to 10V), in increments of 1V.
TEST SENSORS	Tests the supply, return and outdoor temperature sensors to ensure correct operation		
OUTDOOR	-- LO -58° to 212°F (-50° to 100°C) HI	n/a	Displays the temperature measured by the outdoor sensor. "--" means sensor is disconnected LO means temperature reading is below -55°F (-50°C) HI means temperature reading is above 212°F (100°C)
BOILER	-- LO -49° to 257°F (-45° to 125°C) HI	n/a	Displays the temperature measured by the boiler supply sensor. "--" means sensor is disconnected LO means temperature reading is below -49°F (-45°C) HI means temperature reading is above 257°F (125°C)
RETURN	-- LO -49° to 257°F (-45° to 125°C) HI	n/a	Displays the temperature measured by the Return/DHW sensor. "--" means sensor is disconnected LO means temperature reading is below -49°F (-45°C) HI means temperature reading is above 257°F (125°C) Does not display when the RETURN/DHW sensor is configured as a DHW sensor.
DHW	-- LO -49° to 257°F (-45° to 125°C) HI	n/a	Displays the temperature measured by the sensor configured for DHW (the sensor wired to the Return/DHW terminals 5 and 6). "--" means sensor is disconnected LO means temperature reading is below -49°F (-45°C) HI means temperature reading is above 257°F (125°C) Displays only when the sensor is configured as a DHW sensor.

Table 7. Installer Menu – Test and Purge. (Continued)

TEST and PURGE			
Menu Option	Range	Factory Default	Description
TEST ZONES	Tests the zone equipment individually, or sequentially, to ensure correct operation		
ALL ZONES	n/a	OFF	Sequentially energizes / de-energizes all zones connected to the AQUATROL network. <ul style="list-style-type: none"> • 0 displays when the Control Module has confirmation that the pump/valve is closed. • 1 displays when the Control Module has confirmation that the pump/valve is fully open. In the case of pump zoning, the 1 displays no more than 5 seconds after the activation of the relay. In the case of valve zoning, the 1 displays either when the zone valve operating time (defined in EQUIPMENT SETUP > ZONING > ZONE VALVES TIME TO OPEN) has elapsed (AQ15540B) or when the valve's end switch is closed (AQ15740B).
ZONE A-1 0/1 ... ZONE A-16 0/1	0 / 1	0	Energizes / de-energizes each zone individually. <ul style="list-style-type: none"> • 0 displays when the Control Module has confirmation that the pump/valve is closed. • 1 displays when the Control Module has confirmation that the pump/valve is fully open.
PURGE	Purges all (or individual) zones for the period of time selected in the PURGE TIME menu option		
PURGE TIME	1 to 30 (minutes)	5:00 (minutes)	Duration of purge for each zone selected.
PURGE	ALL / DHW / ZONE A-1 ... ZONE D-16	ALL	Installer selects which zones to purge (all, only DHW, or individual zones).
START PURGE	START PURGE / STOP PURGE	n/a	Starts and Stops purge operation.
PURGE OFF	WAIT VALVE / PURGE COMPLETED	n/a	Indicates status of the system during a Purge operation. Displays only if START PURGE is active.

Menu Structure

This section illustrates the complete menu structure for:

- User Menu
- Installer Menu (see Fig. 25 on page 38)

User Menu Structure

Press the Menu button on the keypad to display the User Menu. Fig. 24 illustrates all possible User Menu selections.

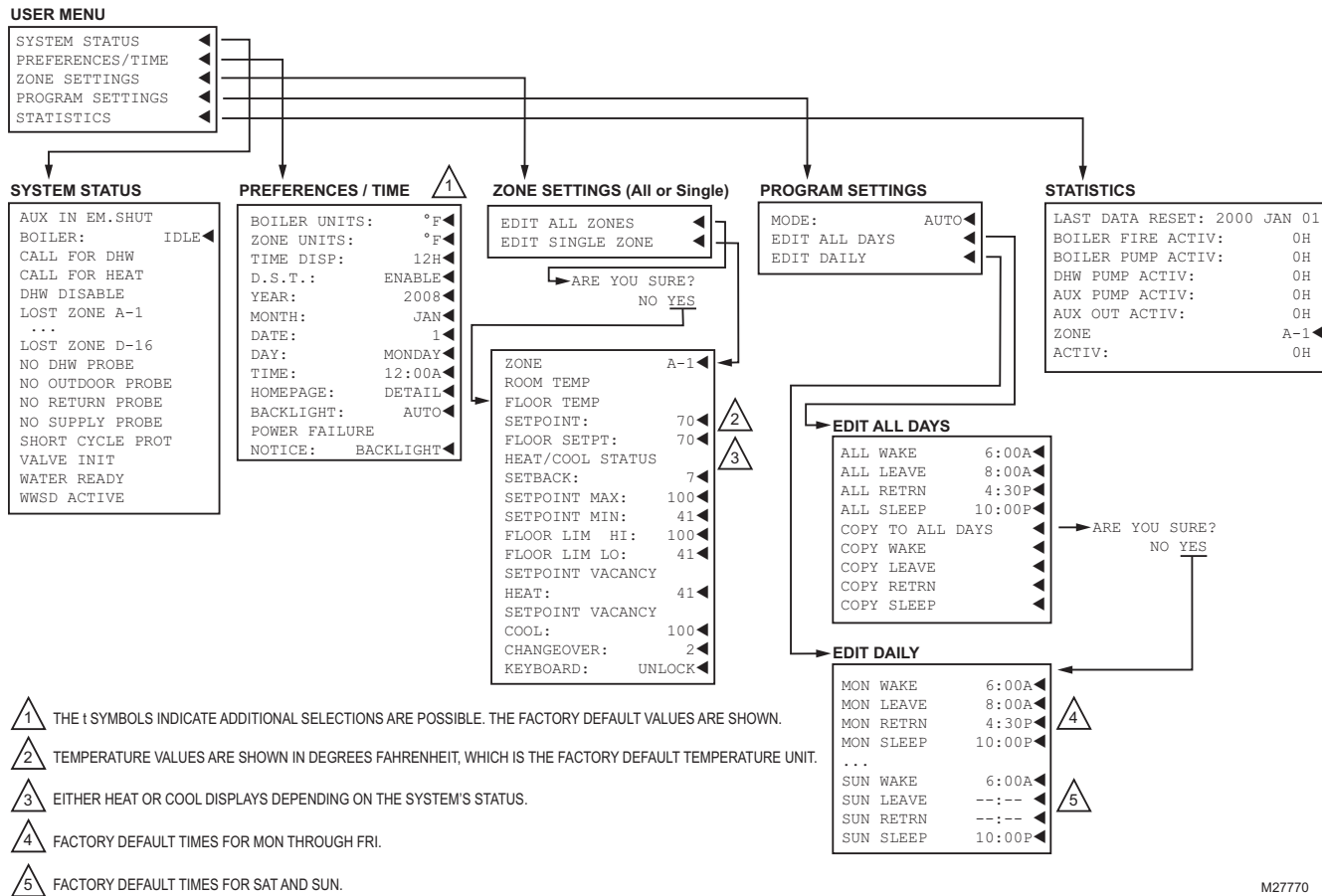


Fig. 24. User Menu Structure.

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Installer Menu Structure

To display the Installer Menu, go to the Home Page, press and hold the OK button for 3 seconds until the message INSTALLER MODE – ARE YOU SURE? displays. Select YES and press the OK button. Fig. 25 and Fig. 26 on page 39 illustrate all possible Installer Menu selections.

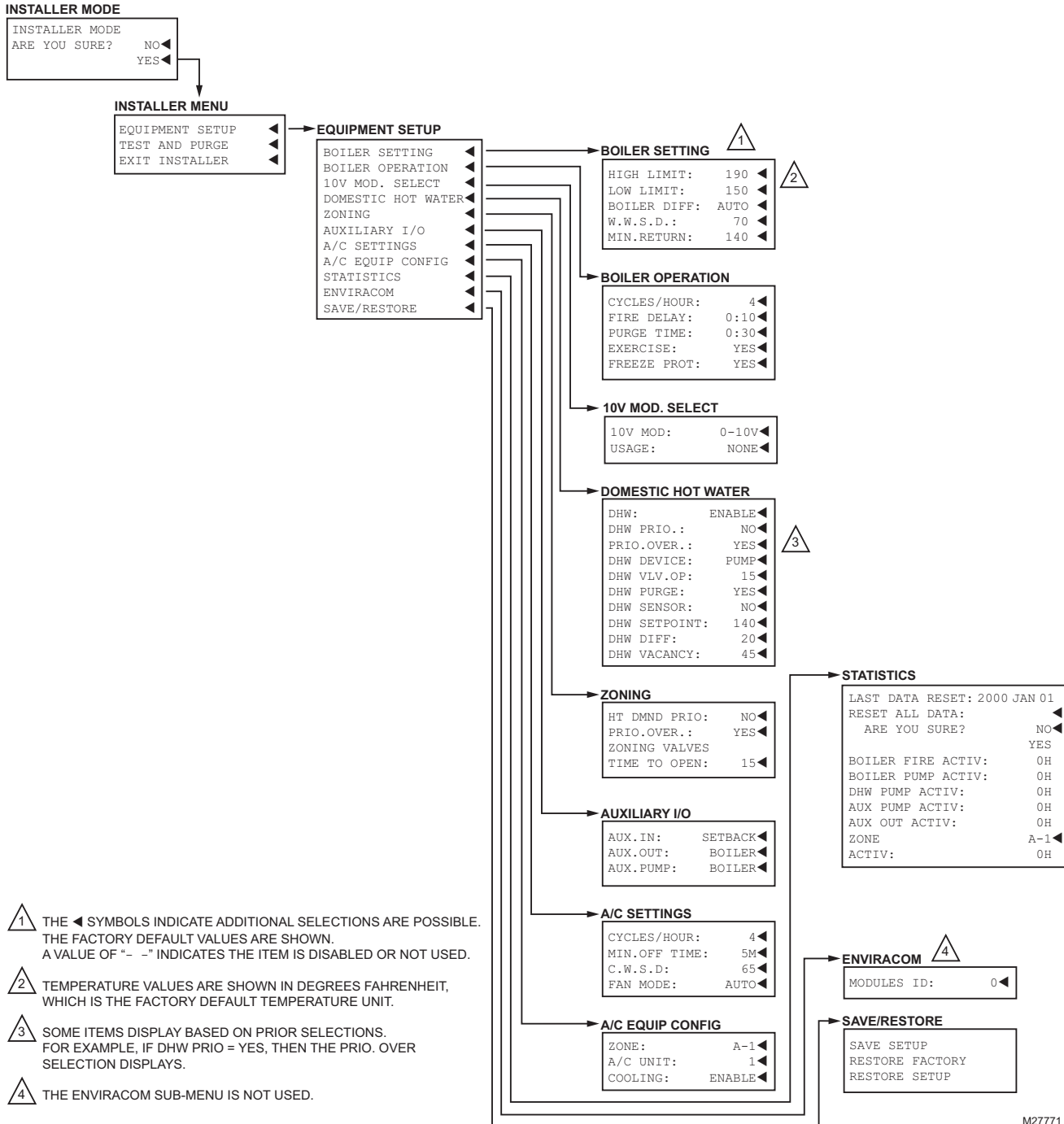
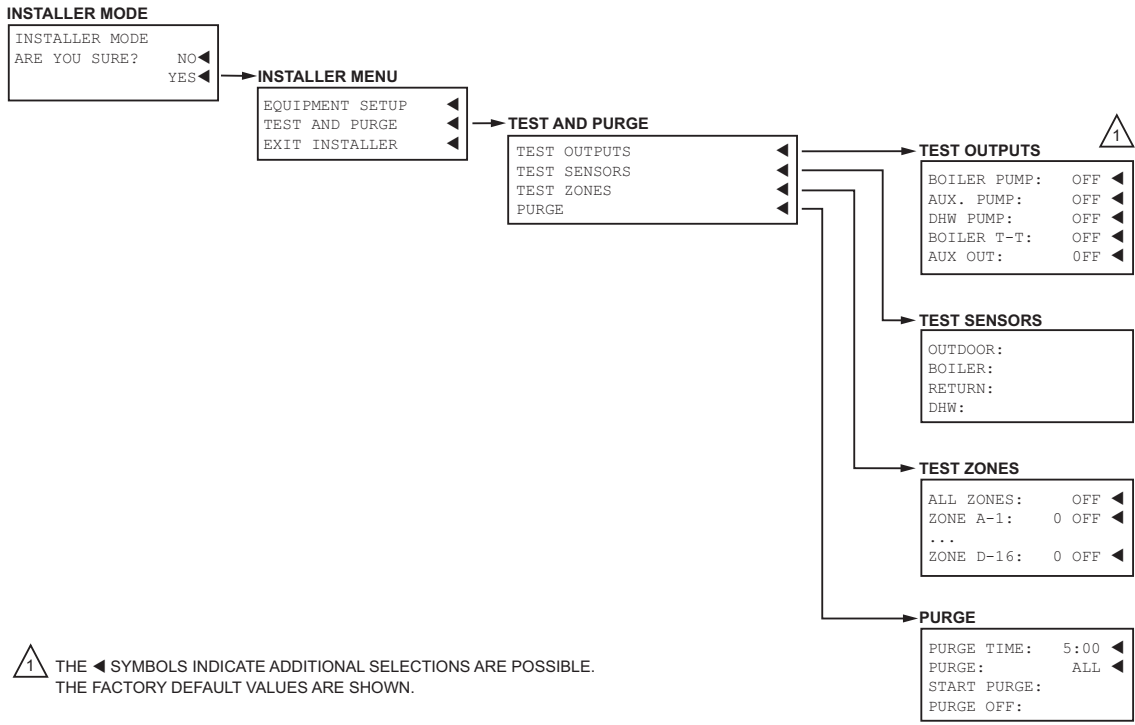


Fig. 25. Installer Menu Structure. – Equipment Setup.

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Fig. 26. Installer Menu Structure. – Test and Purge.

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AQ250 Series Hydronic Control Panels

PRODUCT DATA



FEATURES

The AQ250 Series Hydronic Control Panels have the following features:

- **Zoning Control** for up to four, single-stage zones or two, two-stage zones as shipped; can be expanded to a total of 16 zones with AQ255 or AQ257 expansion zoning panels, and up to 64 zones by using up to three AQ254 Add-a-Temperature expansion panels and additional expansion zoning modules.
- Controls one boiler loop.
- Zone synchronization through Zone of Greatest Demand control.
- Domestic hot water (DHW) priority and priority override protection.
- Use with digital non-communicating thermostats or AQ1000 2-wire polarity insensitive communicating thermostats.
- Automated test feature for quick start-up and simplified troubleshooting.
- Boiler freeze protection (in the event of network communication failure).
- Boiler short cycling protection, post purge, and shock prevention from cold water returning to boiler.
- Line or low-voltage output for zoning equipment (pumps or valves).
- Integral 38 VA transformer with self resetting electronic fuse.

PRODUCT DESCRIPTION

The AQ250 easily converts a single-zone heating system into a room-by-room comfort control system, or upgrades a basic, relay-logic zoning system to intelligent Zone of Greatest Demand control. The boiler control of the AQ250 can ensure ample supply of hot water for both space heating and priority generation of domestic hot water for bathing, dishes and laundry.

IMPORTANT

To ensure correct installation and proper operation of the control, perform the 7 installation steps in the order numbered in the "Contents" below.

	Contents
Specifications	2
1 Installation Preparation	3
2 Mounting	4
3 Wiring Procedure	5
4 Configure the Control Panel DIP Switches	14
5 Test and Check Out the Installation	17
6 Purge Air from all System and Zone Piping	19
7 Document and Keep a record of all System Settings	19
Troubleshooting	19



- **When using non-communicating thermostats, the following features are not available:**
 - **Outdoor temperature is not displayed on the thermostat.**
 - **Individual zone freeze protection.**

SPECIFICATIONS

The AQ250 Control Panels and corresponding attached equipment are listed in Table 1.

Table 1. AQ250 Series Control Panel Models.

Control Panel	Corresponding Control Module	Corresponding Zoning Module
AQ25042B	AQ15000B	AQ15540B
AQ25044B	AQ15000B	AQ15740B

Application: Controls one boiler loop as well as domestic hot water (DHW) management and zoning operation in a hydronic zoning system.

Power and Electrical Ratings:

Power Supply: 120 Vac / 60Hz

Auxiliary Pump Contact Rating: 120/250 Vac, 5A, 1/3 HP

Boiler (T-T) Contact Rating: 24 Vac, 0.5A, 12 VA

Boiler Pump Output Rating: 120 Vac, 5A, 1/3 HP

DHW Pump/Valve Output Rating: 120 Vac, 5A, 1/3 HP

B-B Communication Bus Terminals: Low voltage, Class II, 2-wire polarity-insensitive, digital communicating link to other Control or Zoning modules.

Electrical Connections (Line Voltage): Wire-clamp screw terminals; maximum 2 x 14 AWG each on line voltage terminals

Environmental Ratings:

Control and Zoning Panel Temperature Rating: 32°F to 130°F (0°C to 55°C)

Operating Humidity Range (% RH): 5 to 90% RH, non-condensing

Temperature Ratings:

Return Minimum Control Temperature: 140°F (60°C); This is the temperature at which the bypass pump (Aux. Pump contacts) is activated.

Sensor Temperature Rating: -58°F to 230°F (-50°C to 110°C)

Inputs/Outputs:

DHW Demand Input: External dry contacts connection only

Heat Demand (Thermostat R-W) Input: External dry contacts connection only

R-C Input (on Control and Zoning Modules): 24 Vac Class II

R-C Output (on transformer): 38 VA, 24 Vac Class II

Interface and Timings:

User Interface: DIP Switch settings

Boiler Heat Post Purge: 30 seconds; not adjustable

Pump/Valve exercise: 30 seconds per 2 weeks of space heating inactivity; not adjustable

Thermostat Compatibility: Digital thermostats and/or AQ1000 Series 2-wire communicating thermostats

Supply/Return Loop Sensor: 10K ohm NTC thermistor at 77°F (25°C) ± 0.5°F (±0.3°C). Lead length: 10 ft. (3.0 m); up to 500 ft. (150 m) using 18 AWG or larger wire, beta=3892.

Dimensions (HxWxD): 8.0 x 13 x 3.3 in. (20.3 x 32.9 x 8.5 cm) approximate

Weight: 4.9 lb. (2.2 kg)

Approvals: Canadian Standards Association: Certified, File No. LR76030

ORDERING INFORMATION

When purchasing replacement and modernization products from your TRADELINE® wholesaler or distributor, refer to the TRADELINE® Catalog or price sheets for complete ordering number.

If you have additional questions, need further information, or would like to comment on our products or services, please write or phone:

1. Your local Honeywell Automation and Control Products Sales Office (check white pages of your phone directory).
2. Honeywell Customer Care
1885 Douglas Drive North
Minneapolis, Minnesota 55422-4386

In Canada—Honeywell Limited/Honeywell Limitée, 35 Dynamic Drive, Toronto, Ontario M1V 4Z9.

International Sales and Service Offices in all principal cities of the world. Manufacturing in Australia, Canada, Finland, France, Germany, Japan, Mexico, Netherlands, Spain, Taiwan, United Kingdom, U.S.A.

1 INSTALLATION PREPARATION

NOTES: *Throughout these instructions, the following terminology conventions are used:*

- **AQ150** refers to the AQ15000B Control Module;
- **AQ155** refers to the AQ15540B Zoning Module.
- **AQ157** refers to the AQ15740B Zoning Module.
- **AQ250** is used when the information applies to both the AQ25042B and AQ25044B Control Panels. Where there are specific instructions or details relating to the “-42B” or “-44B” Control Panels, the full model number (i.e. AQ25044B) is used;
- **AQ255** refers to all of the AQ25542B, AQ25582B and AQ25742B Expansion Zoning Panels
- **AQ257** refers to the AQ25744B Expansion Zoning Panel. Where there are specific instructions or details relating to the “-42B”, “-82B”, “-42B”, or “-44B” Expansion Zoning Panels, the full model number (i.e. AQ25744B) is used;
- **Control Module** refers to the component within an AQ2000 Series Control Panel that performs the master control operations. See Table 1 on page 2 for specific models.
- **Control Panel** refers to an assembled product, consisting of a transformer, Control Module and Zoning Module, all contained within an AQ2000 panel enclosure;
- **Expansion Zoning Panel** refers to an assembled product, consisting of a Zoning Module and, if applicable, a transformer, contained within an AQ2000 panel enclosure. Zoning Modules are available in either 4-zone or 8-zone configurations. Refer to Honeywell literature Form No. 69-1981 for more information on these products.
- **Zoning Module** refers to the component within an AQ2000 Series Control Panel or Zoning Expansion Panel.

When Installing this Product...

1. **Read these instructions carefully. Failure to follow them could damage the product or cause a hazardous condition.**
2. **Check the ratings given in the instructions and on the product to make sure the product is suitable for the application.**
3. **Installers must be trained, experienced, and licensed service technicians.**
4. **Follow local codes for installation and application.**
5. **After installation is complete, check out the product operation as printed in these instructions.**

WARNING

Risk of electrical shock. Can cause severe injury, property damage or death. Disconnect power supply before installation and before servicing.

Check That You Have All the Necessary Equipment For a Successful Installation

- AQ2000 Series components:
 - AQ250 Control Panel
 - AQ Expansion Zoning Panels (if more than four space heating zones in the system)
 - Digital thermostats (one for every space heating zone being controlled)
- Boiler supply and return temperature sensors (included with the AQ250 Control Panel)
- Low voltage thermostat wire
- Zoning equipment (zone valves or pumps)

Read All Instructions Carefully Before Proceeding

The AQ250 Control Panels are a part of a totally new series of hydronic controls. And although they - and other AQ2000 system components - are very easy to install and operate, they are different than other hydronic controls that you have previously installed. So take a moment to read through this quick installation guide before beginning the installation. Failure to follow them could damage the product or cause a hazardous condition.

Familiarize Yourself With the AQ250 Control Panel Layout

Refer to Fig. 1 on page 4. All AQ250 Control Panels consist of three functional components:

1. AQ10X38 transformer (power supply module), which connects to 120 Vac power and supplies 24 Vac power to the Control Module and Zoning Modules
2. AQ15000B boiler / DHW Control Module, which controls the boiler and domestic hot water (DHW) functions as well as coordinating the overall operation of the hydronic system.
3. One of two different 4-zone Zoning Modules:
 - AQ15740B (part of the AQ25044B Control Panel) for zoning with 24 Vac zone valves with end switches.
 - AQ15540B (part of the AQ25042B Control Panel) for zoning with either line voltage circulators or 24 Vac zone valves without end switches.

AQ250 Control Panels can control a maximum of 16 zones by connecting additional Expansion Zoning Panels to the AQ250 Control Panel. Each Expansion Zoning Panel is configured with its own bank of DIP switches, located in the left-most section of each Zoning Module. To expand the capacity of an AQ250 Control Panel beyond 16 zones, an AQ254 Add-A-Temperature Expansion Control Panel is required. The hydronic system can be expanded by 16 zones for each AQ254 connected to the AQ2000 network. A maximum of three (3) AQ254 Panels may be connected to an existing AQ2000 Control Panel for a maximum of 64 zones connected on the AQUATROL® network

NOTE: If an AQ254 Add-A-Temperature Expansion Control Panel is used for controlling the temperature in a mixed loop, it can reset the mixed loop temperature using LOAD reset, but not OUTDOOR reset, as the AQ250 panel does not have input terminals for an outdoor sensor.

In general, the top terminals of the AQ2000 Series components carry low voltage (24 Vac) power and the bottom terminals carry line voltage (120 Vac) power. This is illustrated in Fig. 1. The two exceptions to this are:

1. AQ15740B Zoning Module for use with zone valves with end switches.
2. AQ15540B Zoning Module when used with low voltage zone valves without end switches.

For these the two exceptions, the bottom terminals of the Transformer and Control Module carry line voltage (120 Vac), but the bottom terminals of the Zoning Module will carry low voltage (24 Vac) power.

The powered terminals on the bottom of the AQ2000 Series Control Modules and Zoning Modules are connected internally, as shown in Fig. 2. The voltage supplied to the N and L terminals is also available at the adjacent terminal pairs when the hot (\pm) relays are switched.

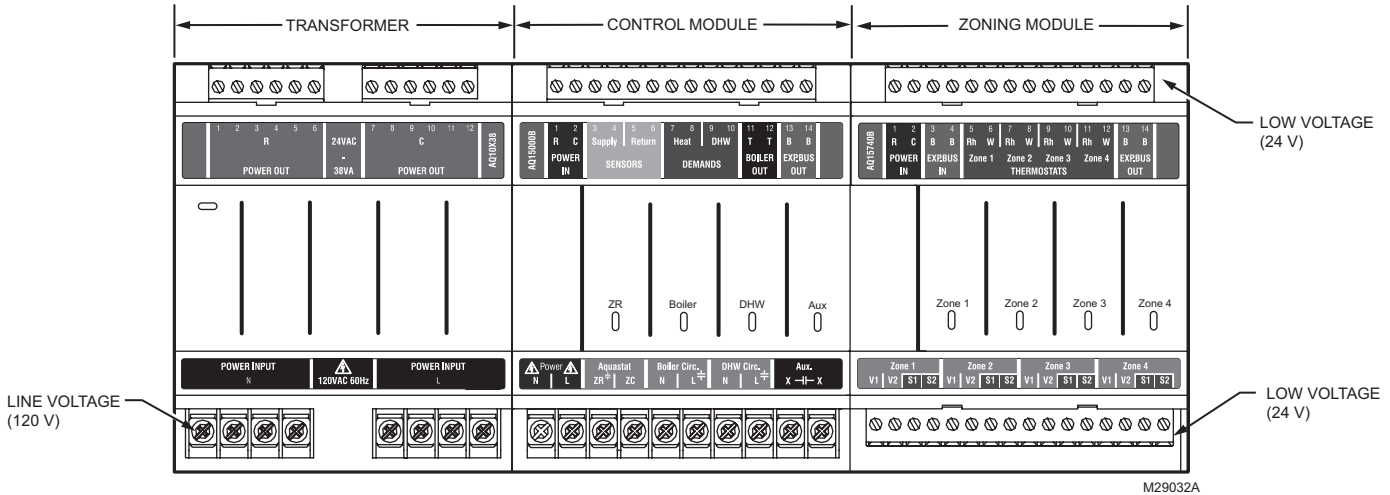


Fig. 1. AQ250 Control Panel layout (AQ25044B shown).

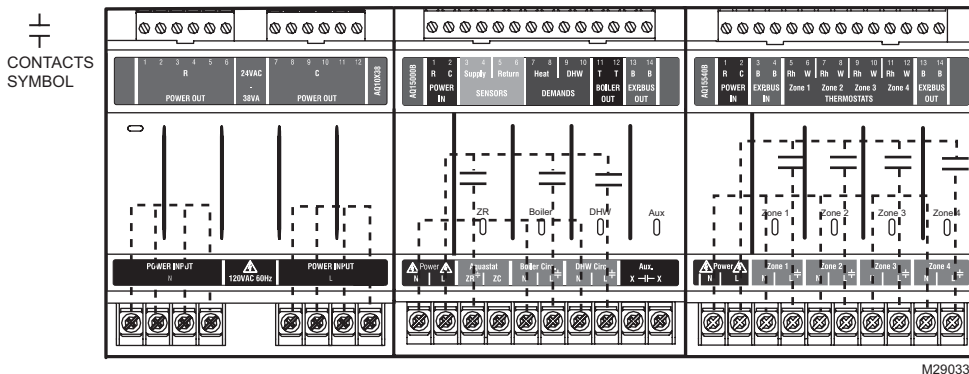


Fig. 2. Internal wiring for AQ2000 Series components line voltage relays.

2 MOUNTING

This section describes how to mount the Control Panel, Expansion Zoning Panels, and the Thermostats.

Mount AQ250 Control Panel

Mount the control panel on the wall:

1. Use the template supplied with the AQ250 Series Control Panel to mark the four mounting holes for the panel.
2. Install two top screws, mount the panel, and install the two lower screws.
4. For any additional Expansion Zoning Panels, repeat

Mount Expansion Zoning Panels

If there are Expansion Zoning Panels to install, mount them to the wall now:

1. Remove wire channel plugs from the AQ250 Control Panel and any Expansion Zoning Panels (see Fig. 3 on page 5).
2. Mount Expansion Zoning Panel on the right-hand end of the AQ250 Control Panel. Install two top screws of the Expansion Zoning Panel, ensuring it is level with the adjoining Control Panel, and install two lower screws.
3. Reverse wire channel plugs and re-insert them into their slot, to form a wiring channel between the Control Panel and the Expansion Zoning Panel (see Fig. 3 on page 5) and to connect the two panels together. steps 1–3.

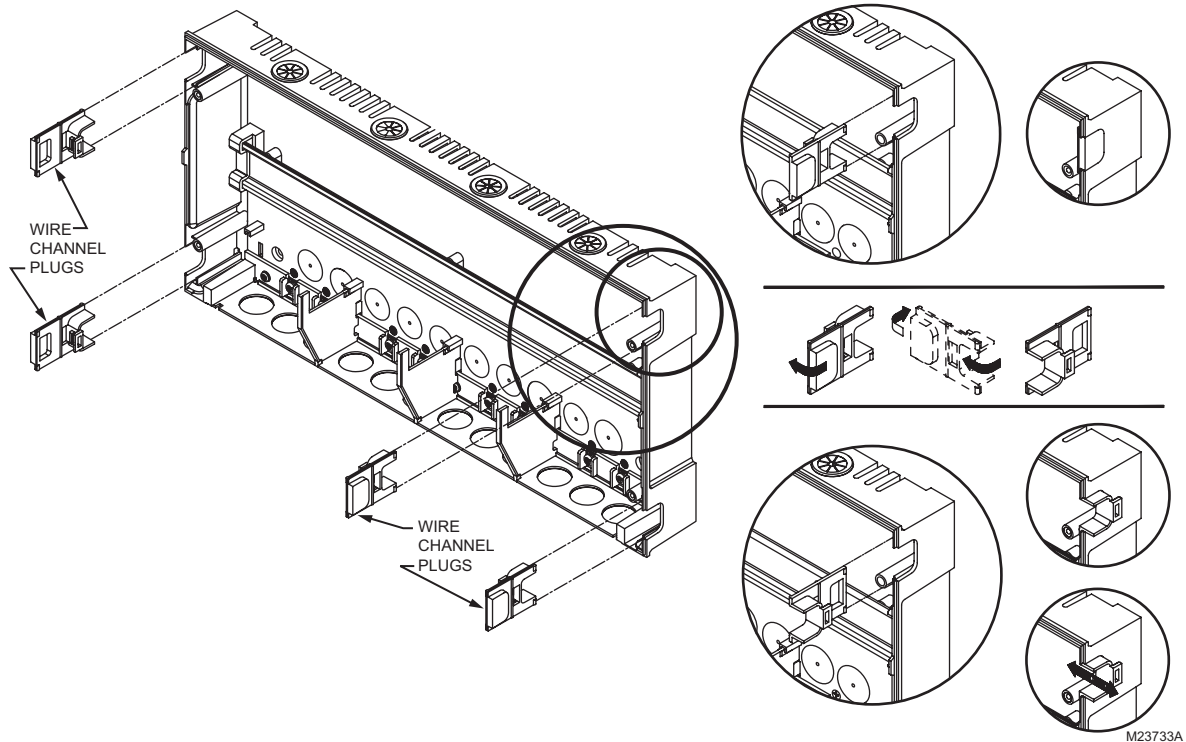


Fig. 3. Orientation of wire channel plugs for creating pass-through wire channel and for joining Control Panel to Expansion Zoning Panels.

Mount and Wire Thermostats in the Zones

Install the thermostats on the walls in the zones that are to be controlled by the AQ250 Control Panel.

When using AQ1000 thermostats refer to the installation instructions included with the AQ1000 thermostats.

If not done already, run low voltage thermostat wire (24 gauge or heavier) from the thermostats back to the Zoning Modules connected to the AQ250 Control Panel.

NOTES: If not otherwise specified, low voltage wiring should be run with 18 gauge thermostat wire and line voltage wiring should be run with 14 gauge wire. AQUATROL line voltage screw terminals are only approved for use with 22 to 12 gauge copper conductors.

Several wiring diagrams are included in this document. For additional information, refer to <http://customer.honeywell.com> or your local distributor.

3 WIRING PROCEDURE

The AQ250 Control Panel is pre-wired at the factory, making for faster installation.

For all models, the low voltage output terminals located at the top of the transformer secondary are wired to the R and C input terminals of the Control Module, as well as the R and C inputs of the Zoning Module. The B-B Exp. Bus terminals (13 and 14) of the Control Module are wired to the B-B Exp. Bus IN terminals of the Zoning Module.

Beginning with the top left of Fig. 4 on page 6 and moving clockwise around the panel, wire components to the AQ250 Control Panel and Expansion Zoning Panels (if installed) in the following six steps:

- “Step 1 – Transformer Wiring” on page 6
- “Step 2 – Control Panel Wiring” on page 6
- “Step 3 – Thermostats Wiring” on page 8
- “Step 4 – Zoning Equipment Wiring” on page 8
- “Step 5 – Line Voltage System Outputs” on page 10
- “Step 6 – Connection To Line Voltage Power” on page 13

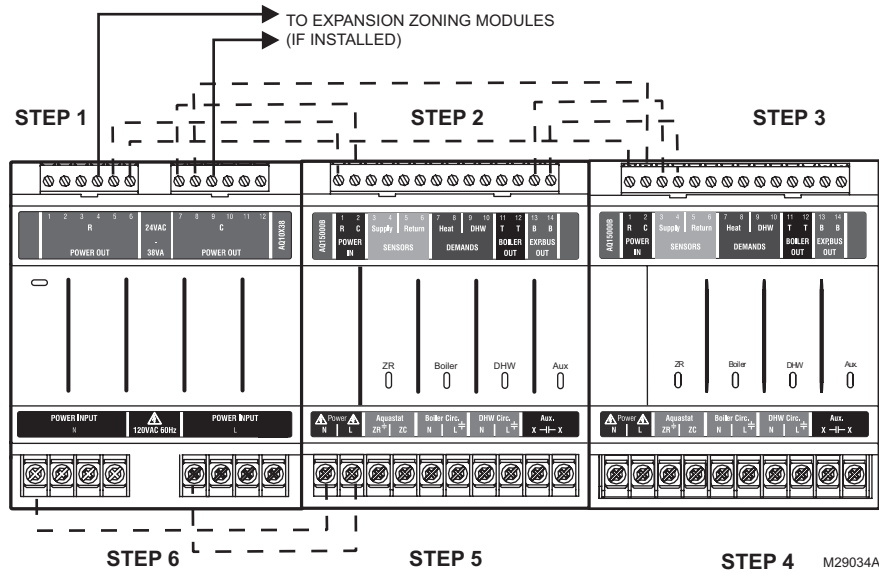


Fig. 4. Wiring sequence.

Step 1 – Transformer Wiring

Factory pre-wiring of the Control Panels is shown as dotted lines in Fig. 4.

In addition to the pre-wiring, run low voltage jumper wires from available R and C terminals on the secondary of the transformer to the R and C terminals of any Expansion Zoning Panel.

Step 2 – Control Panel Wiring

Wire the Temperature Sensors, System Demands, Low Voltage Outputs, and Communication Bus (Refer to Fig. 5 for wiring terminals on the top of the AQ250):

- “Temperature Sensor Wiring”
- “System Demands Wiring” on page 7
- “Low Voltage Outputs Wiring” on page 7
- “Communication Bus Wiring” on page 7

Temperature Sensor Wiring

Connect the lead wires of each sensor to the corresponding terminals on top of the AQ15000B Control Module. See Fig. 5.

The Boiler Supply and Return sensors can be installed either as strap-on sensors or inserted into an immersion well that is packed with thermally-conductive paste.

BOILER SUPPLY AND RETURN SENSORS

Both the Supply and Return Sensors should be installed on the supply and return piping of the boiler for proper operation of the AQ250 Control Panel. Even if the AQ250 is connected to a modulating condensing boiler with its own supply and/or return sensors, the AQ250’s sensors should still be installed for the control to operate.

The Boiler Supply water sensor should be installed on the supply piping close to the exit port of the boiler, using one of the AQ12C11 strap-on sensors supplied with the AQ250. See Fig. 6 on page 7.

The Boiler Return sensor should be installed on the return piping as close to the entrance port to the boiler as practical, using the other AQ12C11 strap-on sensor supplied with the AQ250. The correct location is one that will measure the temperature of all combined sources of water returning back to the boiler.

Insulate strap-on sensors with pipe wrap to ensure accurate boiler temperature sensing.

The Boiler Supply and Return water sensors come with 10 ft. (3m) of wire to minimize the need for splicing.

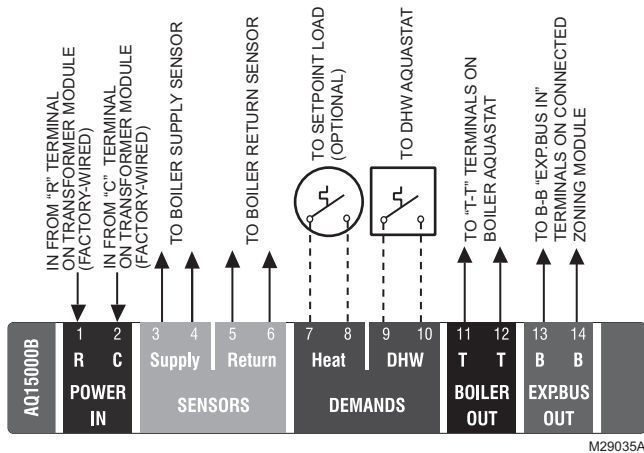


Fig. 5. Low voltage wiring for the AQ1520M0 Control Module.

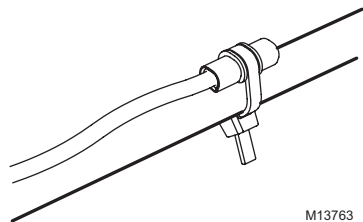


Fig. 6. Strap-on temperature sensor installation.

IMPORTANT

Do not run sensor wires parallel, or close, to telephone, Ethernet, or power cables. Cross all power, Ethernet, and telephone wiring at right angles.

If sensor wires are located in an area with strong sources of electromagnetic interference, or EMI, (e.g., if sensor wires are run in the same electrical chase as line voltage wiring) use twisted pair, shielded cable, or run wires in a grounded metal conduit.

This is important because the calculated temperature - based on the sensor's resistance reading - can be distorted by high EMI, potentially causing the AQ250 to not operate properly.

If using shielded cable or conduit, connect the shield wire to earth ground *only* at the AQ250 panel. Do not ground the shield or conduit at any other location or electromagnetic shielding will be ineffective. If shielded cable is used, Honeywell recommends the use of shielded cable with a continuous ground plane, such as foil, with an integral drain wire for bonding to earth ground.

System Demands Wiring

HEAT DEMAND

Wire the Heat Demand (terminals 7 and 8) to a system setpoint demand (dry contact closure), such as a pool or spa Aquastat®.

DOMESTIC HOT WATER (OPTIONAL)

If used, wire the DHW (terminals 9 and 10) to the Aquastat or thermostat on the domestic hot water tank.

DHW priority allows only DHW heat for the first 30 minutes of a call for DHW and then allows the space heating needs to be added in for the next 30 minutes. This cycle continues until the call for DHW is satisfied.

NOTE: If the AQ250 is connected to a modulating condensing boiler with built-in DHW management, the DHW tank's Aquastat should be connected to the AQ250's DHW (terminals 9 and 10). In this case, the Aux Out contacts should be programmed (in Installer Mode settings) to close when there's a call for DHW [EQUIPMENT SETUP>AUXILIARY IO>AUX.OUT>DHW]

Low Voltage Outputs Wiring

BOILER

Wire the Boiler dry contact output (terminals 11 and 12) to the T-T terminals on the boiler Aquastat or the boiler's control panel. See Fig. 14 on page 11 for wiring connections to a typical boiler Aquastat.

It is not necessary to use the T-T terminals if connecting to a Triple Aquastat, since the signal to the Aquastat is received from the ZR/ZC terminals. See Fig. 14 and Fig. 15 beginning on page 11 for line voltage connection to boiler Aquastats.

These contacts are made any time the system has a request for boiler operation. When this occurs, the system's primary boiler pump comes on.

Communication Bus Wiring

All AQ2000 components communicate with each other on the AQUATROL network using communication bus wiring. This wiring must connect all AQ2000 components. Otherwise, features that depend on this networked communication (e.g., zone synchronization) will not function.

The communication bus wiring is polarity insensitive. The installer does not need to worry about a +ve or -ve orientation of the wires. If there are two wires connected between the B-B Bus Exp. In on one module and B-B Bus Exp. Out on another module, there will be communication. See example in Fig. 7 for how this wiring is to be installed.

The communication bus connections for AQ250 Control Panels are pre-wired at the factory.

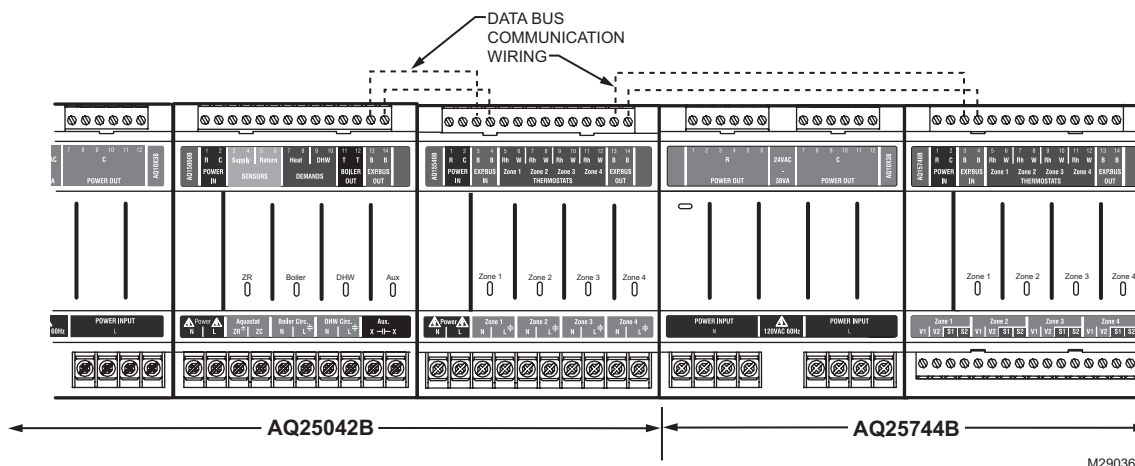


Fig. 7. Wiring for communication bus.

Step 3 – Thermostats Wiring

NOTE: The new AQ2000 panels will work with either digital (electronic) non-communicating thermostats or AQ1000 communicating thermostats.

- Using low voltage thermostat wire, connect one thermostat from each zone to the corresponding THERMOSTATS Zone X inputs on top of the Zoning Module (see Fig. 8).
- If there are additional zones (on Expansion Zoning Panels) connected to this Zoning Module, run low voltage thermostat wiring from the B-B Exp. Bus Out connection (terminals 13 and 14) of the Zoning Module to the B-B Exp. Bus. In connection (terminals 3 and 4) on the Expansion Zoning Panel.

IMPORTANT

Do not run thermostat wires parallel, or close, to telephone, Ethernet, or power cables. Cross all power, Ethernet, and telephone wiring at right angles.

If thermostat wires are located in an area with strong sources of electromagnetic interference, or EMI, (e.g., if thermostat wires are run in the same electrical chase as line voltage wiring) use twisted pair, shielded cable, or run wires in a grounded metal conduit.

This is important, because the AQ1000 thermostats are communicating thermostats which send and received data via the two wires connecting them to the Zoning Module. This data can be distorted by the EMI, potentially causing the AQ250 to not operate properly.

- Run low voltage thermostat wiring from the R and C output terminals on the secondary of the AQ250 Control Panel's transformer to the R and C input terminals on the Expansion Zoning Panel. As an alternative, you can run low voltage thermostat wiring from the R and C terminals on the Zoning Module to the R and C terminals on the Expansion Zoning Panel.

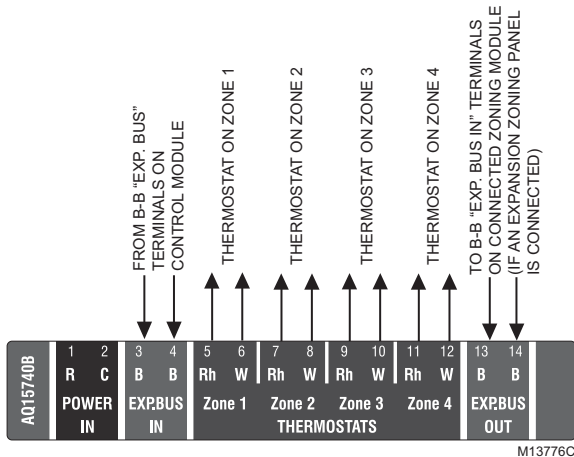


Fig. 8. Connecting thermostats.

Step 4 – Zoning Equipment Wiring

Because the Zoning Module of the AQ25042B Control Panel can be used with either line voltage pumps or valves, or low voltage zone valves (with or without end switches), field installed wiring of the correct voltage needs to be connected to the zoning equipment terminals on the bottom left portion of the Zoning Module.

Line Voltage – Circulators or Zone Valves

Refer to Fig. 9. Remove the plastic wiring barrier that is located in the bottom wiring channel between the AQ15000B Control Module and the Zoning Module. Run jumper wires from the N and L terminals on the bottom of the AQ250 Control Panel's transformer, through the wiring channel across the bottom of the Control Panel, and to the corresponding N and L terminals of the Zoning Module.

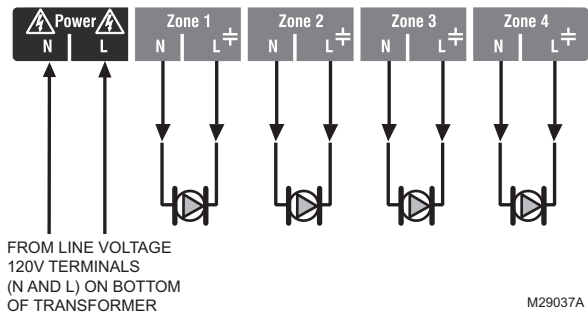


Fig. 9. Wiring an AQ15540B Zoning Module for use with line voltage circulators.

Low Voltage – Zone Valves With or Without End Switches

IMPORTANT

If low voltage zone valves are used with the AQ25042B Control Panel, the supplied Low Voltage Output sticker (shown in Fig. 10) must be applied over the line voltage output sticker (see Fig. 9) that is already attached to the Zoning Module.

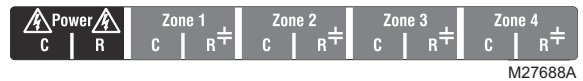


Fig. 10. Low voltage output sticker.

WIRING ZONE VALVES WITHOUT END SWITCHES

- Using Fig. 11 on page 9 as a guide, run jumper wires from the R and C terminals on the secondary of the AQ250's transformer, through the wiring channel across the top of the Control Panel, and down through the wiring channel on the right side of the panel and over to the R and C terminals on the bottom of the Zoning Module.

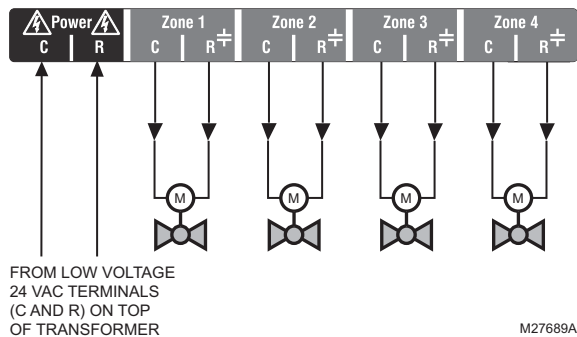


Fig. 11. Wiring an AQ15540B Zoning Module for use with low voltage zone valves without end switches.

WIRING ZONE VALVES WITH END SWITCHES:

- See Fig. 12. 24 Vac power is pre-wired between the transformer secondary at the top left of the AQ250's transformer and the AQ15740B Zoning Module. No field wiring is required.

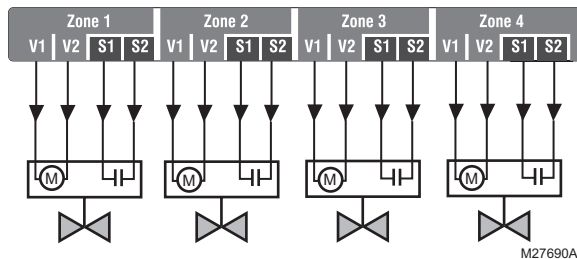


Fig. 12. Wiring an AQ15740B Zoning Module for use with low voltage zone valves with end switches.

CAUTION

Equipment Damage Hazard.
Can damage internal circuitry of Zoning Module.
The ES1 and ES2 terminals of the AQ15740B Zoning Module are powered terminals and must only be connected to a set of dry contacts, such as a zone valve motor's end switch. If power is applied to these contacts (for example, by running line voltage through the zone valves' end switches to bring on a circulator feeding those valves), the internal circuitry of the Zoning Module will be damaged, in which case the warranty for this product will be voided.

NOTE: When wiring zone valves with end switches, note the transformer's VA:
If low voltage zone valves with end switches are used for zone control, make sure the selected zone valves do not draw more power (VA) than the 38 VA capacity of the AQ10X38 transformer supplied with the AQ250 Control Panel. This integral transformer has enough power to operate 4 motorized zone valves (such as Honeywell V8043E valves or 4 valves using low-amperage draw, heat motor actuators, such as Honeywell MV100 actuators), plus power the electronics of the AQ250's Control Module and up to 16 AQ1000 thermostats. If zone valves with high-amperage draw, heat motor actuators are used (such as Taco 500 series zone valves), additional 24 Vac transformer capacity will need to be wired to the Zoning Module to power the valves. See Fig. 13 on page 10 for recommended wiring of additional low voltage VA capacity to AQ2000 Series Zoning Modules.

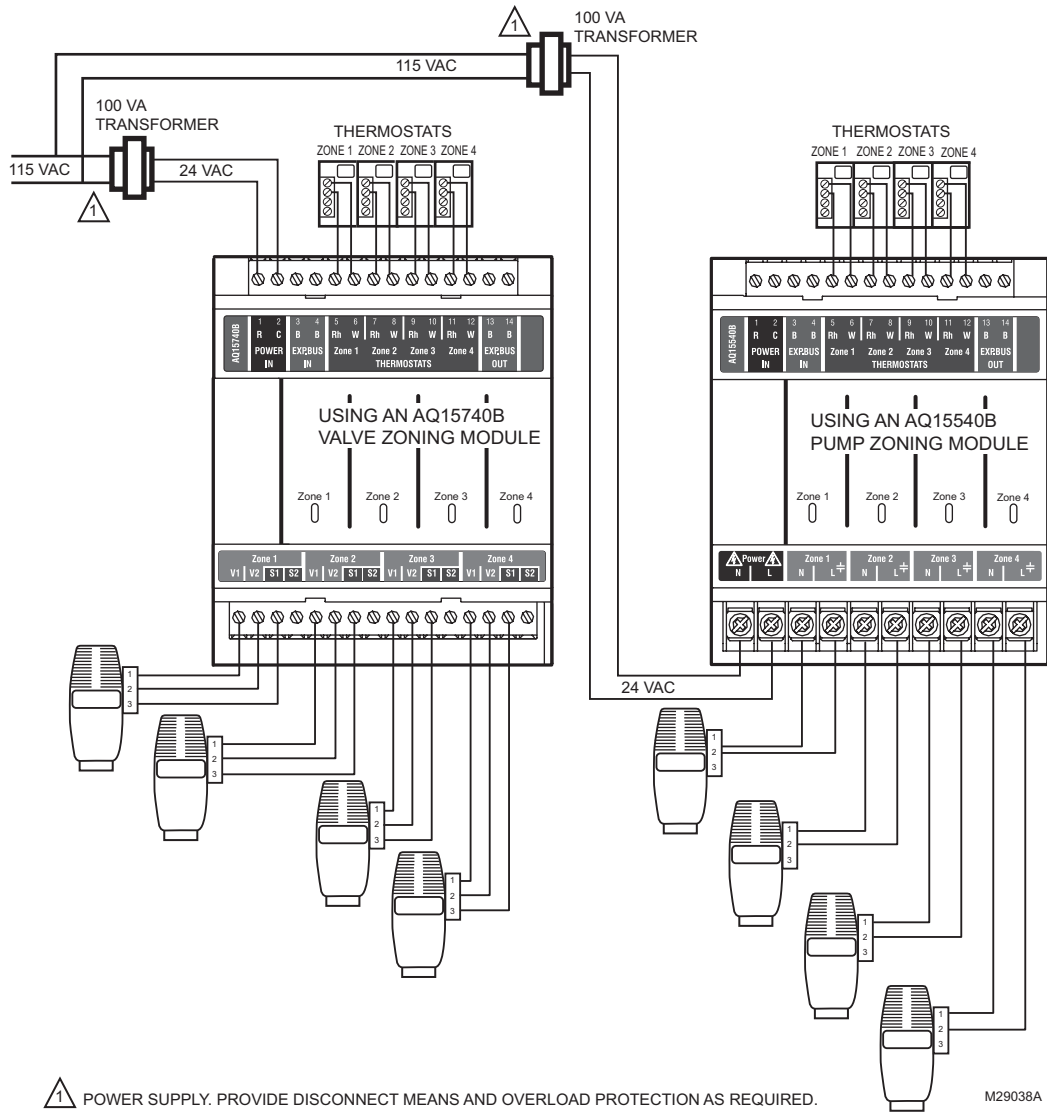


Fig. 13. Wiring of additional low voltage VA capacity.

Step 5 – Line Voltage System Outputs

See Fig. 14 and Fig. 15 on page 11 for wiring diagrams for the line voltage outputs.

NOTE: It is not necessary to connect the boiler equipment's "T-T" terminals to the low voltage BOILER dry contacts (Terminals 11-12) of the AQ250 when using a Triple Aquastat on the boiler. See Fig. 15 on page 11.

Follow these steps to wire the devices to the AQ250 Control Module.

- “1. Boiler Pump” on page 12
- “2. DHW Aquastat Device” on page 12
- “3. Line Voltage Rated Aux Output (optional)” on page 12

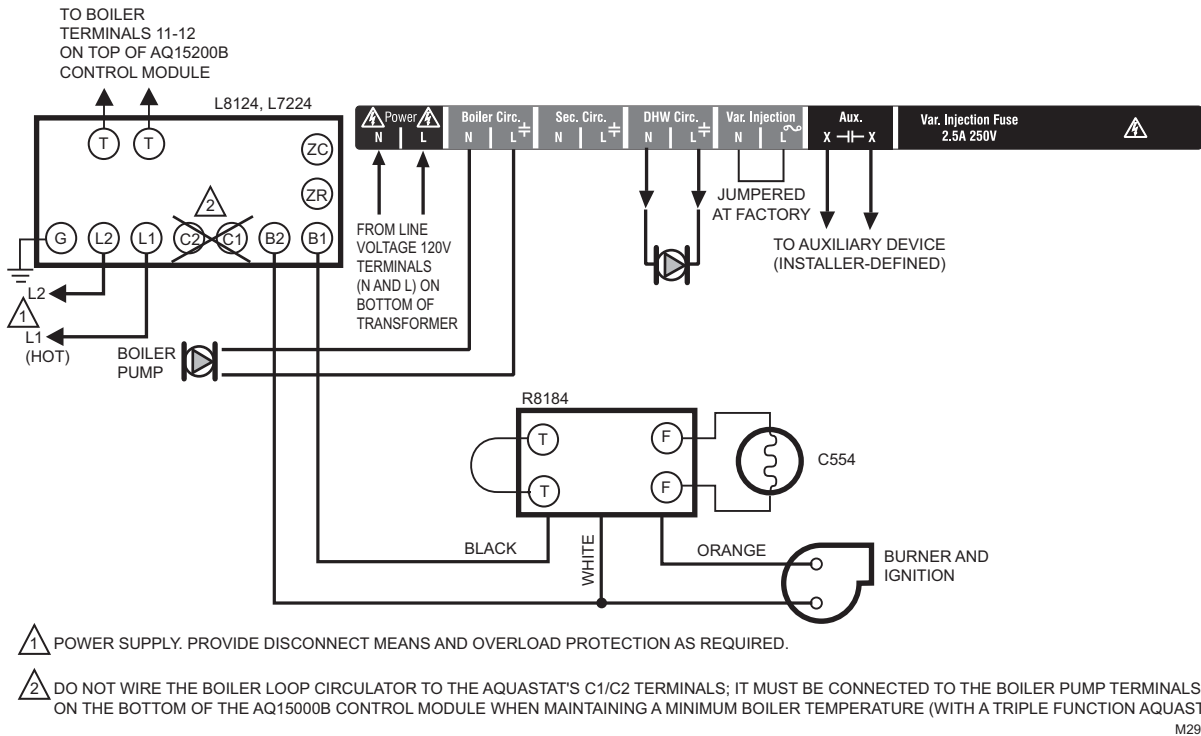


Fig. 14. Line Voltage Connections for AQ250.

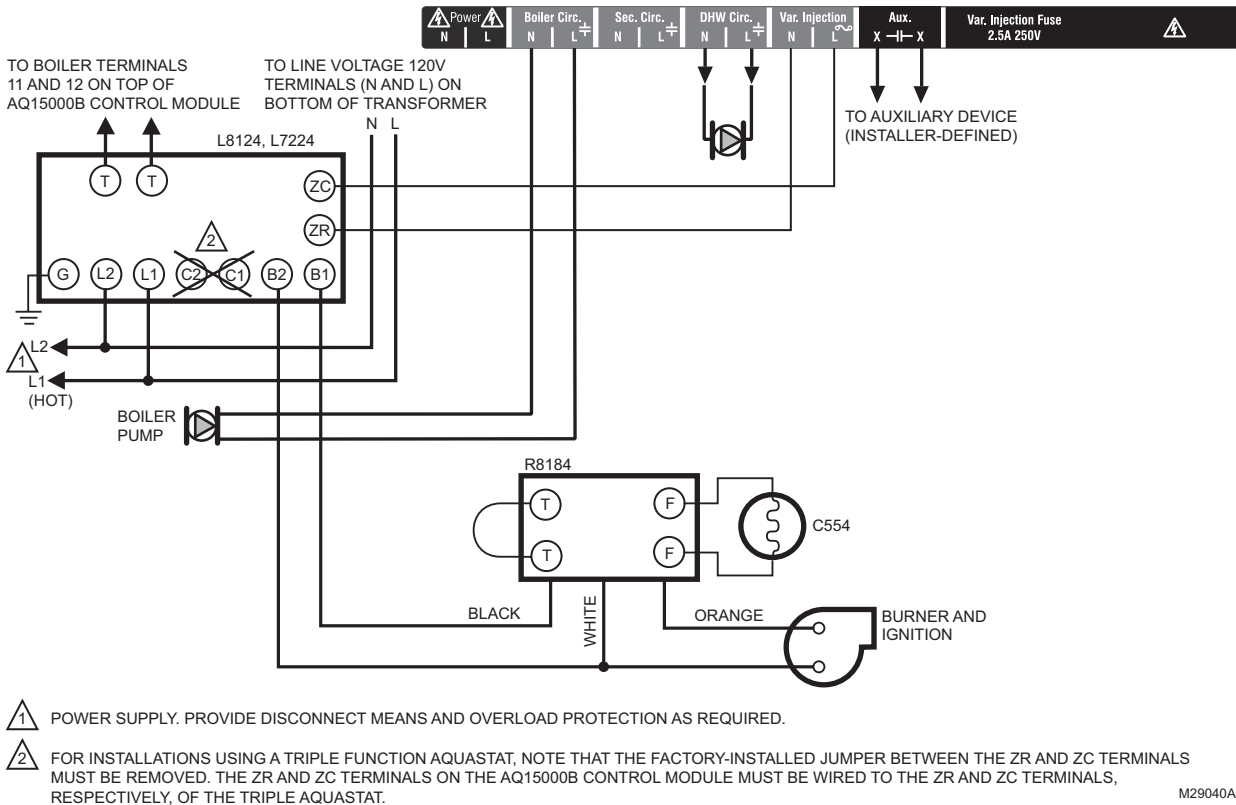


Fig. 15. Line Voltage Connections for AQ250 using triple function Aquastat.

1. Boiler Pump

Connect the N and L wires of the boiler loop pump to the N and switched hot (L) terminals of the line voltage Boiler output, shown in Fig. 17. The ground wire of the pump can be connected to any of the 6 ground screw terminals located on the back surface of the Control Panel enclosure.

NOTE: If the AQ250 is connected to a modulating condensing boiler, the boiler pump may need to be connected to the boiler, not the AQ250. Confirm this with the boiler's installation manual.

2. DHW Aquastat Device

Wire the DHW pump or line voltage zone valve to the N and switched hot (L) terminals of the DHW output, as shown in Fig. 17.

If using a low voltage zone valve, wire the primary of a spud-mounted transformer (115V to 24V) to the DHW line voltage contacts and connect the low voltage zone valve to the secondary terminals of this transformer. A spud-mounted transformer may be located in one of the conduit knockouts on the bottom of the AQ250 Control Panel.

The DHW contacts are made when the DHW inputs on terminals 9 and 10 are shorted by the controlling Aquastat. When DHW Priority is enabled, the system has a 30 minute priority over all calls for heat. After 30 minutes, calls for heat are added back in to the operation for 30 minutes and then turned off again, if the DHW demand is still active in the system. This repeats until the DHW is satisfied.

NOTE: If the AQ250 is connected to a modulating condensing boiler, the DHW pump will probably need to be connected to the boiler, not the AQ250. Confirm this with the boiler's installation manual.

3. Line Voltage Rated Aux Output (optional)

To connect a line voltage auxiliary device to these contacts, such as a boiler bypass pump, power the device from the N and L terminals on the bottom of the Control Module, running the hot (L) lead through the Aux. Pump contacts. See Fig. 16 for details. The exact wiring schematic will depend on what is connected to these dry contacts.

NOTE: Use of this output is optional. The Aux. pump dry contacts are line voltage-rated but unpowered. A low voltage device can be connected to these contacts, but the wire's insulation must meet applicable codes for use in line voltage enclosures.

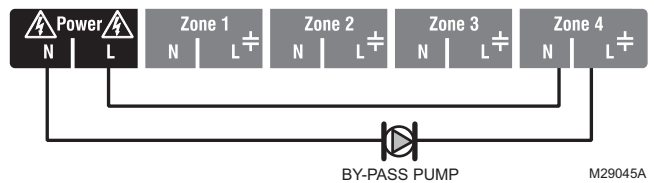
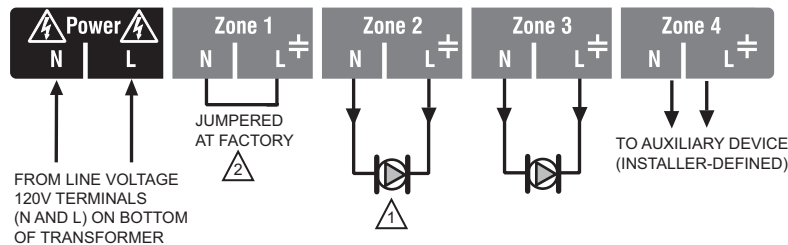


Fig. 16. Wiring of the Aux. pump line voltage rated dry contacts (example shown is a by-pass pump).



- 1 DO NOT WIRE THE BOILER LOOP CIRCULATOR TO THE BOILER'S AQUASTAT TERMINALS C1/C2; IT MUST BE CONNECTED TO THE BOILER PUMP TERMINALS ON THE BOTTOM OF THE AQ15000B CONTROL MODULE WHEN MAINTAINING A MINIMUM BOILER TEMPERATURE (WITH A TRIPLE FUNCTION AQUASTAT).
- 2 FOR INSTALLATIONS USING A TRIPLE FUNCTION AQUASTAT, NOTE THAT THE FACTORY-INSTALLED JUMPER BETWEEN THE ZR AND ZC TERMINALS OF THE AQ15000B CONTROL MODULE MUST BE REMOVED. THE ZR AND ZC TERMINALS ON THE AQ15000B CONTROL MODULE MUST BE WIRED TO THE ZR AND ZC TERMINALS, RESPECTIVELY, OF THE TRIPLE AQUASTAT.

M29044A

Fig. 17. Wiring for Boiler Pump, and DHW Device.

Step 6 – Connection To Line Voltage Power

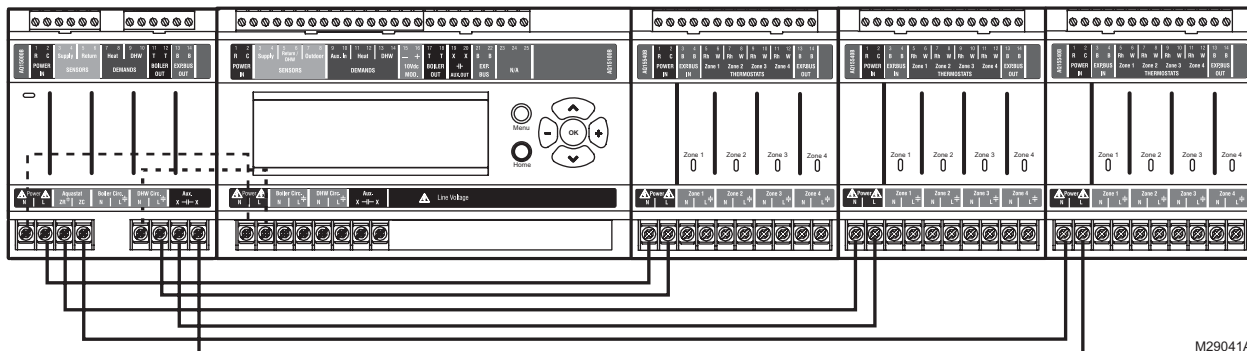
Connect the N and L line voltage inputs of the primary on the AQ250 transformer to the electrical distribution panel and power up the Control. A service switch should be installed on the hot (L) lead to the distribution panel.

If multiple Zoning Modules are connected to the AQ250 Control Panel, the line voltage wiring can either be run directly from the N and L terminals on the primary of the transformer to each Zoning Module (Fig. 18 on page 13), or run in a daisy chain from the N and L terminals of one AQ2000 module to the N and L terminals of the next AQ2000 module (see Fig. 19 on page 13).



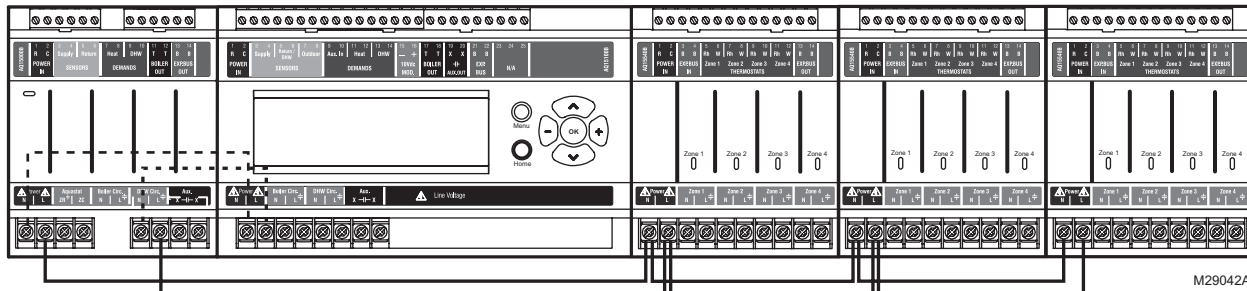
CAUTION

Electrical Shock or Equipment Damage Hazard.
Can shock individuals or short equipment circuitry.
 When line voltage is applied to the AQ250 Control Panel and the front cover of the Panel is removed, there is a risk of electrocution. Be careful to avoid contact with the line voltage (N and L) terminals, either with your fingers or with metal tools (such as a screwdriver) when power is applied to the Control Panel.



M29041A

Fig. 18. Connections for multiple Zoning Panels - parallel wiring.



M29042A

Fig. 19. Alternate Connections for multiple Zoning Panels - daisy chain wiring.

4 CONFIGURE THE CONTROL PANEL DIP SWITCHES

Only two steps are required to set up the AQ250 Series Control Panel:

1. Check the DIP switch settings for the Control Module. (see “AQ250 Control Module DIP Switch Settings” on page 14)
2. Check the DIP switch settings for each Zoning Module. (see “Zoning Module DIP Switch Settings” on page 15)

AQ250 Control Module DIP Switch Location

Operation of the AQ250's Control Module is set by the positions of its DIP switches, which are located behind the blank cover in the left most section of the Control Module (beside the section labeled ZR). See Fig. 20 for location of these DIP switches.

Zoning Module DIP Switch Location

The AQ15540B (pump Zoning Module) and AQ15740B (valves with end switches Zoning Module) both have DIP switches in 8-switch banks and are concealed behind snap-on covers, as shown in Fig. 20.

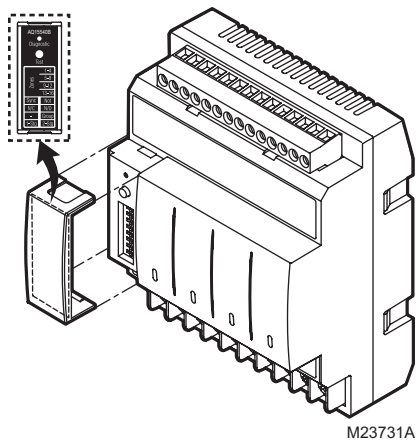


Fig. 20. Location of concealed DIP switches for AQ15000B Control Module and the AQ155/AQ157 Zoning Modules.

DIP Switch Configuration

AQ250 Control Module DIP Switch Settings

AQ250 Control Panels come from the factory with pre-defined settings for all DIP switches. These factory default settings were chosen because they are commonly-used by hydronics contractors across North America. That means that most of the settings only need to be checked by the installing contractor to make sure they're suitable for the installation.

Although for many installations, these factory default values for the Control Module and the Zoning Module(s) are suitable, Honeywell recommends that they be reviewed, and changed as necessary, to get optimal performance of the hydronic system controlled by the AQ2000 Series products.

A chart of the setting options for each DIP switch is attached to the inside of the DIP switch cover. More detailed explanations for these settings, including the pre-set factory defaults for each DIP switch, is shown in Table 2.

When you finish setting the DIP switches for the Control Panel, replace the front cover of the AQ250 Control Panel.

NOTE: The snap-on DIP switch cover is designed so it cannot be removed (exposing the DIP switches) when the front cover of the AQ250 Control Panel is in place.

Table 2. AQ15000B Control Module DIP switch arrangement

DIP Switch	Switch Description	Label and Factory Settings
DHW	1	DHW Device: Pump or Valve
	2	DHW Priority: Off or Priority
	3	DHW Priority Override: Off or O/Ride (override)
	4	Boiler post purge location: Off = zones only; Purge = DHW tank first, then zones
Aux.	5	Aux output: Main = default; Group = group pump
	6	Aux output: Main = default; Bypass = boiler bypass pump
Mass	7	Load Mass: Lo = Low mass (baseboard); Hi = High mass (radiant slab)
	8	Not used at this time

Zoning Module DIP Switch Settings

A chart of the different settings for each DIP switch is attached to the inside of each DIP switch cover.

Refer to Table 3 on page 16, and check all DIP switch settings. If necessary, change the switch settings to suit the desired operation of the hydronic installation.

NOTES:

- To set DIP switches 1 through 4, which identify the unique address of each zone on the AQUATROL network): Refer to the descriptions in Table 3 for the correct DIP switch settings for the Pump or Valve Zoning Module. Unpredictable zone behavior may occur if more than one Zoning Module has DIP switches (1-4) set to the same address.
- DIP Switch 5 enables or disables Zone Synchronization:
 - The factory setting enables Zone Synchronization, which is an energy saving feature of the AQ2000 panels. Zone Synchronization coordinates zone demands to start at the same time when the boiler cycle begins. The AQ2000 functions as activating valves. The valve logic induces a delay before activating the boiler pump even when zone pumps are used. When Zone Synchronization is not selected, the zone demands are served whenever they call for heat.
 - The Zone Synchronization feature replaces the pump/valve selection of previous AQ2000 versions.

4. DIP Switch 8 functionality:
 - The factory setting enables 1-stage per zone thermostat. The zoning module operates as four 1-stage zones.
 - When using a 2-stage thermostat, set DIP switch 8 to 2-Stg. The 2-stage selection uses TH1 and TH2 inputs for 2-stage thermostat control. For the selected zone, TH1 is the first stage input from the thermostat and TH2 is the second stage input. Inputs TH3 and TH4 operate in same manner. The 2-stage selection reduces the zoning module to a 2 zone module from a 4 zone module.
 - When using digital 2-stage thermostats (non AQ1000 thermostats), the system set-up process changes slightly. During system set-up, create an artificial demand on the zoning module by increasing the set point on the thermostat. The artificial demand is required during the PRI/SEC setup menu to select the primary and secondary loop for each zone and stage.

Review the settings of all DIP switches for each Zoning Module connected to an AQ15000B, to ensure they are correct before system start-up.

When you finish setting the DIP switches for all the Zoning Modules, replace the cover of each Expansion Zoning Panel.

NOTE: The snap-on DIP switch covers are designed so they cannot be removed (exposing the DIP switches) when the front cover of the AQ250 Control Panel is in place.

Table 3. AQ15540B Zoning Module (Pump Zoning Module) DIP Switch Arrangement.

DIP Switch	Switch Description	Label and Factory Settings
1 2 3 4	<p>Zone Address: The positions of these 4 DIP switches define the unique address for each zone on the AQUATROL network. For each group of 4 zones, there can be only one DIP switch in the right hand (On) position.</p> <p>The correct DIP switch settings for each zone module are:</p> <ul style="list-style-type: none"> • First Zone (1-4) Module: 1 = ON position; 2, 3, and 4 = OFF position • Second Zone (5-8) Module: 2 = ON position; 1, 3, and 4 = OFF position • Third Zone (9-12) Module: 3 = ON position; 1, 2, and 4 = OFF position • Fourth Zone (13-16) Module: 4 = ON position; 1, 2, and 3 = OFF position 	
5	<ul style="list-style-type: none"> • If set to SYNC, zone synchronization is enabled. • If set to NOT, zone synchronization is disabled. 	
6	<ul style="list-style-type: none"> • If zone valves are normally closed (N.C.), set the NC/NO DIP switch to the Off position. • If zone valves are normally open (N.O.), set the NC/NO DIP switch to the On position. 	
7	<ul style="list-style-type: none"> • If set to Group (ON position), the AUX Pump contacts on the Control Module are switched when any of the zones on this Zoning Module are active.^a • If set to - (OFF position), the AUX Pump contacts are not affected by activity on these zones. 	
8	<ul style="list-style-type: none"> • If set to 2-Stg (ON position), then 2-stage operation is activated on thermostat inputs. The zoning module operates as two 2-stage zones or 3 zones (one 2-stage and two 1-stage). • If set to 1-Stg (OFF position), then operates as four 1-stage zones. 	

^a The AQ15000B Boiler Control Module DIP switch #5 must be set to GROUP position and DIP switch #6 must be set to MAIN position.

5 TEST AND CHECK OUT THE INSTALLATION

Startup

IMPORTANT

Apply power to the AQ250 Control Panel only after all of the AQ2000 SERIES components (Control Panel, thermostats, sensors, Zoning Modules/Panels) have been connected to the other equipment in the hydronic heating system (boiler, zone valves or pumps, DHW, Aquastat, etc.).

When powered, the AQ250 Control Panel begins its start-up routine, establishing communication with all other AQ2000 Series components on the AQUATROL network.

Auto Test

This section describes the Auto Test functions of the Control Module and the Zoning Panel(s).

A) Auto Test– AQ15000B Control Module

Auto Test operation enables the installer to test the system installation by sequentially activating all of the Control Module's outputs for 15 seconds each. Each step of the Auto Test routine may be paused or skipped by pressing the Test button, which is located above the DIP switches on the AQ15000B Control Module.

STATUS LEDS

Every status light (ZR, BOILER pump, AUXiliary pump, DHW pump) will be turned on for 15 seconds when its corresponding output is energized during Auto Test.

CONTROL MODULE DIAGNOSTIC LED

This LED, which is labeled Diagnostic and is located above the DIP switches on the AQ15000B Control Module, is used by the AQ250 to communicate diagnostic data to the user:

- Constantly ON indicates that the unit is working properly.
- Constant, fast blinking indicates that the unit is in the Auto Test mode.
- Constant, slow blinking indicates that Auto Test mode has been paused.
- Coded blinking is used to communicate an error code to the user. Refer to the Troubleshooting section of these instructions for an explanation of these codes.

NOTE: The Diagnostic LED is OFF when the AQ250 Control Panel is not powered.

If this is the first time the AQ250 has been started:

1. Remove the front cover of the AQ250 by loosening the 4 captive slot-Phillips screws.
2. Remove the AQ15000B Control Module's DIP switch cover (refer to Figure Fig. 20 on page 14 for the DIP switch cover location)
3. Check to make sure that the LED, labelled Diagnostic, is steadily illuminated (no blinking).
4. To begin the Auto Test, press the Test button until you feel a click. The AQ250 now begins the Auto Test routine and the Diagnostic LED on the AQ15000B Control Module blinks quickly.

5. Pressing the Test button at any time during the Auto Test routine pauses the routine indefinitely. While paused, the Diagnostic LED blinks slowly.
6. Pressing the Test button while the Auto Test routine is paused advances the routine to the start of the next step in the routine (testing the next output) and the Auto Test routine resumes its test procedure.
7. When the Auto Test routine is completed, the Diagnostic LED returns to a constant ON status (no blinking).
8. To test each of the zone outputs (pumps or valves) individually, proceed to "B) Auto Test– AQ155/AQ157 Zoning Modules" to run the Auto Test feature for each AQ155 / AQ157 Zoning Module attached to the AQ15000B Control Module.

SEQUENCE OF OPERATION—AQ15000B CONTROL MODULE

1. When the Test button is pressed, ALL space heating zones connected to the Control Module are energized and remain energized for the duration of the Auto Test routine
2. At the same time, the Diagnostic LED on the AQ15000B Control Module begins to blink quickly, the ZR relay is energized for 15 seconds, then the relay shuts off.
3. Next, the BOILER relay is energized for 15 seconds, then shuts off.
4. Next, the AUX relay is energized for 15 seconds, then shuts off.
5. Next, the DHW relay is energized for 15 seconds, then shuts off.
6. Next, the Boiler T-T dry contacts are energized for 15 seconds, then re-opened.
7. Then the AQ15000B exits the Auto Test routine and the Diagnostic LED on the Module returns to steady illumination (no blinking).

B) Auto Test– AQ155/AQ157 Zoning Modules

Auto Test operation for Zoning Modules enables the installer to test all zones wired to the Zoning Module by sequentially activating the equipment connected to each zone output (pump or valve) for 15 seconds. Each step of the Auto Test routine may be paused or skipped by pressing the Test button.

ZONING MODULE DIAGNOSTIC LED

The LED, which is labeled Diagnostic and is located above the DIP switches on the AQ155/AQ157 Zoning Modules, is used for communicating diagnostic data to the Installer.

Refer to "Troubleshooting" on page 19 for a description of the Diagnostic LED error codes (blinking rates).

NOTE: The Diagnostic LED is OFF when the AQ155/AQ157 Zoning Module is not powered.

If this is the first time the AQ250 Control Panel has been started:

1. With the front cover of the AQ250 Control Panel removed and set aside, remove the AQ Zoning Module DIP switch cover (refer to Figure Fig. 20 on page 14 for the DIP switch cover location).
2. Check to make sure that the LED, labelled Diagnostic, is steadily illuminated (no blinking).
3. To begin the Auto Test, press the Test button until you feel a click. The AQ155/AQ157 Zoning Module now begins the Auto Test routine, and the Diagnostic LED on the Zoning Module blinks quickly.

4. Pressing the Test button at any time during the Auto Test routine pauses the routine indefinitely. While paused, the Diagnostic LED blinks slowly.
5. Pressing the Test button while the Auto Test routine is paused advances the routine to the start of the next step in the routine (testing the next zoning output) and the Auto Test routine resumes its test procedure.
6. When the Auto Test routine is completed, the Diagnostic LED returns to a constant ON status (no blinking).
7. Replace the DIP switch cover on the Zoning Module.
8. For each AQ155/AQ157 Zoning Module connected to the AQ250, repeat steps 1-7.

SEQUENCE OF OPERATION—AQ155/AQ157 ZONING MODULES

1. When the Auto Test button is pressed, Zone 1 of the Zoning Module is energized and the Diagnostic LED on the AQ155/AQ157 begins to blink quickly.
2. Zone 1 remains energized for 15 seconds, then shuts off.
3. Next, each of the remaining zones is energized, sequentially for 15 seconds, starting with Zone 2, and then shuts off.
4. After Zone 4 has de-energized, the AQ155/AQ157 exits the Auto Test routine and the Diagnostic LED on the Module returns to steady illumination (no blinking).

C) End Auto Test

If no errors are detected in the Control Module or Zoning Module Auto Test routines, the AQ250 is now ready for operation. If errors are detected, refer to "Troubleshooting" on page 19.

Checkout

1. If present, turn down the DHW Aquastat to avoid interfering with space heating control operation.
2. Turn up the setpoint of one of the AQ1000 zone thermostats.
 - 2.1 The zone valve or pump associated with that zone turns on.
 - 2.2 The Boiler and T-T relay outputs energize.

NOTE: When a setpoint is changed on an AQ1000 thermostat, the AQ250's boiler short cycle protection is disabled in favor of a faster reaction for the user.

3. Turn down the setpoint of one of the AQ1000 zone thermostats.
 - 3.1 The zone valve or pump associated with that zone should turn off.
 - 3.2 The Boiler, and T-T relay outputs should de-energize.
4. Repeat steps 2 and 3 for all zones to verify each zone is operating correctly. Thermostats may be exercised individually or all together to accelerate the check out process.
5. Turn up the DHW Aquastat to simulate a call for hot water.
 - 5.1 If the DHW device is a pump, the DHW relay output energizes immediately, and the Boiler pump relay remains off.
 - 5.2 If the DHW device is a valve, the Boiler pump relay energizes after a 15 second delay to allow the zone valve to fully open.
 - 5.3 Turn up the set point of one of the AQ1000 zone thermostats.
 - 5.3.1 If the DHW relay is configured to control a pump, and DHW Priority is selected, the Boiler and associated zone pumps relays remain off.
 - 5.3.2 If the DHW relay is configured to control a valve, and DHW Priority is selected, the associated zone relays remain off.
 - 5.3.3 If DHW Priority is disabled, space heating (zone pumps and valves) operates normally even during a call for DHW.
6. Turn down the DHW Aquastat to end the call for hot water. Space heating operation should continue (if DHW priority is disabled) or resume (if DHW PRIOrity is enabled).

6 PURGE AIR FROM ALL SYSTEM AND ZONE PIPING

Purging air from all zones in the hydronic system is easily accomplished with the AQ250 by using a modification to the Auto Test feature (described in “Auto Test” on page 17) as follows:

- To purge all zones on the AQUATROL network press the Test button on the AQ15000B Control Module once to begin the Auto Test routine. Quickly press it again 3 times until the Boiler relay LED illuminates and the Diagnostic LED of the AQ15000B blinks slowly (which indicates the Auto Test routine has been paused). The boiler pump now remains energized for the duration of the Purge routine (and therefore can be purging all loops of air) until the Test button is pressed again.
- The Diagnostic LED blinks slowly while in paused mode. Continue to purge the boiler loop as long as is needed to remove air from the system.
- Leaving the boiler pump operating, push the Test button on the Zoning Module for any space heating zones you wish to purge.
 - With the first zone's output energized (the LED for Zone 1 illuminates), press the Test button again to pause the Auto Test routine.
 - When Zone 1 has been sufficiently purged, press the Test button again to begin purging Zone 2.
 - Again, press the Test button to pause the Auto Test routine while purging Zone 2.
 - Continue to purge all other space heating zones in the system.

If additional purging is required for any zone, the Auto Test procedure can be activated for any individual Zoning Module by pressing the Test button located above that Zoning Module's DIP switches. Refer to “(B) Auto Test– AQ155/AQ157 Zoning Modules” on page 17.

7 DOCUMENT AND KEEP A RECORD OF ALL SYSTEM SETTINGS

After the AQ250 Series Control Panel and any AQ255/AQ257 Expansion Zoning Panels have been set up and the entire hydronic installation is operating properly, it is important to document all the system settings for future reference.

Job Records

All AQ2000 Series Panels are shipped with Installation Job Records^a for documenting these settings. These should be filled out completely and saved in the Installing Contractor's files.

^a For the AQ250 Series, refer to AQ25042B RelayPLUS Zone Synchronizing Boiler Control, (form 69-1972) and AQ25044B RelayPLUS Zone Synchronizing Boiler Control (form 69-2030)

TROUBLESHOOTING

The following information helps the installer correctly identify system problems, making troubleshooting much faster. Table 4 and Table 5 on page 20 describe the possible error codes that can be communicated on the diagnostic LEDs of the AQ15000B Control Module and AQ155/AQ157 Zoning Module.

Communications Loss

Because all AQ2000 Series components communicate with each other via the dedicated AQUATROL network when controlling a hydronic system, one possible failure mode of the AQ250 would be loss of communication between the AQ15000B Control Module and any connected Zoning Modules, or between a Zoning Module and any zone thermostats connected to the AQUATROL network. In general, the Control Module:

- Periodically tries to re-establish communication with any lost components on the network.
- Initializes any component that re-establishes its communication.

CONTROL MODULE REACTION

When the AQ15000B Control Module loses communication with any number of zones for more than one minute (as long as there is still at least one zone communicating on the AQUATROL network), the AQ250 continues to deliver heat to the other non-communicating zones.

When communication is lost with all zones, the AQ250 enters Freeze Protection mode, in which it fires the boiler and then activates the Boiler (supply) pump and zone equipment for a period of 4 minutes every hour. This should provide sufficient heat to the system to prevent a building from freezing up until communication is re-established between the AQ2000 Series components.

ZONING MODULE REACTION

When a Zoning Module loses communication with the Control Module (as long as there is at least one other Zoning Module communicating with the Control Module), the Zoning Module operates its pumps or valves in a conventional, non-synchronized zoning fashion. That is, it operates according to the demands from the thermostats, without zone synchronization or waiting for permission from the AQ15000B Control Module to operate. This allows the zones to extract any heat provided by the boiler.

When using AQ1000 thermostats and communication is lost between a Zoning Module and one of its thermostats, that zone is invisible to the Control Module, and the Zoning Module stops serving that zone and the zone's pump or valve is de-energized.

The AQ250 provides Zoning Module diagnostic information via the Diagnostic LED located above the DIP switches on each Zoning Module.

Table 4. AQ15000B Control Module LED Display and Error Codes.

Diagnostic Led Status		System Condition	Action Required
Steady (no blinking)		No system problem detected	None.
Fast blinking (4 blinks per second)		Auto Test is in operation	None. Permit the control to finish Auto Test routine.
Slow blinking (2 blinks every 3 seconds)		Auto Test has been paused	Press the Test button to resume Auto Test routine.
Coded blinking = ERROR	2 blinks then pause	Freeze protection activated across AQUATROL network	All zones have lost communication with controller. <ul style="list-style-type: none"> • Check B-B wiring between Control Module and Zoning Module.
	4 blinks then pause	Return sensor open / short	Check the return sensor wiring.
	5 blinks then pause	Supply sensor open / short	Check the supply sensor wiring.

Table 5. AQ155/AQ157 Zoning Module LED Display and Error Codes.

Diagnostic Led Status		System Condition	Action Required
Steady (no blinking)		No system problem detected	None.
Fast blinking (4 blinks per second)		Auto Test is in operation	None. Permit the control to finish Auto Test routine.
Slow blinking (2 blinks every 3 seconds)		Auto Test has been paused	Press the Test button to resume Auto Test routine.
Coded blinking = ERROR	• 2 blinks then pause	Freeze protection activated on the Zoning Module	Zoning module has lost communication with controller. <ul style="list-style-type: none"> • Check B-B wiring between Control Module and Zoning Module.
	• 3 blinks then pause	Communication lost with ALL thermostats	Check thermostat wiring to Zoning Modules.

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AQ251 Series Boiler Reset Control Panels

PRODUCT DATA



PRODUCT DESCRIPTION

The AQ251 Series of AQUATROL® Boiler Reset Controls provides simplified, energy-efficient outdoor temperature compensated control of a high-temperature boiler loop in residential hydronic heating systems. The AQ251 easily converts a single-zone heating system into a room-by-room comfort control system. The boiler controls of the AQ251 can ensure ample supply of hot water for both space heating and priority generation of domestic hot water for bathing, dishes and laundry.

FEATURES

The AQ251 Series has the following features:

- **Outdoor temperature compensation (reset), or Load reset based on indoor temperature feedback, or none**
- **Domestic hot water (DHW) priority and priority override protection.**
- **Customizable control settings and schedules allow for greater level of control and comfort.**
- **Central set-back schedules available.**
- **Zoning Control for up to four, single-stage zones or two, two-stage zones as shipped; can be expanded to a total of 16 zones with AQ255 or AQ257 expansion zoning panels, and up to 64 zones by using up to three AQ254 Add-a-Temperature expansion panels and additional expansion zoning modules.**
- **Use with digital non-communicating thermostats or AQ1000 2-wire polarity insensitive communicating thermostats.**
- **When using non-communicating thermostats, the following features are not available:**
 - **Outdoor temperature is not displayed on the thermostat.**
 - **Time clock on AQ1000TP2 will not synchronize with the Control Module.**
 - **Central programming, vacancy and setback schedules of AQ1000 from AQ panel are not enabled.**
 - **AQ panel will not display individual zone temperatures.**

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- Individual zone freeze protection.
- Allows display of outdoor temperature on all AQ1000 thermostats when used with an AQ12C10 outdoor sensor (included).
- Intuitive programming interface (can be programmed at your shop and taken to the job site “ready-to-install”).
- Pump/valve exercise.
- Line or low-voltage output for zoning equipment (pumps or valves).
- Integral 38 VA transformer with self resetting electronic fuse.
- Automated test and purge feature for quick start-up and simplified troubleshooting.
- Two hour power supply module (super capacitor) retains day and time settings during power outage and a non-volatile EPROM memory retains program settings during power outage.

SPECIFICATIONS

The AQ251 Control Panels and corresponding attached equipment are listed in Table 1.

Table 1. AQ251 Series Control Panel Models.

Control Panel	Corresponding Control Module	Corresponding Zoning Module
AQ25110B	AQ15100B	none
AQ25142B	AQ15100B	AQ15540B
AQ25144B	AQ15100B	AQ15740B

Application: Controls one boiler, as well as domestic hot water (DHW) management and zoning operation in a hydronic zoning system.

Power and Electrical Ratings:

Power Supply: 120 Vac / 60Hz

Auxiliary Pump Contact Rating: 120 to 240 Vac, 5A, 1/3 HP

Auxiliary Low Voltage Contact Rating: 24 Vac, 0.5A, 12VA

Boiler (T-T) Contact Rating: 24 Vac, 0.5A, 12VA

Boiler Pump (C1-C2) Output Rating: 120 Vac 5A, 1/3HP

DHW Pump/Valve Output Rating: 120 Vac 5A, 1/3HP

B-B Communication Bus Terminals: Low voltage, Class II, 2-wire polarity-insensitive, digital communicating link to other Control or Zoning modules

Electrical Connections (Line Voltage): Wire-clamp screw terminals; maximum 2 x 14 AWG each on line voltage terminals

Environmental Ratings:

Control and Zoning Panel Temperature Rating: 32°F to 130°F (0°C to 55°C)

Operating Humidity Range (% RH): 5 to 90% RH, non-condensing

Temperature Ratings:

Boiler Design Temperature: 80°F to 210°F (26°C to 99°C)

Boiler Differential: 2°F to 41°F (1°C to 23°C), or Auto

Boiler High Limit Control Temperature: OFF, 120°F to 225°F (OFF, 49°C to 107°C)

Boiler Low Limit Control Temperature: OFF, 60°F to 180°F (OFF, 15°C to 82°C)

Outdoor Low Design Control Temperature: -60°F to 32°F (-51°C to 0°C)

Boiler Minimum Return Control Temperature: OFF, 80°F to 180°F (OFF, 27°C to 82°C)

Sensor Temperature Rating: -58°F to 230°F (-50°C to 110°C)

Warm Weather Shut Down (WWSD) Temperature: OFF, 35°F to 100°F (OFF, 1°C to 38°C)

Cold Weather Shut Down (CWSD) Temperature: OFF, 32°F to 100°F (OFF, 0°C to 38°C)

Inputs/Outputs:

Auxiliary (Demand) Input: External dry contacts connection only

DHW Demand Input: External dry contacts connection only

R-C Input (on Control and Zoning Modules): 24 Vac Class II

R-C Output (on transformer): 38 VA, 24 Vac Class II

Heat Demand Input External dry contacts connection only

Modulating Output: 0-10 or 2-10 Vdc for variable speed pump or modulating boiler

ORDERING INFORMATION

When purchasing replacement and modernization products from your TRADELINE® wholesaler or distributor, refer to the TRADELINE® Catalog or price sheets for complete ordering number.

If you have additional questions, need further information, or would like to comment on our products or services, please write or phone:

1. Your local Honeywell Automation and Control Products Sales Office (check white pages of your phone directory).
2. Honeywell Customer Care
1885 Douglas Drive North
Minneapolis, Minnesota 55422-4386

In Canada—Honeywell Limited/Honeywell Limitée, 35 Dynamic Drive, Toronto, Ontario M1V 4Z9.

International Sales and Service Offices in all principal cities of the world. Manufacturing in Australia, Canada, Finland, France, Germany, Japan, Mexico, Netherlands, Spain, Taiwan, United Kingdom, U.S.A.

Mixing Valve Output (floating, open/close) (dry relay):
24 Vac, 12 VA

Interface and Timings:

User Interface (Setting, Programming): LCD Display and a 7-button keypad

Setback Program: 7 day, up to 2 setback periods/day.

DHW Valve Open: 0-230 seconds, before boiler loop pump is energized.

DHW Purge: Yes/No; selects whether purge is applied after a DHW demand is served

Boiler Heat Post Purge: Off, 10 seconds to 30 minutes (factory default is 30 seconds)

Pump/Valve exercise: 30 seconds per 2 weeks of space heating inactivity

Thermostat Compatibility: Digital thermostats and/or AQ1000 Series 2-wire communicating thermostats

Supply/Return Loop Sensor: 10K ohm NTC thermistor at 77°F (25°C) ± 0.5°F (±0.3°C). Lead length: 10 ft. (3.0 m); up to 500 ft. (150 m) using 18 AWG or larger wire, beta=3892.

Outdoor Sensor: 10K ohm NTC thermistor at 77°F (25°C) ± 0.5°F (±0.3°C). Lead length: 15 ft. (4.6 m); up to 500 ft. (150 m) using 18 AWG or larger wire, beta=3892

Dimensions (HxWxD): 8 x 16 1/2 x 3 3/8 in. (20.3 x 42 x 8.5 cm) approximate

Weight: 4.9 lb. (2.3 kg)

Approvals: Canadian Standards Association: Certified, File

1 INSTALLATION PREPARATION

NOTES: *Throughout these instructions, the following terminology conventions are used:*

- **AQ251** refers to all of the AQ25142B, AQ25144B and AQ25110B Control Panels. Where there are specific instructions or details relating to the “-42B”, “-44B”, or “-10B” Control Panels, the full model number (i.e. AQ25144B) is used;
- **Control Panel** refers to an assembled product, consisting of a transformer, Control Module and Zoning Module, all contained within an AQ2000 panel enclosure;
- **AQ255** refers to all of the AQ25542B, AQ25542B, AQ25582B and AQ25742B Expansion Zoning Panels, and **AQ257** refers to the AQ25744B Expansion Zoning Panel. Where there are specific instructions or details relating to the “-42B”, “-82B”, “-42B”, or “-44B” Expansion Zoning Panels, the full model number (i.e. AQ25744B) is used;
- **Expansion Zoning Panel** refers to an assembled product, consisting of a Zoning Module and—if applicable—a transformer, contained within an AQ2000 panel enclosure; Expansion Zoning Panels are available in either 4-zone or 8-zone configurations. See Table 1 in “AQ2000 Series Expansion Zoning Panels” (form no. 69-1981) for specific models.
- **AQ151** refers to the AQ15100B Control Module - within an AQ251 Series Control Panel.
- **Control Module** refers to the component within an AQ251 Series Control Panel that performs the “master control operations”. See Table 1 for specific models.
- **Zoning Module** refers to the component within the AQ251 Series Control Panel that controls zoning operations;
- **AQ155** refers to the AQ15540B Zoning Module and **AQ157** refers to the AQ15740B Zoning Module.

When Installing this Product...

1. **Read these instructions carefully. Failure to follow them could damage the product or cause a hazardous condition.**
2. **Check the ratings given in the instructions and on the product to make sure the product is suitable for the application.**

3. **Installers must be trained, experienced, and licensed service technicians.**
4. **Follow local codes for installation and application.**
5. **After installation is complete, check out the product operation as printed in these instructions.**

WARNING

Risk of electrical shock.

Can cause severe injury, property damage or death. Disconnect power supply before installation and before servicing.

Check That You Have All the Necessary Equipment For a Successful Installation

- AQ2000 Series components:
 - AQ251 Control Panel
 - AQ Expansion Zoning Panels (if more than four space-heating zones in the system)
 - Digital Thermostats (one for every space-heating zone being controlled)
- Boiler supply and return temperature sensors and secondary loop sensor (included with the AQ251 Control Panel)
- Outdoor temperature sensor (included with AQ251 Control Panel)
- Low voltage thermostat wire
- Zoning equipment (zone valves or pumps)

Read All Instructions Carefully Before Proceeding

The AQ251 Control Panels are a part of a totally new series of hydronic controls. And although they - and other AQ2000 system components - are very easy to install and operate, they are different than other hydronic controls that you have previously installed. So take a moment to read through this quick installation guide before beginning the installation. Failure to follow them could damage the product or cause a hazardous condition.

Familiarize Yourself With the AQ251 Control Panel Layout

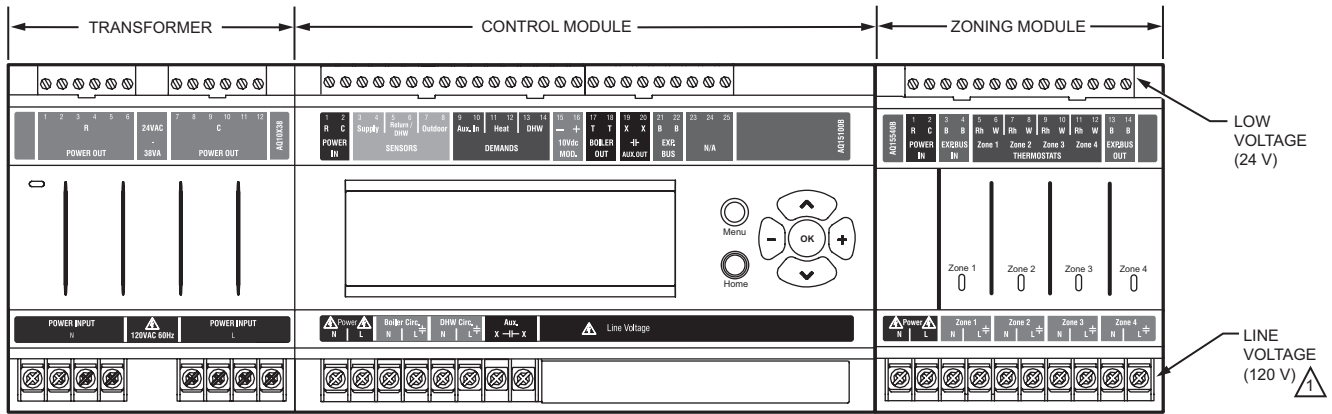
Refer to Fig. 1. All AQ251 Control Panels consist of three functional components:

1. AQ10X38 transformer (power supply module), which connects to 120 Vac power and supplies 24 Vac power to the Control Module and Zoning Modules
2. AQ15100B boiler/DHW Control Module, which controls the boiler and domestic hot water (DHW) functions, as well as coordinating the overall operation of the hydronic system.
3. One of two different 4-zone Zoning Modules:
 - AQ15740B (part of the AQ25144B Control Panel) for zoning with 24 Vac zone valves with end switches
 - AQ15540B (part of the AQ25142B Control Panel) for zoning with either line voltage circulators or 24 Vac zone valves without end switches.

AQ251 Control Panels can control a maximum of 16 zones by connecting additional Expansion Zoning Panels to the AQ251 Control Panel. Each Expansion Zoning Panel is configured with its own bank of DIP switches, located in the left-most section of each Zoning Module.

In general, the top terminals of the AQ2000 Series components carry low voltage (24 Vac) power and the bottom terminals carry line voltage (120 Vac) power. This is illustrated in Fig. 1. The only exception to this is the AQ15540B Zoning Module when used with low voltage zone valves (without end switches). In this case, the bottom terminals of the Transformer and Control Module carry line voltage (120 Vac), but the bottom terminals of the Zoning Module will carry low voltage (24 Vac) power.

The powered terminals on the bottom of the AQ2000 Series Control Modules and Zoning Modules are connected internally, as shown in Fig. 2. The voltage supplied to the N and L terminals is also available at the adjacent terminal pairs when the hot ($\frac{\pm}{\pm}$) relays are switched.

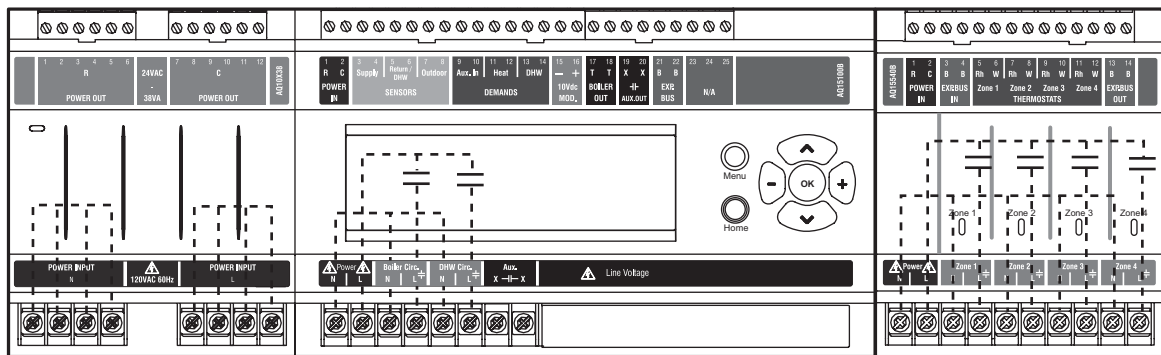


⚠ FOR THE AQ25142B TERMINALS CAN BE LINE VOLTAGE (IF USED WITH PUMPS) OR LOW VOLTAGE (IF USED WITH ZONE VALVES)

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Fig. 1. AQ251 Control Panel layout (AQ25142B shown).

$\frac{\pm}{\pm}$
CONTACTS
SYMBOL



M27737A

Fig. 2. Internal wiring for AQ2000 Series components line voltage relays.

2 MOUNTING

This section describes how to mount the Control Panel, Expansion Zoning Panels, and the Thermostats.

Mount AQ251 Control Panel

Mount the control panel on the wall:

1. Use the template supplied with the AQ251 Series Control Panel to mark mounting holes for panels
2. Install two top screws, mount the panel, and install the two lower screws.

Mount Expansion Zoning Panel(s)

If there are Expansion Zoning Panels to install, mount them to the wall now:

1. Remove wire channel plugs from the AQ251 Control Panel and any Expansion Zoning Panels (see Fig. 3).
2. Mount Expansion Zoning Panel on the right-hand end of the AQ251 Control Panel. Install two top screws of the Expansion Zoning Panel, ensuring it is level with the adjoining Control Panel, and install two lower screws.
3. Reverse wire channel plugs and re-insert them into their slot, to form a wiring channel between the Control Panel and the Expansion Zoning Panel (see Fig. 3) and to connect the two panels together.
4. Repeat steps 1–3 for any additional Expansion Zoning Panels.

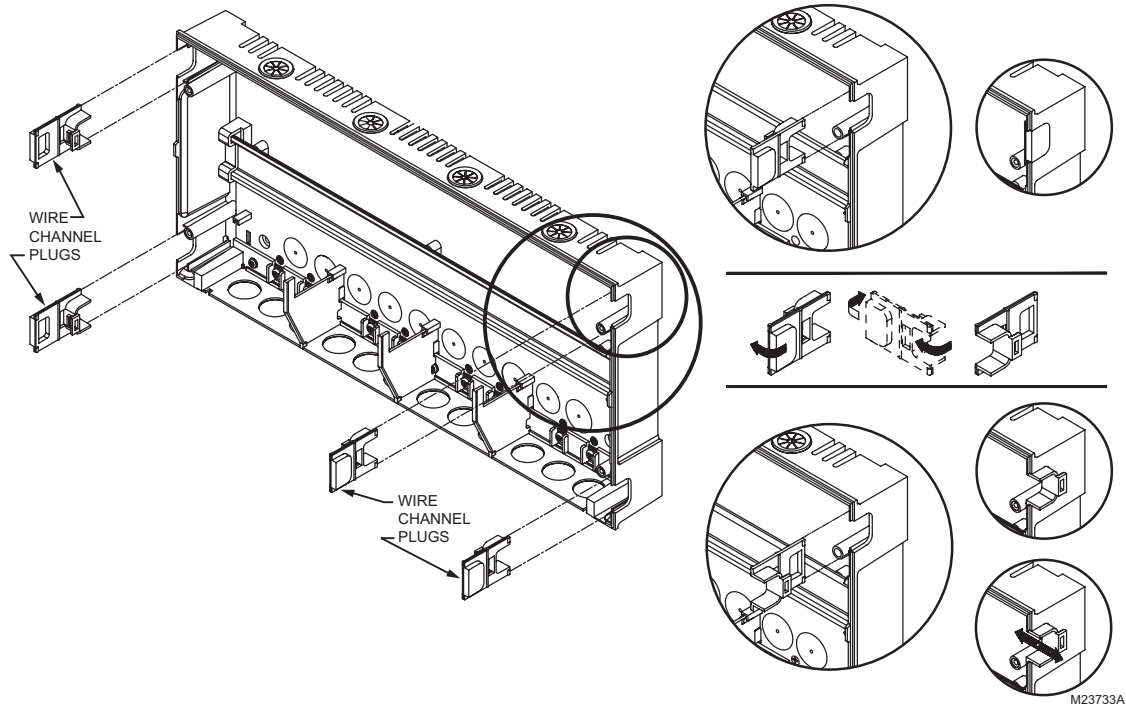


Fig. 3. Orientation of wire channel plugs for creating pass-through wire channel and for joining Control Panel to Expansion Zoning Panels.

Mount and Wire Thermostats in the Zones

Install the thermostats on the walls in the zones that are to be controlled by the AQ251 Control Panel.

When using AQ1000 thermostats refer to the installation instructions (form #69-2005) included with the AQ1000 thermostats.

If not done already, run low voltage thermostat wire (24 gauge or heavier) from the thermostats back to the Zoning Modules connected to the AQ251 Control Panel.

NOTES: If not otherwise specified, low voltage wiring should be run with 18 gauge thermostat wire and line voltage wiring should be run with 14 gauge wire. AQUATROL® line voltage screw terminals are only approved for use with 22 to 12 gauge copper conductors.

Several wiring diagrams are included in this document. For additional information, refer to <http://customer.honeywell.com> or your local distributor.

3 WIRING PROCEDURE

The AQ251 Control Panel is pre-wired at the factory, making for faster installation:

- For all models, the low voltage output terminals located at the top of the transformer are wired to the R and C input terminals of the Control Module.
- For those Control Panel models that come with Zoning Modules included, (all but the AQ25110B), the transformer's low voltage outputs are also wired to the R and C inputs of the Zoning Module. The B-B "Exp. Bus" terminals of the Control Module are wired to the B-B "Exp. Bus IN" terminals of the Zoning Module.

Beginning with the top left of Fig. 4 and moving clockwise around the panel, wire components to the AQ251 Control Panel and Expansion Zoning Panels (if installed) in the following six steps:

- "Step 1 – Transformer Wiring"
- "Step 2 – Control Panel Wiring"
- "Step 3 – Thermostats Wiring" on page 9
- "Step 4 – Zoning Equipment Wiring" on page 9
- "Step 5 – Line Voltage System Outputs" on page 12
- "Step 6 – Connection to Line Voltage Power" on page 13

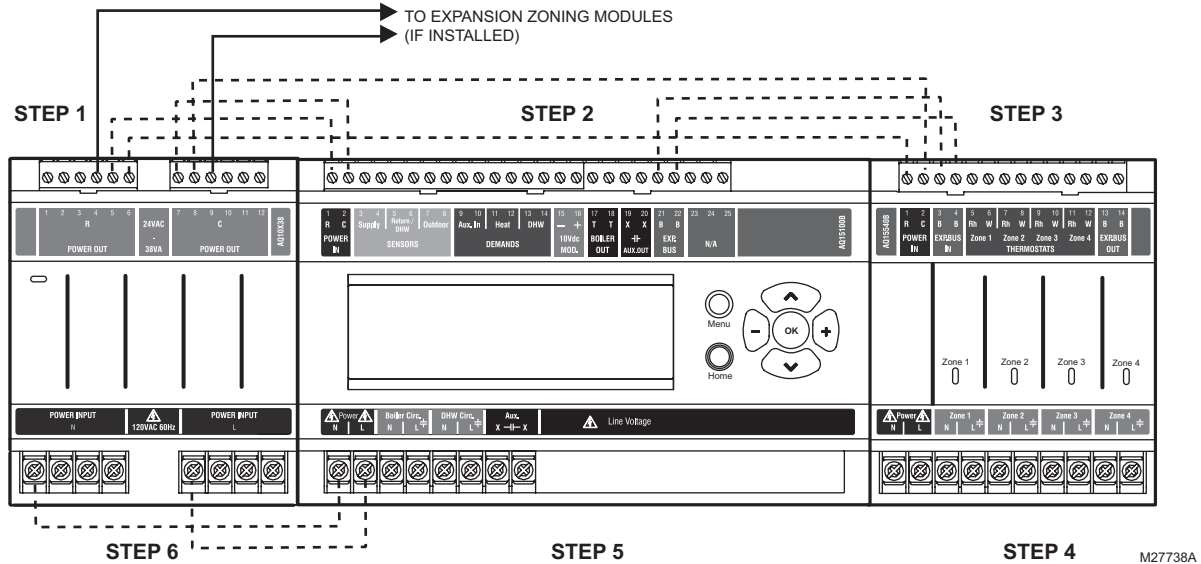


Fig. 4. Wiring sequence.

Step 1 – Transformer Wiring

Factory pre-wiring of the Control Panels is shown as dotted lines in Fig. 4.

In addition to the pre-wiring, run low voltage jumper wires from available R and C terminals on the secondary of the transformer to the R and C terminals of any Expansion Zoning Panel.

Step 2 – Control Panel Wiring

Wire the Temperature Sensors, System Demands, Low Voltage Outputs, and Communication Bus (Refer to Fig. 5 for wiring terminals on the top of the AQ251):

- "Temperature Sensor Wiring" on page 7
- "System Demands Wiring" on page 7
- "Low Voltage Outputs Wiring" on page 8
- "Communication Bus Wiring" on page 8

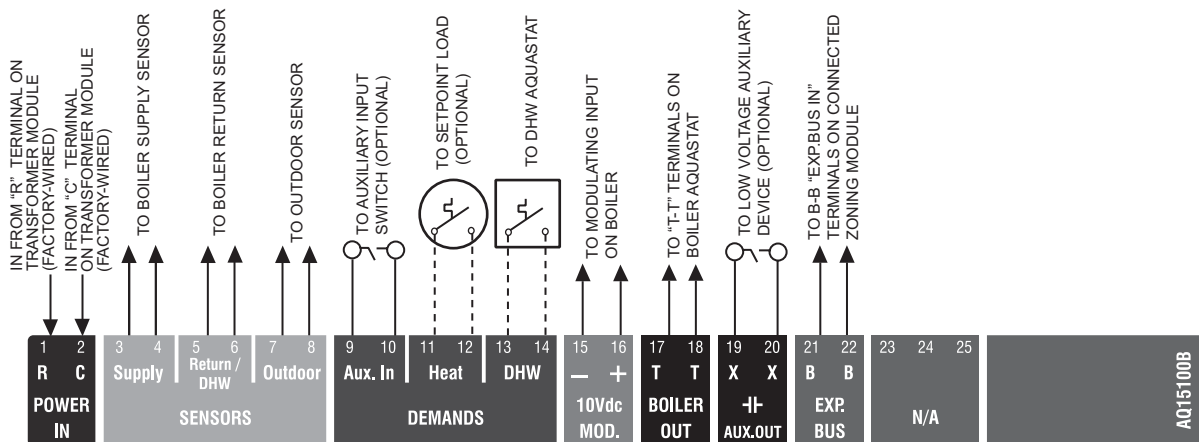


Fig. 5. Low voltage wiring for the AQ15100B Control Module.

Temperature Sensor Wiring

Connect the lead wires of each sensor to the corresponding terminals on top of the AQ151 Control Module. See Fig. 5 on page 6.

The Boiler Supply, Return and Secondary loop sensors can be installed either as strap-on sensors or inserted into an immersion well that is packed with thermally-conductive paste.

BOILER SUPPLY AND RETURN SENSORS.

Both the Supply and Return Sensors should be installed on the supply and return piping of the boiler for proper operation of the AQ251 Control Panel. Even if the AQ251 is connected to a modulating condensing boiler with its own supply and/or return sensors, the AQ251's sensors should still be installed for the control to operate.

The Boiler Supply water sensor should be installed on the supply piping close to the exit port of the boiler, using one of the AQ12C11 strap-on sensors supplied with the AQ251. See Fig. 6.

The Boiler Return sensor should be installed on the return piping as close to the entrance port to the boiler as practical, using the other AQ12C11 strap-on sensor supplied with the AQ251.

The correct location is one that will measure the temperature of all combined sources of water returning back to the boiler.

Insulate strap-on sensors with pipe wrap to ensure accurate boiler temperature sensing.

The Boiler Supply and Return water sensors come with 10 ft. (3m) of wire to minimize the need for splicing.

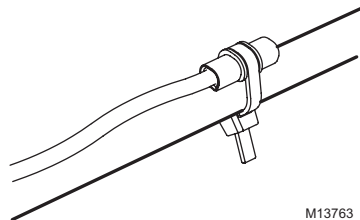


Fig. 6. Strap-on temperature sensor installation.

OUTDOOR SENSOR

The outdoor sensor should be located:

- in a shady location out of direct sunlight
- at least three feet from dryer, bathroom, or other vents
- above the expected snow line where ice and debris cannot cover it
- on the north side of the building.

See Fig. 7 for typical placement. Outdoor sensor comes with 10 ft. (3m) of wire to facilitate splicing the sensor on the interior of the building. Alternatively, if the building is equipped with a continuous fresh air supply using, for example, an air-to-air heat exchanger, the outdoor sensor may be installed in the insulated portion of the ventilation intake duct, taking care not to expose the sensor to direct or indirect sunlight.



Fig. 7. Outdoor temperature sensor installation.

IMPORTANT

Do not run sensor wires parallel, or close, to telephone, Ethernet, or power cables. Cross all power, Ethernet, and telephone wiring at right angles. If sensor wires are located in an area with strong sources of electromagnetic interference, or EMI, (e.g., if sensor wires are run in the same electrical chase as line voltage wiring) use twisted pair, shielded cable, or run wires in a grounded metal conduit. This is important, since the calculated temperature - based on the sensor's resistance reading - can be distorted by high EMI, potentially causing the AQ251 to not operate properly. If using shielded cable or conduit, connect the shield wire to earth ground only at the AQ251 panel. Do not ground the shield or conduit at any other location or electromagnetic shielding will be ineffective. If shielded cable is used, Honeywell recommends the use of shielded cable with a continuous ground plane, such as foil, with an integral drain wire for bonding to earth ground.

System Demands Wiring

Additional information about settings for the various System Demands is discussed in Table 6 on page 30.

AUX-IN

f the optional Aux In. contacts (terminals 9 and 10) will be used, wire them now. These inputs are powered with 24 Vdc and must connect only to a dry closure contact (unpowered switch).

The Aux-In contact closure sets the system into a specific state, as determined by the installer setup using the EQUIPMENT SETUP > AUXILIARY I/O sub-menu (see Fig. 25 on page 39).

HEAT DEMAND

If the optional Heat Demand (terminals 11 and 12) will be used, wire them to a system setpoint demand (dry contact closure), such as a pool or spa Aquastat®.

The HEAT contact closure drives the system to control either at the Reset temperature or the Setpoint temperature, as determined by the installer setup using the EQUIPMENT SETUP > ZONING > HEAT DMND selection (see Fig. 25 on page 39). Heat Demand priority allows only heat for the first 30 minutes of a call for heat and then allows the space heating needs to be added in for the next 30 minutes. This cycle continues until the call for heat is satisfied.

DOMESTIC HOT WATER

Wire the DHW (terminals 13 and 14) to the Aquastat or thermostat on the domestic hot water tank.

DHW priority allows only DHW heat for the first 30 minutes of a call for DHW and then allows the space heating needs to be added in for the next 30 minutes. This cycle continues until the call for DHW is satisfied.

NOTE: If the AQ251 is connected to a modulating condensing boiler with built-in DHW management, the DHW tank's Aquastat should be connected to the AQ251's DHW (terminals 13 and 14). The AQ251's Aux. Out (terminals 19 and 20) should be wired to the boiler's DHW input terminals to the AQ251. In this case, the Aux Out contacts should be programmed (in Installer Mode settings) to close when there's a call for DHW [EQUIPMENT SETUP>AUXILIARY IO>AUX.OUT>DHW]

Low Voltage Outputs Wiring

10 VDC

The 10 Vdc terminals (15 and 16) of the AQ251 produce a modulating (0-10 Vdc or 2-10 Vdc) signal that can drive a modulating boiler's combustion fan to maintain a constant supply temperature from the boiler (generally equal to the Boiler High Limit setting in the EQUIPMENT SETUP > BOILER SETTINGS sub-menu).

Boiler Signal: If the AQ251 panel is configured to send a 0-10V or 2-10V signal to a modulating/condensing boiler, connect the AQ251's modulating output terminals (15 and 16) to the modulating signal input on the boiler control.

BOILER

Wire the Boiler dry contact output (terminals 17 and 18) to the T-T terminals on the boiler Aquastat or the boiler's control panel. See Fig. 15 on page 12 for wiring connections to a typical boiler Aquastat.

These contacts are made any time the system has a request for boiler operation, unless the water supply temperature is above the target temp at that time, at which time the system primary boiler pump would come on.

AUX-OUT

If the Auxiliary Out low voltage output will be used, wire it now to the device that will be switched when the Auxiliary Out's dry contacts close. Wire the hot leg of the device through the Aux. Out connection (terminals 19 and 20).

The Aux-Out relay contacts close to correspond with an action as determined by the installer setup using the EQUIPMENT SETUP > AUXILIARY I/O sub-menu (see Fig. 25 on page 39).

NOTE: The Aux. Out contacts are rated for low voltage devices only.

Communication Bus Wiring

All AQ2000 components communicate with each other on the AQUATROL network using communication bus wiring. This wiring must connect all AQ2000 components. Otherwise, features that depend on this networked communication (e.g., zone synchronization, outdoor temperature displayed on thermostats, etc.) will not function.

The communication bus wiring is polarity insensitive. The installer does not need to worry about a +ve or -ve orientation of the wires. If there are two wires connected between the B-B Bus Exp. In on one module and B-B Bus Exp. Out on another module, there will be communication. See example in Fig. 8 for how this wiring is to be installed.

The communication bus connections for AQ251 Control Panels are pre-wired at the factory. If connecting an Expansion Zoning Panel to an AQ25110B, wire the Control Panel's B-B "Exp.Bus" terminals (21-22) to the B-B "Exp. Bus IN" terminals (3-4) of the Expansion Zoning Panel.

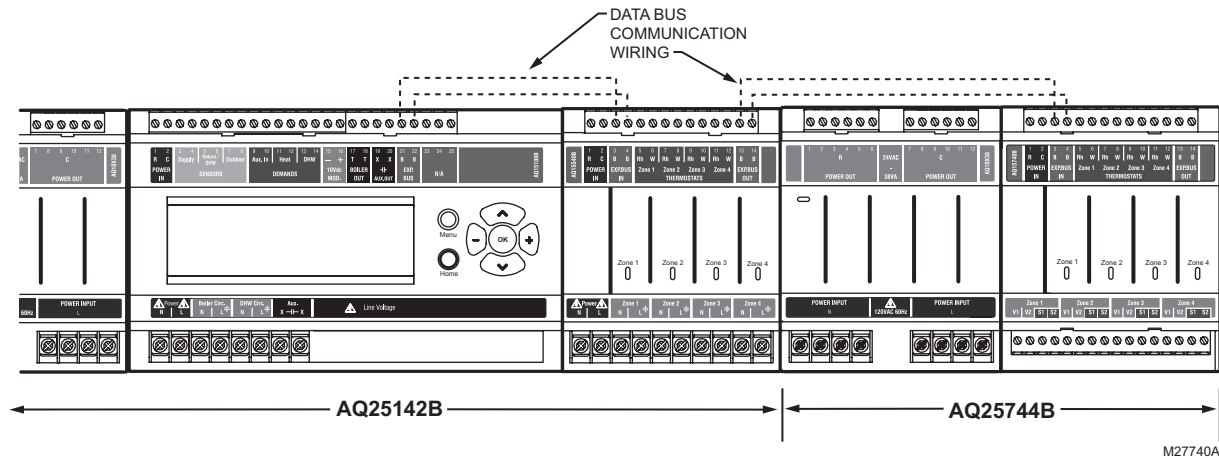


Fig. 8. Wiring for communication bus.

Step 3 – Thermostats Wiring

NOTE: The new AQ2000 panels will work with either digital (electronic) non-communicating thermostats or AQ1000 communicating thermostats.

- Using low voltage thermostat wire, connect one thermostat from each zone to the corresponding THERMOSTATS Zone X inputs on top of the Zoning Module (see Fig. 9).
- If there are additional zones (on Expansion Zoning Panels) connected to this Zoning Module, run low voltage thermostat wiring from the B-B Exp. Bus Out connection (terminals 13 and 14) of the Zoning Module to the B-B Exp. Bus. In connection (terminals 3 and 4) on the Expansion Zoning Panel.

IMPORTANT

Do not run thermostat wires parallel, or close, to telephone, Ethernet, or power cables. Cross all power, Ethernet, and telephone wiring at right angles.

If thermostat wires are located in an area with strong sources of electromagnetic interference, or EMI, (e.g., if thermostat wires are run in the same electrical chase as line voltage wiring) use twisted pair, shielded cable, or run wires in a grounded metal conduit.

This is important, because the AQ1000 thermostats are communicating thermostats which send and received data via the two wires connecting them to the Zoning Module. This data can be distorted by the EMI, potentially causing the AQ251 to not operate properly.

- Run low voltage thermostat wiring from the R and C terminals on the AQ251 Control Panel’s transformer to the R and C terminals on the Expansion Zoning Panel. As an alternative, you can run low voltage thermostat wiring from the R and C terminals on the Zoning Module to the R and C terminals on the Expansion Zoning Panel.

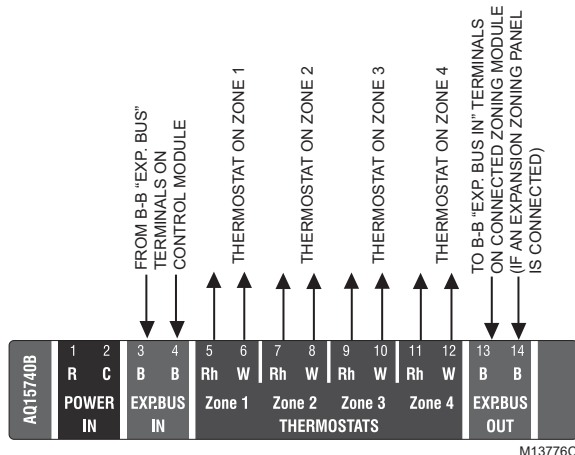


Fig. 9. Connecting AQ1000 thermostats.

Step 4 – Zoning Equipment Wiring

Because the Zoning Module of the AQ25142B Control Panel can be used with either low voltage zone valves (without end switches) or line voltage pumps or valves, field installed wiring of the correct voltage needs to be connected to the zoning equipment terminals on the bottom left portion of the Zoning Module.

Line Voltage – Circulators or Zone Valves

Refer to Fig. 10. Remove the plastic wiring barrier that is located in the bottom wiring channel between the AQ15100B Control Module and the Zoning Module. Run jumper wires from the N and L terminals on the bottom of the AQ251 Control Panel’s transformer, through the wiring channel across the bottom of the Control Panel, and to the corresponding N and L terminals of the Zoning Module.

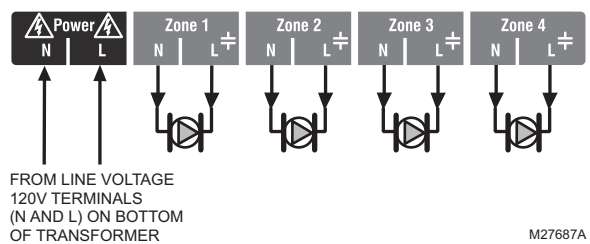


Fig. 10. Wiring an AQ15540B Zoning Module for use with line voltage circulators.

Low Voltage – Zone Valves With or Without End Switches

Wire using step 1 for zone valves without end switches, or use step 2 for zone valves with end switches:

- Low voltage zone valves without end switches: Using Fig. 12 on page 10 as a guide, run jumper wires from the R and C terminals on the secondary of the AQ251’s transformer, through the wiring channel across the top of the Control Panel, and down through the wiring channel on the right side of the panel and over to the R and C terminals on the bottom of the Zoning Module.

IMPORTANT

*If low voltage zone valves are used with the AQ25142B Control Panel, the supplied Low Voltage Output sticker (shown in Fig. 11) **must** be applied over the line voltage output sticker (see Fig. 10) that is already attached to the Zoning Module.*



Fig. 11. Low voltage output sticker.

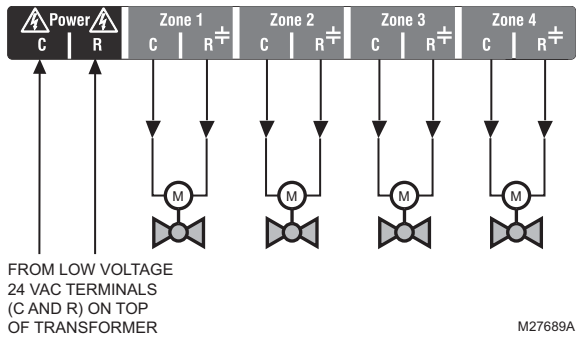


Fig. 12. Wiring an AQ15540B Zoning Module for use with low voltage zone valves without end switches.

2. Low voltage zone valves with end switches: See Fig. 13. 24 Vac power is pre-wired between the transformer secondary at the top left of the AQ251's transformer and the AQ15740B Zoning Module. No field wiring is required.

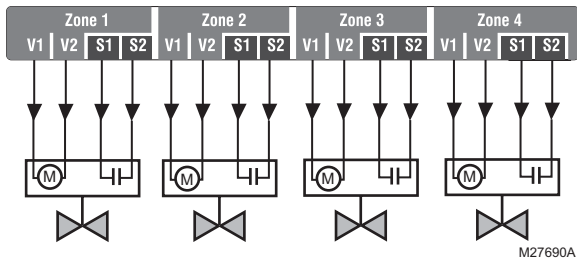


Fig. 13. Wiring an AQ15740B Zoning Module for use with low voltage zone valves with end switches.

NOTE: When wiring zone valves with end switches, note the transformer's VA:

If low voltage zone valves with end switches are used for zone control, make sure the selected zone valves do not draw more power (VA) than the 38 VA capacity of the AQ10X38 transformer supplied with the AQ251 Control Panel. This integral transformer has enough power to operate 4 motorized zone valves (such as Honeywell V8043E valves or 4 valves using low-amperage draw, heat motor actuators, such as Honeywell MV100 actuators), plus power the electronics of the AQ251's Control Module and up to 16, AQ1000 thermostats. If zone valves with high-amperage-draw heat-motor actuators are used (such as Taco 500 series zone valves), additional 24 Vac transformer capacity will need to be wired to the Zoning Module to power the valves. See Fig. 14 on page 11 for recommended wiring of additional low voltage VA capacity to AQ2000 Series Zoning Modules.

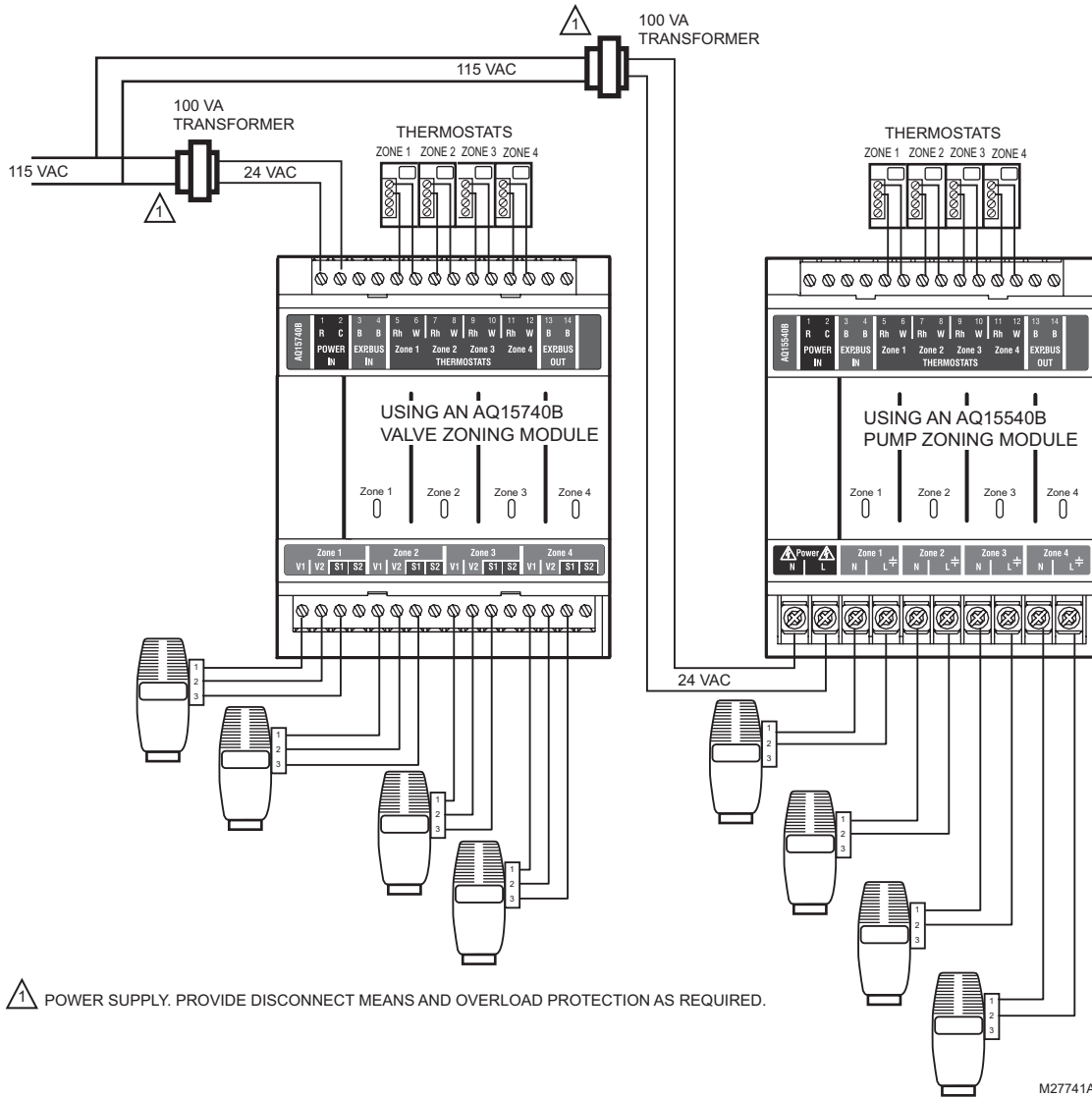


CAUTION

Equipment Damage Hazard.

Can damage internal circuitry of Zoning Module.

The ES1 and ES2 terminals of the AQ15740B Zoning Module are powered terminals and must only be connected to a set of dry contacts, such as a zone valve motor's end switch. If power is applied to these contacts (for example, by running line voltage through the zone valves' end switches to bring on a circulator feeding those valves), the internal circuitry of the Zoning Module will be damaged, in which case the warranty for this product will be voided.



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Fig. 14. Wiring of additional low voltage VA capacity.

Step 5 – Line Voltage System Outputs

Refer to Fig. 15 and follow the steps in this section to wire these devices to the AQ251 Control Module.

- “1. Boiler Pump”
- “2. DHW Device”
- “3. Line Voltage Rated Aux Output (Aux. pump)” on page 13

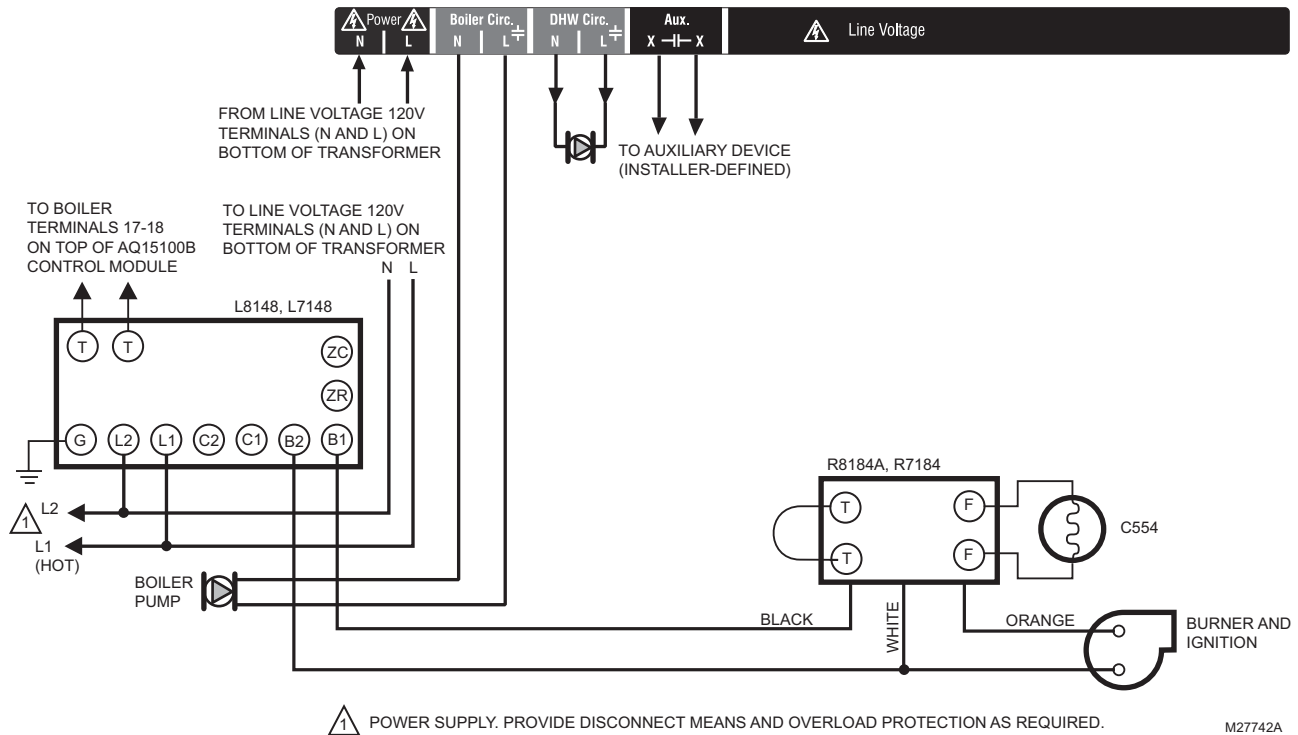


Fig. 15. Line Voltage Connections for AQ251.

1. Boiler Pump

Connect the N and L wires of the boiler loop pump to the N and switched hot terminals of the line voltage Boiler output, shown in Fig. 17 on page 13. The ground wire of the pump can be connected to any of the 8 ground screw terminals located on the back surface of the Control Panel enclosure.

The boiler pump contacts are made after any one of the following occur:

- A call for heat has occurred from any heating zone.
- The Heat input is shorted on terminals 11 and 12.
- The DHW input is shorted and the DHW type is configured as a valve.

The pump is delayed for the FIRE DELAY programmed in the EQUIPMENT SETUP > BOILER OPERATION sub-menu (see Fig. 25 on page 39). The boiler pump and the last zone calling remain on in order to move heat out of the boiler for the period of time programmed in the Purge time menu under the fire delay. Manually adjusting thermostats affects the operation of this software so it can not be tested manually, you must observe it under normal operating conditions.

NOTE: If the AQ251 is connected to a modulating condensing boiler, the boiler pump may need to be connected to the boiler, not the AQ251. Confirm this with the boiler’s installation manual.

2. DHW Device

Wire the DHW pump or line voltage zone valve to the N and switched hot terminals of the DHW output, as shown in Fig. 17 on page 13.

If using a low voltage zone valve, wire the primary of a spud-mounted transformer (115V to 24V) to the DHW line voltage output contacts and connect the low voltage zone valve to the secondary terminals of this transformer. A spud-mounted transformer may be located in one of the conduit knockouts on the bottom of the AQ251 Control Panel.

Alternatively, a 24 Vac zone valve can be connected to the Aux. pump line voltage-rated dry contacts, which can be configured to close on a DHW call. This configuration is defined in the Installer Equipment Setup menu beginning on page 30.

The DHW contacts are made when the DHW inputs on terminals 13 and 14 are shorted by the controlling Aquastat. This is a line voltage output designed to go to the DHW pump. If 24 Vac is needed for a low voltage valve, you can mount a step-down transformer on the conduit opening and wire the valve from the transformer. When DHW is enabled, the system has a 30-minute priority over all calls for heat. After 30 minutes, calls for heat are added back in to the operation for 30 minutes and then turned off again. This repeats until the DHW is satisfied.

3. Line Voltage Rated Aux Output (Aux. pump)

To connect a line voltage auxiliary device to these contacts, such as a boiler bypass pump, power the pump from the N and L terminals on the bottom of the Control Module, running the L (hot) lead through the AUX.Pump contacts. See Fig. 16 for details. The exact wiring schematic will depend on what is connected to these dry contacts.

The Aux Pump is a line voltage-rated dry contact that is controlled by the selection in the EQUIPMENT SETUP > AUXILIARY I/O sub-menu (see Fig. 25 on page 39).

NOTE: Use of this output is optional. The Aux. pump dry contacts are line voltage-rated but unpowered. A low voltage device can be connected to these programmable contacts, but the wire's insulation must meet applicable codes for use in line voltage enclosures. See page 30 for programming options for the Aux. Pump dry contacts.



Fig. 16. Wiring of the Aux. pump line voltage rated dry contacts (example shown is a by-pass pump).

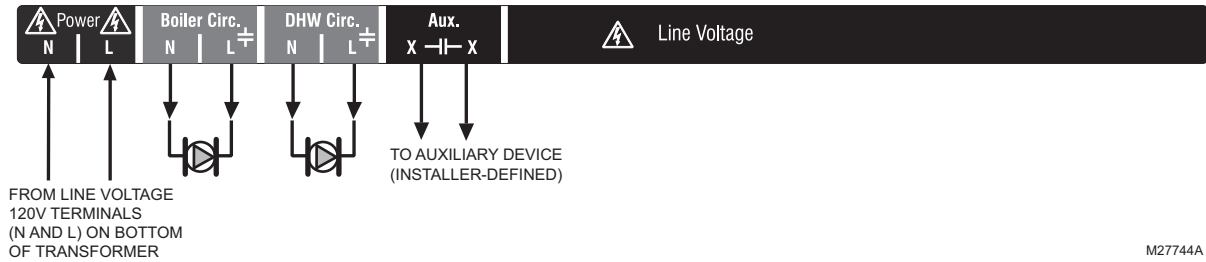


Fig. 17. Wiring for Boiler Pump, DHW Device, and Aux Output.

Step 6 – Connection to Line Voltage Power

Connect the N and L line voltage inputs of the AQ251 Control Panel (at the bottom of the transformer) to the electrical distribution panel and power up the Control. A service switch should be installed on the hot (L) lead to the distribution panel.

If multiple Zoning Modules are connected to the AQ251 Control Panel, the line voltage wiring can either be run directly from the N and L terminals on the primary of the transformer to each Zoning Module (Fig. 18), or run in a daisy chain from the N and L terminals of one AQ2000 module to the N and L terminals of the next AQ2000 module (Fig. 19 on page 14).

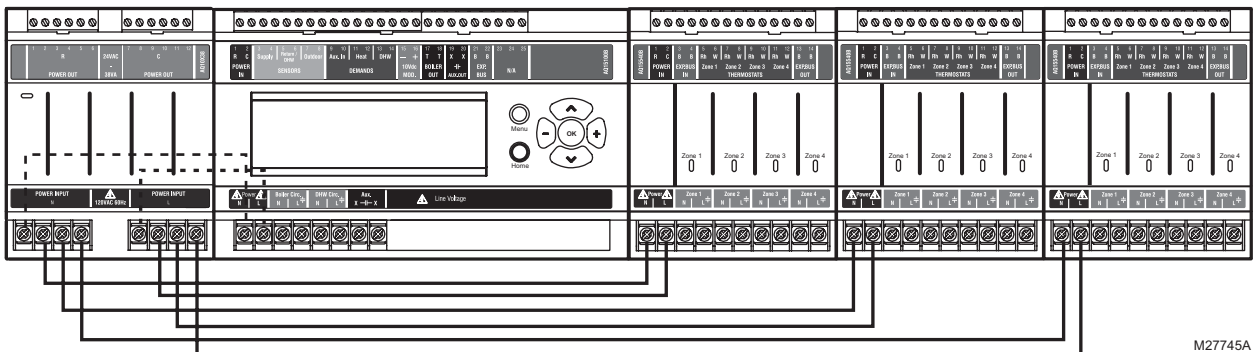
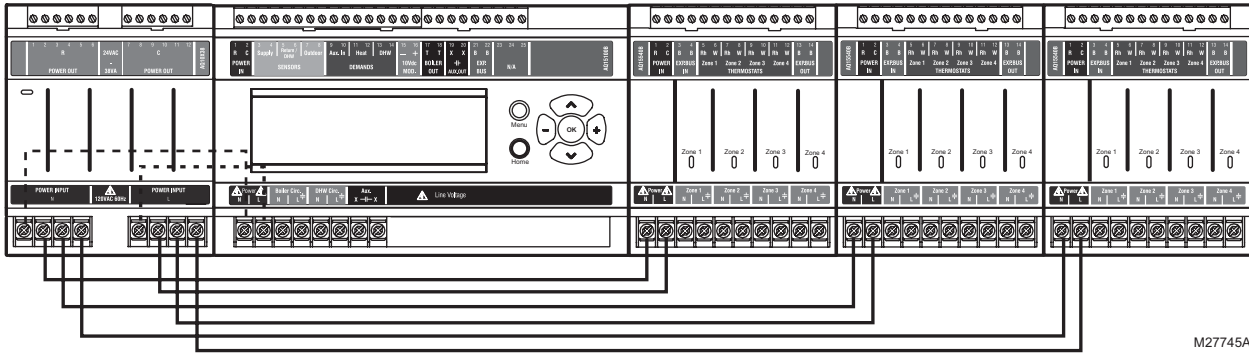


Fig. 18. Connections for multiple Zoning Panels - parallel wiring.



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Fig. 19. Alternate Connections for multiple Zoning Panels - daisy chain wiring.

CAUTION

Electrical Shock or Equipment Damage Hazard. Can shock individuals or short equipment circuitry. When line voltage is applied to the AQ251 Control Panel and the front cover of the Panel is removed, there is a risk of electrocution. Be careful to avoid contact with the line voltage (N and L) terminals, either with your fingers or with metal tools (such as a screwdriver) when power is applied to the Control Panel.

to be checked by the installing contractor to make sure they are suitable for the job, rather than having to input all the settings from scratch.

Although these factory default values for the Control Module and each Zoning Module are suitable for many installations, Honeywell recommends that they be reviewed, and changed as necessary, to get optimal performance of the hydronic system controlled by the AQ2000 Series products.

4 PROGRAM AND CONFIGURE THE CONTROL PANEL

Only two steps are required to set up the AQ251 Series Control Panel:

1. Check the program settings for the Control Module: Operation of the AQ251's Control Module is set by the menu selections accessible through the Control Module's LCD screen. See "AQ251 – System Programming" on page 16 for instructions.
2. Check the DIP switch settings for each Zoning Module.

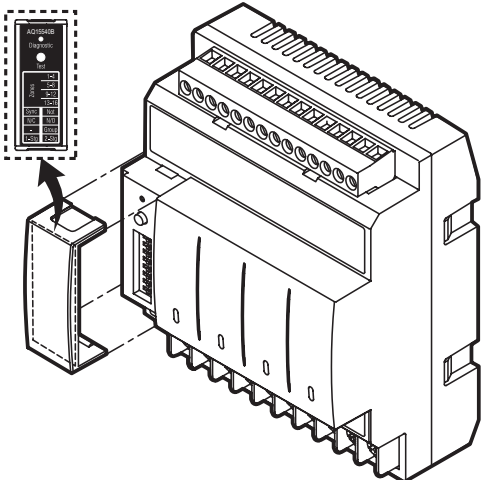
Control Panel Defaults

Operation of the AQ251 Control Module is set by the menu selections accessible through the Control Module's LCD screen. See "AQ251 – System Programming" on page 16 for instructions.

The AQ251 Control Panels are shipped from the factory with pre-defined values for all program settings. These factory default settings are commonly used by hydronics contractors across North America. Usually, most of the settings only need

Zoning Module DIP Switch Location

The AQ15540B (pump Zoning Module) and AQ15740B (valves with end switches Zoning Module) both have DIP switches in 8-switch banks and are concealed behind snap-on covers, as shown in Fig. 20.



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Fig. 20. Location of the DIP switches for the AQ155/AQ157 Zoning Modules.

Zoning Module DIP Switch Settings

A chart of the different settings for each DIP switch is attached to the inside of each DIP switch cover.

Refer to Table 2 on page 15, and check all DIP switch settings. If necessary, change the switch settings to suit the desired operation of the hydronic installation.

NOTES:

1. To set DIP switches 1 through 4, which identify the unique address of each zone on the AQUATROL network:
 - Refer to the descriptions in Table 2 for the correct DIP switch settings for the Zoning Module. Unpredictable zone behavior may occur if more than one Zoning Module has DIP switches (1-4) set to the same address.
2. DIP Switch 5 enables or disables Zone Synchronization:
 - The factory setting enables Zone Synchronization, which is an energy saving feature of the AQ2000 panels. Zone Synchronization coordinates zone demands to start at the same time when the boiler cycle begins. The AQ2000 functions as activating valves. The valve logic induces a delay before activating the boiler pump even when zone pumps are used. When Zone Synchronization is not selected, the zone demands are served whenever they call for heat.
 - The Zone Synchronization feature replaces the pump/valve selection of previous AQ2000 versions.

3. DIP Switch 8 functionality:
 - The factory setting enables 1-stage per zone thermostat. The zoning module operates as four 1-stage zones.
 - When using a 2-stage thermostat, set DIP switch 8 to 2-Stg. The 2-stage selection uses TH1 and TH2 inputs for 2-stage thermostat control. For the selected zone, TH1 is the first stage input from the thermostat and TH2 is the second stage input. Inputs TH3 and TH4 operate in same manner. The 2-stage selection reduces the zoning module to a 2 zone module from a 4 zone module.
 - When using digital 2-stage thermostats (non AQ1000 thermostats), the system set-up process changes slightly. During system set-up, create an artificial demand on the zoning module by increasing the set point on the thermostat. The artificial demand is required during the PRI/SEC set-up menu to select the primary and secondary loop for each zone and stage.

Review the settings of all DIP switches for each Zoning Module connected to an AQ1510 Control Module, to ensure they are correct before system start-up.

When you finish setting the DIP switches for all the Zoning Modules, replace the front cover of the AQ251 Control Panel and the cover of each Expansion Zoning Panel.

NOTE: The snap-on DIP switch covers are designed so they cannot be removed (exposing the DIP switches) when the front cover of the AQ251 Control Panel is in place.

Table 2. AQ15540B Zoning Module (Pump Zoning Module) DIP Switch Arrangement.

DIP Switch	Switch Description	Label and Factory Settings
1 2 3 4	<p>Zone Address: The positions of these 4 DIP switches define the unique address for each zone on the AQUATROL network. For each group of 4 zones, there can be only one DIP switch in the right-hand (ON) position.</p> <p>The correct DIP switch settings for each zone module are:</p> <ul style="list-style-type: none"> • First Zone (1-4) Module: 1 = ON position; 2, 3, and 4 = OFF position • Second Zone (5-8) Module: 2 = ON position; 1, 3, and 4 = OFF position • Third Zone (9-12) Module: 3 = ON position; 1, 2, and 4 = OFF position • Fourth Zone (13-16) Module: 4 = ON position; 1, 2, and 3 = OFF position 	
5	<ul style="list-style-type: none"> • If set to SYNC, zone synchronization is enabled. • If set to NOT, zone synchronization is disabled. 	
6	<ul style="list-style-type: none"> • If zone valves are normally closed (N.C.), set the NC/NO DIP switch to the OFF position. • If zone valves are normally open (N.O.), set the NC/NO DIP switch to the ON position. 	
7	<ul style="list-style-type: none"> • If set to Group (ON position), the AUX Pump contacts on the Control Module are switched when any of the zones on this Zoning Module are active. • If set to - (OFF position), the AUX Pump contacts are not affected by activity on these zones. 	
8	<ul style="list-style-type: none"> • If set to 2-Stg (ON position), then 2-stage operation is activated on thermostat inputs. The zoning module operates as two 2-stage zones or 3 zones (one 2-stage and two 1-stage). • If set to 1-Stg (OFF position), then operates as four 1-stage zones. 	

AQ251 – System Programming

This section describes how to navigate the user interface using the keypad and LCD display, and how to program the AQ251 Control Panel, which begins on page 17.

Keypad

The AQ251 User Interface consists of an LCD screen (16 characters by 3 rows) and a 7-button keypad for navigating the menus, as illustrated in Fig. 22. Fig. 21 provides an isolated view of the keypad.

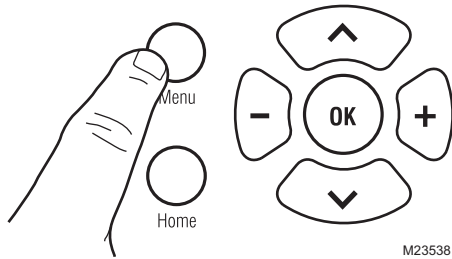


Fig. 21. AQ251 keypad.

- Menu** Press this button to access the User Menu. When pressed while in a sub-menu, the sub-menu's values are saved before going up one level in the current menu.
- Home** Press this button to leave the User or Installer Menu and return to the Home Page display screen.
- OK** Press this button to enter a sub-menu of the active menu item. A menu item is active when the indicator arrow (←) is positioned beside the item.

- ^ and v Press these buttons to scroll up/down in the menu items. Pressing one of these buttons automatically saves your current selection, exits the edit mode, and moves to the previous or next menu item.
- and + Press these buttons to decrease/increase the value of a selected menu item, or to scroll through a list of pre-defined options.
 - If the menu item being modified is a number, the displayed value will decrease/increase by pressing these buttons. When holding the - or + button for more than a second, the values automatically decrease/increase at a faster pace, similar to setting the time on a digital clock radio.
 - If the menu item is an option, pressing these buttons scrolls through the list of available options one at a time.

LCD Display

The LCD on the AQ251 Control Panel is used to:

- Monitor system status and performance.
- Select and/or modify control settings for the hydronic system.
- Diagnose and troubleshoot system problems.

The layout of the display is logical and simple to navigate. The information displays so that the installer can see at a glance the system's operating temperatures, as well as the status of the system equipment, such as a call for heat, DHW pump on, Boiler T-T terminals energized, etc. In addition, all system information displays in simple, straightforward English for quick system diagnosis. Fig. 22 illustrates the layout and features of the LCD display panel and keypad.

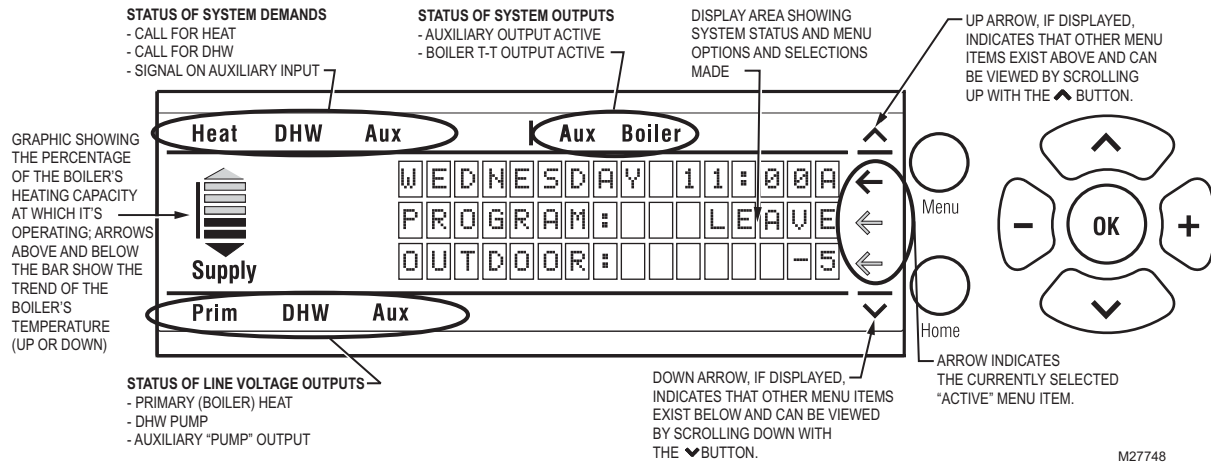


Fig. 22. LCD display and keypad layout.

LCD Display Navigation

This section describes how the keypad is used to navigate the LCD display and menus.

- The LCD displays up to three lines of text at a time. For menus with more than three lines, use the up and down buttons (^ or v) to scroll through the menu options.
- As the menu is scrolled up or down, the indicator arrow (←) shows which menu item is active.
- If the active menu item is part of a list of predefined options (e.g., Day of the Week) press the - or + button to scroll through the available options until the preferred option is displayed. The option is automatically saved when the indicator arrow is scrolled away from the value being edited.

- If the active menu item requires you to define a value (e.g., a setpoint), use the – or + button to decrease or increase the value until the desired value is displayed. The selection will be saved when the indicator arrow is scrolled up or down.

NOTES:

1. When setting times for the setback schedule, you must use the – or + buttons to change the time.
 2. The OK button, when pressed, defaults the time setting to “--:--” (midnight).
- If the active menu item leads to a further sub-menu, pressing the OK button displays the sub-menu options on the LCD. Scroll through this sub-menu to position the indicator arrow (←) beside the desired menu item to input or modify. Choose one of the options provided or input the desired value for the menu item. When satisfied, scroll to another item and your selection will be saved.
 - To define or modify another item within the same menu, scroll the up and down buttons (▲ or ▼) until the indicator arrow (←) is beside the desired option. Use the – or + buttons to set the value for that item.
 - To move back (up) one level within a menu, press the Menu button.
 - To return to the Home Page display, press the Home button.

NOTE: The AQ251 automatically returns to the Home Page display after 60 minutes of inactivity on the keypad.

HOME PAGE DISPLAY

The Home Page is the default view displayed on the AQ251 Control Panel's LCD screen.

There are two Home Page views - Simple and Detail.

- Simple view shows 3 lines of text and is a brief description of the system operation: Day, Time of Day, Current Program and Outdoor temperature.
- Detail view includes the same 3 lines, plus 8 lines of additional information, including Boiler Supply and Return temperatures, Boiler Supply Target temperature, Zone Demand and Zone Count, and DHW temperature (if configured for DHW sensor use). Detail view is the factory default setting for the Home Page.

The choice of the Simple or Detail Home Page view is made from the USER MENU > PREFERENCES/TIME>HOMEPAGE menu option.

The Home Page, together with the System Status information (a selection from the User Menu), provides a service contractor extensive diagnostic information for troubleshooting the installation.

NOTES: Home Page display upon restart after a power failure of more than four hours:

1. Upon restarting the AQ251 following a power disruption of greater than 4 hours, the message PLS SET DAY/TIME OF DAY displays on the top line of the Home Page screen. The message disappears after the DAY and TIME OF DAY are updated.
 - If the power failure parameter is set to Backlight (USER MENU > PREFERENCES), the LCD backlight flashes repeatedly, along with the message.
2. The AQ251 starts up with its clock settings as: DAY = MONDAY, TIME OF DAY = 12:00 midnight, and program = OCCUPIED.

3. Until the DAY and TIME OF DAY settings are adjusted, the control remains in permanent setpoint (comfort) mode.
4. When the DAY and TIME OF DAY settings are adjusted, the AQ251 follows the four programs of WAKE, LEAVE, RETRN (return), and SLEEP.

Refer to “Home Page” on page 23 in the “Appendix” for illustrations of the Simple and Detail displays.

Programming the AQ251

Program the AQ251 by using the keypad and LCD display to select parameters from the User and Installer menus. Refer to Fig. 22 on page 16 for an illustration of the LCD screen and keypad.

NOTE: The figures in “Menu Structure” on page 38 provide a graphical layout of the AQ251's User and Installer menus.

When a new AQ2000 component is connected on the AQUATROL network, it will be seamlessly integrated in the system after a few seconds. If one or more components are disconnected or stop providing data to the network, a message will appear on the System Status display until the fault is corrected.

User Menu

The User Menu is intended for use by the building owner to choose the LCD display preferences, Zone Settings (including setpoint temperatures and setback times for each zone), and temperatures for the WAKE, LEAVE, RETRN (return), and SLEEP programs.

The Home Page and User Menu allow the building owner to:

- View the status of the system.
- Set up preferences for how the system information is displayed.
- Set the setpoint temperatures for each zone.
- Program times of the day when the system will set back the temperatures for the WAKE, LEAVE, RETURN, and SLEEP programs.

NOTE: If there are any problems with the system's operation, the AQ251 displays error codes on the System Status Page display of the LCD panel. For details on these, refer to “Troubleshooting” on page 20.

TO ACCESS THE USER MENU:

Press the Menu button on the keypad at any time to access the User Menu.

Refer to Table 5 on page 24 in the “Appendix” for all of the User Menu options for the AQ251 Control Panel, the factory default values and permissible ranges for each option, and a brief description of each setting.

Installer Menu

The Installer Menu is used to:

- Set up and modify the Equipment Settings (for boiler operation, DHW management, zoning, auxiliary input/output operation, and options such as pump/valve exercise, freeze protection, and Save/Restore settings)
- Access the Test and Purge functions to facilitate quick and simple commissioning of the hydronic system.

TO ACCESS THE INSTALLER MENU:

1. Press the Home button to return to the Home Page display.
2. Press and hold the OK button for 3 seconds until the message, INSTALLER MODE – ARE YOU SURE?, displays.
3. Select YES.
4. Press and release the OK button to display the Installer Menu.

Refer to Table 6 on page 30 in the “Appendix” for all of the Installer Menu options for the AQ251 Control Panel, the factory default values and permissible ranges for each option, and a brief description of how each setting affects the AQ251’s operation.

5 TEST AND CHECK OUT THE INSTALLATION

Startup

IMPORTANT

Apply power to the AQ251 Control Panel only after all of the AQ2000 SERIES components (Control Panel, thermostats, sensors, Zoning Panels) have been connected to the other equipment in the hydronic heating system (boiler, zone valves or pumps, DHW, Aquastat, etc.).

When powered, the AQ251 Control Panel begins its start-up routine, establishing communication with all other AQ2000 Series components on the AQUATROL network.

Test

The TEST feature enables the installer to checkout all of the system’s outputs, sensors, and zone equipment as part of system commissioning (Checkout).

The TEST operation is accessed from the Installer Menu option EQUIPMENT SETUP >TEST AND PURGE. To begin testing the installation, position the indicator arrow (←) beside the equipment group to be tested (OUTPUTS, SENSORS, or ZONES and press the OK button.

Test Outputs

- When TEST OUTPUTS is selected, the AQ251 LCD displays a list of all outputs that can be tested. To select an output to test, position the indicator arrow (←) beside that output and press the + button to activate the output’s relay. As each output is activated, a word icon for that output is displayed at the top or bottom of the LCD display (refer to Fig. 22 on page 16). The test routine activates the output relay until the – button is pressed to turn off that output.
- To test additional outputs, navigate the list using the up and down arrows (Λ or v), position the indicator arrow (←) beside that output and press the + button to begin testing. Press the – button to de-activate the output relay and stop its test.
- Any combination of outputs can be activated at the same time when testing the outputs.
- When finished testing the outputs, press the Menu button to return to the TEST AND PURGE sub-menu.

Test Sensors

When TEST SENSORS is selected, the AQ251 LCD displays the temperature that each of the SUPPLY, RETURN, SECONDARY and OUTDOOR sensors is measuring. If a sensor is malfunctioning or is not properly connected to the AQUATROL network, the value “- -” displays beside that sensor on the LCD, instead of its temperature. If any of the sensors reports a temperature that is illogical, investigate further by referring to “Troubleshooting” on page 20.

Test Zones

- When TEST ZONES is selected, the Installer can test all space heating zones connected to the AQ251 simultaneously or individually.
- If zones are tested simultaneously (TEST ALL ZONES), all zone outputs energize immediately (with a delay of 1/10th of a second between each pump or valve to minimize the chance of electrical circuit overloads caused by the inrush currents from the pumps’ motors).
- A zero (0) displayed after a zone’s ID address (e.g., Zone A1 0, A2 0, A16 0) indicates that the AQ251 Control Module has received confirmation that the zone’s pump or valve is closed, or OFF. Similarly, a one (1) displayed after a zone’s ID address (e.g., Zone A1 1, A2 1, A16 1) indicates that the AQ251 has received confirmation that the zone’s pump or valve is open, or ON.
 - For zone pumps or zone valves without end-switches, a 1 is displayed as soon as the pump is energized.
 - For zone valves with end-switches, a 1 is displayed only after the valve’s end switch makes or the valve’s Time To Open delay has expired (for use with 2-wire valves).
- To test zones individually, position the indicator arrow (←) beside a selected zone. Press the + button to energize it, and press the – button to de-energize it. As each zone is tested, the Status LED on the Zoning Module associated with that zone illuminates. To test additional zones, position the indicator arrow (←) beside the zone to be tested, Press the + button to energize the zone’s pump or valve, and then press the – button to de-energize it.
- Any combination of zones can be activated at the same time when testing the zones.
- When finished testing the zones, press the Menu button to return to the TEST AND PURGE sub-menu.

Checkout

1. From the Installer Menu, select Boiler Settings and reduce the Warm Weather Shut Down (WWSD) temperature setting until it is disabled and the display shows “- -”. This way, the WWSD will not interfere with the zone operation during checkout.
2. Turn down the DHW Aquastat, if present, to avoid interfering with space heating control operation.
3. Turn up the setpoint of one of the thermostats associated with the Boiler (Primary) loop.
 - a. The zone valve or pump associated with that zone turns on.
 - b. The Boiler T-T relay activates (Boiler displays in the demands section of the LCD screen), and the Boiler pump relay activates (PRIMary displays in the outputs section of the LCD screen).

NOTE: See Fig. 22 on page 16 for the demands and outputs display areas on the LCD.

- c. Depending on the settings for the AUX.PUMP (line voltage-rated dry contacts) and the AUX OUT (low voltage-rated dry contacts), either or both of these relays may also close.
- 4. Turn down the setpoint of one thermostat. The zone valve or pump associated with that zone should turn off. The Boiler T-T and Boiler pump relay outputs should be de-activated.
- 5. Repeat steps 3 and 4 for all zones to verify each zone is operating correctly. Thermostats may be exercised individually or all together to accelerate the check out process.
- 6. Turn up the DHW Aquastat to simulate a call for hot water.
 - a. If the DHW device is a pump, the DHW relay output energizes immediately. The Boiler pump relay remains off.
 - b. If the DHW device is a valve, the Boiler pump relay energizes after a delay to allow the zone valve to fully open. This delay is selected from the EQUIPMENT SETUP>DHW>DHW VLV.OP menu option.
 - c. Turn up the setpoint of one of the AQ1000 zone thermostats.
 - (1) If the DHW relay is configured to control a pump, and DHW PRIOrity is selected, the Boiler and the associated zone pump's relay remain off.
 - (2) If the DHW relay is configured to control a valve, and DHW PRIOrity is selected, the Boiler pump activates after a delay for the DHW zone valve to open, but the associated zone relays remain off.
 - (3) If DHW PRIOrity is disabled, space heating zone pumps and valves should operate during a call for DHW.

- 7. Turn down the DHW Aquastat to end the call for hot water. Space heating operation should continue (if DHW priority is disabled) or resume (if DHW PRIOrity is enabled).

6 PURGE AIR FROM ALL SYSTEM AND ZONE PIPING

The PURGE operation on the AQ251 Control Panel allows the installer to purge all zones (loops) sequentially, or each zone individually, for a period of time, PURGE TIME, which selected from the EQUIPMENT SETUP >TEST AND PURGE > PURGE submenu. The purge time can be adjusted in increments of 1 minute, up to a maximum of 30 minutes per loop to be purged.

After you have defined which loops to purge (all loops, or an individual loop) and for how long (using the AQ251's menus), position the indicator arrow (←) beside the START PURGE option and press the OK button. The START PURGE display will change to STOP PURGE and the AQ251 display begins counting down the time remaining for the purge cycle.

Purging All Loops

When the purge time has elapsed for the first loop, the control proceeds to the next loop and performs the purge operation on each loop in sequential order. After all selected loops have been purged, the display shows PURGE COMPLETED.

7 DOCUMENT AND KEEP A RECORD OF ALL SYSTEM SETTINGS

After the AQ251 Series Control Panel and any AQ255/AQ257 Expansion Zoning Panels have been set up and the entire hydronic installation is operating properly, it is important to document all the system settings for future reference.

Job Records

All AQ2000 Series Panels are shipped with Installation Job Records for documenting these settings. These should be filled out completely and saved in the Installing Contractor's files.

NOTES: There are two classes of settings used by the AQ251 to control the operation of the heating system, Zone Settings and System (or Equipment) Settings. Both types of settings are stored in non-volatile memory and are not lost following an extended power disruption.

WHEN USING AQ1000 THERMOSTATS

1. Zone Settings are designed to be adjustable by the user or the installer and are stored in the faceplate of each zone's AQ1000 thermostat. These settings are **not saved** with the SAVE SETUP operation. If the faceplates of two AQ1000 thermostats are switched, the settings (setpoints, zone minimum, zone maximum, etc.) will also be switched.
2. System Settings are designed to be adjustable **only** by the system installer and are stored in the AQ151 Control Module. These are the settings that are saved with the SAVE SETUP operation.

SAVE Feature

In addition to the hardcopy Installation Job Records, the AQ251 Control Panel has a convenient SAVE feature that allows the installing contractor to save the specific equipment setting for this installation in the AQ251's memory for future recall, in case the system's settings are inadvertently changed. This feature is found in the EQUIPMENT SETUP > SAVE/RESTORE sub-menu.

There are three levels of settings in the AQ251's memory – CURRENT, FACTORY and SETUP.

- **CURRENT** settings are the settings that are currently displayed in any of the menus and are the settings that the AQ251 uses to operate. Any time a value is changed in any of the menus, the CURRENT settings are changed and these new settings are instantly used by the AQ251 Control Panel.
- **FACTORY** settings are the default values loaded at the factory and are the starting point for programming the AQ251. These values are permanently stored in memory and cannot be over-written or erased. The AQ251 can be restored to factory settings through the RESTORE FACTORY option in the SAVE / RESTORE sub-menu. A warning prompt, RESTORE FACTORY—ARE YOU SURE?, displays and YES or NO must be chosen before proceeding. If YES is selected, the FACTORY settings are be copied to the AQ251's CURRENT settings and the Control Panel begins to operate with these values immediately.

- **SETUP** settings are the specific settings for this installation which an installer has saved after the AQ251 is set up and operating well. These are saved for future recall, in case the system's settings are inadvertently changed.
 - To save this installation's settings for the first time, go to the EQUIPMENT SETUP > SAVE/RESTORE sub-menu. Position the indicator arrow (←) beside SAVE SETUP and press OK. This saves the current system settings to the SETUP values.
 - To retrieve the SETUP values at any time in the future, go to the EQUIPMENT SETUP > SAVE / RESTORE sub-menu and select RESTORE SETUP to load those values into the AQ251 as the CURRENT settings. The system will now operate according to these retrieved settings.
 - If the current settings are modified after a RESTORE SETUP operation is performed, simply select SAVE SETUP again to overwrite these new settings into the SAVE settings memory.



CAUTION

If you change any system settings after a RESTORE SETUP operation, you change the current settings that the AQ251 uses as its basis of operation.

TROUBLESHOOTING

The following information helps the installer correctly identify system problems, making troubleshooting much faster.

Table 3 and Table 4, beginning on page 22, describe the possible error codes and status notices that can be communicated on the AQ155 / AQ157 Zoning Modules' diagnostic LEDs.

System Status Information

To aid in troubleshooting hydronic systems controlled by an AQ251, the operational status of the system is shown on the System Status page. Status notices and error messages display here as appropriate, i.e., only those that are pertinent to the system's current operation will be displayed. See Table 4 on page 22 for a complete list of status notices and error messages. The System Status page is available from the User Menu.

When a new AQ2000 component is connected on the AQUATROL network, its settings are communicated to the AQ251 Control Module within 10 seconds of being connected. If the component is an AQ1000 thermostat, the setpoints for that zone thermostat can be modified from the AQ251 Control Module as soon as it is recognized.

When an AQ1000 thermostat is disconnected from the AQUATROL network, a message displays on the System Status page of the AQ251 indicating "Lost Zone A-xx", where "xx" is the specific identity, or address, of the lost zone. This helps the servicing contractor quickly identify the lost zone and fix its wiring to re-establish communication with the AQ251 Control Module.

This diagnostic information is very valuable and the System Status page is the first place a contractor should look for information when troubleshooting system problems.

Communications Loss

Because all AQ2000 Series components communicate with each other via the dedicated AQUATROL network when controlling a hydronic system, one possible failure mode of the AQ251 would be loss of communication between the AQ1510 Control Module and any connected Zoning Modules, or between a Zoning Module and any zone thermostats connected to the AQUATROL network. In general, the Control Module:

- Periodically tries to re-establish communication with any lost components on the network.
- Initializes any component that re-establishes its communication.
- Displays an error code on the AQ251's System Status page, until the error is corrected and/or communication is re-established.

Control Module Reaction

When the AQ1510 Control Module loses communication with any number of zones for more than one minute (as long as there is at least one zone communicating on the AQUATROL network), the AQ251 continues to deliver heat to the other non-communicating zones.

When communication is lost with all zones, the AQ251 enters BOILER FREEZE PROTECTION mode, in which it fires the boiler and then activates the Boiler (supply) pump and zone equipment for a period of 10 minutes every hour. This should provide sufficient heat to the system to prevent a building from freezing up until communication is re-established between the AQ2000 Series components.

BOILER FREEZE PROTECTION mode is disabled when the outdoor temperature is above the warm weather shutdown (WWSD) temperature setting.

Zoning Module Reaction

When a Zoning Module loses communication with the Control Module (as long as there is at least one other Zoning Module communicating with the Control Module), the Zoning Module operates its pumps or valves in a conventional, non-synchronized zoning fashion. That is, it operates according to the demands from the thermostats, without zone synchronization or waiting for permission from the AQ151 Control Module to operate. This allows the zones to extract any heat provided by the boiler.

When using AQ1000 thermostats and communication is lost between a Zoning Module and any of its thermostats, that zone enters Single Zone Freeze Protection mode. In this mode, the zoning equipment is operated for an amount of time equal to one-half of the maximum demand of all other zones on the network. This helps prevent the lost zone from freezing. This is especially helpful if a zone's thermostat is removed from the wall while a room is being painted. When used with 2-stage thermostat operation, only the first stage will be activated in the freeze protection mode.

When using digital, non-communicating thermostats other than the AQ1000, the Single Zone Freeze Protection is disabled for those zones.

Single Zone Freeze Protection mode is disabled when the outdoor temperature is above the warm weather shutdown (WWSD) temperature setting.

The AQ251 provides Zoning Module diagnostic information via the DIAGNOSTIC LEDs located above the DIP switches on its Zoning Module(s), as well as on the System Status menu of the LCD display.

If a zone becomes disconnected from the Control Module or is malfunctioning (i.e., lost), this can be seen in the ZONE COUNT value on the AQ251's Home Page display (Detail view only). The ZONE COUNT represents the number of zones on the AQUATROL network at any given time (the second stages of a heating zone is also counted as a zone). When a zone is lost, the ZONE COUNT decreases by one. Because an installer knows how many zones are installed, if there is a difference between the actual number of installed zones and the ZONE COUNT, the installer will know to look for the zone(s).

The identity of lost zones displays in the System Status page as LOST ZONE A-X:

- A identifies the Control Module of the lost zone, and B, C, or D identify an AQ25400B Add-A-Temperature Expansion Control Panel. This prefix can be set or changed on the AQ254 Panels.
- X identifies the lost zone (1 through 16).

Boiler Freeze Protection (not network communication-related)

If the boiler supply temperature sensor measures 50°F (10°C) or less, the boiler fires and the boiler pump, secondary pump etc. operate until the target temperature is achieved, as measured by the supply temperature sensor. This target temperature is the reset temp (if the boiler RESET parameter = OUTDOOR). Or, it is the AQ251's BOILER HIGH LIMIT (if the boiler RESET parameter = LOAD or NONE). DHW and Heat Demand calls are ignored when the system is in freeze protection mode.

Power Disruption

The AQ251's system and thermostat parameters are stored in non-volatile memory and are updated as they are changed.

When a power disruption occurs, the system configuration is retained in memory. When power is restored, the AQ251 Control Panel enters auto-detection mode, reads its previously-stored settings, and initializes all AQUATROL network components according to their saved parameters.

Power Disruption Greater Than 2 Hours

If a power disruption lasts for more than 2 hours, the AQ251 will have discharged its internal super capacitor, and the DATE and TIME OF DAY settings will need to be reset.

Upon restart, the AQ251 displays its clock settings as: YEAR = 2008, MONTH = JAN, DATE = 1. The message PLS SET DAY/TIME displays and optionally, the AQ251's backlight flashes repeatedly. This displayed message continues until the DATE and TIME OF DAY are updated. The AQ251 remains permanently in OCCUPIED (or Comfort) mode until the DATE and TIME OF DAY are updated.

Table 3. AQ155 / AQ157 Zoning Module LED Display and System Condition.

DIAGNOSTIC LED Status		System Condition	Action Required
Steady (no blinking)		No system problem detected	None
Fast blinking (4 blinks per second)		Auto Test is in operation	None. Allow the control to finish its Auto Test routine.
Slow blinking (2 blinks every 3 seconds)		Auto Test has been paused.	Press the Test button to resume the Auto Test routine.
Coded blinking = ERROR	2 blinks, then pause	Freeze protection activated across the entire AQUATROL network	All zones have lost communication with the Control Module. Check B–B wiring between the Control Module and each Zoning Module.
	3 blinks, then pause	Communication lost with all thermostats on the Zoning Module	Check thermostat wiring to each Zoning Module.

Table 4. LCD Status Notices and Error Messages.

LCD Display	Parameter	Meaning
BOILER:	EM SHUT	Boiler is disabled, because the AQ251 is in Emergency Shut Down mode.
	FRZ PROT	Boiler freeze protection activated: <ul style="list-style-type: none"> • Communication between Control Module and Zoning Module has been lost for more than 1 minute or • Boiler supply temperature is less than 50°F (10°C)
	HEAT DHW	Boiler is active to serve DHW.
	HEATING	Boiler is active to serve zones.
	IDLE	Boiler is not active.
	INIT	Boiler contacts (terminals 17 and 18) on the AQ151, which are connected to the boiler's T-T terminals, have been shorted and the boiler is beginning its firing sequence.
	INST PURG	Boiler is active while the AQ251 is conducting the PURGE operation in the Installer Setup.
	INSTALL	Boiler is in ready mode during Installer Setup.
	PMP EXER	Boiler is disabled while the AQ251 is exercising all pumps and valves connected to the AQUATROL network.
	POST PURG	Boiler is active with Post Purge operation and is sending the purged water to the Boiler (Primary) loop.
PURGE DHW	Boiler is active with Post Purge operation and is sending the purged water to the DHW tank.	
CALL FOR COOL	n/a	At least one zone with a programmable thermostat requires cooling.
CALL FOR DHW	n/a	The DHW requires heat.
CALL FOR HEAT	n/a	At least one zone requires heat.
CWSD ACTIVE	n/a	Zone calls for cooling are not served because CWSD (Cold Weather Shutdown) is in progress.
DHW DISABLE	n/a	DHW call is not served because it is disabled.
LOST ZONE A-1 ... LOST ZONE D-16	n/a	Lost communication with a zone (A-1 to A-16, B-1 to B-16, C-1 to C-16, or D-1 to D-16).
NO DHW PROBE	n/a	No DHW sensor connected or it is defective.
NO OUTDOOR PROBE	n/a	No outdoor sensor connected or it is defective.
NO RETURN PROBE	n/a	No return sensor connected or it is defective.
NO SUPPLY PROBE	n/a	No supply sensor connected or it is defective.
SHORT CYCLE PROT	n/a	There is a call for heat, but less than two minutes have elapsed since the last firing of the boiler (prevents short cycling).
VALVE INIT	n/a	Motorized mixing valve controlling the secondary loop is being initialized and repositioned (opening or closing) to meet the secondary loop target temperature.
WATER READY	n/a	Boiler Supply Water temperature is at or above the target temperature calculated by the AQ251.
WWSD ACTIVE	n/a	Zone calls for heat is not served because WWSD (Warm Weather Shutdown) is in progress.

APPENDIX

The appendix provides AQ251 Control Panel user interface information for the:

- The Home Page
- Programming menus (User and Installer)
- Programming menu structure (User and Installer). See page 38.

Home Page

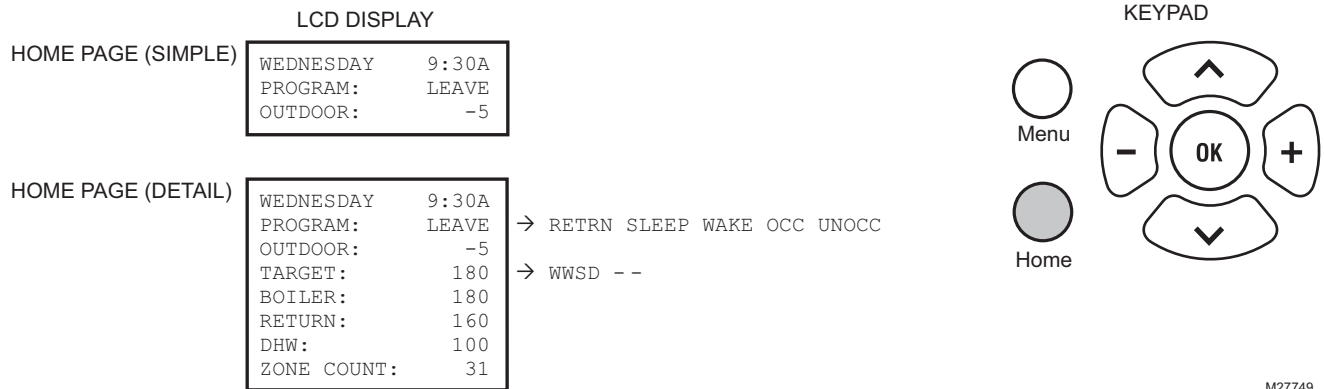
The Home Page is the default display for the control panel. It provides general information on system water and outdoor temperatures, program schedule mode and day / time of day.

The Home Page display may be Simple (3-line) or Detailed (8-line), as illustrated in Fig. 23. The Home Page display type is configured from the Installer Menu.

Press the Home button on the keypad to display the Home Page.

NOTES:

1. PLS SET DAY/TIME displays after a power outage of more than 4 hours.
2. PROGRAM displays the current active program (Leave, Return, Sleep, Wake, Occ, or Unocc).
3. TARGET displays the current temperature or indicates the system is in a warm water shutdown (WWSD) status.
4. When “- -” is displayed instead of a temperature value (e.g., TARGET: - -), this means that there is no call for heat from either space heating, DHW, or Heat Demand zones at the moment.



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Fig. 23. Home Page display (Simple and Detail) and keypad.

Programming Menus

There are two programming menus, User and Installer. The Installer Menu begins on page 30.

User Menu

The User Menu can be accessed at any time by pressing the Menu button on the keypad.

This menu allows the building owner to:

- View the System Status and Statistics.
- Set the display preferences, date, and time.
- Edit the Zone settings, including setpoint temperatures for each zone.
- Edit the Setback temperatures for each zone for the WAKE, LEAVE, RETRN (return), and SLEEP programs.

Refer to Table 5 beginning on page 24 for the following User Menu selections:

- System Status (page 24)
- Preferences/Time (page 24)
- Zone Settings (page 26)
 - All zones
 - Single zone for Ambient, Floor, or Ambient/Floor settings
- Program Settings (page 28)
- Statistics – refer to page 29.

NOTE: An illustration of the complete User Menu is on page 38.

Table 5. User Menu.

Menu Option	Range	Factory Default	Description
SYSTEM STATUS		Identifies what is happening within the system.	
See Table 4 on page 22	n/a	n/a	Multiple status and alarm messages can display on this page. This diagnostic information is for troubleshooting purposes. However, only the status and messages pertinent to the system's current operating condition will display.
PREFERENCES		Allows you to set up the AQ251 Control Panel with preferred display, time, date, and temperature settings.	
BOILER UNITS	°F or °C	°F	Choice of temperature units (F or C) for displaying temperatures on the AQ251 LCD display.
ZONE UNITS	°F or °C	°F	Choice of temperature units (F or C) for displaying temperatures (on the AQ1000 zone thermostats).
TIME DISP	12H or 24H	12H	Choice of time format display: 12 hour format (e.g., 2:00 P) or 24 hour format (e.g., 14:00).
D.S.T.	ENABLE or DISABLE	ENABLE	Enables / disables automatic change to and from Daylight Savings Time.
YEAR	2000 - 2099	2008	Select the year when the control is commissioned.
MONTH	JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DEC	JAN	Select the month of the year when the control is commissioned.
DATE	01 to 31	01	Select the date (01-31) of the month when the control is commissioned.
DAY	MONDAY, TUESDAY, WEDNESDAY, ... SUNDAY	MONDAY	Select the day of the week when the control is commissioned.
TIME	00:00A to 12:59P (00:00 to 23:59)	12:00A (midnight)	Select the time of day when the control is commissioned. You can change the time with the + and – buttons, just as with a clock radio.
HOME PAGE	SIMPLE or DETAIL	DETAIL	Select the 3 line (Simple) display or the 10 line (Detail) display for the Home Page.
BACKLIGHT	AUTO or ON	AUTO	<ul style="list-style-type: none"> • Auto mode = backlight illuminates when any button on the display is pressed. It turns off after 1 hour. • ON mode = backlight stays on constantly.
POWER FAILURE NOTICE	BACKLIGHT or MSG.ONLY	BACKLIGHT	<p>The building owner can be notified in one of two ways that the AQ251's DATE and TIME OF DAY settings need to be reset:</p> <ol style="list-style-type: none"> 1. By displaying the message, PLS SET DAY/TIME, on the first line of the Home Page 2. By repeated flashing of the AQ251's LCD backlight and displaying the message PLS SET DAY/TIME, on the first line of the Home Page

Table 5. User Menu. (Continued)

Menu Option	Range	Factory Default	Description
ZONE SETTINGS	Displays all information pertaining to the selected zone(s). There are four possible sub-menu displays (available only with AQ1000 thermostats): 1. EDIT ALL ZONES 2. EDIT SINGLE ZONE - Ambient Style (see page 26) 3. EDIT SINGLE ZONE - Floor Style (see page 27) 4. EDIT SINGLE ZONE - Ambient/Floor Style (see page 27)		
EDIT ALL ZONES	YES or NO	NO	Prompts with EDIT ALL ZONES ARE YOU SURE? Selecting YES displays the following options:
SETPOINT	Between SETPOINT MIN and SETPOINT MAX	70°F (21°C)	Target temperature set for the zone.
SETBACK	0°F to 16°F (0°C to 9°C)	7°F (4°C)	Amount of temperature (number of degrees) setback from occupied to unoccupied modes for this zone.
SETPOINT MAX	41°F to 100°F (5°C to 38 °C)	100°F (38°C)	Maximum setpoint temperature allowed for this zone's thermostat. The SETPOINT MAX cannot be set below the SETPOINT MIN setting.
SETPOINT MIN	41°F to 100°F (5°C to 38 °C)	41°F (5°C)	Minimum setpoint temperature allowed for this zone's thermostat. The SETPOINT MIN cannot be set above the SETPOINT MAX setting.
FLOOR LIMIT HI ^a	41°F to 100°F (5°C to 38 °C)	100°F (38°C)	Maximum floor temperature allowed for a given zone that is controlled by a floor / slab sensor connected to that zone's AQ1000 thermostat. At Floor MAX, the zone equip is turned off. The FLOOR MAX cannot be set below the FLOOR MIN setting.
FLOOR LIMIT LO ^a	41°F to 100°F (5°C to 38 °C)	41°F (5°C)	Minimum floor temperature allowed for a given zone that is controlled by a floor / slab sensor connected to that zone's AQ1000 thermostat. At Floor MIN, the zone equip is energized. The FLOOR MIN cannot be set above the FLOOR MAX setting).
SETPOINT VACANCY HEAT ^b	Between SETPOINT MIN and SETPOINT MAX	41°F (5°C)	Target heating temperature for the zone when system is in VACANCY mode.
SETPOINT VACANCY COOL ^b	Between SETPOINT MIN and SETPOINT MAX	100°F (38°C)	Target cooling temperature for the zone when system is in VACANCY mode. Only displays when cooling is enabled for that zone.
CHANGEOVER ^b	2°F to 9°F (1°C to 5°C)	2°F (1°C)	Temperature deadband that determines the changeover from heating to cooling and from cooling to heating: <ul style="list-style-type: none"> The thermostat switches from heating to cooling mode when the indoor temperature is <u>higher</u> than the setpoint by more than the changeover band setting for 15 minutes. The thermostat switches from cooling to heating mode when the indoor temperature is <u>lower</u> than the setpoint by more than the changeover band setting for 15 minutes.
KEYBOARD	LOCK or UNLOCK	UNLOCK	Controls the zone thermostat's keyboard. <ul style="list-style-type: none"> If set to LOCK, settings cannot be changed at that zone's thermostat. If set to UNLOCK, the thermostat's settings can be changed within the respective limits.

Table 5. User Menu. (Continued)

Menu Option	Range	Factory Default	Description
EDIT SINGLE ZONE^c	Ambient Style — Selecting this menu item displays the following options:		
ZONE #A-X	A-1 to A-16 ... D-1 to D-16	A-1	Each zone on the AQUATROL network has a unique identity (address). This address consists of a Control Module ID and the Zone related to that controller. <ul style="list-style-type: none"> Module ID: The Boiler Controller is A, and the 1st through 3rd Add-A-Temperature Expansion Control Modules (i.e., AQ25400B) are B, C, and D. Zone: From 1 to 16 for each Module ID. A total of four controllers (one Boiler Control Module and up to three Add-A-Temperature Expansion Control Modules), each having 16 associated zones can be connected on the AQUATROL network. The AQ251 Control Panel itself can control one Boiler loop water temperature and one secondary loop water temperature.
ROOM TEMP	32°F to 158°F (0°C to 70°C)	n/a	Display only – Temperature measured by the zone thermostat.
SETPOINT	Between SETPOINT MIN and SETPOINT MAX	70°F (21°C)	Target temperature set for the zone.
H/C STATUS	HEAT or COOL	n/a	Display only – Status is received from each zone thermostat every 10 seconds.
SETBACK	0°F to 16°F (0°C to 9°C)	7°F (4°C)	Amount of temperature (number of degrees) setback from occupied to unoccupied modes for this zone
SETPOINT MAX	41°F to 100°F (5°C to 38 °C)	100°F (38°C)	Maximum setpoint temperature allowed for this zone's thermostat. The SETPOINT MAX cannot be set below the SETPOINT MIN setting.
SETPOINT MIN	41°F to 100°F (5°C to 38 °C)	41°F (5°C)	Minimum setpoint temperature allowed for this zone's thermostat. The SETPOINT MIN cannot be set above the SETPOINT MAX setting.
SETPOINT VACANCY HEAT	41°F to 100°F (5°C to 38 °C)	41°F (5°C)	Target HEATING temperature for the zone when system is in VACANCY mode
SETPOINT VACANCY COOL	41°F to 100°F (5°C to 38°C)	100°F (38°C)	Target COOLING temperature for the zone when system is in VACANCY mode. Only displayed when cooling is enabled for that zone.
CHANGEOVER	2°F to 9°F (1°C to 5°C)	2°F (1°C)	Temperature deadband that determines the changeover from heating to cooling and from cooling to heating: <ul style="list-style-type: none"> The thermostat switches from heating to cooling mode when the indoor temperature is <u>higher</u> than the setpoint by more than the changeover band setting for 15 minutes. The thermostat switches from cooling to heating mode when the indoor temperature is <u>lower</u> than the setpoint by more than the changeover band setting for 15 minutes.
KEYBOARD	LOCK or UNLOCK	UNLOCK	Controls the zone thermostat's keyboard. <ul style="list-style-type: none"> If set to LOCK, settings cannot be changed at that zone's thermostat. If set to UNLOCK, the thermostat's settings can be changed within the respective limits.

Table 5. User Menu. (Continued)

Menu Option	Range	Factory Default	Description
EDIT SINGLE ZONE^c	Floor Style — Selecting this menu item displays the following options:		
FLOOR TEMP	32°F to 158°F (0°C to 70°C)	n/a	Display only. This is the temperature measured by the floor temperature sensor.
FLOOR SETPT	41°F to 100°F (5°C to 38 °C)	70°F (21°C)	This menu option displays only when the AQ1000 thermostat is set to FLOOR ONLY mode.
SETBACK	0°F to 16°F (0°C to 9°C)	7°F (4°C)	Amount of temperature (number of degrees) setback from occupied to unoccupied modes for this zone.
SETPOINT MAX	41°F to 100°F (5°C to 38 °C)	100°F (38°C)	Maximum setpoint temperature allowed for this zone's thermostat. The SETPOINT MAX cannot be set below the SETPOINT MIN setting.
SETPOINT MIN	41°F to 100°F (5°C to 38 °C)	41°F (5°C)	Minimum setpoint temperature allowed for this zone's thermostat. The SETPOINT MIN cannot be set above the SETPOINT MAX setting.
SETPOINT VACANCY HEAT	41°F to 100°F (5°C to 38 °C)	41°F (5°C)	Target HEATING temperature for the zone when system is in VACANCY mode.
KEYBOARD	LOCK or UNLOCK	UNLOCK	Controls the zone thermostat's keyboard. <ul style="list-style-type: none"> If set to LOCK, settings cannot be changed at that zone's thermostat. If set to UNLOCK, the thermostat's settings can be changed within the SETPOINT MAX and SETPOINT MIN limits.
EDIT SINGLE ZONE^c	Ambient/Floor Style — Selecting this menu item displays the following options:		
ZONE #A-X	A-1 to A-16 ... D-1 to D-16	A-1	Each zone on the AQUATROL network has a unique identity (address). This address consists of a Control Module ID and the Zone related to that controller. <ul style="list-style-type: none"> Module ID: The Boiler Controller is A, and the 1st through 3rd Add-A-Temperature Expansion Control Modules (i.e., AQ25400B) are B, C, and D. Zone: From 1 to 16 for each Module ID. <p>A total of four controllers (one Boiler Control Module and up to three Add-A-Temperature Expansion Control Modules) each having 16 associated zones can be connected on the AQUATROL network. The AQ251 Control Panel itself can control one Boiler loop water temperature and one secondary loop water temperature.</p>
ROOM TEMP	32°F to 158°F (0°C to 70°C)	n/a	Display only. This is the temperature measured by the zone thermostat.
FLOOR TEMP	32°F to 158°F (0°C to 70°C)	n/a	Display only – Temperature measured by the floor temperature sensor.
SETPOINT	Between SETPOINT MIN and SETPOINT MAX	70°F (21°C)	Target temperature set for the zone.
H/C STATUS	HEAT or COOL	n/a	Display only – Status is received from each zone thermostat every 10 seconds.
SETBACK	0°F to 16°F (0°C to 9°C)	7°F (4°C)	Amount of temperature (number of degrees) setback from occupied to unoccupied modes for this zone.
SETPOINT MAX	41°F to 100°F (5°C to 38 °C)	100°F (38°C)	Maximum setpoint temperature allowed for this zone's thermostat. The SETPOINT MAX cannot be set below the SETPOINT MIN setting.
SETPOINT MIN	41°F to 100°F (5°C to 38 °C)	41°F (5°C)	Minimum setpoint temperature allowed for this zone's thermostat. The SETPOINT MIN cannot be set above the SETPOINT MAX setting.

Table 5. User Menu. (Continued)

Menu Option	Range	Factory Default	Description
EDIT SINGLE ZONE			
Ambient/Floor Style (continued)			
FLOOR LIMIT HI ^a	41°F to 100°F (5°C to 38 °C)	100°F (38°C)	Maximum floor temperature allowed for a given zone that is controlled by a floor / slab sensor connected to that zone's AQ1000 thermostat. At floor maximum, the zone equipment is turned off. The FLOOR MAX cannot be set below the FLOOR MIN setting.
FLOOR LIMIT LO ^a	41°F to 100°F (5°C to 38 °C)	41°F (5°C)	Minimum floor temperature allowed for a given zone that is controlled by a floor / slab sensor connected to that zone's AQ1000 thermostat. At Floor MIN, the zone equip is energized. The FLOOR MIN cannot be set above the FLOOR MAX setting.
SETPOINT VACANCY HEAT	41°F to 100°F (5°C to 38 °C)	41°F (5°C)	Target HEATING temperature for the zone when system is in VACANCY mode.
SETPOINT VACANCY COOL	41°F to 100°F (5°C to 38 °C)	100°F (38°C)	Target COOLING temperature for the zone when system is in VACANCY mode. Only displays when cooling is enabled for that zone.
CHANGEOVER	2°F to 9°F (1°C to 5°C)	2°F (1°C)	Temperature deadband that determines the changeover from heating to cooling and from cooling to heating: <ul style="list-style-type: none"> • The thermostat switches from heating to cooling mode when the indoor temperature is <u>higher</u> than the setpoint by more than the changeover band setting for 15 minutes. • The thermostat switches from cooling to heating mode when the indoor temperature is <u>lower</u> than the setpoint by more than the changeover band setting for 15 minutes.
KEYBOARD	LOCK or UNLOCK	UNLOCK	Controls the zone thermostat's keyboard. <ul style="list-style-type: none"> • If set to LOCK, settings cannot be changed at that zone's thermostat. • If set to UNLOCK, the floor thermostat's settings can be changed within the FLOOR MAX and FLOOR MIN limits.
PROGRAM SETTINGS			
Displays, and allows for editing of, the temperature setpoints for each of the four time periods (or programs) within a 24-hour period (WAKE, LEAVE, RETRN (return), and SLEEP).			
MODE	AUTO, OCC, or UNOCC	AUTO	<ul style="list-style-type: none"> • AUTO = Automatically follow the four time periods (or programs) within a 24 hour period, as set up in the Edit All Days or Edit Daily sub-menus. The four programs are WAKE, LEAVE, RETRN (return), and SLEEP. • OCC = Observe the program settings only for WAKE and RETRN (return). • UNOCC = Observe the program settings only for LEAVE and SLEEP.
EDIT ALL DAYS	ALL WAKE, ALL LEAVE, ALL RETRN, or ALL SLEEP	WAKE=6:00AM LEAVE=8:00AM RETRN=6:00PM SLEEP=10:00PM	Allows Installer to set the WAKE, LEAVE, RETRN (return), and SLEEP times once, and apply the settings to all 7 days. NOTE: The programs will be copied to the individual days <u>only</u> when the COPY TO ALL DAYS option is selected.
EDIT DAILY	WAKE, LEAVE, RETRN, or SLEEP	WAKE=6:00AM LEAVE=8:00AM RETRN=6:00PM SLEEP=10:00PM	Allows Installer to set the WAKE, LEAVE, RETRN (return), and SLEEP times for all 7 days individually.

Table 5. User Menu. (Continued)

Menu Option	Range	Factory Default	Description
STATISTICS	Displays the summary and zone relay activity (hours of operation or cycles since last reset).		
LAST DATA RESET	Max. 24,855 days (68 years)	2000 JAN 01	Date of last reset formatted as YYYY MMM DD.
BOILER FIRE ACTIV	Maximum of 596,523 hours (68 years)	0H	Hours of operation of the relay since last reset.
BOILER PUMP ACTIV	Maximum of 596,523 hours (68 years)	0H	Hours of operation of the relay since last reset.
DHW PUMP ACTIV	Maximum of 596,523 hours (68 years)	0H	Hours of operation of the relay since last reset.
AUX PUMP ACTIV	Maximum of 596,523 hours (68 years)	0H	Hours of operation of the relay since last reset.
AUX OUT ACTIV	Maximum of 596,523 hours (68 years)	0H	Hours of operation of the relay since last reset.
ZONE A-1 ACTIV	Maximum of 596,523 hours (68 years)	0H	Hours of operation of the zone's relay (e.g., zone A-1) since last reset. The zone Identifier is A-1 through D-16.

^a The FLOOR LIMIT values can be set in the User Menu of AQ251 Control Panel or the Installer Menu of the AQ1000 thermostat. These programming options only display when an AQ1000 thermostat is configured for Air/ Floor or Floor control operation. Refer to the AQ1000 thermostat Instruction Sheet.

^b Only available with AQ1000TP2 thermostats.

^c Only available with AQ1000 thermostats.

Installer Menu

The Installer Menu allows you to set up and modify system settings that typically would be adjusted by a trained installer. These include equipment settings (for boiler operation, DHW management, zoning, auxiliary input/output operation) and option settings, such as pump/valve exercise, freeze protection, and Save/Restore settings.

System statistics and the installer tools (Test and Purge) are also available from the Installer Menu.

The two Installer Menu options are:

- Equipment Setup – refer to Table 6
- Test and Purge – refer to Table 7 on page 36

NOTE: Illustrations of the complete Installer Menu begin on page 39.

To access the Installer Menu:

1. Press the Home button to return to the Home Page display.
2. Press and hold the OK button for 3 seconds until the message, INSTALLER MODE – ARE YOU SURE?, displays.
3. Select YES, then press and release the OK button to display the Installer Menu.

NOTE: To exit Installer Mode, select the Installer Exit menu option.

Table 6. Installer Menu – Equipment Setup.

EQUIPMENT SETUP			
Menu Option	Range	Factory Default	Description
BOILER SETTINGS	Installer-defined settings for the system design parameters (e.g., boiler supply and return temperatures, reset mode, and outdoor low temperature)		
HIGH LIMIT	12°F to 225°F (49°C to 107°C)	190°F (88°C)	Maximum temperature that the control can use as a target for the boiler supply water (HIGH LIMIT cannot be set below the LOW LIMIT setting).
LOW LIMIT	60°F to 180°F (15°C to 82°C)	150°F	Minimum temperature that the control can use as a target for the boiler supply water (LOW LIMIT cannot be set above the HIGH LIMIT setting).
BOILER DIFF	2°F to 41°F (1°C to 23°C) / AUTO	AUTO	The temperature differential used by the control when operating the boiler. The same differential is used for both the HIGH LIMIT and the LOW LIMIT. <ul style="list-style-type: none"> • If AUTO is selected, the differential is calculated automatically by the AQ251 to maximize comfort and minimize boiler short cycling. • If a specific boiler differential (BOILER DIFF) is selected, the AQ251 will apply 1/2 of this differential above the AQ251's HIGH LIMIT boiler setting and the other 1/2 below the HIGH LIMIT setting when controlling the boiler supply water temperature. • For example, if the High Limit = 190°F and the Boiler Diff = 10°F, the High Limit range becomes 185-195°F. NOTE: This formula also applies to the boiler differential around the AQ251's LOW LIMIT.
W.W.S.D.	-- 35°F to 100°F (2°C to 38°C)	70 °F (21°C)	Warm Weather Shut Down is the outdoor temperature above which the AQ251 will not allow hot water to be sent to a space heating zone. The boiler still operates to supply hot water to DHW or a setpoint (HEAT) demand. The WWSD feature can be disabled by reducing the WWSD temperature below 35°F (2°C), at which point the display will read "--". NOTE: Disabling WWSD is not advisable. This will increase the average reset temperature for the Boiler Supply water, resulting in higher energy consumption and less even heating.
RESET	OUTDOOR / LOAD / NONE	OUTDOOR	Selects the calculation method (algorithm) that the control uses to set the target temperature for the boiler supply and secondary loop supply water. Choose LOAD for buildings with high internal heat gains; otherwise use OUTDOOR.

Table 6. Installer Menu – Equipment Setup. (Continued)

EQUIPMENT SETUP			
Menu Option	Range	Factory Default	Description
BOILER SETTINGS (continued)			
OUTDOOR LOW	-60°F to 32°F (-51°C to 0°C)	10 °F (-12°C)	The lowest annual outdoor temperature for the location where the system is installed, also referred to as the Design Temperature. Typically used in the original heat loss calculations for the building, the OUTDOOR LOW temperatures for various cities in North America can generally be found in ASHRAE tables.
BOILER DSGN	80°F to 210°F (27°C to 99°C)	180°F (82°C)	The supply water temperature required from the boiler when the outdoor temperature is at the OUTDOOR LOW temperature.
MIN. RETURN	OFF / 80°F to 180°F (27°C to 82°C)	140 °F (60°C)	Minimum temperature (or OFF) that the control allows for water returning to the boiler. If the temperature of the boiler return water is below the selected temperature, <u>and</u> the AUX pump is set to operate as a boiler bypass pump (EQUIPMENT SETUP > AUXILIARY I/O > AUX.PUMP option is set to BYPASS), the AUX dry contacts close, allowing the separately-powered AUX pump to energize.
BOILER OPERATION			
CYCLES/HOUR	2 to 6	4	The number of heating cycles per hour that the control will operate the boiler.
FIRE DELAY	0 seconds to 3 minutes (in 5 second increments)	10 (seconds)	Time period that AQ251 control expects between closing the T-T relay and the boiler firing up. Referring to the boiler's instruction manual, set this value equal to the boiler's pre-purge time, if available for the boiler.
PURGE TIME	OFF, 10 seconds to 30 minutes (in 10 second increments)	30 (seconds)	Length of time the Boiler pump (or Boiler pump plus zone valve) will continue to operate (remain open) after the boiler stops firing. Adjustable from 10 seconds to 30 minutes or OFF.
EXERCISE	YES / NO	YES	Option can be set to YES or NO. When set to YES, all pumps and valves in the system are energized for 30 seconds, following a period of 2 weeks of no zone equipment activity. The boiler is not fired during this operation.
FREEZE PROT	YES / NO	YES	Option can be set to YES or NO. When set to YES, all pumps and valves in the system are energized for 4 minutes every hour. The boiler is operated at high fire during this operation.
10V MOD. SELECT	Operating settings for the analog 0-10V (2-10V) modulating signal		
10V MOD	0-10V / 2-10V	0-10V	The analog signal provided by the control to the mixing valve or variable speed pump is proportional to the degree of opening of the valve or the speed of the pump. It is opened fully at 10V and closed fully at either 0V or 2V, depending on the setting chosen. The pump is running at maximum speed at 10V and completely stopped at 0V or 2V.
USAGE	NONE / BOILER	NONE	This setting assigns the device which the analog signal will drive. The NONE option disables a signal from the 10V output.

Table 6. Installer Menu – Equipment Setup. (Continued)

EQUIPMENT SETUP			
Menu Option	Range	Factory Default	Description
DOMEST.HOT WATER	Settings that the AQ251 uses to manage Domestic Hot Water generation		
DHW	ENABLE / DISABLE	ENABLE	Identifies whether Domestic Hot Water Management function is enabled. DHW is typically disabled only if a separate source of domestic hot water (e.g., oil, or gas-fired hot water heater) is used.
DHW PRIO	YES / NO	NO	Displays only if DHW = ENABLE. Selects whether DHW generation can take priority over space heating. If yes, set to YES; if not, set to NO.
PRIO.OVER.	YES / NO	YES	Displays only if DHW PRIO = YES. Selects whether (following a 30 minute uninterrupted call for DHW Demand) the priority given to DHW generation can be overridden to minimize the chance of freeze up or excessive cool down of the space heating zones. <ul style="list-style-type: none"> • YES = On = Allow DHW Priority override. • NO = Off = Do not allow DHW Priority override. If DHW Priority is selected, Honeywell strongly recommends setting the DHW PRIOR.OVER to YES.
DHW DEVICE	PUMP / VALVE	PUMP	Displays only if DHW = ENABLE. Selects whether the DHW loop is supplied by a zone valve or zone pump.
DHW VLV.OP	0 - 230 seconds (in 5 second increments)	15 (seconds)	Displays only if DHW DEVICE = VALVE. Time required for the DHW zone valve to fully open before boiler loop pump is energized. The 15 second default is typical for motorized valves.
DHW PURGE	YES / NO	YES	Displays only if DHW = ENABLE. Selects whether or not a purge should be applied after a DHW demand has been served. If YES is selected, the DHW pump or valve is kept running for the amount of time programmed in the PURGE TIME option of the BOILER OPERATION menu.
DHW SENSOR	YES / NO	NO	Selects whether or not the Return sensor will be used as a DHW tank sensor. YES = use as the DHW sensor.
DHW SETPOINT	-- 60°F to 160°F (16°C to 71°C)	140°F (60°C)	Displays only if DHW SENSOR = YES. "--" means Off (not used). Target temperature set for the DHW tank.
DHW DIFF	-- 5°F to 40°F (2.5°C to 22°C)	20°F (-7°C)	Displays only if DHW SENSOR = YES. "--" means Off (not used). <ul style="list-style-type: none"> • A call for DHW begins when the measured DHW temperature = DHW SETPOINT - DHW DIFF and ends when the DHW temperature = DHW SETPOINT. • For example, if the DHW setpoint = 140°F and the DHW Diff = 20°F, a call for DHW begins when the DHW temperature falls below 120°F and ends when the DHW temperature increases to 140°F.
DHW VACANCY	-- [41°F + DHW DIFF] to 160°F ([5°C + DHW DIFF] to 71°C)	45°F (7°C)	Displays only if DHW SENSOR = YES. "--" means Off (not used). Target DHW temperature when system is in VACANCY mode
ZONING	Settings which the AQ251 uses specifically for Zone operation		
HT DMND PRIO	YES / NO	NO	Selects whether a HEAT DEMAND (device connected to the Heat terminals on the AQ control module) can take priority over space heating. If yes, set to YES; if not, set to NO. <ul style="list-style-type: none"> • If both DHW Priority and Heat Demand Priority are set to YES and both are active at the same time, DHW Priority takes priority over Heat Demand Priority.

Table 6. Installer Menu – Equipment Setup. (Continued)

EQUIPMENT SETUP			
Menu Option	Range	Factory Default	Description
PRIO.OVER	YES / NO	NO	Displays only if HT DMND PRIO = YES. Selects whether (following a 30 minute uninterrupted call for Heat Demand) the priority given to the Heat Demand can be overridden to minimize the chance of freeze up or excessive cool down of the space heating zones. <ul style="list-style-type: none"> • YES = On = Allow Heat Demand Priority override. • NO = Off = Do not allow Heat Demand Priority override.
ZONING VALVES TIME TO OPEN	0 - 230 (seconds)	15 (seconds)	Time required for the zone valves installed on space heating zones to fully open.
AUXILIARY I/O	Settings which the AQ251 uses to control the system based on input to the AUX. IN terminals or to control the activation of the AUX.OUT and AUX.PUMP outputs.		
AUX.IN (optional)	SETBACK / VACANCY / EM. SHUT / NONE	SETBACK	Based on the setting chosen, the AQ251 sets the system in one of 3 different levels of setback for as long as the Aux. In terminals are shorted. Refer to instruction sheet for AQ1000 thermostat (69- 2005EF) for setting the Vacancy (Freeze Protection) temperature setpoint.
AUX.OUT (optional)	BOILER / SETBACK / ZONE OP. / ALARM / AUX.IN / DHW IN / HEAT IN / HT DMND / COOL / NONE	BOILER	Based on the setting chosen, the AQ251 closes the AUX. Out dry contact terminals when: <ul style="list-style-type: none"> • BOILER: The boiler pump energizes. • SETBACK: The system program is in setback mode (either SLEEP or LEAVE). • ZONE OP.: The end switch of a zone valve connected to a Zoning Module closes or a zone pump energizes. • ALARM: An alarm is detected on the system. • AUX.IN, DHW IN, HEAT IN, or HEAT DMND: An input signal is detected on the respective terminals. • COOL: There is a call for cooling from a programmable AQ1000 thermostat. The COOL option is available <u>only</u> if central A/C is present; see the “A/C SETTINGSa” and “A/C EQUIP CONFIG” menu options in this table. • NONE: indicates that the Aux Out terminals are not used.
AUXILIARY I/O (continued)			
AUX.PUMP (optional)	BOILER / GROUP / OCC / BYPASS / FAN / NONE / AUX.IN / DHW IN / HEAT IN / HT DMND	BOILER	Based on the setting chosen, the AQ251 closes the Aux. Pump dry contacts when: <ul style="list-style-type: none"> • BOILER: The boiler pump energizes. • GROUP: Any of the thermostats in a Group of zones (identified by the Zoning Module's DIP switch #7 [AUX] being switched to YES) energize. • OCC: The system program is in Occupied mode (either WAKE or RETRN). • BYPASS: The boiler return sensor measures a water temperature less than the value defined for the EQUIPMENT SETUP > BOILER SETTING > MIN RETURN setting. • FAN: There is a call for cooling from a programmable AQ1000 thermostat. The FAN option is available <u>only</u> if central A/C is present; see the “A/C SETTINGSa” and “A/C EQUIP CONFIG” menu options in this table • AUX.IN, DHW IN, HEAT IN, or HEAT DMND: An input signal is detected on the respective terminals. • NONE: indicates that the Aux Pump terminals are not used.

Table 6. Installer Menu – Equipment Setup. (Continued)

EQUIPMENT SETUP			
Menu Option	Range	Factory Default	Description
A/C SETTINGS^a	Central A/C – Available only if no AQ158 controller is present on the network.		
CYCLES/HOUR	2 / 3 / 4 / 5 / 6	4	The maximum number of times the controller will permit the central A/C to cycle in each hour.
MIN.OFF TIME	2 to 10 (minutes)	5M	The length of time that must elapse after the AC compressor shuts off before the Aux. Out relay is permitted to close, to energize the compressor again.
C.W.S.D.	-- 32°F to 100°F (0°C to 38°C)	65°F (18°C)	The temperature at which cold weather shutdown is activated. • "--" means Off (not used).
FAN MODE	AUTO / ON	AUTO	Selects whether or not the fan serving the A/C system operates constantly (ON) or operates only when there is a call for cooling (AUTO). FAN MODE displays only if the FAN option is selected for AUX.PUMP. See the AUX.PUMP menu option in this table.
A/C EQUIP CONFIG	Central A/C – Available only if no AQ158 controller is present on the network.		
ZONE	A-1 to D-16	A-1	Selects the desired zone.
A/C UNIT	NONE / 1	1	Defines which A/C compressor is associated with each zone thermostat. NOTE: At this time, only one zone of A/C can be handled by the AQ2000 controls. The options are 1 (if the zone uses an AQ1000TP2 programmable thermostat and can call for cooling), or NONE.
COOLING	ENABLE / DISABLE	ENABLE	Enables or disables the cooling functions of the zone's programmable thermostat (AQ1000TP2). NOTE: This item is always set to DISABLE when a non-programmable thermostat (AQ1000TN2) is used in the selected zone.
STATISTICS	Displays the summary and Zone relay activity (hours of operation or cycles since last reset)		
LAST DATA RESET	Max. 24,855 days (68 years)	2000 JAN 01	Date of last reset formatted as YYYY MMM DD.
RESET ALL DATA ARE YOU SURE?	YES / NO	NO	Selecting YES resets all of the summary and zone activity values to zero.
BOILER FIRE ACTIV	Maximum of 596,523 hours (68 years)	0H	Hours of operation of the relay since last reset.
BOILER PUMP ACTIV	Maximum of 596,523 hours (68 years)	0H	Hours of operation of the relay since last reset.
DHW PUMP ACTIV	Maximum of 596,523 hours (68 years)	0H	Hours of operation of the relay since last reset.
AUX PUMP ACTIV	Maximum of 596,523 hours (68 years)	0H	Hours of operation of the relay since last reset.
AUX OUT ACTIV	Maximum of 596,523 hours (68 years)	0H	Hours of operation of the relay since last reset.
ZONE A-1 ACTIV	Maximum of 596,523 hours (68 years)	0H	Hours of operation of the zone's relay (e.g., zone A-1) since last reset. The zone Identifier is A-1 through D-16.
ENVIRACOM	Not used - reserved for future use.		
Modules ID:	n/a	n/a	n/a

Table 6. Installer Menu – Equipment Setup. (Continued)

EQUIPMENT SETUP			
Menu Option	Range	Factory Default	Description
SAVE / RESTORE	Options for saving settings or restoring previously-saved settings		
RESTORE FACTORY	n/a	n/a	Selecting this option restores all settings to their factory defaults
RESTORE SETUP	n/a	n/a	Selecting this option restores all settings to those saved by the Installer with the SAVE SETUP operation. RESTORE SETUP is only displayed as a menu option if installer settings have previously been saved using the SAVE SETUP menu option. Only displays if the installer has previously saved his (non-factory default) settings using the SAVE SETUP feature.
SAVE SETUP	n/a	n/a	Enables installer to SAVE system settings after the system has been set up and is working well. Designed to facilitate quick recovery to proper system operation in the event of inadvertently changing control settings (e.g., tampering with the system settings by an inexperienced user).

^a Applies only to systems where the zones use an AQ1000TP2 stat and the A/C equipment is connected directly to (and controlled by) the AQ panel. Does not apply when A/C equipment is connected directly to a digital, non-communicating stat.

Table 7. Installer Menu – Test and Purge.

TEST and PURGE			
Menu Option	Range	Factory Default	Description
TEST OUTPUTS	Tests the individual system outputs to ensure correct operation.		
BOILER PUMP	ON / OFF	OFF	Energizes / de-energizes the line voltage terminals marked Boiler when switched to ON / OFF respectively.
AUX PUMP	ON / OFF (close / open)	OFF (open)	Closes / opens the line voltage rated dry contacts marked Aux. when switched to ON / OFF, respectively.
DHW PUMP	ON / OFF	OFF	Energizes / de-energizes the line voltage rated terminals marked DHW when switched to ON / OFF respectively.
BOILER T-T	ON / OFF (close / open)	OFF (open)	Closes / opens the low voltage rated dry contacts (terminals 17 and 18) marked Boiler T-T when switched to ON / OFF respectively.
AUX OUT	ON / OFF (close / open)	OFF (open)	Closes / opens the low voltage rated dry contacts (terminals 19 and 20) marked Aux. Out. when switched to ON / OFF respectively.
10V MOD	0V to 10V	0V	Produces voltage on the 10 Vdc low voltage terminals (17 and 18), according to the setting chosen (0V to 10V), in increments of 1V.
TEST SENSORS	Tests the supply, return and outdoor temperature sensors to ensure correct operation		
OUTDOOR	-- LO -58° to 212°F (-50° to 100°C) HI	n/a	Displays the temperature measured by the outdoor sensor. "--" means sensor is disconnected LO means temperature reading is below -55°F (-50°C) HI means temperature reading is above 212°F (100°C)
BOILER	-- LO -49° to 257°F (-45° to 125°C) HI	n/a	Displays the temperature measured by the boiler supply sensor. "--" means sensor is disconnected LO means temperature reading is below -49°F (-45°C) HI means temperature reading is above 257°F (125°C)
RETURN	-- LO -49° to 257°F (-45° to 125°C) HI	n/a	Displays the temperature measured by the Return/DHW sensor. "--" means sensor is disconnected LO means temperature reading is below -49°F (-45°C) HI means temperature reading is above 257°F (125°C) Does not display when the RETURN/DHW sensor is configured as a DHW sensor.
DHW	-- LO -49° to 257°F (-45° to 125°C) HI	n/a	Displays the temperature measured by the sensor configured for DHW (the sensor wired to the Return/DHW terminals 5 and 6). "--" means sensor is disconnected LO means temperature reading is below -49°F (-45°C) HI means temperature reading is above 257°F (125°C) Displays only when the sensor is configured as a DHW sensor.

Table 7. Installer Menu – Test and Purge. (Continued)

TEST and PURGE			
Menu Option	Range	Factory Default	Description
TEST ZONES	Tests the zone equipment individually, or sequentially, to ensure correct operation		
ALL ZONES	n/a	OFF	Sequentially energizes / de-energizes all zones connected to the AQUATROL network. <ul style="list-style-type: none"> • 0 displays when the Control Module has confirmation that the pump/valve is closed. • 1 displays when the Control Module has confirmation that the pump/valve is fully open. In the case of pump zoning, the 1 displays no more than 5 seconds after the activation of the relay. In the case of valve zoning, the 1 displays either when the zone valve operating time (defined in EQUIPMENT SETUP > ZONING > ZONE VALVES TIME TO OPEN) has elapsed (AQ15540B) or when the valve's end switch is closed (AQ15740B).
ZONE A-1 0 ... ZONE A-16 0	0 / 1	0	Energizes / de-energizes each zone individually. <ul style="list-style-type: none"> • 0 displays when the Control Module has confirmation that the pump/valve is closed. • 1 displays when the Control Module has confirmation that the pump/valve is fully open.
PURGE	Purges all (or individual) zones for the period of time selected in the PURGE TIME menu option		
PURGE TIME	1 to 30 (minutes)	5:00 (minutes)	Duration of purge for each zone selected.
PURGE	ALL / DHW / ZONE A-1 ... ZONE D-16	ALL	Installer selects which zones to purge (all, only DHW, or individual zones).
START PURGE	START PURGE / STOP PURGE	n/a	Starts and Stops purge operation.
PURGE OFF	WAIT VALVE / PURGE COMPLETED	n/a	Indicates status of the system during a Purge operation. Displays only if START PURGE is active.

Menu Structure

This section illustrates the complete menu structure for:

- User Menu
- Installer Menu (see Fig. 25 on page 39)

User Menu Structure

Press the Menu button on the keypad to display the User Menu. Fig. 24 illustrates all possible User Menu selections.

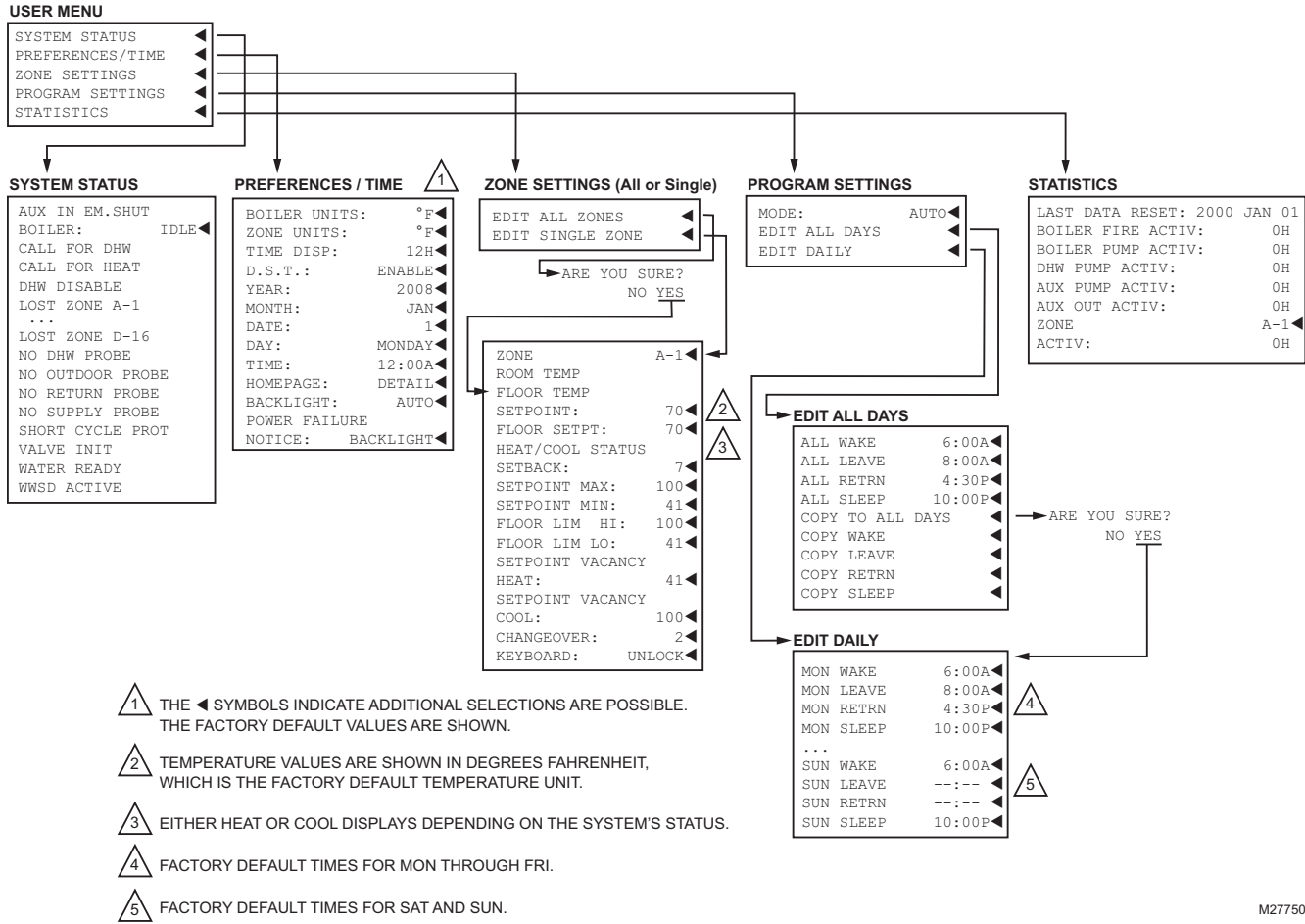


Fig. 24. User Menu Structure.

M27750

Installer Menu Structure

To display the Installer Menu, go to the Home Page, press and hold the OK button for 3 seconds until the message INSTALLER MODE – ARE YOU SURE? displays. Select YES and press the OK button. Fig. 25 and Fig. 26 illustrate all possible Installer Menu selections.

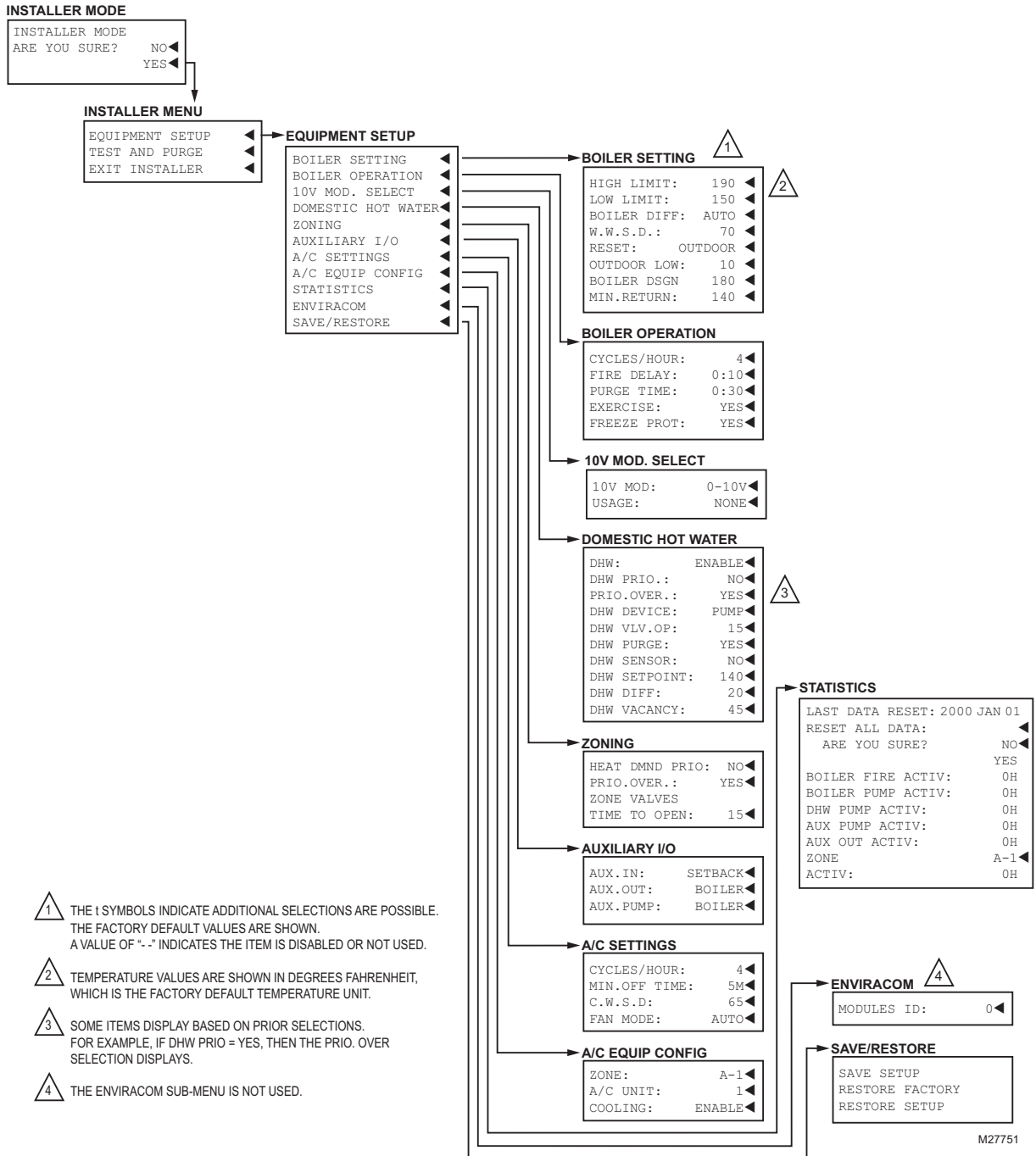


Fig. 25. Installer Menu Structure. – Equipment Setup.

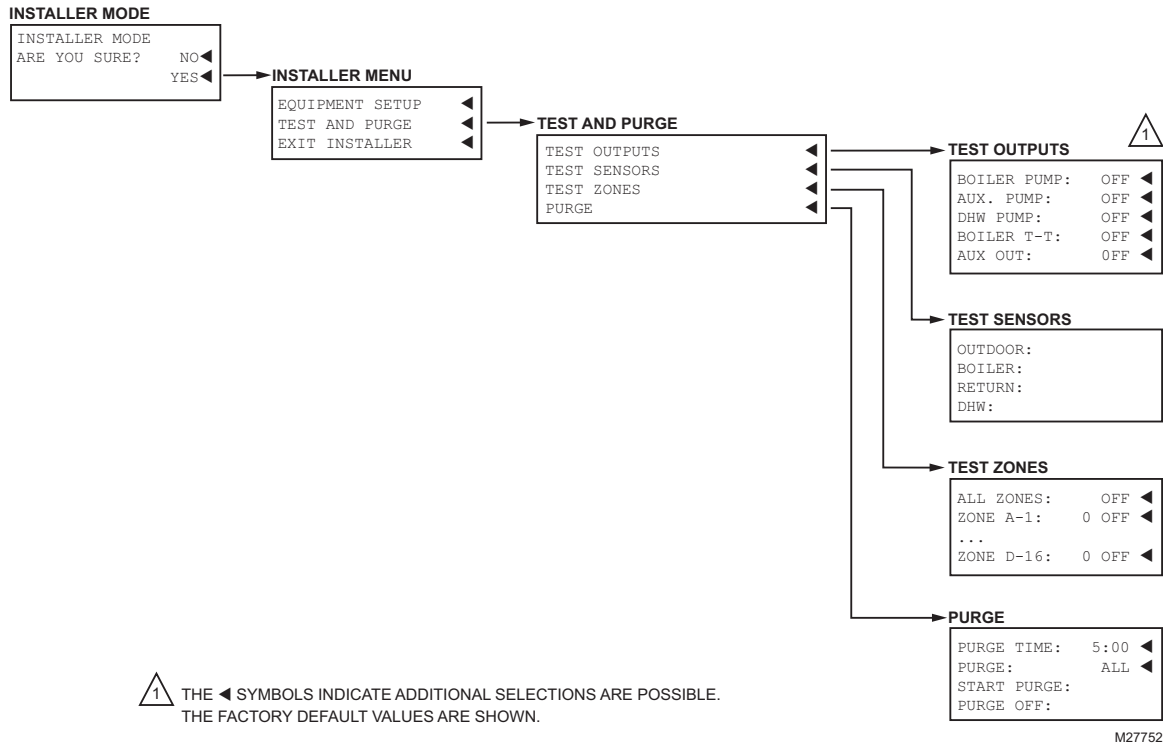


Fig. 26. Installer Menu Structure. – Test and Purge.

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AQ252 Universal Injection/Mixing Boiler Reset Control Panels

PRODUCT DATA



FEATURES

The AQ252 family have the following features:

- Controls one boiler loop and one mixed temperature loop.
- Outdoor temperature compensation (reset), or Load reset based on indoor temperature feedback, or none.
- Zone synchronization through Zone of Greatest Demand control.
- Domestic hot water (DHW) priority and priority override protection.
- Customizable control settings and schedules allow for greater level of control and comfort.
- Use of variable speed injection pump or motorized mixing valve for mixed temperature loop control.
- Central set-back schedules available.
- Zoning Control for up to four, single-stage or two, two-stage zones as shipped; can be expanded to a total of 16 zones with AQ255 or AQ257 expansion zoning panels, and up to 64 zones by using up to three AQ254 Add-a-Temperature expansion panels and additional expansion zoning modules.

PRODUCT DESCRIPTION

The AQ252 family of AQUATROL® Universal Injection/Mixing Boiler Reset Controls provides simplified, energy-efficient outdoor temperature compensated control of a high-temperature boiler loop and a lower temperature mixed loop in residential hydronic heating systems. The AQ252 easily converts a single-zone heating system into a room-by-room comfort control system, or upgrades a basic, relay-logic zoning system to intelligent Zone of Greatest Demand control, with outdoor reset for increased energy efficiency with reduced boiler cycling. The boiler controls of the AQ252 can ensure ample supply of hot water for both space heating and priority generation of domestic hot water for bathing, dishes and laundry.

IMPORTANT

To ensure correct installation and proper operation of the control, perform the 7 installation steps in the order numbered in the "Contents" below.

	Contents
Specifications	2
1 Installation Preparation	3
2 Mounting	5
3 Wiring Procedure	7
4 Program and Configure the Control Panel	15
5 Test and Check Out the Installation	19
6 Purge Air from all System and Zone Piping	20
7 Document and Keep a record of all System Settings	20
Troubleshooting	21
Appendix	24
User Menu	24
Installer Menu	31



- Use with digital non-communicating thermostats or AQ1000 2-wire polarity insensitive communicating thermostats. **Note: When using non-communicating thermostats, the following features are not available:**
 - Outdoor temperature is not displayed on the thermostat.
 - Time clock on AQ1000TP2 will not synchronize with the Control Module.
 - Central programming, vacancy and setback schedules of AQ1000 from AQ panel are not enabled.
 - AQ panel will not display individual zone temperatures.
 - Individual zone freeze protection.
- Allows display of outdoor temperature on all AQ1000 thermostats when used with an AQ12C10 outdoor sensor (included).
- Intuitive programming interface (can be programmed at your shop and taken to the job site “ready-to-install”).
- Automated test and purge feature for quick start-up and simplified troubleshooting.
- Boiler freeze protection and single-zone freeze protection.
- Pump/valve exercise.
- Boiler short cycling protection, post purge, and shock prevention from cold water returning to boiler.
- Line or low-voltage output for zoning equipment (pumps or valves).
- Integral 38 VA transformer with self resetting electronic fuse.
- 4 hour power supply (super capacitor) retains day and time settings during power outage and a non-volatile EPROM memory retains program settings during power outage.

SPECIFICATIONS

The AQ252 Control Panels and corresponding attached equipment are listed in Table 1.

Table 1. AQ252 Series Control Panel Models.

Control Panel	Corresponding Control Module	Corresponding Zoning Module
AQ25242B	AQ15200B	AQ15540B
AQ25244B	AQ15200B	AQ15740B

Application: Controls one boiler and one mixed temperature loop (using either a variable-speed injection pump or motorized valve mixing), as well as domestic hot water (DHW) management and zoning operation in a hydronic zoning system.

Power and Electrical Ratings:

Power Supply: 120 Vac / 60Hz

Auxiliary Pump Output Rating: Dry contact output, 120/250 Vac 5A, 1/3 HP

Auxiliary Low Voltage Output Rating: 24 Vac, 0.5A, 12VA

Boiler (T-T) Output Rating: 24 Vac, 0.5A, 12VA

Boiler Pump (C1-C2) Output Rating: 120 Vac 5A, 1/3HP

DHW Pump/Valve Output Rating: 120 Vac 5A, 1/3HP

Secondary Pump Output Rating: 120 Vac 5A, 1/3HP

Variable-Speed Injection Pump Output: Triac modulated; 120 Vac 2.1A, 1/6HP

B–B Communication Bus Terminals: Low voltage, Class II, 2-wire polarity-insensitive, digital communicating link to other Control or Zoning modules.

Electrical Connections (Line Voltage): Wire-clamp screw terminals; maximum 2 x 14 AWG each on line voltage terminals

Environmental Ratings:

Control and Zoning Panel Temperature Rating: 32°F to 130°F (0°C to 55°C)

Operating Humidity Range (% RH): 5 to 90% RH, non-condensing

ORDERING INFORMATION

When purchasing replacement and modernization products from your TRADELINE® wholesaler or distributor, refer to the TRADELINE® Catalog or price sheets for complete ordering number.

If you have additional questions, need further information, or would like to comment on our products or services, please write or phone:

1. Your local Honeywell Automation and Control Products Sales Office (check white pages of your phone directory).
2. Honeywell Customer Care
1885 Douglas Drive North
Minneapolis, Minnesota 55422-4386

In Canada—Honeywell Limited/Honeywell Limitée, 35 Dynamic Drive, Toronto, Ontario M1V 4Z9.

International Sales and Service Offices in all principal cities of the world. Manufacturing in Australia, Canada, Finland, France, Germany, Japan, Mexico, Netherlands, Spain, Taiwan, United Kingdom, U.S.A.

Temperature Ratings:

- Boiler Design Temperature:** 80°F to 210°F (26°C to 99°C)
- Boiler Differential:** 2°F to 41°F (1°C to 23°C), or Auto
- Boiler (Supply) Minimum Control Temperature:** OFF, 59°F to 180°F (OFF, 15°C to 82°C)
- Boiler (Supply) Maximum Control Temperature:** OFF, 120°F to 225°F (OFF, 49°C to 107°C)
- Outdoor Low Design Control Temperature:** -60°F to 32°F (-51°C to 0°C)
- Return Minimum Control Temperature:** OFF, 80°F to 180°F (OFF, 27°C to 82°C)
- Secondary Loop Mixing (Supply) Design Temp Range:** 70°F to 210°F (21°C to 99°C)
- Secondary Loop Mixing (Supply) Min. Control Temp Range:** OFF, 35°F to 150°F (OFF, 2°C to 66°C)
- Secondary Loop Mixing (Supply) Max. Control Temp Range:** OFF, 80°F to 210°F (OFF, 27°C to 99°C)
- Sensor Temperature Rating:** -58°F to 230°F (-50°C to 110°C)
- Warm Weather Shut Down (WWSD) Temperature:** OFF, 35°F to 100°F (OFF, 1°C to 38°C)
- Cold Weather Shut Down (CWSD) Temperature:** OFF, 32°F to 100°F (OFF, 0°C to 38°C)

Inputs/Outputs:

- Auxiliary (Demand) Input:** External dry contacts connection only
- DHW Demand Input:** External dry contacts connection only
- Heat Demand (Thermostat R-W) Input:** External dry contacts connection only

Modulating Output:)-10 or 2-10 Vdc for variable speed pump or modulating boiler

Mixing Valve (Com, O, C): 324 Vac, 0.5A, 12VA

R-C Input (on Control and Zoning Modules): 24 Vac Class II

R-C Output (on transformer): 38 VA, 24 Vac Class II

Interface and Timings:

User Interface (Setting, Programming): LCD Display and a 7-button keypad

Setback Program: 7 day, up to 2 setback periods/day.

Boiler Heat Post Purge: Off, 10 seconds to 30 minutes (factory default is 30 seconds)

Pump/Valve exercise: 30 seconds per 2 weeks of space heating inactivity

Thermostat Compatibility: Digital non-communicating thermostats and/or AQ1000 Series 2-wire communicating thermostats

Supply/Return/Secondary (Mixed) Loop Sensor: 10K ohm NTC thermistor at 77°F (25°C) ± 0.5°F (±0.3°C). Lead length: 10 ft. (3.0 m); up to 500 ft. (150 m) using 18 AWG or larger wire, beta=3892.

Outdoor Sensor: 10K ohm NTC thermistor at 77°F (25°C) ± 0.5°F (±0.3°C). Lead length: 15 ft. (4.6 m); up to 500 ft. (150 m) using 18 AWG or larger wire, beta=3892

Dimensions (HxWxD): 8 x 16 1/2 x 3 3/8 in. (20.3 x 42 x 8.5 cm) approximate

Weight: 4.9 lb. (2.3 kg)

Approvals: Canadian Standards Association: Certified, File No. LR76030

1 INSTALLATION PREPARATION

NOTES: *Throughout these instructions, the following terminology conventions are used:*

- **AQ155** refers to the AQ15540B Zoning Module.
- **AQ157** refers to the AQ15740B Zoning Module.
- **AQ1520** refers to the AQ15200B Control Module within an AQ252 Series Control Panel.
- **AQ252** refers to the AQ25242B and AQ25244B Control Panels. Where there are specific instructions or details relating to the -42B or -44B Control Panels, the full model number (i.e., AQ25244B) is used.
- **AQ255** refers to all of the AQ25542B, AQ25582B and AQ25742B Expansion Zoning Panels.
- **AQ257** refers to the AQ25744B Expansion Zoning Panel. Where there are specific instructions or details relating to the -542B, -582B, -742B, or -744B Expansion Zoning Panels, the full model number (i.e., AQ25744B) is used.
- **Control Module** refers to the component within an AQ252 Series Control Panel that performs the master control operations. See Table 1 on page 2 for specific models.
- **Control Panel** refers to an assembled product, consisting of a transformer, Control Module and Zoning Module, all contained within an AQ2000 panel enclosure.

- **Expansion Zoning Panel** refers to an assembled product, consisting of a Zoning Module and (if applicable) a transformer, contained within an AQ2000 panel enclosure. Expansion Zoning Panels are available in either 4-zone or 8-zone configurations.
- **Zoning Module** refers to the component within the AQ252 Series Control Panel that controls zoning operations.

When Installing this Product...

1. **Read these instructions carefully. Failure to follow them could damage the product or cause a hazardous condition.**
2. **Check the ratings given in the instructions and on the product to make sure the product is suitable for the application.**
3. **Installers must be trained, experienced, and licensed service technicians.**
4. **Follow local codes for installation and application.**
5. **After installation is complete, check out the product operation as printed in these instructions.**

WARNING

Risk of electrical shock.

Can cause severe injury, property damage or death.
Disconnect power supply before installation and before servicing.

Check That You Have All the Necessary Equipment For a Successful Installation

- AQ2000 Series components:
 - AQ252 Control Panel
 - AQ Expansion Zoning Panels (if more than four space heating zones in the system)
 - Digital thermostats (one for every space heating zone being controlled)
- Boiler supply and return temperature sensors and secondary loop sensor (included with the AQ252 Control Panel)
- Outdoor temperature sensor (included with AQ252 Control Panel)
- Low voltage thermostat wire
- Zoning equipment (zone valves or pumps)

Read All Instructions Carefully Before Proceeding

The AQ252 Control Panels are a part of a totally new family of hydronic controls. And although they - and other AQ2000 system components - are very easy to install and operate, they are different than other hydronic controls that you have previously installed. So take a moment to read through this quick installation guide before beginning the installation. Failure to follow them could damage the product or cause a hazardous condition.

Familiarize Yourself With the AQ252 Control Panel Layout

Refer to Fig. 1. All AQ252 Control Panels consist of three functional components:

1. AQ10X38 transformer (power supply module), which connects to 120 Vac power and supplies 24 Vac power to the Control Module and Zoning Modules
2. AQ15200B boiler/DHW Control Module, which controls the boiler and domestic hot water (DHW) functions, mixing operation for the secondary loop, as well as coordinating the overall operation of the hydronic system.

3. One of two different 4-zone Zoning Modules:
 - AQ15740B (part of the AQ25244B Control Panel) for zoning with 24 Vac zone valves with end switches.
 - AQ15540B (part of the AQ25242B Control Panel) for zoning with either line voltage circulators or 24 Vac zone valves without end switches.

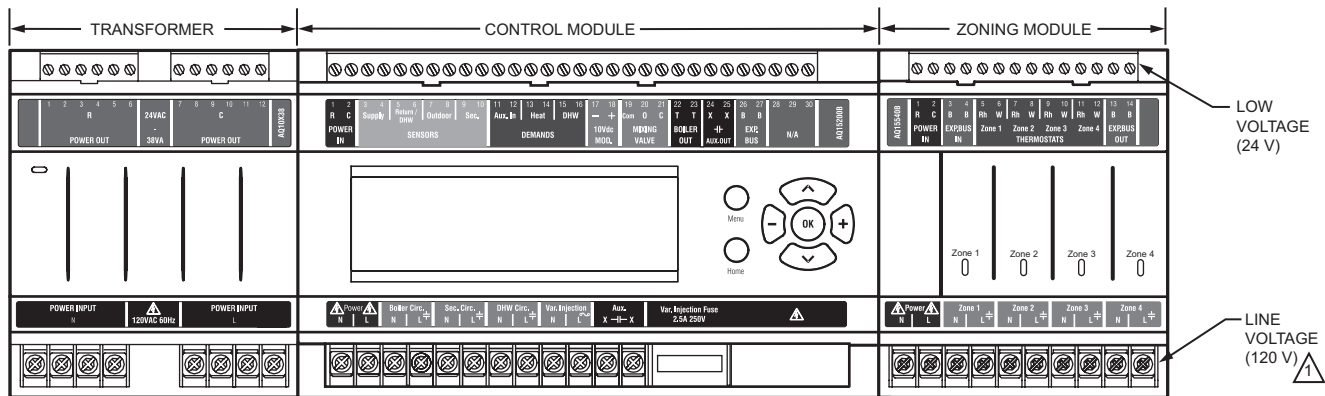
AQ252 Control Panels can control a maximum of 16 zones by connecting additional Expansion Zoning Panels to the AQ252 Control Panel. Each Expansion Zoning Panel is configured with its own bank of DIP switches, located in the left-most section of each Zoning Module. To expand the capacity of an AQ252 Control Module beyond 16 zones, an AQ254 Add-A-Temperature Expansion Control Panel is required. The hydronic system can be expanded by 16 zones for each AQ254 connected to the AQ2000 network. A maximum of three (3) AQ254 Panels may be connected to an existing AQ2000 Control Panel for a maximum of 64 zones connected on the AQUATROL network.

In general, the top terminals of the AQ2000 Series components carry low voltage (24 Vac) power and the bottom terminals carry line voltage (120 Vac) power. This is illustrated in Fig. 1. The two exceptions to this are:

1. AQ15740B Zoning Module for use with zone valves with end switches.
2. AQ15540B Zoning Module when used with low voltage zone valves without end switches.

For these the two exceptions, the bottom terminals of the Transformer and Control Module carry line voltage (120 Vac), but the bottom terminals of the Zoning Module will carry low voltage (24 Vac) power.

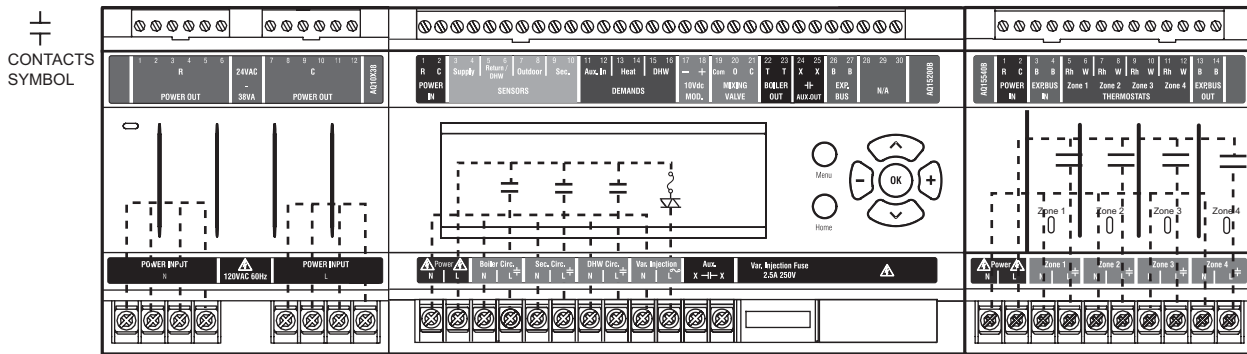
The powered terminals on the bottom of the AQ2000 Series Control Modules and Zoning Modules are connected internally, as shown in Fig. 2 on page 5. The voltage supplied to the N and L terminals is also available at the adjacent terminal pairs when the hot (\pm) relays are switched.



⚠ FOR THE AQ25242B TERMINALS CAN BE LINE VOLTAGE (IF USED WITH PUMPS) OR LOW VOLTAGE (IF USED WITH ZONE VALVES)

M27682A

Fig. 1. AQ252 Control Panel layout (AQ25242B shown).



M27683A

Fig. 2. Internal wiring for AQ2000 Series components line voltage relays.

2 MOUNTING

This section describes how to mount the Control Panel, Expansion Zoning Panels, and the Thermostats.

Mount AQ252 Control Panel

Mount the control panel on the wall:

1. Use the template supplied with the AQ252 Series Control Panel to mark mounting holes for panels.
2. Install two top screws, mount the panel, and install the two lower screws.

Mount Expansion Zoning Panel(s)

If there are Expansion Zoning Panels to install, mount them to the wall now:

1. Remove wire channel plugs from the AQ252 Control Panel and any Expansion Zoning Panels (see Fig. 3).
2. Mount Expansion Zoning Panel on the right-hand end of the AQ252 Control Panel. Install two top screws of the Expansion Zoning Panel, ensuring it is level with the adjoining Control Panel, and install two lower screws.
3. Reverse wire channel plugs and re-insert them into their slot, to form a wiring channel between the Control Panel and the Expansion Zoning Panel (see Fig. 3) and to connect the two panels together.
4. Repeat steps 1–3 for any additional Expansion Zoning Panels.

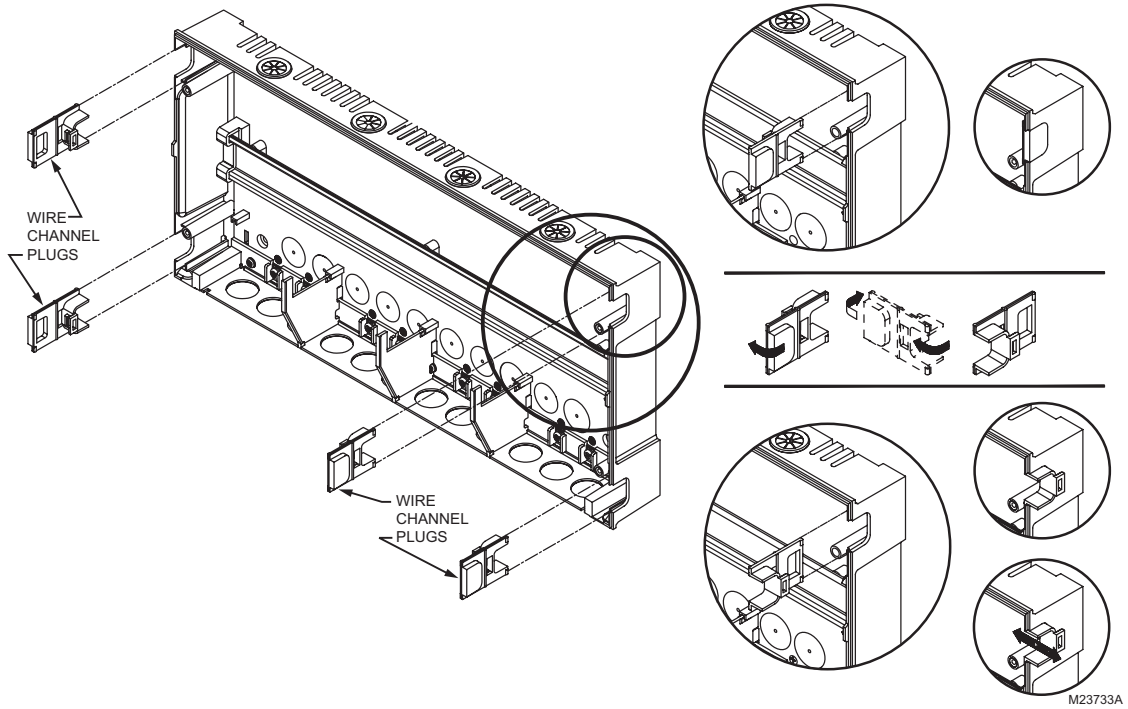


Fig. 3. Orientation of wire channel plugs for creating pass-through wire channel and for joining Control Panel to Expansion Zoning Panels.

Mount and Wire Thermostats in the Zones

Install the thermostats on the walls in the zones that are to be controlled by the AQ252 Control Panel.

When using AQ1000 thermostats refer to the installation instructions (form #69-2005) included with the AQ1000 thermostats.

If not done already, run low voltage thermostat wire (24 gauge or heavier) from the thermostats back to the Zoning Modules connected to the AQ252 Control Panel.

NOTES: If not otherwise specified, low voltage wiring should be run with 18 gauge thermostat wire and line voltage wiring should be run with 14 gauge wire. AQUATROL® line voltage screw terminals are only approved for use with 22 to 12 gauge copper conductors.

Several wiring diagrams are included in this document. For additional information, refer to <http://customer.honeywell.com> or your local distributor.

3 WIRING PROCEDURE

The AQ252 Control Panel is pre-wired at the factory, making for faster installation.

For all models, the low voltage output terminals located at the top of the transformer secondary are wired to the R and C input terminals of the Control Module, as well as the R and C inputs of the Zoning Module. The B-B Exp. Bus terminals (26 and 27) of the Control Module are wired to the B-B Exp. Bus IN terminals of the Zoning Module.

Beginning with the top left of Fig. 4 and moving clockwise around the panel, wire components to the AQ252 Control Panel and Expansion Zoning Panels (if installed) in the following six steps:

- “Step 1 – Transformer Wiring”
- “Step 2 – Control Panel Wiring”
- “Step 3 – Thermostats Wiring” on page 9
- “Step 4 – Zoning Equipment Wiring” on page 11
- “Step 5 – Line Voltage System Outputs” on page 13
- “Step 6 – Connection To Line Voltage Power” on page 14

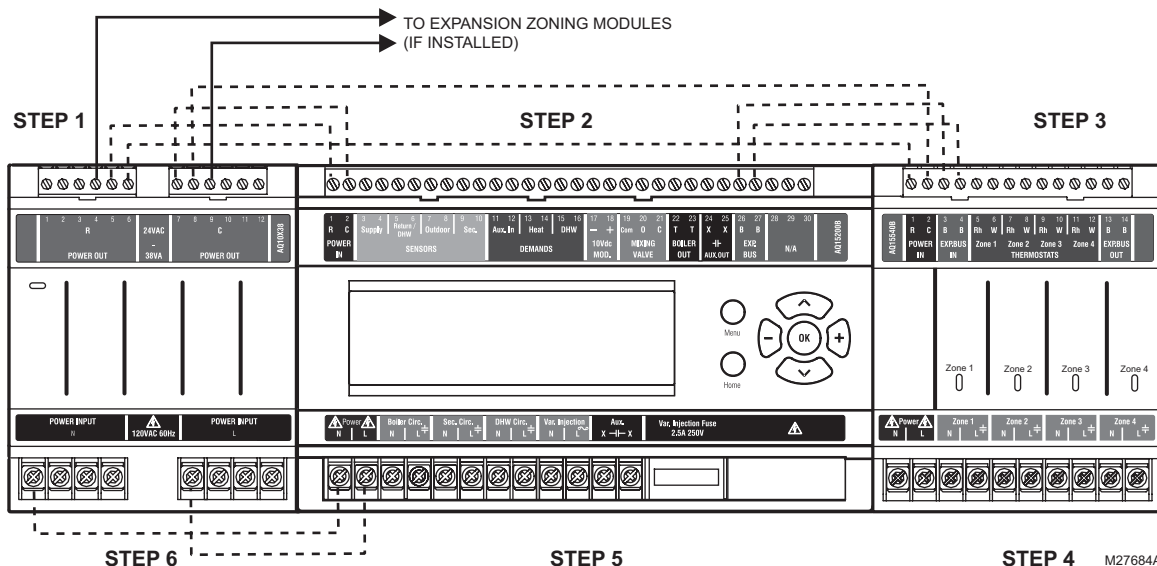


Fig. 4. Wiring sequence.

Step 1 – Transformer Wiring

Factory pre-wiring of the Control Panels is shown as dotted lines in Fig. 4.

In addition to the pre-wiring, run low voltage jumper wires from available R and C terminals on the secondary of the transformer to the R and C terminals of any Expansion Zoning Panel.

Step 2 – Control Panel Wiring

Wire the Temperature Sensors, System Demands, Low Voltage Outputs, and Communication Bus (Refer to Fig. 5 on page 8 for wiring terminals on the top of the AQ252):

- “Temperature Sensor Wiring” on page 8
- “System Demands Wiring” on page 9
- “Low Voltage Outputs Wiring” on page 9
- “Communication Bus Wiring” on page 10

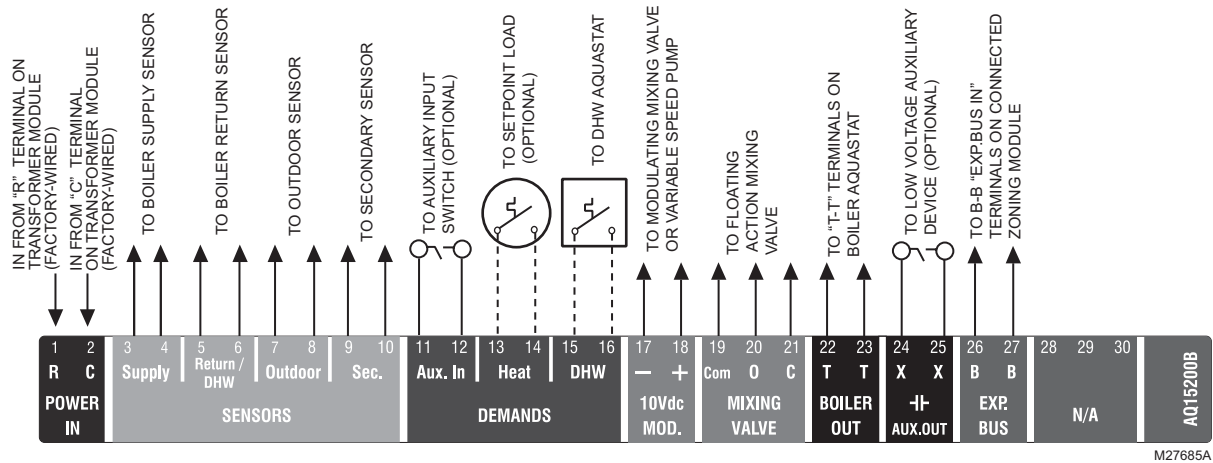


Fig. 5. Low voltage wiring for the AQ15200B Control Module.

Temperature Sensor Wiring

Connect the lead wires of each sensor to the corresponding terminals on top of the AQ1520 Control Module. See Fig. 5.

The Boiler Supply, Return and Secondary loop sensors can be installed either as strap-on sensors or inserted into an immersion well that is packed with thermally-conductive paste.

BOILER SUPPLY AND RETURN SENSORS.

Both the Supply and Return Sensors should be installed on the supply and return piping of the boiler for proper operation of the AQ252 Control Panel. Even if the AQ252 is connected to a modulating condensing boiler with its own supply and/or return sensors, the AQ252's sensors should still be installed for the control to operate.

The Boiler Supply water sensor should be installed on the supply piping close to the exit port of the boiler, using one of the AQ12C11 strap-on sensors supplied with the AQ252. See Fig. 6 on page 8.

The Boiler Return sensor should be installed on the return piping as close to the entrance port to the boiler as practical, using the other AQ12C11 strap-on sensor supplied with the AQ252.

The correct location is one that will measure the temperature of all combined sources of water returning back to the boiler.

Insulate strap-on sensors with pipe wrap to ensure accurate boiler temperature sensing.

The Boiler Supply and Return water sensors come with 10 ft. (3m) of wire to minimize the need for splicing.

SECONDARY (MIXED) LOOP SUPPLY SENSOR

The secondary sensor should be installed on the secondary (mixed) water piping, far enough downstream of the mixing device that the return water from the mixed loop and the boiler loop water are sufficiently well mixed, but before it flows through a branch leading to a zoning pump, zoning valve or manifold. The sensor used for the secondary loop is the same type of sensor (AQ12C11) as the Boiler Supply and Return sensors. See Fig. 6.

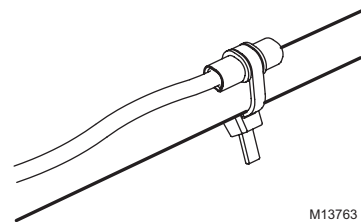


Fig. 6. Strap-on temperature sensor installation.

OUTDOOR SENSOR

The outdoor sensor should be located:

- in a shady location out of direct sunlight
- at least three feet from dryer, bathroom, or other vents
- above the expected snow line where ice and debris cannot cover it
- on the north side of the building.

See Fig. 7 on page 9 for typical placement. Outdoor sensor comes with 10 ft. (3m) of wire to facilitate splicing the sensor on the interior of the building. Alternatively, if the building is equipped with a continuous fresh air supply using, for example, an air-to-air heat exchanger, the outdoor sensor may be installed in the insulated portion of the ventilation intake duct, taking care not to expose the sensor to direct or indirect sunlight.



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Fig. 7. Outdoor temperature sensor installation.

IMPORTANT

Do not run sensor wires parallel, or close, to telephone, Ethernet, or power cables. Cross all power, Ethernet, and telephone wiring at right angles.

If sensor wires are located in an area with strong sources of electromagnetic interference, or EMI, (e.g., if sensor wires are run in the same electrical chase as line voltage wiring) use twisted pair, shielded cable, or run wires in a grounded metal conduit.

This is important because the calculated temperature - based on the sensor's resistance reading - can be distorted by high EMI, potentially causing the AQ252 to not operate properly.

If using shielded cable or conduit, connect the shield wire to earth ground only at the AQ252 panel. Do not ground the shield or conduit at any other location or electromagnetic shielding will be ineffective. If shielded cable is used, Honeywell recommends the use of shielded cable with a continuous ground plane, such as foil, with an integral drain wire for bonding to earth ground.

System Demands Wiring

Additional information about settings for the various System Demands is discussed in Table 6 on page 32.

AUX-IN

If the optional Aux In. contacts (terminals 11 and 12) will be used, wire them now. These inputs are powered with 24 Vdc and must connect only to a dry closure contact (unpowered switch).

The Aux-In contact closure sets the system into a specific state, as determined by the installer setup using the EQUIPMENT SETUP > AUXILIARY I/O sub-menu (see Fig. 25 on page 41).

HEAT DEMAND

If the optional Heat Demand (terminals 13 and 14) will be used, wire them to a system setpoint demand (dry contact closure), such as a pool or spa Aquastat®.

The HEAT contact closure drives the system to control either at the Reset temperature or the Setpoint temperature, as determined by the installer setup using the EQUIPMENT SETUP > ZONING > HEAT DMND selection (see Fig. 25 on page 41). Heat Demand priority allows only heat for the first 30 minutes of a call for heat and then allows the space heating needs to be added in for the next 30 minutes. This cycle continues until the call for heat is satisfied.

DOMESTIC HOT WATER

Wire the DHW (terminals 15 and 16) to the Aquastat or thermostat on the domestic hot water tank.

DHW priority allows only DHW heat for the first 30 minutes of a call for DHW and then allows the space heating needs to be added in for the next 30 minutes. This cycle continues until the call for DHW is satisfied.

NOTE: If the AQ252 is connected to a modulating condensing boiler with built-in DHW management, the DHW tank's Aquastat should be connected to the AQ252's DHW (terminals 15 and 16). The AQ252's Aux. Out (terminals 24 and 25) should be wired to the boiler's DHW input terminals to the AQ252.

Low Voltage Outputs Wiring

10 VDC

The 10 Vdc terminals (17 and 18) of the AQ252 produce a modulating (0-10 Vdc or 2-10 Vdc) signal that can drive a modulating boiler's combustion fan or a modulating mixing device, such as a motorized mixing valve or a variable-speed injection pump.

Boiler Signal: If the AQ252 panel is configured to send a 0-10V or 2-10V signal to a modulating/condensing boiler, connect the AQ252's modulating output terminals (17 and 18) to the modulating signal input on the boiler control.

Secondary Loop Control: If a 0-10V or 2-10V driven variable speed injection pump or a modulating mixing valve is used for controlling the temperature of the secondary loop, wire the mixing device to the - and + terminals (17 and 18) of the AQ252.

FLOATING ACTION OUTPUT

Floating action valve: If a floating action valve is used for controlling the temperature of the secondary (mixed) loop, wire the Common (Com), Open (O), and Close (C) (terminals 19, 20, and 21) of the AQ252 to the corresponding terminals on the mixing valve's actuator.

BOILER

Wire the Boiler dry contact output (terminals 22 and 23) to the T-T terminals on the boiler Aquastat or the boiler's control panel. See Fig. 15 on page 13 for wiring connections to a typical boiler Aquastat.

These contacts are made any time the system has a request for boiler operation, unless the water supply temperature is above the target temp at that time. If this occurs, the system primary boiler pump would come on.

AUX-OUT

If the Auxiliary Out low voltage output will be used, wire it now to the device (e.g., A/C compressor) that will be switched when the Auxiliary Out's dry contacts close. Wire the hot leg of the device through the Aux. Out connection (terminals 24 and 25).

The Aux-Out relay contacts close to correspond with an action, as determined by the installer setup using the EQUIPMENT SETUP > AUXILIARY I/O sub-menu (see Fig. 25 on page 41).

NOTE: The Aux. Out contacts are rated for low voltage devices only.

Communication Bus Wiring

All AQ2000 components communicate with each other on the AQUATROL network using communication bus wiring. This wiring must connect all AQ2000 components. Otherwise, features that depend on this networked communication (e.g., zone synchronization, outdoor temperature displayed on thermostats, etc.) will not function.

The communication bus wiring is polarity insensitive. The installer does not need to worry about a +ve or -ve orientation of the wires. If there are two wires connected between the B-B Bus Exp. In on one module and B-B Bus Exp. Out on another module, there will be communication. See example in Fig. 8 for how this wiring is to be installed.

The communication bus connections for AQ252 Control Panels are pre-wired at the factory.

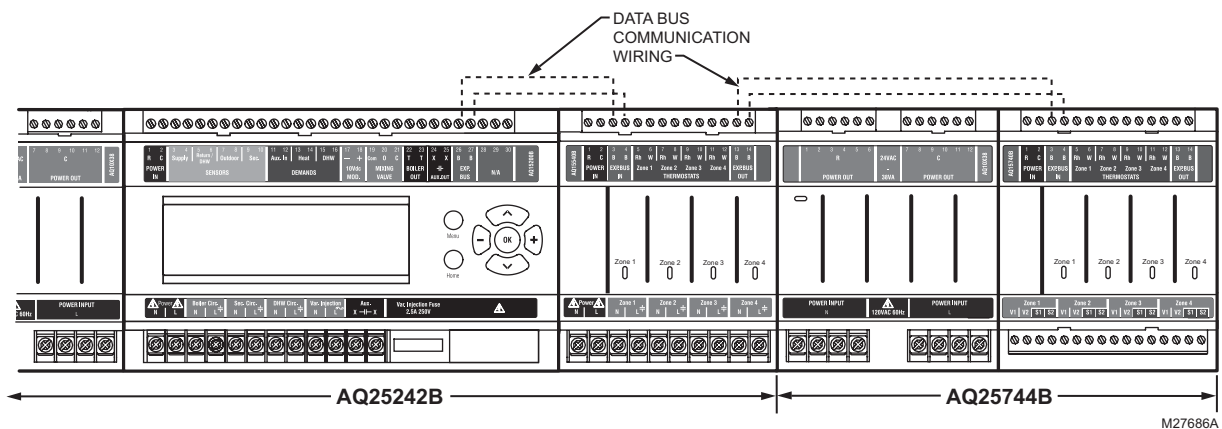


Fig. 8. Wiring for communication bus.

Step 3 – Thermostats Wiring

NOTE: The new AQ2000 panels will work with either digital (electronic) non-communicating thermostats or AQ1000 communicating thermostats.

1. Using low voltage thermostat wire, connect one thermostat from each zone to the corresponding THERMOSTATS Zone X inputs on top of the Zoning Module (see Fig. 9).
2. If there are additional zones (on Expansion Zoning Panels) connected to this Zoning Module, run low voltage thermostat wiring from the B-B Exp. Bus Out connection (terminals 13 and 14) of the Zoning Module to the B-B Exp. Bus. In connection (terminals 3 and 4) on the Expansion Zoning Panel.

IMPORTANT

Do not run thermostat wires parallel, or close, to telephone, Ethernet, or power cables. Cross all power, Ethernet, and telephone wiring at right angles.

If thermostat wires are located in an area with strong sources of electromagnetic interference, or EMI, (e.g., if thermostat wires are run in the same electrical chase as line voltage wiring) use twisted pair, shielded cable, or run wires in a grounded metal conduit.

This is important, because the AQ1000 thermostats are communicating thermostats which send and received data via the two wires connecting them to the Zoning Module. This data can be distorted by the EMI, potentially causing the AQ252 to not operate properly.

3. Run low voltage thermostat wiring from the R and C output terminals on the secondary of the AQ252 Control Panel's transformer to the R and C input terminals on the Expansion Zoning Panel. As an alternative, you can run low voltage thermostat wiring from the R and C terminals on the Zoning Module to the R and C terminals on the Expansion Zoning Panel.

the top of the Control Panel, and down through the wiring channel on the right side of the panel and over to the R and C terminals on the bottom of the Zoning Module.

IMPORTANT

If low voltage zone valves are used with the AQ25242B Control Panel, the supplied Low Voltage Output sticker (shown in Fig. 11) **must** be applied over the line voltage output sticker (see Fig. 10) that is already attached to the Zoning Module.

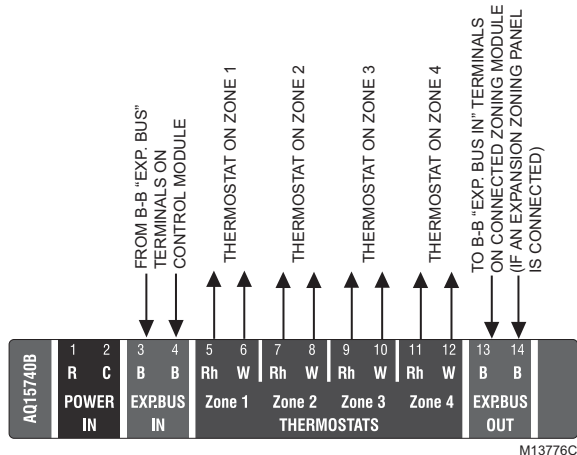


Fig. 9. Connecting thermostats.

Step 4 – Zoning Equipment Wiring

Because the Zoning Module of the AQ25242B Control Panel can be used with either line voltage pumps or valves, or low voltage zone valves (with or without end switches), field installed wiring of the correct voltage needs to be connected to the zoning equipment terminals on the bottom left portion of the Zoning Module.

Line Voltage – Circulators or Zone Valves

Refer to Fig. 10. Remove the plastic wiring barrier that is located in the bottom wiring channel between the AQ15200B Control Module and the Zoning Module. Run jumper wires from the N and L terminals on the bottom of the AQ252 Control Panel's transformer, through the wiring channel across the bottom of the Control Panel, and to the corresponding N and L terminals of the Zoning Module.

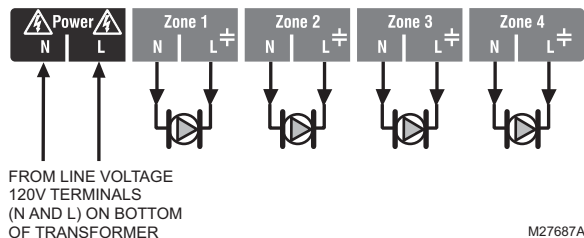


Fig. 10. Wiring an AQ15540B Zoning Module for use with line voltage circulators.

Low Voltage – Zone Valves With or Without End Switches

Wire using step 1 for zone valves without end switches, or use step 2 for zone valves with end switches:

1. Low voltage zone valves without end switches: Using Fig. 12 on page 11 as a guide, run jumper wires from the R and C terminals on the secondary of the AQ252's transformer, through the wiring channel across

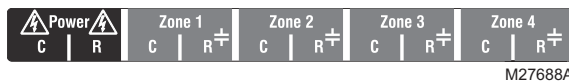


Fig. 11. Low voltage output sticker.

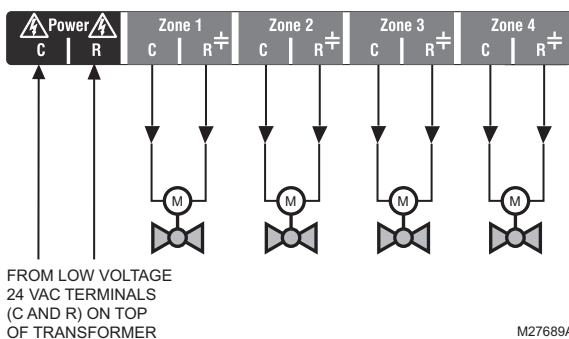


Fig. 12. Wiring an AQ15540B Zoning Module for use with low voltage zone valves without end switches.

2. Low voltage zone valves with end switches: See Fig. 13. 24 Vac power is pre-wired between the transformer secondary at the top left of the AQ252's transformer and the AQ15740B Zoning Module. No field wiring is required.

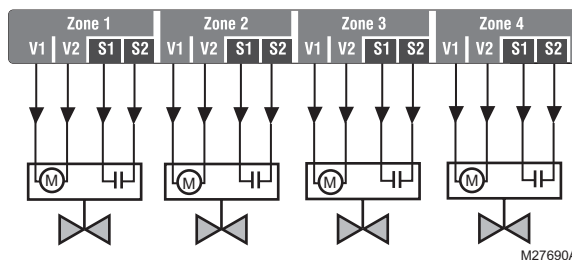


Fig. 13. Wiring an AQ15740B Zoning Module for use with low voltage zone valves with end switches.

NOTE: When wiring zone valves with end switches, note the transformer's VA: If low voltage zone valves with end switches are used for zone control, make sure the selected zone valves do not draw more power (VA) than the 38 VA capacity of the AQ10X38 transformer supplied with the AQ252 Control Panel. This integral transformer has enough power to operate 4 motorized zone valves (such as Honeywell V8043E valves or 4 valves using low-amperage draw, heat motor actuators, such as Honeywell MV100 actuators), plus power the electronics of the AQ252's Control Module and up to

Step 5 – Line Voltage System Outputs

Refer to Fig. 15 and follow these steps to wire the devices to the AQ252 Control Module.

- “1. Boiler Pump”
- “2. DHW Device”
- “3. Line Voltage Rated Variable Injection Pump”
- “4. Line Voltage Rated Aux Output (Aux. Pump)” on page 14
- “5. Secondary Pump” on page 14

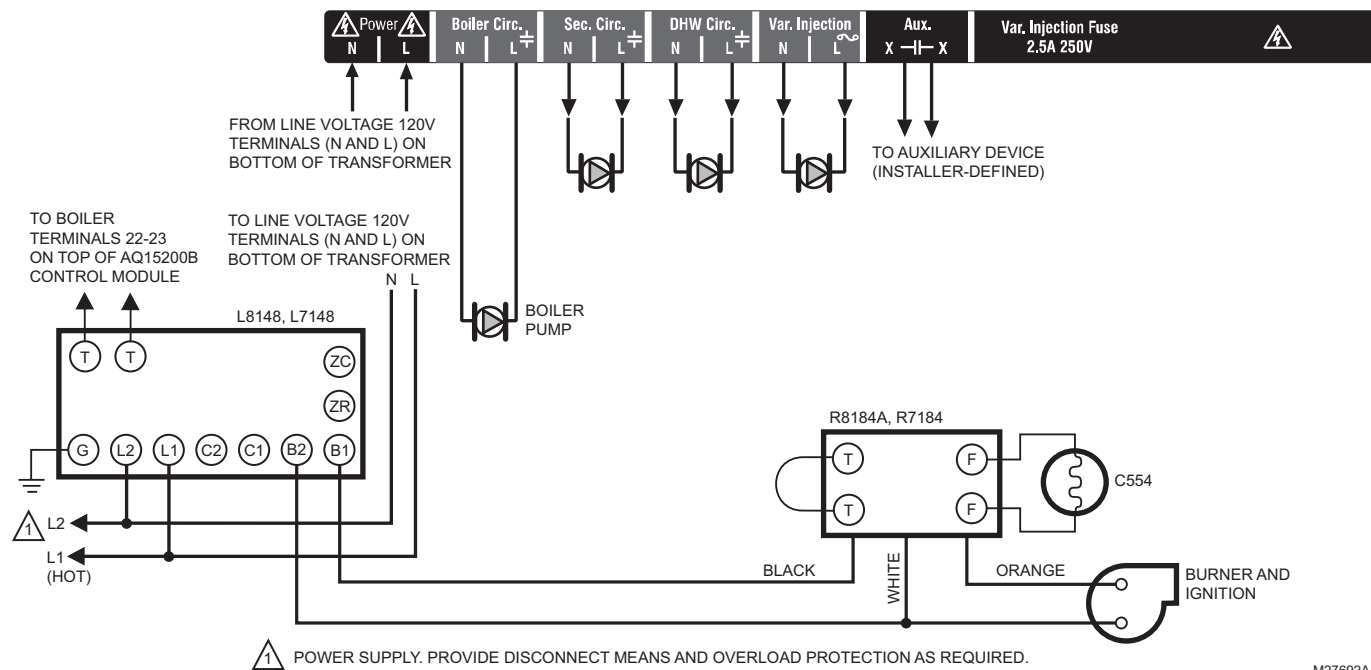


Fig. 15. Line Voltage Connections for AQ252.

1. Boiler Pump

Connect the N and L wires of the boiler loop pump to the N and switched hot (±) terminals of the line voltage Boiler output, shown in Fig. 17 on page 14. The ground wire of the pump can be connected to any of the 8 ground screw terminals located on the back surface of the Control Panel enclosure.

The boiler pump contacts are made after any one of the following occur:

- A call for heat has occurred from any heating zone.
- The Heat input is shorted on terminals 13 and 14.
- The DHW input is shorted and the DHW type is configured as a valve.

The pump is delayed for the FIRE DELAY programmed in the EQUIPMENT SETUP > BOILER OPERATION sub-menu (see Fig. 25 on page 41). The boiler pump and the last zone calling remain “On,” in order to move heat out of the boiler for the period of time programmed in the Purge time menu under the fire delay. Manually adjusting thermostats affects the operation of this software, so it can not be tested manually. You must observe it under normal operating conditions.

NOTE: If the AQ252 is connected to a modulating condensing boiler, the boiler pump may need to be connected to the boiler, not the AQ252. Confirm this with the boiler’s installation manual.

2. DHW Device

Wire the DHW pump or line voltage zone valve to the N and switched hot (±) terminals of the DHW output, as shown in Fig. 17 on page 14.

If using a low voltage zone valve, wire the primary of a spud-mounted transformer (115V to 24V) to the DHW line voltage contacts and connect the low voltage zone valve to the secondary terminals of this transformer. A spud-mounted transformer may be located in one of the conduit knockouts on the bottom of the AQ252 Control Panel.

Alternatively, a 24 Vac zone valve can be connected to the Aux. pump line voltage-rated dry contacts, which can be configured to close on a DHW call. This configuration is defined in the Installer Equipment Setup menu beginning on page 32.

The DHW contacts are made when the DHW inputs on terminals 15 and 16 are shorted by the controlling Aquastat. This is a line voltage output designed to go to the DHW pump. If 24 Vac is needed for a low voltage valve, you can mount a step-down transformer on the conduit opening and wire the valve from the transformer. When DHW is enabled, the system has a 30 minute priority over all calls for heat. After 30 minutes, calls for heat are added back in to the operation for 30 minutes and then turned off again. This repeats until the DHW is satisfied.

NOTE: If the AQ252 is connected to a modulating condensing boiler, the DHW pump will probably need to be connected to the boiler, not the AQ252. Confirm this with the boiler’s installation manual.

3. Line Voltage Rated Variable Injection Pump

The terminals for the variable injection pump are line voltage rated and protected by an external fuse. A standard pump is controlled by the output of these terminals.

Setup is enabled in the EQUIPMENT SETUP > SECONDARY LOOP sub-menu when the INJECT parameter is set to ENABLE (see Fig. 25 on page 41). The pump remains off (drive is off) whenever the Return temperature is below the Boiler Minimum Return temperature.

4. Line Voltage Rated Aux Output (Aux. Pump)

To connect a line voltage auxiliary device to these contacts, such as a group pump or a boiler bypass pump, power the device from the N and L terminals on the bottom of the Control Module, running the hot (L) lead through the Aux. Pump contacts. See Fig. 16 for details. The exact wiring schematic will depend on what is connected to these dry contacts.

The Aux Pump is a line voltage rated dry contact that is controlled by the selection in the EQUIPMENT SETUP > AUXILIARY I/O sub-menu (see Fig. 25 on page 41).

NOTE: Use of this output is optional. The Aux. pump dry contacts are line voltage-rated but unpowered. A low voltage device can be connected to these programmable contacts, but the wire's insulation must meet applicable codes for use in line voltage enclosures. See page 32 for programming options for the Aux. Pump dry contacts.

5. Secondary Pump

Connect the N and L wires of the secondary (mixed) loop pump to the N and switched terminals of the line voltage Sec. output. shown in Fig. 17. The ground wire of the pump can be connected to any of the 8 ground screw terminals located on the back surface of the Control Panel enclosure.

The secondary pump terminals energize only when a zone that has been designated as a secondary zone has a call for heat. This enables the pump and the mixing device you have chosen for the loop control. Set-up is enabled in the EQUIPMENT SETUP > PRI/SEC sub-menu (see Fig. 25 on page 41).

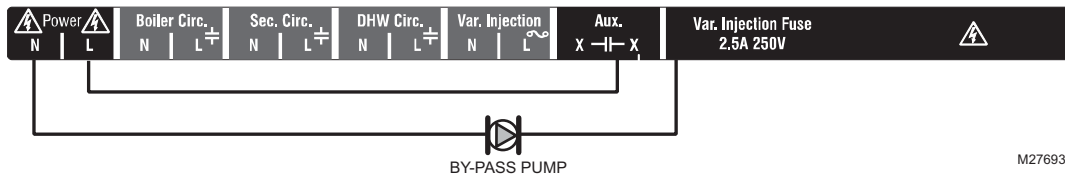


Fig. 16. Wiring of the Aux. pump line voltage rated dry contacts (example shown is a by-pass pump).

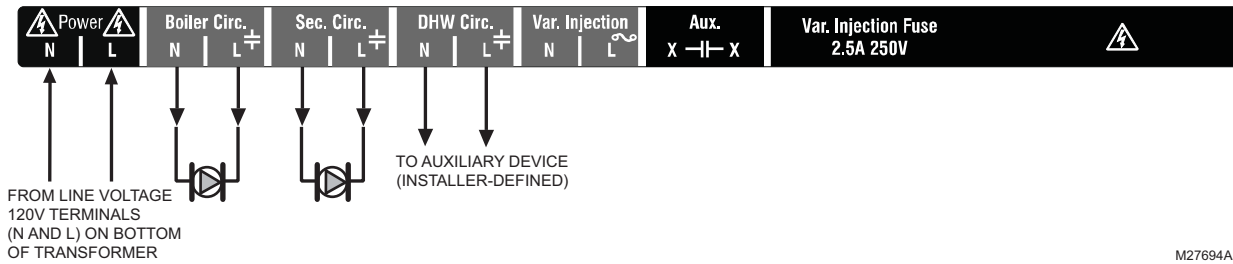


Fig. 17. Wiring for Boiler Pump, Secondary (Mixed) Loop Pump, DHW Device, Injection Pump, and Aux Output.

Step 6 – Connection To Line Voltage Power

Connect the N and L line voltage inputs of the primary on the AQ252 transformer to the electrical distribution panel and power up the Control. A service switch should be installed on the hot (L) lead to the distribution panel.

If multiple Zoning Modules are connected to the AQ252 Control Panel, the line voltage wiring can either be run directly from the N and L terminals on the primary of the transformer to each Zoning Module (Fig. 18), or run in a daisy chain from the N and L terminals of one AQ2000 module to the N and L terminals of the next AQ2000 module (see Fig. 19 on page 15).

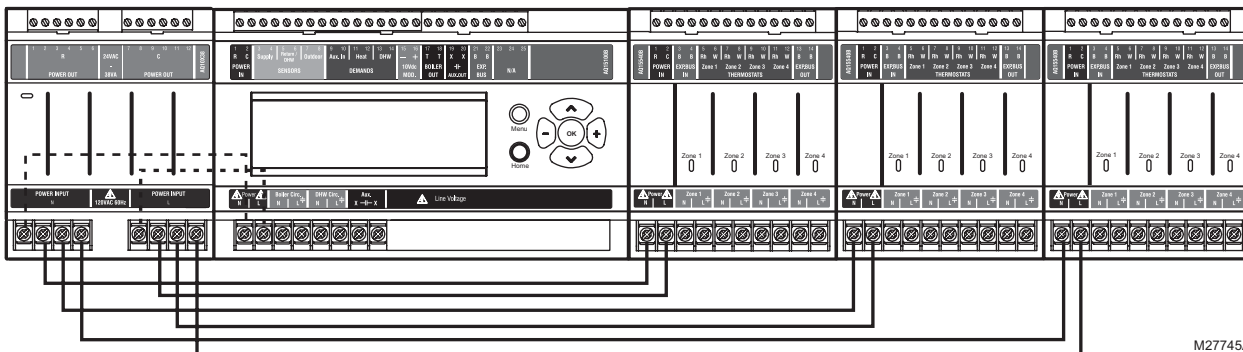
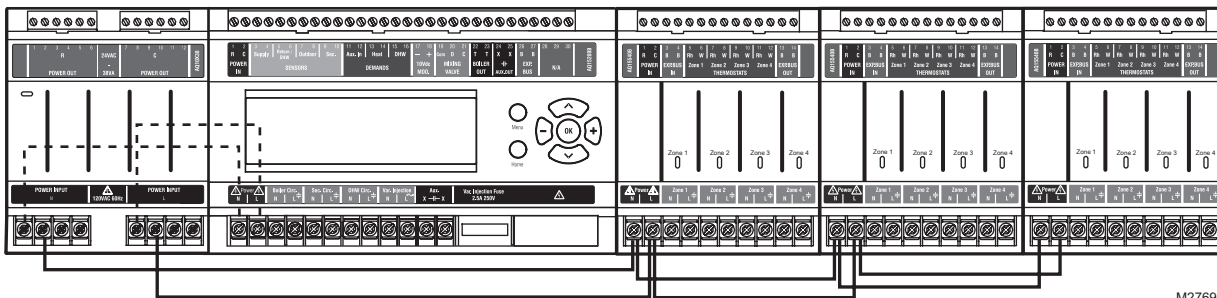


Fig. 18. Connections for multiple Zoning Panels - parallel wiring.



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Fig. 19. Alternate Connections for multiple Zoning Panels - daisy chain wiring.



CAUTION

Electrical Shock or Equipment Damage Hazard. Can shock individuals or short equipment circuitry. When line voltage is applied to the AQ252 Control Panel and the front cover of the Panel is removed, there is a risk of electrocution. Be careful to avoid contact with the line voltage (N and L) terminals, either with your fingers or with metal tools (such as a screwdriver) when power is applied to the Control Panel.

4 PROGRAM AND CONFIGURE THE CONTROL PANEL

Only two steps are required to set up the AQ252 Series Control Panel:

1. Check the program settings for the Control Module: Operation of the AQ252's Control Module is set by the menu selections accessible through the Control Module's LCD screen. See "AQ252 – System Programming" on page 17 for instructions.
2. Check the DIP switch settings for each Zoning Module.

Control Panel Defaults

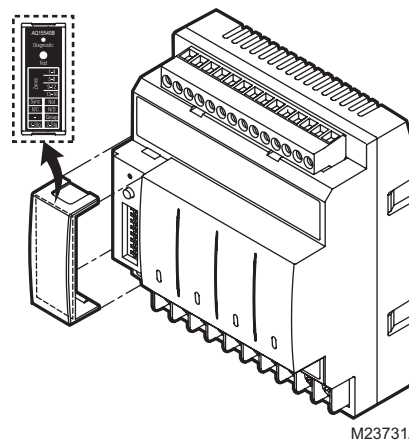
Operation of the AQ252 Control Module is set by the menu selections accessible through the Control Module's LCD screen. See "AQ252 – System Programming" on page 17 for instructions.

The AQ252 Control Panels are shipped from the factory with pre-defined values for all program settings. These factory default settings are commonly used by hydronics contractors across North America. Usually, most of the settings only need to be checked by the installing contractor to make sure they are suitable for the job, rather than having to input all the settings from scratch.

Although these factory default values for the Control Module and each Zoning Module are suitable for many installations, Honeywell recommends that they be reviewed, and changed as necessary, to get optimal performance of the hydronic system controlled by the AQ2000 Series products.

Zoning Module DIP Switch Location

The AQ15540B (pump Zoning Module) and AQ15740B (valves with end switches Zoning Module) both have DIP switches in 8-switch banks and are concealed behind snap-on covers, as shown in Fig. 20.



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Fig. 20. Location of Zoning Modules DIP switches.

Zoning Module DIP Switch Settings

A chart of the different settings for each DIP switch is attached to the inside of each DIP switch cover.

Refer to Table 2 on page 16, and check all DIP switch settings. If necessary, change the switch settings to suit the desired operation of the hydronic installation.

NOTES:

1. To set DIP switches 1 through 4, which identify the unique address of each zone on the AQUATROL network:
 - Refer to the descriptions in Table 2 for the correct DIP switch settings for the Zoning Module. Unpredictable zone behavior may occur if more than one Zoning Module has DIP switches (1-4) set to the same address.
2. DIP Switch 5 enables or disables Zone Synchronization:
 - The factory setting enables Zone Synchronization, which is an energy saving feature of the AQ2000 panels. Zone Synchronization coordinates zone demands to start at the same time when the boiler cycle begins. The AQ2000 functions as activating

valves. The valve logic induces a delay before activating the boiler pump even when zone pumps are used. When Zone Synchronization is not selected, the zone demands are served whenever they call for heat.

- The Zone Synchronization feature replaces the pump/valve selection of previous AQ2000 versions.
- 3. DIP Switch 8 functionality:
 - The factory setting enables 1-stage per zone thermostat. The zoning module operates as four 1-stage zones.
 - When using a 2-stage thermostat, set DIP switch 8 to 2-Stg. The 2-stage selection uses TH1 and TH2 inputs for 2-stage thermostat control. For the selected zone, TH1 is the first stage input from the thermostat and TH2 is the second stage input. Inputs TH3 and TH4 operate in same manner. The 2-stage selection reduces the zoning module to a 2 zone module from a 4 zone module.

- When using digital 2-stage thermostats (non AQ1000 thermostats), the system set-up process changes slightly. During system set-up, create an artificial demand on the zoning module by increasing the set point on the thermostat. The artificial demand is required during the PRI/SEC set-up menu to select the primary and secondary loop for each zone and stage.

Review the settings of all DIP switches for each Zoning Module connected to an AQ1520, to ensure they are correct before system start-up.

When you finish setting the DIP switches for all the Zoning Modules, replace the front cover of the AQ252 Control Panel and the cover of each Expansion Zoning Panel.

NOTE: The snap-on DIP switch covers are designed so they cannot be removed (exposing the DIP switches) when the front cover of the AQ252 Control Panel is in place.

Table 2. AQ15540B Zoning Module (Pump Zoning Module) DIP Switch Arrangement.

DIP Switch	Switch Description	Label and Factory Settings
1 2 3 4	<p>Zone Address: The positions of these 4 DIP switches define the unique address for each zone on the AQUATROL network. For each group of 4 zones, there can be only one DIP switch in the right hand (ON) position.</p> <p>The correct DIP switch settings for each zone module are:</p> <ul style="list-style-type: none"> • First Zone (1-4) Module: 1 = ON position; 2, 3, and 4 = OFF position • Second Zone (5-8) Module: 2 = ON position; 1, 3, and 4 = OFF position • Third Zone (9-12) Module: 3 = ON position; 1, 2, and 4 = OFF position • Fourth Zone (13-16) Module: 4 = ON position; 1, 2, and 3 = OFF position 	
5	<ul style="list-style-type: none"> • If set to SYNC, zone synchronization is enabled. • If set to NOT, zone synchronization is disabled. 	
6	<ul style="list-style-type: none"> • If zone valves are normally closed (N.C.), set the NC/NO DIP switch to the OFF position. • If zone valves are normally open (N.O.), set the NC/NO DIP switch to the ON position. 	
7	<ul style="list-style-type: none"> • If set to Group (ON position), the AUX Pump contacts on the Control Module are switched when any of the zones on this Zoning Module are active. • If set to - (OFF position), the AUX Pump contacts are not affected by activity on these zones. 	
8	<ul style="list-style-type: none"> • If set to 2-Stg (ON position), then 2-stage operation is activated on thermostat inputs. The zoning module operates as two 2-stage zones or 3 zones (one 2-stage and two 1-stage). • If set to 1-Stg (OFF position), then operates as four 1-stage zones. 	

AQ252 – System Programming

This section describes how to navigate the user interface using the keypad and LCD display, and how to program the AQ252 Control Panel, which begins on page 18.

Keypad

The AQ252 User Interface consists of an LCD screen (16 characters by 3 rows) and a 7-button keypad for navigating the menus, as illustrated in Fig. 22. Fig. 21 provides an isolated view of the keypad.

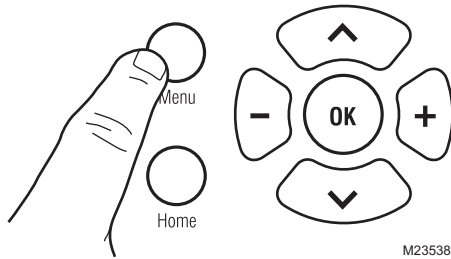


Fig. 21. AQ252 keypad.

- Menu** Press this button to access the User Menu. When pressed while in a sub-menu, the sub-menu's values are saved before going up one level in the current menu.
- Home** Press this button to leave the User or Installer Menu and return to the Home Page display screen.
- OK** Press this button to enter a sub-menu of the active menu item. A menu item is active when the indicator arrow (←) is positioned beside the item.

- ▲ and ▼ Press these buttons to scroll up/down in the menu items. Pressing one of these buttons automatically saves your current selection, exits the edit mode, and moves to the previous or next menu item.
- and + Press these buttons to decrease/increase the value of a selected menu item, or to scroll through a list of pre-defined options.
 - If the menu item being modified is a number, the displayed value will decrease/increase by pressing these buttons. When holding the – or + button for more than a second, the values automatically decrease/increase at a faster pace, similar to setting the time on a digital clock radio.
 - If the menu item is an option, pressing these buttons scrolls through the list of available options one at a time.

LCD Display

The LCD on the AQ252 Control Panel is used to:

- Monitor system status and performance.
- Select and/or modify control settings for the hydronic system.
- Diagnose and troubleshoot system problems.

The layout of the display is logical and simple to navigate. The information displays so that the installer can see at a glance the system's operating temperatures, as well as the status of the system equipment, such as a Call for heat, DHW pump On, Boiler T-T terminals energized, etc. In addition, all system information displays in simple, straightforward English for quick system diagnosis. Fig. 22 illustrates the layout and features of the LCD display panel and keypad.

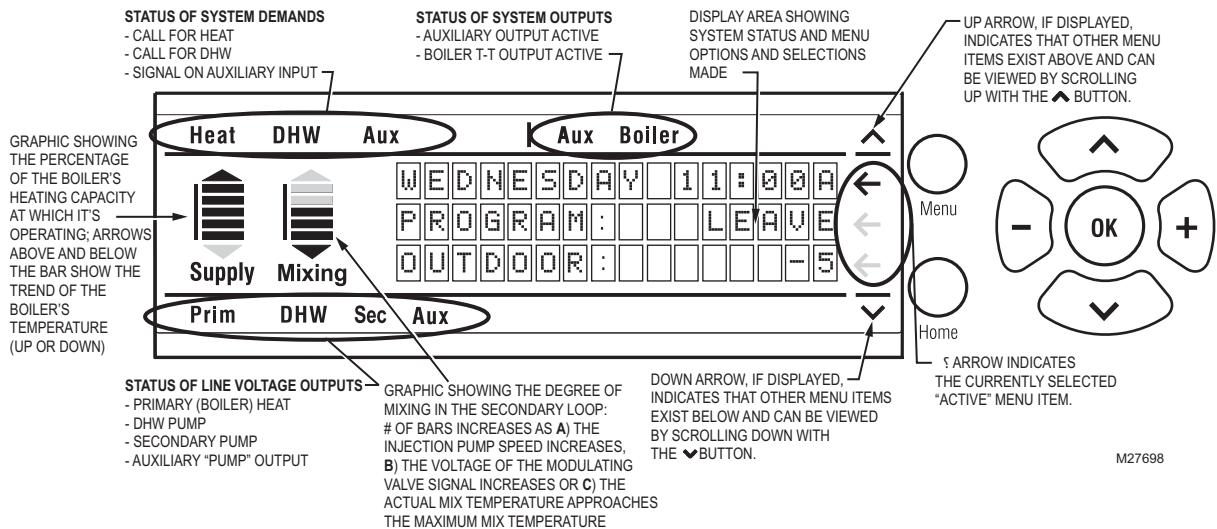


Fig. 22. LCD display and keypad layout.

LCD Display Navigation

This section describes how the keypad is used to navigate the LCD display and menus.

- The LCD displays up to three lines of text at a time. For menus with more than three lines, use the up and down buttons (▲ and ▼) to scroll through the menu options.
- As the menu is scrolled up or down, the indicator arrow (←) shows which menu item is active.
- If the active menu item is part of a list of predefined options (e.g., Day of the Week) press the – or + button to scroll through the available options until the preferred option is displayed. The option is automatically saved when the indicator arrow is scrolled away from the value being edited.
- If the active menu item requires you to define a value (e.g., a setpoint), use the – or + button to decrease or increase the value until the desired value is displayed. The selection will be saved when the indicator arrow is scrolled up or down.

NOTES:

1. When setting times for the setback schedule, you must use the – or + button to change the time.
 2. The OK button, when pressed, defaults the time setting to “--:--” (midnight).
- If the active menu item leads to a further sub-menu, pressing the OK button displays the sub-menu options on the LCD. Scroll through this sub-menu to position the indicator arrow (←) beside the desired menu item to input or modify. Choose one of the options provided or input the desired value for the menu item. When satisfied, scroll to another item and your selection will be saved.
 - To define or modify another item within the same menu, scroll the up and down buttons (▲ and ▼) until the indicator arrow (←) is beside the desired option. Use the – or + buttons to set the value for that item.
 - To move back (up) one level within a menu, press the Menu button.
 - To return to the Home Page display, press the Home button.

NOTE: The AQ252 automatically returns to the Home Page display after 60 minutes of inactivity on the keypad.

HOME PAGE DISPLAY

The Home Page is the default view displayed on the AQ252 Control Panel's LCD screen.

There are two Home Page views - Simple and Detail.

- Simple view shows 3 lines of text and is a brief description of the system operation: Day, Time of Day, Current Program and Outdoor temperature.
- Detail view includes the same 3 lines plus up to 10 lines of additional information, including Boiler Supply and Return temperatures, Secondary (Mixed loop) temperature, Boiler Supply Target temperature, Secondary Loop Target temperature, Zone Count, and DHW temperature (if configured for DHW sensor use). Detail view is the factory default setting for the Home Page.

The choice of the Simple or Detail Home Page view is made from the USER MENU > PREFERENCES/TIME menu option.

The Home Page, together with the System Status information (a selection from the User Menu), provides a service contractor extensive diagnostic information for troubleshooting the installation.

NOTES: Home Page display upon restart after a power failure of more than four hours:

1. Upon restarting the AQ252 following a power disruption of greater than 4 hours, the message PLS SET DAY/TIME OF DAY displays on the top line of the Home Page screen. The message disappears after the DAY and TIME OF DAY are updated.
 - If the power failure parameter is set to Backlight (USER MENU > PREFERENCES), the LCD backlight flashes repeatedly, along with the message.
2. The AQ252 starts up with its clock settings as: DAY = MONDAY, TIME OF DAY = 12:00 midnight, and program = OCCUPIED.
3. Until the DAY and TIME OF DAY settings are adjusted, the control remains in permanent setpoint (comfort) mode.
4. When the DAY and TIME OF DAY settings are adjusted, the AQ252 follows the four programs of WAKE, LEAVE, RETRN (return), and SLEEP.

Refer to “Home Page” on page 24 in the “Appendix” for illustrations of the Simple and Detail displays.

Programming the AQ252

Program the AQ252 by using the keypad and LCD display to select parameters from the User and Installer menus. Refer to Fig. 22 on page 17 for an illustration of the LCD screen and keypad.

NOTE: The figures in “Menu Structure” on page 40 provide a graphical layout of the AQ252's User and Installer menus.

When a new AQ2000 component is connected on the AQUATROL network, it is seamlessly integrated in the system after a few seconds. If one or more components are disconnected or stop providing data to the network, a message will appear on the System Status display until the fault is corrected.

User Menu

The User Menu is intended for use by the building owner to choose the LCD display preferences, Zone Settings (including setpoint temperatures and setback times for each zone), and temperatures for the WAKE, LEAVE, RETRN (return), and SLEEP programs.

The Home Page and User Menu allow the building owner to:

- View the status of the system.
- Set up preferences for how the system information is displayed.
- Set target temperatures for each zone.
- Program times of the day when the system will set back the temperatures for all zones.

NOTE: If there are any problems with the system's operation, the AQ252 displays error codes on the System Status Page display of the LCD panel. For details on these, refer to “Troubleshooting” on page 21.

TO ACCESS THE USER MENU:

Press the Menu button on the keypad at any time to access the User Menu.

Refer to Table 5 on page 25 in the “Appendix” for all of the User Menu options for the AQ252 Control Panel, the factory default values and permissible ranges for each option, and a brief description of each setting.

Installer Menu

The Installer Menu is used to:

- Set up and modify the Equipment Settings (for boiler operation, DHW management, zoning, auxiliary input/output operation, and options such as pump/valve exercise, freeze protection, and Save/Restore settings)
- Access the Test and Purge functions to facilitate quick and simple commissioning of the hydronic system.

TO ACCESS THE INSTALLER MENU:

1. Press the Home button to return to the Home Page display.
2. Press and hold the OK button for 3 seconds until the message, INSTALLER MODE – ARE YOU SURE?, displays.
3. Select YES.
4. Press and release the OK button to display the Installer Menu.

Refer to Table 6 on page 32 in the “Appendix” for all of the Installer Menu options for the Control Panel, the factory default values and permissible ranges for each option, and a brief description of how each setting affects the AQ252’s operation.

5 TEST AND CHECK OUT THE INSTALLATION

Startup

IMPORTANT

Apply power to the AQ252 Control Panel only after all of the AQ2000 SERIES components (Control Panel, thermostats, sensors, Zoning Panels) have been connected to the other equipment in the hydronic heating system (boiler, zone valves or pumps, DHW, Aquastat, etc.).

When powered, the AQ252 Control Panel begins its start-up routine, establishing communication with all other AQ2000 Series components on the AQUATROL network.

Test

The TEST feature enables the installer to checkout all of the system’s outputs, sensors, and zone equipment as part of system commissioning (Checkout).

The TEST operation is accessed from the Installer Menu option EQUIPMENT SETUP >TEST AND PURGE. To begin testing the installation, position the indicator arrow (←) beside the equipment group to be tested (OUTPUTS, SENSORS, or ZONES) and press the OK button.

TEST OUTPUTS

- When TEST OUTPUTS is selected, the AQ252 LCD displays a list of all outputs that can be tested. To select an output to test, position the indicator arrow (←) beside that output and press the + button to activate the output’s relay. As each output is activated, a word icon for that output is

displayed at the top or bottom of the LCD display (refer to Fig. 22 on page 17). The test routine activates the output relay until the “–” button is pressed to turn off that output.

- To test additional outputs, navigate the list using the up and down arrows (▲ and ▼), position the indicator arrow (←) beside that output and press the + button to begin testing. Press the “–” button to de-activate the output relay and stop its test.
- Any combination of outputs can be activated at the same time when testing the outputs.
- When finished testing the outputs, press the Menu button to return to the TEST AND PURGE sub-menu.

TEST SENSORS

When TEST SENSORS is selected, the AQ252 LCD displays the temperature that each of the SUPPLY, RETURN, SECONDARY and OUTDOOR sensors is measuring. If a sensor is malfunctioning or is not properly connected to the AQUATROL network, the value “- -” displays beside that sensor on the LCD, instead of its temperature. If any of the sensors reports a temperature that is illogical, investigate further by referring to “Troubleshooting” on page 21.

TEST ZONES

- When TEST ZONES is selected, the Installer can test all space heating zones connected to the AQ252 simultaneously or individually.
- If zones are tested simultaneously (TEST ALL ZONES), all zone outputs energize immediately (with a delay of 1/10th of a second between each pump or valve to minimize the chance of electrical circuit overloads caused by the inrush currents from the pumps’ motors).
- A zero (0) displayed after a zone’s ID address (e.g., Zone A1 0, A2 0, A16 0) indicates that the AQ252 Control Module has received confirmation that the zone’s pump or valve is closed, or OFF. Similarly, a one (1) displayed after a zone’s ID address (e.g., Zone A1 1, A2 1, A16 1) indicates that the AQ252 has received confirmation that the zone’s pump or valve is open, or ON.
 - For zone pumps or zone valves without end-switches, a 1 is displayed as soon as the pump is energized.
 - For zone valves with end-switches, a 1 is displayed only after the valve’s end switch makes or the valve’s Time To Open delay has expired (for use with 2-wire valves).
- To test zones individually, position the indicator arrow (←) beside a selected zone. Press the “+” button to energize it, and press the “–” button to de-energize it. As each zone is tested, the Status LED on the Zoning Module associated with that zone illuminates. To test additional zones, position the indicator arrow (←) beside the zone to be tested. Press the “+” button to energize the zone’s pump or valve, and then press the “–” button to de-energize it.
- Any combination of zones can be activated at the same time when testing the zones.
- When finished testing the zones, press the Menu button to return to the TEST AND PURGE sub-menu.

Checkout

1. From the Installer Menu, select Boiler Settings and reduce the Warm Weather Shut Down (WWSD) temperature setting until it is disabled and the display shows “- -”. This way, the WWSD will not interfere with the zone operation during checkout.
2. Turn down the DHW Aquastat, if present, to avoid interfering with space heating control operation.

3. Turn up the setpoint of one of the thermostats associated with the Boiler (Primary) loop.
 - a. The zone valve or pump associated with that zone turns on.
 - b. The Boiler T-T relay activates (Boiler displays in the demands section of the LCD screen), and the Boiler pump relay activates (PRIMary displays in the outputs section of the LCD screen).

NOTE: See Fig. 22 on page 17 for the demands and outputs display areas on the LCD.

- c. Depending on the settings for the AUX.PUMP (line voltage rated dry contacts) and the AUX OUT (low voltage rated dry contacts), either or both of these relays may also close.
4. Turn down the setpoint of one thermostat. The zone valve or pump associated with that zone should turn off. The Boiler T-T and Boiler pump relay outputs should deactivate.
5. Repeat steps 3 and 4 for all zones associated with the Boiler (Primary) loop to verify that each zone is operating correctly. Thermostats may be tested individually or all together to accelerate the check out process.
6. Turn up the DHW Aquastat to simulate a call for hot water.
 - a. If the DHW device is a pump, the DHW relay output energizes immediately. The Boiler pump relay remains off.
 - b. If the DHW device is a valve, the Boiler pump relay energizes after a delay to allow the zone valve to fully open. This delay is selected from the EQUIPMENT SETUP>DHW>DHW VLV.OP menu option.
 - c. Turn up the setpoint of one of the AQ1000 zone thermostats.
 - (1) If the DHW relay is configured to control a pump, and DHW PRIOrity is selected, the Boiler and the associated zone pump's relay remain off.
 - (2) If the DHW relay is configured to control a valve, and DHW PRIOrity is selected, the Boiler pump activates after a delay for the DHW zone valve to open, but the associated zone relays remain off.
 - (3) If DHW PRIOrity is disabled, space heating zone pumps and valves should operate during a call for DHW.
7. Turn down the DHW Aquastat to end the call for hot water. Space heating operation should continue (if DHW priority is disabled) or resume (if DHW PRIOrity is enabled).
8. Repeat the preceding steps for all zones associated with the Secondary (Mixed temperature) loop. The only difference between operation of the Primary zones and the Secondary zones is that the Secondary pump and the Mixing Device (Injection Pump or Motorized Mixing Valve) energize on a call for heat from a Secondary zone but not from a Primary zone.

6 PURGE AIR FROM ALL SYSTEM AND ZONE PIPING

The PURGE operation on the AQ252 Control Panel allows the installer to purge all zones (loops) sequentially, or each zone individually, for a period of time, PURGE TIME, which selected from the EQUIPMENT SETUP>TEST AND PURGE>PURGE sub-menu. The purge time can be adjusted in increments of 1 minute, up to a maximum of 30 minutes per loop to be purged.

After you have defined which loops to purge (all loops, or an individual loop) and for how long (using the AQ252's menus), position the indicator arrow (←) beside the START PURGE option and press the OK button. The START PURGE display will change to STOP PURGE and the AQ252 display begins counting down the time remaining for the purge cycle.

Purging All Loops

When the purge time has elapsed for the first loop, the control proceeds to the next loop and performs the purge operation on each loop in sequential order. After all selected loops have been purged, the display shows PURGE COMPLETED.

7 DOCUMENT AND KEEP A RECORD OF ALL SYSTEM SETTINGS

After the AQ252 Series Control Panel and any AQ255/AQ257 Expansion Zoning Panels have been set up and the entire hydronic installation is operating properly, it is important to document all the system settings for future reference.

Job Records

All AQ2000 Series Panels are shipped with Installation Job Records for documenting these settings. These should be filled out completely and saved in the Installing Contractor's files.

NOTES: There are two classes of settings used by the AQ252 to control the operation of the heating system, Zone Settings and System (or Equipment) Settings. Both types of settings are stored in non-volatile memory and are not lost following an extended power disruption.

WHEN USING AQ1000 THERMOSTATS

1. Zone Settings are designed to be adjustable by the user or the installer and are stored in the faceplate of each zone's AQ1000 thermostat. These settings are not saved with the SAVE SETUP operation. If the faceplates of two AQ1000 thermostats are switched, the settings (setpoints, zone minimum, zone maximum, etc.) will also be switched.
2. System Settings are designed to be adjustable only by the system installer and are stored in the AQ151 Control Module. These are the settings that are saved with the SAVE SETUP operation.

SAVE Feature

In addition to the hardcopy Installation Job Records, the AQ252 Control Panel has a convenient SAVE feature that allows the installing contractor to save the specific equipment setting for this installation in the AQ252's memory for future recall, in case the system's settings are inadvertently changed. This feature is found in the EQUIPMENT SETUP > SAVE/RESTORE sub-menu.

There are three levels of settings in the AQ252's memory – CURRENT, FACTORY and SETUP.

- **CURRENT** settings are the settings that are currently displayed in any of the menus and are the settings that the AQ252 uses to operate. Any time a value is changed in any of the menus, the CURRENT settings are changed and these new settings are instantly used by the AQ252 Control Panel.

- **FACTORY** settings are the default values loaded at the factory and are the starting point for programming the AQ252. These values are permanently stored in memory and cannot be over-written or erased. The AQ252 can be restored to factory settings through the RESTORE FACTORY option in the SAVE / RESTORE sub-menu. A warning prompt, RESTORE FACTORY—ARE YOU SURE?, displays and YES or NO must be chosen before proceeding. If YES is selected, the FACTORY settings are be copied to the AQ252's CURRENT settings and the Control Panel begins to operate with these values immediately.
- **SETUP** settings are the specific settings for this installation which an installer has saved after the AQ252 is set up and operating well. These are saved for future recall, in case the system's settings are inadvertently changed.
 - To save this installation's settings for the first time, go to the EQUIPMENT SETUP > SAVE/RESTORE sub-menu. Position the indicator arrow (←) beside SAVE SETUP and press OK. This saves the current system settings to the SETUP values.
 - To retrieve the SETUP values at any time in the future, go to the EQUIPMENT SETUP > SAVE/RESTORE sub-menu and select RESTORE SETUP to load those values into the AQ252 as the CURRENT settings. The system will now operate according to these retrieved settings.
 - If the current settings are modified after a RESTORE SETUP operation is performed, simply select SAVE SETUP again to overwrite these new settings into the SAVE settings memory.



CAUTION

If you change any system settings after a RESTORE SETUP operation, you change the current settings that the AQ252 uses as its basis of operation.

TROUBLESHOOTING

The following information helps the installer correctly identify system problems, making troubleshooting much faster.

Table 3 and Table 4, beginning on page 22, describe the possible error codes and status notices that can be communicated on the AQ155 / AQ157 Zoning Modules' diagnostic LEDs.

System Status Information

To aid in troubleshooting hydronic systems controlled by an AQ252, the operational status of the system is shown on the System Status page. Status notices and error messages display here as appropriate, i.e., only those that are pertinent to the system's current operation will be displayed. See Table 4 on page 22 for a complete list of status notices and error messages. The System Status page is available from the User Menu.

When a new AQ2000 component is connected on the AQUATROL network, its settings are communicated to the AQ252 Control Module within 10 seconds of being connected. If the component is an AQ1000 thermostat, the setpoints for that zone thermostat can be modified from the AQ252 Control Module as soon as it is recognized.

When an AQ1000 thermostat is disconnected from the AQUATROL network, a message displays on the System Status page of the AQ252 indicating "Lost Zone A-xx", where "xx" is the specific identity, or address, of the lost zone. This helps the servicing contractor quickly identify the lost zone and fix its wiring to re-establish communication with the AQ252 Control Module.

This diagnostic information is very valuable and the System Status page is the first place a contractor should look for information when troubleshooting system problems.

Communications Loss

Because all AQ2000 Series components communicate with each other via the dedicated AQUATROL network when controlling a hydronic system, one possible failure mode of the AQ252 would be loss of communication between the AQ1520 Control Module and any connected Zoning Modules, or between a Zoning Module and any zone thermostats connected to the AQUATROL network. In general, the Control Module:

- Periodically tries to re-establish communication with any lost components on the network.
- Initializes any component that re-establishes its communication.
- Displays an error code on the AQ252's System Status page, until the error is corrected and/or communication is re-established.

CONTROL MODULE REACTION

When the AQ1520 Control Module loses communication with any number of zones for more than one minute (as long as there is still at least one zone communicating on the AQUATROL network), the AQ252 continues to deliver heat to the other non-communicating zones. The address of each lost zone (e.g., A-7, B-4) displays on the System Status page.

When communication is lost with all zones, the AQ252 enters BOILER FREEZE PROTECTION mode, in which it fires the boiler and then activates the Boiler (supply) pump and zone equipment for a period of 10 minutes every hour. This should provide sufficient heat to the system to prevent a building from freezing up until communication is re-established between the AQ2000 Series components.

BOILER FREEZE PROTECTION mode is disabled when the outdoor temperature is above the warm weather shutdown (WWSD) temperature setting.

ZONING MODULE REACTION

When a Zoning Module loses communication with the Control Module (as long as there is at least one other Zoning Module communicating with the Control Module), the Zoning Module operates its pumps or valves in a conventional, non-synchronized zoning fashion. That is, it operates according to the demands from the thermostats, without zone synchronization or waiting for permission from the AQ152 Control Module to operate. This allows the zones to extract any heat provided by the boiler.

When using AQ1000 thermostats and communication is lost between a Zoning Module and any of its thermostats, that zone enters Single Zone Freeze Protection mode. In this mode, the zoning equipment is operated for an amount of time equal to one-half of the maximum demand of all other zones on the network. This helps prevent the lost zone from freezing. This is especially helpful if a zone's thermostat is removed from the

wall while a room is being painted. When used with 2-stage thermostat operation, only the first stage will be activated in the freeze protection mode.

When using digital, non-communicating thermostats other than the AQ1000, the Single Zone Freeze Protection is disabled for those zones.

Single Zone Freeze Protection mode is disabled when the outdoor temperature is above the warm weather shutdown (WWSD) temperature setting.

The AQ252 provides Zoning Module diagnostic information via the DIAGNOSTIC LEDs located above the DIP switches on its Zoning Module(s), as well as on the System Status menu of the LCD display.

BOILER FREEZE PROTECTION (not network communication-related)
 If the boiler supply temperature sensor measures 50°F (10°C) or less, the boiler fires and the boiler pump, secondary pump etc. operate until the target temperature is achieved, as measured by the supply temperature sensor. This target temperature is the reset temp (if the boiler RESET parameter = OUTDOOR). Or, it is the AQ252's BOILER HIGH LIMIT (if the boiler RESET parameter = LOAD or NONE). DHW and Heat Demand calls are ignored when the system is in freeze protection mode.

Table 3. AQ155 / AQ157 Zoning Module LED Display and System Condition.

DIAGNOSTIC LED Status		System Condition	Action Required
Steady (no blinking)		No system problem detected	None
Fast blinking (4 blinks per second)		Auto Test is in operation	None. Allow the control to finish its Auto Test routine.
Slow blinking (2 blinks every 3 seconds)		Auto Test has been paused.	Press the Test button to resume the Auto Test routine.
Coded blinking = ERROR	2 blinks, then pause	Freeze protection activated across the entire AQUATROL network	All zones have lost communication with the Control Module. Check B–B wiring between the Control Module and each Zoning Module.
	3 blinks, then pause	Communication lost with <u>all</u> thermostats on the Zoning Module	Check thermostat wiring to each Zoning Module.

If a zone becomes disconnected from the Control Module or is malfunctioning (i.e., lost), this can be seen in the ZONE COUNT value on the AQ252's Home Page display (Detail view only). The ZONE COUNT represents the number of zones on the AQUATROL network at any given time (the second stages of a heating zone is also counted as a zone). When a zone is lost, the ZONE COUNT decreases by one. Because an installer knows how many zones are installed, if there is a difference between the actual number of installed zones and the ZONE COUNT, the installer will know to look for the zone(s).

The identity of lost zones displays in the System Status page as LOST ZONE A-X:

- A identifies the Control Module of the lost zone, and B, C, or D identify an AQ25400B Add-A-Temperature Expansion Control Panel. This prefix can be set or changed on the AQ254 Panels.
- X identifies the lost zone (1 through 16).

Power Disruption

The AQ252's system and thermostat parameters are stored in non-volatile memory and are updated as they are changed.

When a power disruption occurs, the system configuration is retained in memory. When power is restored, the AQ252 Control Panel enters auto-detection mode, reads its previously-stored settings, and initializes all AQUATROL network components according to their saved parameters.

POWER DISRUPTION GREATER THAN 4 HOURS

If a power disruption lasts for more than 4 hours, the AQ252 will have discharged its internal super capacitor, and the DATE and TIME OF DAY settings will need to be reset.

Upon restart, the AQ252 displays its clock settings as: YEAR = 2008, MONTH = JAN, DATE = 1. The message PLS SET DAY/TIME displays and optionally, the AQ252's backlight flashes repeatedly. This displayed message continues until the DATE and TIME OF DAY are updated. The AQ252 remains permanently in OCCUPIED (or Comfort) mode until the DATE and TIME OF DAY are updated.

Table 4. LCD Status Notices and Error Messages.

LCD Display	Parameter	Meaning
A/C MIN. OFF TIME	n/a	The A/C compressor is disabled, because the minimum OFF time has not yet elapsed.
A/C MIN. ON TIME	n/a	The A/C compressor is active and the minimum ON time has not yet elapsed.
AUX IN EM. SHUT	n/a	Auxiliary Input's Emergency Shut Down is active.
BOILER:	EM SHUT	Boiler is disabled, because the AQ252 is in Emergency Shut Down mode.

Table 4. LCD Status Notices and Error Messages. (Continued)

LCD Display	Parameter	Meaning
	FRZ PROT	Boiler freeze protection activated: <ul style="list-style-type: none"> • Communication between Control Module and Zoning Module has been lost for more than 1 minute or • Boiler supply temperature is less than 50°F (10°C)
	HEAT DHW	Boiler is active to serve DHW.
BOILER: (continued)	HEATING	Boiler is active to serve zones.
	IDLE	Boiler is not active.
	INIT	Boiler contacts (terminals 22 and 23) on the AQ152, which are connected to the boiler's T-T terminals, have been shorted and the boiler is beginning its firing sequence.
	INST PURG	Boiler is active while the AQ252 is conducting the PURGE operation in the Installer Setup.
	INSTALL	Boiler is in ready mode during Installer Setup.
	PMP EXER	Boiler is disabled while the AQ252 is exercising all pumps and valves connected to the AQUATROL network.
	POST PURG	Boiler is active with Post Purge operation and is sending the purged water to the Boiler (Primary) loop.
	PURGE DHW	Boiler is active with Post Purge operation and is sending the purged water to the DHW tank.
CALL FOR COOL	n/a	At least one zone with a programmable thermostat requires cooling.
CALL FOR DHW	n/a	The DHW requires heat.
CALL FOR HEAT	n/a	At least one zone requires heat.
CWSD ACTIVE	n/a	Zone calls for cooling are not served because CWSD (Cold Weather Shutdown) is in progress.
DHW DISABLE	n/a	DHW call is not served because it is disabled.
INJECTION%: xx%	n/a	The variable speed injection pump terminals are active and operating at xx% of full speed.
LOST ZONE A-1 ... LOST ZONE D-16	n/a	Lost communication with a zone (A-1 to A-16, B-1 to B-16, C-1 to C-16, or D-1 to D-16).
MIN. RETURN PROT	n/a	The temperature measured by the return sensor is at or below the minimum return water temperature.
NO DHW PROBE	n/a	No DHW sensor connected or it is defective.
NO LINE VOLTAGE	n/a	No line voltage has been detected on the N and L terminals on the line voltage input to the control module.
NO OUTDOOR PROBE	n/a	No outdoor sensor connected or it is defective.
NO RETURN PROBE	n/a	No return sensor connected or it is defective.
NO SECOND. PROBE	n/a	No secondary (mixed) loop sensor connected or it is defective.
NO SUPPLY PROBE	n/a	No supply sensor connected or it is defective.
SHORT CYCLE PROT	n/a	There is a call for heat, but less than two minutes have elapsed since the last firing of the boiler (prevents short cycling).
VALVE INIT	n/a	Motorized mixing valve controlling the secondary loop is being initialized and repositioned (opening or closing) to meet the secondary loop target temperature.
WATER READY	n/a	Boiler Supply Water temperature is at or above the target temperature calculated by the AQ252.
WWSD ACTIVE	n/a	Zone calls for heat is not served because WWSD (Warm Weather Shutdown) is in progress.

APPENDIX

The appendix provides AQ252 Control Panel user interface information for the:

- The Home Page
- Programming menus (User and Installer)
- Programming menu structure (User and Installer). See page 40.

Home Page

The Home Page is the default display for the control panel. It provides general information on system water and outdoor temperatures, and program schedule mode and day and time.

The Home Page display may be Simple (3-line) or Detailed (10-line), as illustrated in Fig. 23. The Home Page display type is configured from the Installer Menu.

Press the Home button on the keypad to display the Home Page.

NOTES:

1. PLS SET DAY/TIME displays after a power outage of more than 4 hours.
2. PROGRAM displays the current active program (Leave, Return, Sleep, Wake, Occ, or Unocc).
3. TARGET displays the current temperature or indicates the system is in a warm water shutdown (WWSD) status.
4. When “- -” is displayed instead of a temperature value (e.g., TARGET: - -), this means that there is no call for heat from either space heating, DHW, or Heat Demand zones at the moment.

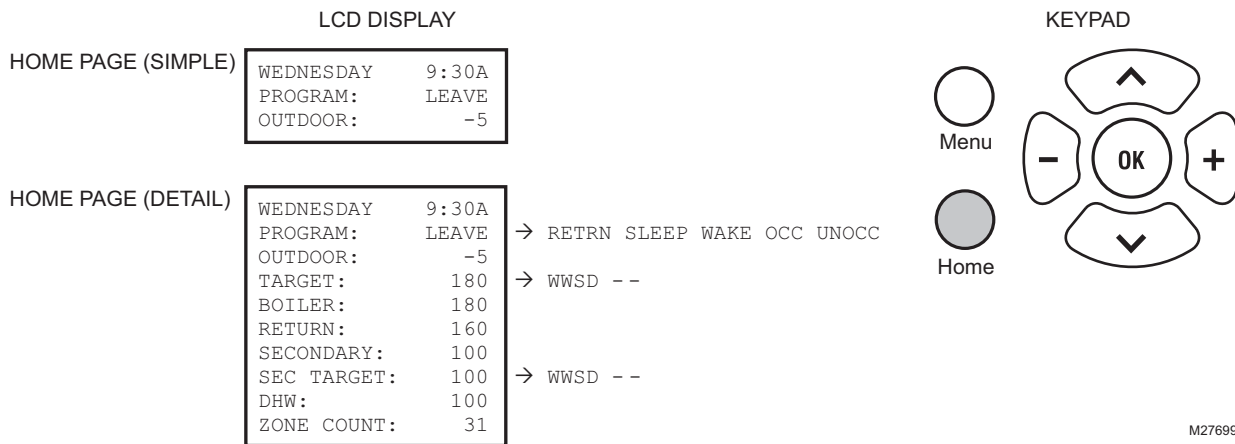


Fig. 23. Home Page display (Simple and Detail) and keypad.

Programming Menus

There are two programming menus, User and Installer. The Installer Menu begins on page 31.

User Menu

The User Menu can be accessed at any time by pressing the Menu button on the keypad.

This menu allows the building owner to:

- View the System Status and Statistics.
- Set the display preferences, date, and time.
- Edit the Zone settings, including setpoint temperatures for each zone.
- Edit the Setback temperatures for each zone for the WAKE, LEAVE, RETRN (return), and SLEEP programs.

Refer to Table 5 beginning on page 25 for the following User Menu selections:

- System Status (page 25)
- Preferences/Time (page 25)
- Zone Settings (page 26)
 - All zones
 - Single zone for Ambient, Floor, or Ambient/Floor settings
- Program Settings (page 29)
- Statistics – refer to page 30.

NOTE: An illustration of the complete User Menu is on page 40.

Table 5. User Menu.

Menu Option	Range	Factory Default	Description
SYSTEM STATUS		Identifies what is happening within the system.	
See Table 4 on page 22	n/a	n/a	Multiple status and alarm messages can display on this page. This diagnostic information is for troubleshooting purposes. However, only the status and messages pertinent to the system's current operating condition will display.
PREFERENCES/TIME		Allows you to set up the AQ252 Control Panel with preferred display, time, date, and temperature settings.	
BOILER UNITS	°F or °C	°F	Choice of temperature units (F or C) for displaying temperatures on the AQ252 LCD display.
ZONE UNITS	°F or °C	°F	Choice of temperature units (F or C) for displaying temperatures (on the AQ1000 zone thermostats).
TIME DISP	12H or 24H	12H	Choice of time format display: 12 hour format (e.g., 2:00 P) or 24 hour format (e.g., 14:00).
D.S.T.	ENABLE or DISABLE	ENABLE	Enables / disables automatic change to and from Daylight Savings Time.
YEAR	2000 - 2099	2008	Select the year when the control is commissioned.
MONTH	JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DEC	JAN	Select the month of the year when the control is commissioned.
DATE	01 to 31	01	Select the date (01-31) of the month when the control is commissioned.
DAY	MONDAY, TUESDAY, WEDNESDAY, ... SUNDAY	MONDAY	Select the day of the week when the control is commissioned.
TIME	00:00A to 12:59P (00:00 to 23:59)	12:00A (midnight)	Select the time of day when the control is commissioned. You can change the time with the + and – buttons, just as with a clock radio.
HOME PAGE	SIMPLE or DETAIL	DETAIL	Select the 3 line (Simple) display or the 10 line (Detail) display for the Home Page.
BACKLIGHT	AUTO or ON	AUTO	<ul style="list-style-type: none"> • Auto mode = backlight illuminates when any button on the display is pressed. It turns off after 1 hour. • ON mode = backlight stays on constantly.
POWER FAILURE NOTICE	BACKLIGHT or MSG.ONLY	BACKLIGHT	<p>The building owner can be notified in one of two ways that the AQ252's DATE and TIME OF DAY settings need to be reset:</p> <ol style="list-style-type: none"> 1. By displaying the message, PLS SET DAY/TIME, on the first line of the Home Page 2. By repeated flashing of the AQ252's LCD backlight and displaying the message PLS SET DAY/TIME, on the first line of the Home Page

Table 5. User Menu. (Continued)

Menu Option	Range	Factory Default	Description
ZONE SETTINGS	Displays all information pertaining to the selected zone(s). There are four possible sub-menu displays (available only with AQ1000 thermostats): 1. EDIT ALL ZONES 2. EDIT SINGLE ZONE - Ambient Style (see page 27) 3. EDIT SINGLE ZONE - Floor Style (see page 28) 4. EDIT SINGLE ZONE - Ambient/Floor Style (see page 28)		
EDIT ALL ZONES	YES or NO	NO	Prompts with EDIT ALL ZONES ARE YOU SURE? Selecting YES displays the following options:
SETPOINT	Between SETPOINT MIN and SETPOINT MAX	70°F (21°C)	Target temperature set for the zone.
SETBACK	0°F to 16°F (0°C to 9°C)	7°F (4°C)	Amount of temperature (number of degrees) setback from occupied to unoccupied modes for this zone.
SETPOINT MAX	41°F to 100°F (5°C to 38 °C)	100°F (38°C)	Maximum setpoint temperature allowed for this zone's thermostat. The SETPOINT MAX cannot be set below the SETPOINT MIN setting.
SETPOINT MIN	41°F to 100°F (5°C to 38 °C)	41°F (5°C)	Minimum setpoint temperature allowed for this zone's thermostat. The SETPOINT MIN cannot be set above the SETPOINT MAX setting.
FLOOR LIMIT HI ^a	41°F to 100°F (5°C to 38 °C)	100°F (38°C)	Maximum floor temperature allowed for a given zone that is controlled by a floor / slab sensor connected to that zone's AQ1000 thermostat. At Floor MAX, the zone equip is turned off. The FLOOR MAX cannot be set below the FLOOR MIN setting.
FLOOR LIMIT LO ^a	41°F to 100°F (5°C to 38 °C)	41°F (5°C)	Minimum floor temperature allowed for a given zone that is controlled by a floor / slab sensor connected to that zone's AQ1000 thermostat. At Floor MIN, the zone equip is energized. The FLOOR MIN cannot be set above the FLOOR MAX setting).
SETPOINT VACANCY HEAT ^b	Between SETPOINT MIN and SETPOINT MAX	41°F (5°C)	Target heating temperature for the zone when system is in VACANCY mode.
SETPOINT VACANCY COOL ^b	Between SETPOINT MIN and SETPOINT MAX	100°F (38°C)	Target cooling temperature for the zone when system is in VACANCY mode. Only displays when cooling is enabled for that zone.
CHANGEOVER ^b	2°F to 9°F (1°C to 5°C)	2°F (1°C)	Temperature deadband that determines the changeover from heating to cooling and from cooling to heating: <ul style="list-style-type: none"> The thermostat switches from heating to cooling mode when the indoor temperature is <u>higher</u> than the setpoint by more than the changeover band setting for 15 minutes. The thermostat switches from cooling to heating mode when the indoor temperature is <u>lower</u> than the setpoint by more than the changeover band setting for 15 minutes.
KEYBOARD	LOCK or UNLOCK	UNLOCK	Controls the zone thermostat's keyboard. <ul style="list-style-type: none"> If set to LOCK, settings cannot be changed at that zone's thermostat. If set to UNLOCK, the thermostat's settings can be changed within the respective limits.

Table 5. User Menu. (Continued)

Menu Option	Range	Factory Default	Description
EDIT SINGLE ZONE^c	Ambient Style — Selecting this menu item displays the following options:		
ZONE #A-X	A-1 to A-16 ... D-1 to D-16	A-1	Each zone on the AQUATROL network has a unique identity (address). This address consists of a Control Module ID and the Zone related to that controller. <ul style="list-style-type: none"> Module ID: The Boiler Controller is A, and the 1st through 3rd Add-A-Temperature Expansion Control Modules (i.e., AQ25400B) are B, C, and D. Zone: From 1 to 16 for each Module ID. <p>A total of four controllers (one Boiler Control Module and up to three Add-A-Temperature Expansion Control Modules), each having 16 associated zones can be connected on the AQUATROL network. The AQ252 Control Panel itself can control one Boiler loop water temperature and one secondary loop water temperature.</p>
ROOM TEMP	32°F to 158°F (0°C to 70°C)	n/a	Display only – Temperature measured by the zone thermostat.
SETPOINT	Between SETPOINT MIN and SETPOINT MAX	70°F (21°C)	Target temperature set for the zone.
H/C STATUS	HEAT or COOL	n/a	Display only – Status is received from each zone thermostat every 10 seconds.
SETBACK	0°F to 16°F (0°C to 9°C)	7°F (4°C)	Amount of temperature (number of degrees) setback from occupied to unoccupied modes for this zone
SETPOINT MAX	41°F to 100°F (5°C to 38 °C)	100°F (38°C)	Maximum setpoint temperature allowed for this zone's thermostat. The SETPOINT MAX cannot be set below the SETPOINT MIN setting.
SETPOINT MIN	41°F to 100°F (5°C to 38 °C)	41°F (5°C)	Minimum setpoint temperature allowed for this zone's thermostat. The SETPOINT MIN cannot be set above the SETPOINT MAX setting.
SETPOINT VACANCY HEAT	41°F to 100°F (5°C to 38 °C)	41°F (5°C)	Target HEATING temperature for the zone when system is in VACANCY mode
SETPOINT VACANCY COOL	41°F to 100°F (5°C to 38°C)	100°F (38°C)	Target COOLING temperature for the zone when system is in VACANCY mode. Only displayed when cooling is enabled for that zone.
CHANGEOVER	2°F to 9°F (1°C to 5°C)	2°F (1°C)	Temperature deadband that determines the changeover from heating to cooling and from cooling to heating: <ul style="list-style-type: none"> The thermostat switches from heating to cooling mode when the indoor temperature is <u>higher</u> than the setpoint by more than the changeover band setting for 15 minutes. The thermostat switches from cooling to heating mode when the indoor temperature is <u>lower</u> than the setpoint by more than the changeover band setting for 15 minutes.
KEYBOARD	LOCK or UNLOCK	UNLOCK	Controls the zone thermostat's keyboard. <ul style="list-style-type: none"> If set to LOCK, settings cannot be changed at that zone's thermostat. If set to UNLOCK, the thermostat's settings can be changed within the respective limits.

Table 5. User Menu. (Continued)

Menu Option	Range	Factory Default	Description
EDIT SINGLE ZONE^c	Floor Style — Selecting this menu item displays the following options:		
FLOOR TEMP	32°F to 158°F (0°C to 70°C)	n/a	Display only. This is the temperature measured by the floor temperature sensor.
FLOOR SETPT	41°F to 100°F (5°C to 38 °C)	70°F (21°C)	This menu option displays only when the AQ1000 thermostat is set to FLOOR ONLY mode.
SETBACK	0°F to 16°F (0°C to 9°C)	7°F (4°C)	Amount of temperature (number of degrees) setback from occupied to unoccupied modes for this zone.
SETPOINT MAX	41°F to 100°F (5°C to 38 °C)	100°F (38°C)	Maximum setpoint temperature allowed for this zone's thermostat. The SETPOINT MAX cannot be set below the SETPOINT MIN setting.
SETPOINT MIN	41°F to 100°F (5°C to 38 °C)	41°F (5°C)	Minimum setpoint temperature allowed for this zone's thermostat. The SETPOINT MIN cannot be set above the SETPOINT MAX setting.
SETPOINT VACANCY HEAT	41°F to 100°F (5°C to 38 °C)	41°F (5°C)	Target HEATING temperature for the zone when system is in VACANCY mode.
KEYBOARD	LOCK or UNLOCK	UNLOCK	Controls the zone thermostat's keyboard. <ul style="list-style-type: none"> • If set to LOCK, settings cannot be changed at that zone's thermostat. • If set to UNLOCK, the thermostat's settings can be changed within the SETPOINT MAX and SETPOINT MIN limits.
EDIT SINGLE ZONE^c	Ambient/Floor Style — Selecting this menu item displays the following options:		
ZONE #A-X	A-1 to A-16 ... D-1 to D-16	A-1	Each zone on the AQUATROL network has a unique identity (address). This address consists of a Control Module ID and the Zone related to that controller. <ul style="list-style-type: none"> • Module ID: The Boiler Controller is A, and the 1st through 3rd Add-A-Temperature Expansion Control Modules (i.e., AQ25400B) are B, C, and D. • Zone: From 1 to 16 for each Module ID. <p>A total of four controllers (one Boiler Control Module and up to three Add-A-Temperature Expansion Control Modules) each having 16 associated zones can be connected on the AQUATROL network. The AQ252 Control Panel itself can control one Boiler loop water temperature and one secondary loop water temperature.</p>
ROOM TEMP	32°F to 158°F (0°C to 70°C)	n/a	Display only. This is the temperature measured by the zone thermostat.
FLOOR TEMP	32°F to 158°F (0°C to 70°C)	n/a	Display only – Temperature measured by the floor temperature sensor.
SETPOINT	Between SETPOINT MIN and SETPOINT MAX	70°F (21°C)	Target temperature set for the zone.
H/C STATUS	HEAT or COOL	n/a	Display only – Status is received from each zone thermostat every 10 seconds.
SETBACK	0°F to 16°F (0°C to 9°C)	7°F (4°C)	Amount of temperature (number of degrees) setback from occupied to unoccupied modes for this zone.
SETPOINT MAX	41°F to 100°F (5°C to 38 °C)	100°F (38°C)	Maximum setpoint temperature allowed for this zone's thermostat. The SETPOINT MAX cannot be set below the SETPOINT MIN setting.
SETPOINT MIN	41°F to 100°F (5°C to 38 °C)	41°F (5°C)	Minimum setpoint temperature allowed for this zone's thermostat. The SETPOINT MIN cannot be set above the SETPOINT MAX setting.

Table 5. User Menu. (Continued)

Menu Option	Range	Factory Default	Description
EDIT SINGLE ZONE			
Ambient/Floor Style (continued)			
FLOOR LIMIT HI ^a	41°F to 100°F (5°C to 38 °C)	100°F (38°C)	Maximum floor temperature allowed for a given zone that is controlled by a floor / slab sensor connected to that zone's AQ1000 thermostat. At floor maximum, the zone equipment is turned off. The FLOOR MAX cannot be set below the FLOOR MIN setting.
FLOOR LIMIT LO ^a	41°F to 100°F (5°C to 38 °C)	41°F (5°C)	Minimum floor temperature allowed for a given zone that is controlled by a floor / slab sensor connected to that zone's AQ1000 thermostat. At Floor MIN, the zone equip is energized. The FLOOR MIN cannot be set above the FLOOR MAX setting.
SETPOINT VACANCY HEAT	41°F to 100°F (5°C to 38 °C)	41°F (5°C)	Target HEATING temperature for the zone when system is in VACANCY mode.
SETPOINT VACANCY COOL	41°F to 100°F (5°C to 38 °C)	100°F (38°C)	Target COOLING temperature for the zone when system is in VACANCY mode. Only displays when cooling is enabled for that zone.
CHANGEOVER	2°F to 9°F (1°C to 5°C)	2°F (1°C)	Temperature deadband that determines the changeover from heating to cooling and from cooling to heating: <ul style="list-style-type: none"> The thermostat switches from heating to cooling mode when the indoor temperature is <u>higher</u> than the setpoint by more than the changeover band setting for 15 minutes. The thermostat switches from cooling to heating mode when the indoor temperature is <u>lower</u> than the setpoint by more than the changeover band setting for 15 minutes.
KEYBOARD	LOCK or UNLOCK	UNLOCK	Controls the zone thermostat's keyboard. <ul style="list-style-type: none"> If set to LOCK, settings cannot be changed at that zone's thermostat. If set to UNLOCK, the floor thermostat's settings can be changed within the FLOOR MAX and FLOOR MIN limits.
PROGRAM SETTINGS			
Displays, and allows for editing of, the temperature setpoints for each of the four time periods (or programs) within a 24-hour period (WAKE, LEAVE, RETRN (return), and SLEEP).			
MODE	AUTO, OCC, or UNOCC	AUTO	<ul style="list-style-type: none"> AUTO = Automatically follow the four time periods (or programs) within a 24 hour period, as set up in the Edit All Days or Edit Daily sub-menus. The four programs are WAKE, LEAVE, RETRN (return), and SLEEP. OCC = Observe the program settings only for WAKE and RETRN (return). UNOCC = Observe the program settings only for LEAVE and SLEEP.
EDIT ALL DAYS	ALL WAKE, ALL LEAVE, ALL RETRN, or ALL SLEEP	WAKE=6:00AM LEAVE=8:00AM RETRN=6:00PM SLEEP=10:00PM	Allows Installer to set the WAKE, LEAVE, RETRN (return), and SLEEP times once, and apply the settings to all 7 days. NOTE: The programs will be copied to the individual days <u>only</u> when the COPY TO ALL DAYS option is selected.
EDIT DAILY	WAKE, LEAVE, RETRN, or SLEEP	WAKE=6:00AM LEAVE=8:00AM RETRN=6:00PM SLEEP=10:00PM	Allows Installer to set the WAKE, LEAVE, RETRN (return), and SLEEP times for all 7 days individually.

Table 5. User Menu. (Continued)

Menu Option	Range	Factory Default	Description
STATISTICS	Displays the summary and zone relay activity (hours of operation or cycles since last reset).		
LAST DATA RESET	Max. 24,855 days (68 years)	2000 JAN 01	Date of last reset formatted as YYYY MMM DD.
BOILER FIRE ACTIV	Maximum of 596,523 hours (68 years)	0H	Hours of operation of the relay since last reset.
BOILER PUMP ACTIV	Maximum of 596,523 hours (68 years)	0H	Hours of operation of the relay since last reset.
DHW PUMP ACTIV	Maximum of 596,523 hours (68 years)	0H	Hours of operation of the relay since last reset.
AUX PUMP ACTIV	Maximum of 596,523 hours (68 years)	0H	Hours of operation of the relay since last reset.
SEC PUMP ACTIV	Maximum of 596,523 hours (68 years)	0H	Hours of operation of the relay since last reset.
INJ PUMP ACTIV	Maximum of 596,523 hours (68 years)	0H	Hours of operation of the relay since last reset.
AUX OUT ACTIV	Maximum of 596,523 hours (68 years)	0H	Hours of operation of the relay since last reset.
MIX VLV. OPEN CYCLE	Maximum of 10,000,000 cycles	0	Displays number of valve open cycles since last reset.
MIX VLV. CLOSE CYCLE	Maximum of 10,000,000 cycles	0	Displays number of valve close cycles since last reset.
ZONE A-1 ACTIV	Maximum of 596,523 hours (68 years)	0H	Hours of operation of the zone's relay (e.g., zone A-1) since last reset. The zone Identifier is A-1 through D-16.

^a The FLOOR LIMIT values can be set in the User Menu of AQ252 Control Panel or the Installer Menu of the AQ1000 thermostat. These programming options only display when an AQ1000 thermostat is configured for Air/ Floor or Floor control operation. Refer to the AQ1000 thermostat Instruction Sheet.

^b) Only available with AQ1000TP2 thermostats.

^c) Only available with AQ1000 thermostats.

Installer Menu

The Installer Menu allows you to set up and modify system settings that typically would be adjusted by a trained installer. These include equipment settings (for boiler operation, DHW management, zoning, auxiliary input/output operation) and option settings, such as pump/valve exercise, freeze protection, and Save/Restore settings.

System statistics and the installer tools (Test and Purge) are also available from the Installer Menu.

The two Installer Menu options are:

- Equipment Setup (including Statistics) – refer to Table 6
- Test and Purge – refer to Table 7 on page 38

NOTE: Illustrations of the complete Installer Menu begin on page 41.

To access the Installer Menu:

1. Press the Home button to return to the Home Page display.
2. Press and hold the OK button for 3 seconds until the message, INSTALLER MODE – ARE YOU SURE?, displays.
3. Select YES, then press and release the OK button to display the Installer Menu.

NOTE: To exit Installer Mode, select the Installer Exit menu option.

Table 6. Installer Menu – Equipment Setup.

EQUIPMENT SETUP			
Menu Option	Range	Factory Default	Description
BOILER SETTINGS	Installer-defined settings for the system design parameters (e.g., boiler supply and return temperatures, reset mode, and outdoor low temperature)		
HIGH LIMIT	120°F to 225°F (49°C to 107°C)	190°F (88°C)	Maximum temperature that the control can use as a target for the boiler supply water (HIGH LIMIT cannot be set below the LOW LIMIT setting).
LOW LIMIT	60°F to 180°F (15°C to 82°C)	150°F	Minimum temperature that the control can use as a target for the boiler supply water (LOW LIMIT cannot be set above the HIGH LIMIT setting).
BOILER DIFF	2°F to 41°F (1°C to 23°C) / AUTO	AUTO	The temperature differential used by the control when operating the boiler. The same differential is used for both the HIGH LIMIT and the LOW LIMIT. <ul style="list-style-type: none"> • If AUTO is selected, the differential is calculated automatically by the AQ252 to maximize comfort and minimize boiler short cycling. • If a specific boiler differential (BOILER DIFF) is selected, the AQ252 will apply 1/2 of this differential above the AQ252's HIGH LIMIT boiler setting and the other 1/2 below the HIGH LIMIT setting when controlling the boiler supply water temperature. • For example, if the High Limit = 190°F and the Boiler Diff = 10°F, the High Limit range becomes 185-195°F. NOTE: This formula also applies to the boiler differential around the AQ252's LOW LIMIT.
W.W.S.D.	-- 35°F to 100°F (2°C to 38°C)	70°F (21°C)	Warm Weather Shut Down is the outdoor temperature above which the AQ252 will not allow hot water to be sent to a space heating zone. The boiler still operates to supply hot water to DHW or a setpoint (HEAT) demand. The WWSD feature can be disabled by reducing the WWSD temperature below 35°F (2°C), at which point the display will read "--". NOTE: Disabling WWSD is not advisable. This will increase the average reset temperature for the Boiler Supply water, resulting in higher energy consumption and less even heating.
RESET	OUTDOOR / LOAD / NONE	OUTDOOR	Selects the calculation method (algorithm) that the control uses to set the target temperature for the boiler supply and secondary loop supply water. Choose LOAD for buildings with high internal heat gains; otherwise use OUTDOOR.
BOILER SETTINGS (continued)			
OUTDOOR LOW	-60°F to 32°F (-51°C to 0°C)	10°F (-12°C)	The lowest annual outdoor temperature for the location where the system is installed, also referred to as the Design Temperature. Typically used in the original heat loss calculations for the building, the OUTDOOR LOW temperatures for various cities in North America can generally be found in ASHRAE tables.
BOILER DSGN	80°F to 210°F (27°C to 99°C)	180°F (82°C)	The supply water temperature required from the boiler when the outdoor temperature is at the OUTDOOR LOW temperature.
MIN. RETURN	-- / 80°F to 180°F (27°C to 82°C)	140°F (60°C)	Minimum temperature (or OFF) that the control allows for water returning to the boiler. If the temperature of the boiler return water is below the selected temperature, <u>and</u> the AUX pump is set to operate as a boiler bypass pump (EQUIPMENT SETUP > AUXILIARY I/O > AUX.PUMP option is set to BYPASS), the AUX dry contacts close, allowing the separately-powered AUX pump to energize. <ul style="list-style-type: none"> • "--" means Off (not used).

Table 6. Installer Menu – Equipment Setup. (Continued)

EQUIPMENT SETUP			
Menu Option	Range	Factory Default	Description
BOILER OPERATION			
CYCLES/HOUR	2 to 6	4	The number of heating cycles per hour that the control will operate the boiler.
FIRE DELAY	0 seconds to 3 minutes (in 5 second increments)	10 (seconds)	Time period that AQ252 control expects between closing the T-T relay and the boiler firing up. Referring to the boiler's instruction manual, set this value equal to the boiler's pre-purge time, if available for the boiler.
PURGE TIME	OFF, 10 seconds to 30 minutes (in 10 second increments)	30 (seconds)	Length of time the Boiler pump (or Boiler pump plus zone valve) will continue to operate (remain open) after the boiler stops firing. Adjustable from 10 seconds to 30 minutes or OFF.
EXERCISE	YES / NO	YES	Option can be set to YES or NO. When set to YES, all pumps and valves in the system are energized for 30 seconds, following a period of 2 weeks of no zone equipment activity. The boiler is not fired during this operation.
FREEZE PROT	YES / NO	YES	Option can be set to YES or NO. When set to YES, all pumps and valves in the system are energized for 4 minutes every hour. The boiler is operated at high fire during this operation.
10V MOD. SELECT Operating settings for the analog 0-10V (2-10V) modulating signal			
10V MOD	0-10V / 2-10V	0-10V	The analog signal provided by the control to the mixing valve or variable speed pump is proportional to the degree of opening of the valve or the speed of the pump. It is opened fully at 10V and closed fully at either 0V or 2V, depending on the setting chosen. The pump is running at maximum speed at 10V and completely stopped at 0V or 2V.
USAGE	NONE / MIX. INJ. / BOILER	NONE	This setting assigns the device which the analog signal will drive. The NONE option disables a signal from the 10V output.
SECONDARY LOOP Settings which the AQ252 uses for Secondary loop operation			
MIX HIGH	-- 80°F to 210°F (27°C to 99°C)	140°F (60°C)	Maximum temperature that the control can use as a target for the secondary loop supply water. The MIX HIGH cannot be set below the MIX LOW setting. • "--" means Off (not used).
SECONDARY LOOP (continued)			
MIX LOW	-- 35°F to 150°F (2°C to 66°C)	-- (disabled)	Minimum temperature that the control can use as a target for the secondary loop supply water. The MIX LOW cannot be set above the MIX HIGH setting. • "--" means Off (not used).
MIX DESIGN	70°F to 210°F (21°C to 99°C)	120°F (49°C)	The supply water temperature required in the secondary loop when the outdoor temperature is at the OUTDOOR LOW temperature.
INJECT.	ENABLE / DISABLE	ENABLE	Enables or disables the INJECTION pump output.
MIX.VLV	ENABLE / DISABLE	DISABLE	Enables or disables the Floating Action valve output
MIX.V.TTO	5 to 230 seconds (in 5 second increments)	160 (seconds)	Time required for the motorized mixing valve to fully open. NOTE: This option is available <u>only</u> when the FLOAT option for MIX.DEVICE is selected.
MIX.V.ACT	DIRECT / REVRSE	DIRECT	Assigns the polarity of the Mixing Valve's action: Direct or Reverse. This feature is very useful in the event that the Mixing Valve has been installed backwards. NOTE: This option is available <u>only</u> when the FLOAT option for MIX.DEVICE is selected.

Table 6. Installer Menu – Equipment Setup. (Continued)

EQUIPMENT SETUP			
Menu Option	Range	Factory Default	Description
MIX DEVICE	FLOAT / INJ / 10V	10V	Assigns which device is used for mixing to produce the target temperature in the secondary loop.
DOMEST.HOT WATER	Settings that the AQ252 uses to manage Domestic Hot Water generation		
DHW	ENABLE / DISABLE	ENABLE	Identifies whether Domestic Hot Water Management function is enabled. DHW is typically disabled only if a separate source of domestic hot water (e.g., oil, or gas-fired hot water heater) is used.
DHW PRIO	YES / NO	NO	Displays only if DHW = ENABLE. Selects whether DHW generation can take priority over space heating. If yes, set to YES; if not, set to NO.
PRIO.OVER.	YES / NO	YES	Displays only if DHW PRIO = YES. Selects whether (following a 30 minute uninterrupted call for DHW Demand) the priority given to DHW generation can be overridden to minimize the chance of freeze up or excessive cool down of the space heating zones. <ul style="list-style-type: none"> • YES = On = Allow DHW Priority override. • NO = Off = Do not allow DHW Priority override. If DHW Priority is selected, Honeywell strongly recommends setting the DHW PRIO.OVER to YES.
DHW DEVICE	PUMP / VALVE	PUMP	Displays only if DHW = ENABLE. Selects whether the DHW loop is supplied by a zone valve or zone pump.
DHW VLV.OP	0 - 230 seconds (in 5 second increments)	15 (seconds)	Displays only if DHW DEVICE = VALVE. Time required for the DHW zone valve to fully open before boiler loop pump is energized. The 15 second default is typical for motorized valves.
DHW PURGE	YES / NO	YES	Displays only if DHW = ENABLE. Selects whether or not a purge should be applied after a DHW demand has been served. If YES is selected, the DHW pump or valve is kept running for the amount of time programmed in the PURGE TIME option of the BOILER OPERATION menu.
DHW SENSOR	YES / NO	NO	Selects whether or not the Return sensor will be used as a DHW tank sensor. YES = use as the DHW sensor.
DHW SETPOINT	-- 60°F to 160°F (16°C to 71°C)	140°F (60°C)	Displays only if DHW SENSOR = YES. Target temperature set for the DHW tank. <ul style="list-style-type: none"> • "--" means Off (not used).
DHW DIFF	-- 5°F to 40°F (2.5°C to 22°C)	20°F (-7°C)	Displays only if DHW SENSOR = YES. <ul style="list-style-type: none"> • "--" means Off (not used). • A call for DHW begins when the measured DHW temperature = DHW SETPOINT - DHW DIFF and ends when the DHW temperature = DHW SETPOINT. • For example, if the DHW setpoint = 140°F and the DHW Diff = 20°F, a call for DHW begins when the DHW temperature falls below 120°F and ends when the DHW temperature increases to 140°F.
DHW VACANCY	-- [41°F + DHW DIFF] to 160°F ([5°C + DHW DIFF] to 71°C)	45°F (7°C)	Displays only if DHW SENSOR = YES. Target DHW temperature when system is in VACANCY mode. <ul style="list-style-type: none"> • "--" means Off (not used).

Table 6. Installer Menu – Equipment Setup. (Continued)

EQUIPMENT SETUP			
Menu Option	Range	Factory Default	Description
ZONING	Settings which the AQ252 uses specifically for Zone operation		
HEAT DMND	RESET / SETPT	RESET	<p>Defines whether the device connected to Heat (terminals 13 and 14) is a conventional (non-communicating) thermostat (RESET) or a setpoint load (SETPT) - such as a pool or spa.</p> <ul style="list-style-type: none"> When RESET is selected, the AQ252 fires the boiler to produce supply water at a temperature defined by the AQ's reset algorithm (Outdoor or Load) when the Heat terminals are shorted. When SETPT is selected, the AQ252 operates the boiler at the HIGH LIMIT setting [EQUIPMENT SETUP > BOILER SETTING > HIGH LIMIT].
HT DMND PRIO	YES / NO	NO	<p>Displays only if HEAT DMND = SETPT.</p> <p>Selects whether a HEAT DEMAND (device connected to the Heat terminals on the AQ control module) can take priority over space heating. If yes, set to YES; if not, set to NO.</p> <ul style="list-style-type: none"> If both DHW Priority and Heat Demand Priority are set to YES and both are active at the same time, DHW Priority takes priority over Heat Demand Priority.
PRIO.OVER	YES / NO	NO	<p>Displays only if HT DMND PRIO = YES.</p> <p>Selects whether (following a 30 minute uninterrupted call for Heat Demand) the priority given to the Heat Demand can be overridden to minimize the chance of freeze up or excessive cool down of the space heating zones.</p> <ul style="list-style-type: none"> YES = On = Allow Heat Demand Priority override. NO = Off = Do not allow Heat Demand Priority override.
ZONING VALVES TIME TO OPEN	5 - 230 (seconds)	15 (seconds)	<p>Time required for the zone valves installed on space heating zones to fully open.</p>
PRI/SEC	PRI / SEC	SEC	<p>Identifies the heating water loop that each space heating zone is supplied by the primary boiler loop (PRI) or the secondary mixed loop (SEC).</p> <p>Displays the PRI/SEC sub-menu with the following selections for all or individual zones:</p> <p>ALL PRI: ALL SEC: A-1: PRI/SEC A-2: PRI/SEC ... D-16 PRI/SEC</p>

Table 6. Installer Menu – Equipment Setup. (Continued)

EQUIPMENT SETUP			
Menu Option	Range	Factory Default	Description
AUXILIARY I/O	Settings which the AQ252 uses to control the system based on input to the AUX. IN terminals or to control the activation of the AUX.OUT and AUX.PUMP outputs.		
AUX.IN (optional)	SETBACK / VACANCY / EM. SHUT / NONE	SETBACK	Based on the setting chosen, the AQ252 sets the system in one of 3 different levels of setback for as long as the Aux. In terminals are shorted. Refer to instruction sheet for AQ1000 thermostat (69- 2005EF) for setting the Vacancy (Freeze Protection) temperature setpoint.
AUX.OUT (optional)	BOILER / SETBACK / ZONE OP. / ALARM / AUX.IN / DHW IN / HEAT IN / HT DMND / COOL / NONE	BOILER	Based on the setting chosen, the AQ252 closes the AUX. Out dry contact terminals when: <ul style="list-style-type: none"> • BOILER: The boiler pump energizes. • SETBACK: The system program is in setback mode (either SLEEP or LEAVE). • ZONE OP.: The end switch of a zone valve connected to a Zoning Module closes or a zone pump energizes. • ALARM: An alarm is detected on the system. • AUX.IN, DHW IN, HEAT IN, or HEAT DMND: An input signal is detected on the respective terminals. • COOL: There is a call for cooling from a programmable AQ1000 thermostat. The COOL option is available <u>only</u> if central A/C is present; see the “A/C SETTINGS^a” and “A/C EQUIP CONFIG” menu options in this table. • NONE: indicates that the Aux Out terminals are not used.
AUX.PUMP (optional)	BOILER / GROUP / OCC / BYPASS / FAN / NONE / AUX.IN / DHW IN / HEAT IN / HT DMND	BOILER	Based on the setting chosen, the AQ252 closes the Aux. Pump dry contacts when: <ul style="list-style-type: none"> • BOILER: The boiler pump energizes. • GROUP: Any of the thermostats in a Group of zones (identified by the Zoning Module's DIP switch #7 [AUX] being switched to YES) energize. • OCC: The system program is in Occupied mode (either WAKE or RETRN). • BYPASS: The boiler return sensor measures a water temperature less than the value defined for the EQUIPMENT SETUP > BOILER SETTING > MIN RETURN setting. • FAN: There is a call for cooling from a programmable AQ1000 thermostat. The FAN option is available <u>only</u> if central A/C is present; see the “A/C SETTINGS^a” and “A/C EQUIP CONFIG” menu options in this table • AUX.IN, DHW IN, HEAT IN, or HEAT DMND: An input signal is detected on the respective terminals. • NONE: indicates that the Aux Pump terminals are not used.
A/C SETTINGS^a	Central A/C – Available only if no AQ158 controller is present on the network.		
CYCLES/HOUR	2 / 3 / 4 / 5 / 6	4	The maximum number of times the controller will permit the central A/C to cycle in each hour.
MIN.OFF TIME	2 to 10 (minutes)	5M	The length of time that must elapse after the AC compressor shuts off before the Aux. Out relay is permitted to close, to energize the compressor again.
C.W.S.D.	-- 32°F to 100°F (0°C to 38°C)	65°F (18°C)	The temperature at which cold weather shutdown is activated. <ul style="list-style-type: none"> • “--” means Off (not used).
FAN MODE	AUTO / ON	AUTO	Selects whether or not the fan serving the A/C system operates constantly (ON) or operates only when there is a call for cooling (AUTO). FAN MODE displays only if the FAN option is selected for AUX.PUMP. See “AUX.PUMP” menu option in this table.

Table 6. Installer Menu – Equipment Setup. (Continued)

EQUIPMENT SETUP			
Menu Option	Range	Factory Default	Description
A/C EQUIP CONFIG	Central A/C – Available only if no AQ158 controller is present on the network.		
ZONE	A-1 to D-16	A-1	Selects the desired zone.
A/C UNIT	NONE / 1	1	Defines which A/C compressor is associated with each zone thermostat. NOTE: At this time, only one zone of A/C can be handled by the AQ2000 controls. The options are 1 (if the zone uses an AQ1000TP2 programmable thermostat and can call for cooling), or NONE.
COOLING	ENABLE / DISABLE	ENABLE	Enables or disables the cooling functions of the zone's programmable thermostat (AQ1000TP2). NOTE: This item is always set to DISABLE when a non-programmable thermostat (AQ1000TN2) is used in the selected zone.
STATISTICS	Displays the summary and Zone relay activity (hours of operation or cycles since last reset)		
LAST DATA RESET	Max. 24,855 days (68 years)	2000 JAN 01	Date of last reset formatted as YYYY MMM DD.
RESET ALL DATA ARE YOU SURE?	YES / NO	NO	Selecting YES resets all of the summary and zone activity values to zero.
BOILER FIRE ACTIV	Maximum of 596,523 hours (68 years)	0H	Hours of operation of the relay since last reset.
BOILER PUMP ACTIV	Maximum of 596,523 hours (68 years)	0H	Hours of operation of the relay since last reset.
DHW PUMP ACTIV	Maximum of 596,523 hours (68 years)	0H	Hours of operation of the relay since last reset.
AUX PUMP ACTIV	Maximum of 596,523 hours (68 years)	0H	Hours of operation of the relay since last reset.
SEC PUMP ACTIV	Maximum of 596,523 hours (68 years)	0H	Hours of operation of the relay since last reset.
INJ PUMP ACTIV	Maximum of 596,523 hours (68 years)	0H	Hours of operation of the relay since last reset.
AUX OUT ACTIV	Maximum of 596,523 hours (68 years)	0H	Hours of operation of the relay since last reset.
MIX VLV. OPEN CYCLE	Maximum of 10,000,000 cycles	0	Displays number of valve open cycles since last reset.
MIX VLV. CLOSE CYCLE	Maximum of 10,000,000 cycles	0	Displays number of valve close cycles since last reset.
ZONE A-1 ACTIV	Maximum of 596,523 hours (68 years)	0H	Hours of operation of the zone's relay (e.g., zone A-1) since last reset. The zone Identifier is A-1 through D-16.
ENVIRACOM	Not used - reserved for future use.		
Modules ID:	n/a	n/a	n/a

Table 6. Installer Menu – Equipment Setup. (Continued)

EQUIPMENT SETUP			
Menu Option	Range	Factory Default	Description
SAVE / RESTORE	Options for saving settings or restoring previously-saved settings		
RESTORE FACTORY	n/a	n/a	Selecting this option restores all settings to their factory defaults
RESTORE SETUP	n/a	n/a	Selecting this option restores all settings to those saved by the Installer with the SAVE SETUP operation. RESTORE SETUP is only displayed as a menu option if installer settings have previously been saved using the SAVE SETUP menu option. Only displays if the installer has previously saved his (non-factory default) settings using the SAVE SETUP feature.
SAVE SETUP	n/a	n/a	Enables installer to SAVE system settings once the system has been set up and is working well; Designed to facilitate quick recovery to proper system operation in the event of inadvertently changing control settings (e.g., tampering with the system settings by an inexperienced user).

^a Applies only to systems where the zones use an AQ1000TP2 stat and the A/C equipment is connected directly to (and controlled by) the AQ panel. Does not apply when A/C equipment is connected directly to a digital, non-communicating stat.

Table 7. Installer Menu – Test and Purge.

TEST and PURGE			
Menu Option	Range	Factory Default	Description
TEST OUTPUTS	Tests the individual system outputs to ensure correct operation.		
BOILER PUMP	ON / OFF	OFF	Energizes / de-energizes the line voltage terminals marked Boiler when switched to ON / OFF respectively.
SEC. PUMP	ON / OFF	OFF	Energizes / de-energizes the line voltage terminals (9 and 10) marked Sec. when switched to ON / OFF respectively.
AUX PUMP	ON / OFF (close / open)	OFF (open)	Closes / opens the line voltage rated dry contacts marked Aux. when switched to ON / OFF, respectively.
DHW PUMP	ON / OFF	OFF	Energizes / de-energizes the line voltage rated terminals marked DHW when switched to ON / OFF respectively.
BOILER T-T	ON / OFF (close / open)	OFF (open)	Closes / opens the low voltage rated dry contacts (terminals 22 and 23) marked Boiler T-T when switched to ON / OFF respectively.
AUX OUT	ON / OFF (close / open)	OFF (open)	Closes / opens the low voltage rated dry contacts (terminals 24 and 25) marked Aux. Out. when switched to ON / OFF respectively.
MIX V. OPEN	ON / OFF	OFF	Energizes the Open terminal (20) of the Motorized Mixing Valve to open the valve.
MIX V. CLOSE	ON / OFF	OFF	Energizes the Close terminal (21) of the Motorized Mixing Valve to close the valve.
INJECTION%	0% to 100%	0%	Produces a variable voltage on the Var.Injection line voltage terminals, according to the setting chosen (0% to 100%) in increments of 10%.
10V MOD	0V to 10V	0V	Produces voltage on the 10 Vdc low voltage terminals (17 and 18), according to the setting chosen (0V to 10V), in increments of 1V.

Table 7. Installer Menu – Test and Purge. (Continued)

TEST and PURGE			
Menu Option	Range	Factory Default	Description
TEST SENSORS	Tests the supply, return and outdoor temperature sensors to ensure correct operation		
OUTDOOR	-- LO -58° to 212°F (-50° to 100°C) HI	n/a	Displays the temperature measured by the outdoor sensor. <ul style="list-style-type: none"> • "--" means sensor is disconnected • LO means temperature reading is below -55°F (-50°C) • HI means temperature reading is above 212°F (100°C)
BOILER	-- LO -49° to 257°F (-45° to 125°C) HI	n/a	Displays the temperature measured by the boiler supply sensor. <ul style="list-style-type: none"> • "--" means sensor is disconnected • LO means temperature reading is below -49°F (-45°C) • HI means temperature reading is above 257°F (125°C)
SECONDARY	-- LO -49° to 257°F (-45° to 125°C) HI	n/a	Displays the temperature measured by the secondary mixed water sensor. <ul style="list-style-type: none"> • "--" means sensor is disconnected • LO means temperature reading is below -49°F (-45°C) • HI means temperature reading is above 257°F (125°C)
RETURN	-- LO -49° to 257°F (-45° to 125°C) HI	n/a	Displays the temperature measured by the Return/DHW sensor. <ul style="list-style-type: none"> • "--" means sensor is disconnected • LO means temperature reading is below -49°F (-45°C) • HI means temperature reading is above 257°F (125°C) <p>Does not display when the RETURN/DHW sensor is configured as a DHW sensor.</p>
DHW	-- LO -49° to 257°F (-45° to 125°C) HI	n/a	Displays the temperature measured by the sensor configured for DHW (the sensor wired to the Return/DHW terminals 5 and 6). <ul style="list-style-type: none"> • "--" means sensor is disconnected • LO means temperature reading is below -49°F (-45°C) • HI means temperature reading is above 257°F (125°C) <p>Displays only when the sensor is configured as a DHW sensor.</p>
TEST ZONES	Tests the zone equipment individually, or sequentially, to ensure correct operation		
ALL ZONES	n/a	OFF	Sequentially energizes / de-energizes all zones connected to the AQUATROL network. <ul style="list-style-type: none"> • 0 displays when the Control Module has confirmation that the pump/valve is closed. • 1 displays when the Control Module has confirmation that the pump/valve is fully open. <p>In the case of pump zoning, the 1 displays no more than 5 seconds after the activation of the relay. In the case of valve zoning, the 1 displays either when the zone valve operating time (defined in EQUIPMENT SETUP > ZONING > ZONE VALVES TIME TO OPEN) has elapsed (AQ15540B) or when the valve's end switch is closed (AQ15740B).</p>
ZONE A-1 0/1 ... ZONE A-16 0/1	0 / 1	0	Energizes / de-energizes each zone individually. <ul style="list-style-type: none"> • 0 displays when the Control Module has confirmation that the pump/valve is closed. • 1 displays when the Control Module has confirmation that the pump/valve is fully open.

Table 7. Installer Menu – Test and Purge. (Continued)

TEST and PURGE			
Menu Option	Range	Factory Default	Description
PURGE	Purges all (or individual) zones for the period of time selected in the PURGE TIME menu option		
PURGE TIME	1 to 30 (minutes)	5:00 (minutes)	Duration of purge for each zone selected.
PURGE	ALL / DHW / ZONE A-1 ... ZONE D-16	ALL	Installer selects which zones to purge (all, only DHW, or individual zones).
START PURGE	START PURGE / STOP PURGE	n/a	Starts and Stops purge operation.
PURGE OFF	WAIT VALVE / PURGE COMPLETED	n/a	Indicates status of the system during a Purge operation. Displays only if START PURGE is active.

Menu Structure

This section illustrates the complete menu structure for:

- User Menu
- Installer Menu (see Fig. 25 on page 41)

User Menu Structure

Press the Menu button on the keypad to display the User Menu. Fig. 24 illustrates all possible User Menu selections.

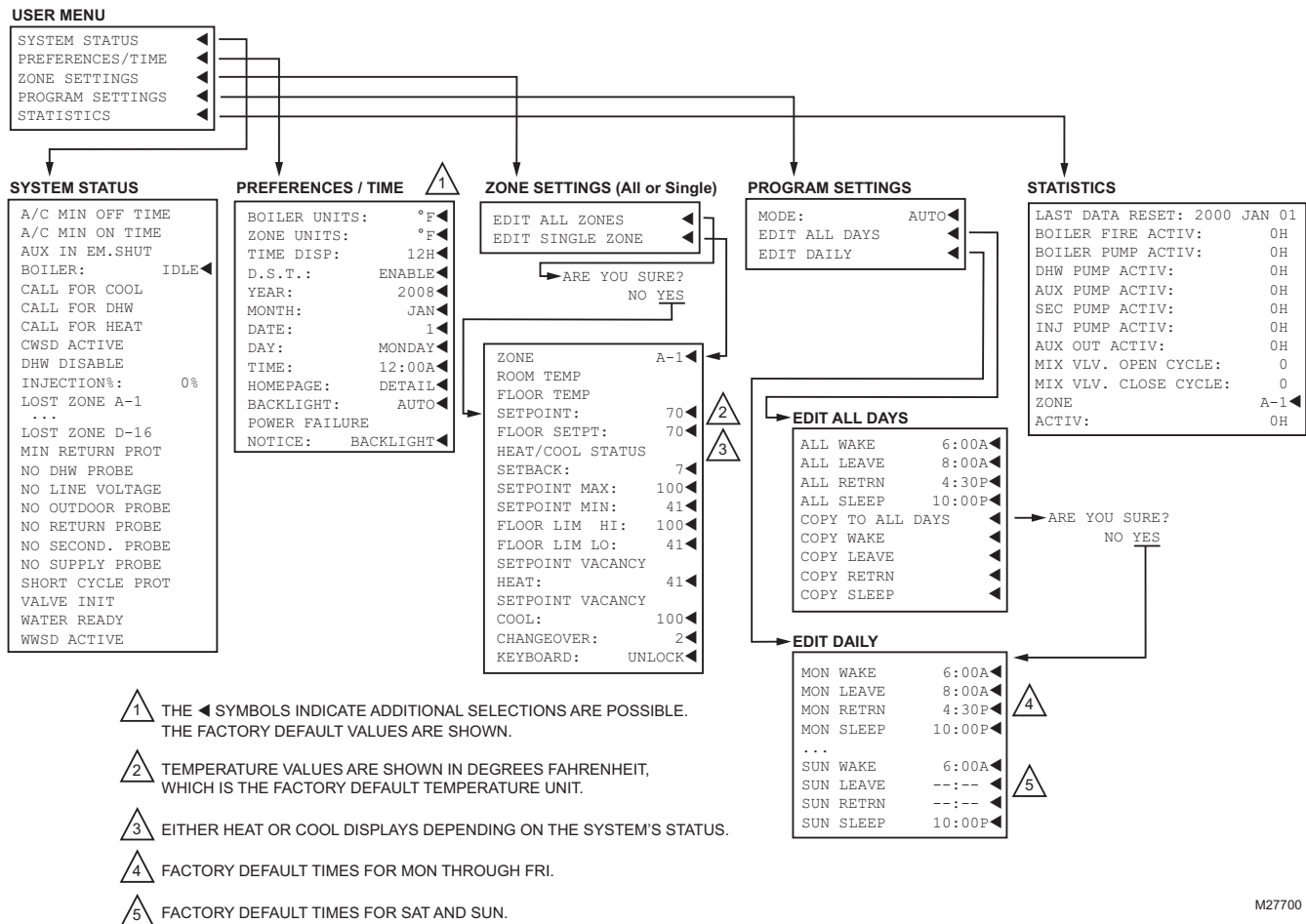
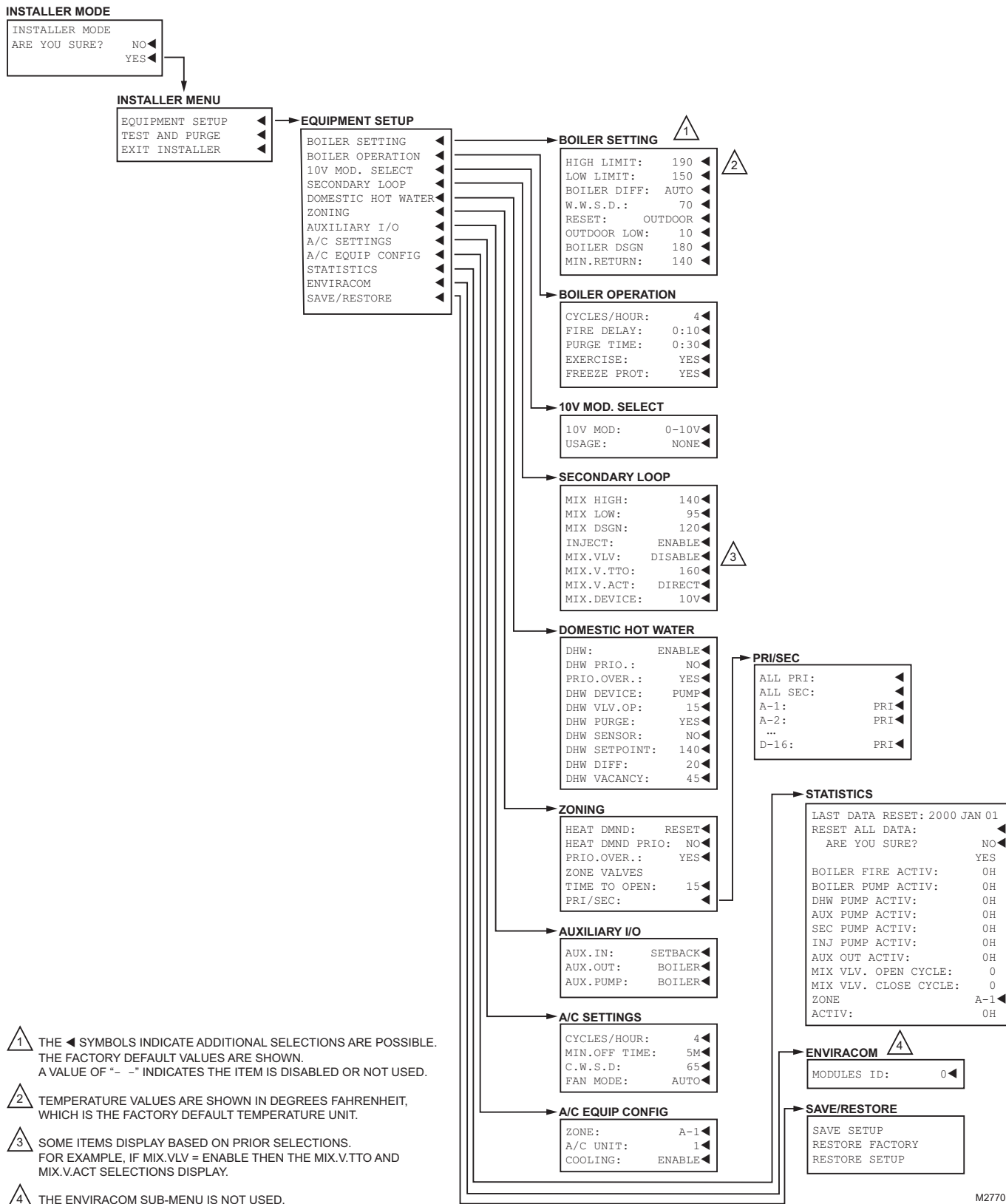


Fig. 24. User Menu Structure.

Installer Menu Structure

To display the Installer Menu, go to the Home Page, press and hold the OK button for 3 seconds until the message INSTALLER MODE – ARE YOU SURE? displays. Select YES and press the OK button. Fig. 25 and Fig. 26 illustrate all possible Installer Menu selections.



- 1 THE ◀ SYMBOLS INDICATE ADDITIONAL SELECTIONS ARE POSSIBLE. THE FACTORY DEFAULT VALUES ARE SHOWN. A VALUE OF " - " INDICATES THE ITEM IS DISABLED OR NOT USED.
- 2 TEMPERATURE VALUES ARE SHOWN IN DEGREES FAHRENHEIT, WHICH IS THE FACTORY DEFAULT TEMPERATURE UNIT.
- 3 SOME ITEMS DISPLAY BASED ON PRIOR SELECTIONS. FOR EXAMPLE, IF MIX.VLV = ENABLE THEN THE MIX.V.TTO AND MIX.V.ACT SELECTIONS DISPLAY.
- 4 THE ENVIRACOM SUB-MENU IS NOT USED.

Fig. 25. Installer Menu Structure. – Equipment Setup.

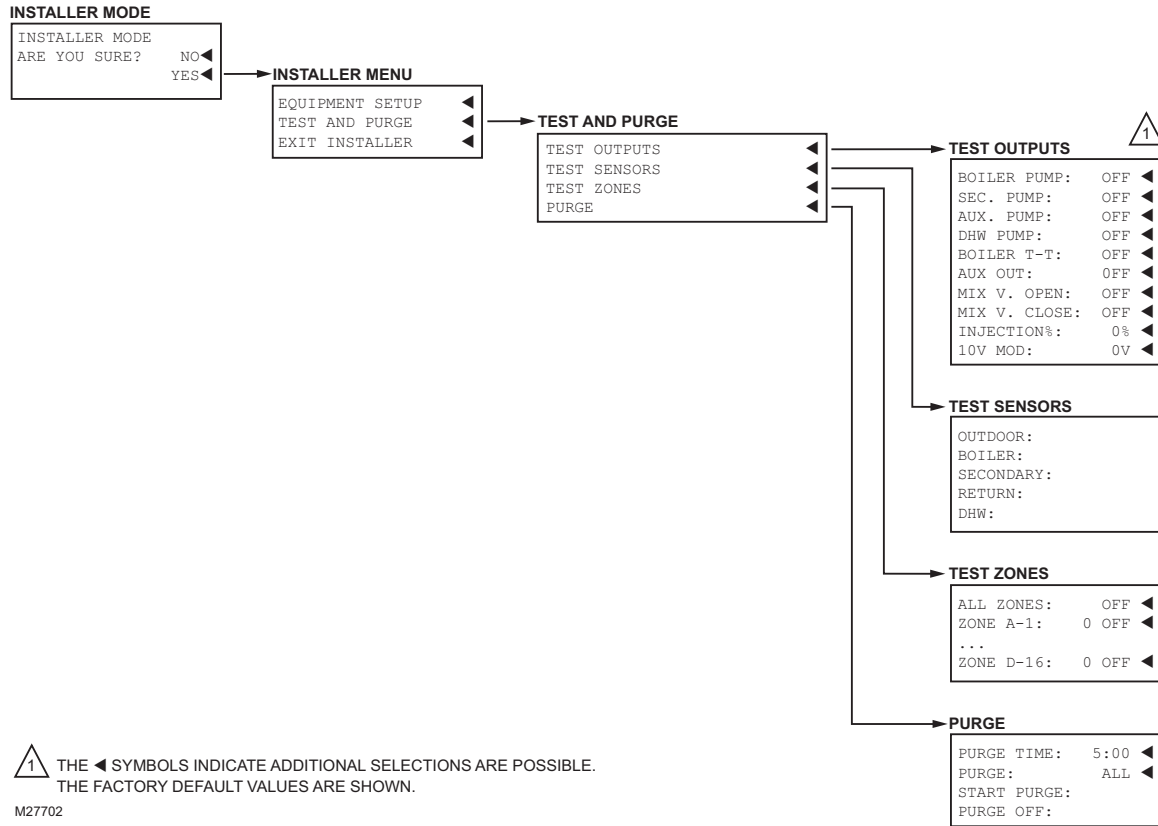


Fig. 26. Installer Menu Structure. – Test and Purge.

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Expansion Relays

AQ25400B “Add-A-Temperature” Expansion Control Panel

PRODUCT DATA



PRODUCT DESCRIPTION

The AQ25400B “Add-A-Temperature” Expansion Control Panel provides additional zoning capacity for an existing hydronic installation controlled by an AQ2000 Series Boiler Control Panel such as an AQ250 Relay Boiler Control, an AQ25A Programmable Boiler Control, an AQ251 Reset Boiler Control, or an AQ252 Universal Injection/Mixing Boiler Reset Control. The AQ254, which can control up to 16 zones of heating in addition to the zones connected to the Master AQ2000 Series boiler control, maintains the water temperature in a secondary loop of a hydronic system by

mixing higher temperature water from the primary (boiler) loop with cooler water returning from the heat emitters in the secondary loop that is being controlled by the AQ254.

The mixing action is accomplished by one of three outputs on the AQ254’s Control Module:

- a line voltage injection pump,
- a 24 Vac floating action motorized mixing valve, or
- a 0-10 Vdc (or 2-10 Vdc) modulating output (for a motorized mixing valve or variable speed pump). The floating action mixing valve can be either a rotary or globe style design.

FEATURES

The AQ25400B has the following features:

- **Controls one mixed temperature loop.**
- **Outdoor temperature compensation (reset), or Load reset based on indoor temperature feedback, or none.**
- **Zone synchronization through Zone of Greatest Demand control.**
- **Customizable control settings allow for greater level of control and comfort.**
- **Use of variable speed injection pump or motorized mixing valve for mixed temperature loop control.**

IMPORTANT

To ensure correct installation and proper operation of the control, perform the 6 installation steps in the order numbered in the “Contents” below.

Contents

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2 Wiring Procedure	5
3 Program and Configure the Expansion Control Panel ...	9
4 Test and Check Out the Installation	11
5 Purge Air from all System and Zone Piping	12
6 Document and Keep a record of all System Settings	12
Troubleshooting	13
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Home Page and System Status Page	14
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- Extends the capacity of an existing AQ2000 hydronic control panel by up to 16 zones and one reset mixed temperature loop.
- Intuitive programming interface (can be programmed at your shop and taken to the job site "ready-to-install").
- Integral 38 VA transformer with self resetting electronic fuse.
- Equipment settings are stored in a non-volatile EPROM memory so the AQ254 retains all program settings during a power outage.

SPECIFICATIONS

Application: Provides additional zoning capacity for an existing hydronic installation controlled by an AQ2000 Series Boiler Control Panel.

Power and Electrical Ratings:

Power Supply: 120 Vac / 60Hz

Auxiliary Pump Output Rating: Dry contact output, 120 to 240 Vac 5A, 1/3 HP

Secondary Pump Output Rating: 120 Vac 5A, 1/3HP

Variable-Speed Injection Pump Output: Triac modulated; 120 Vac 2.1A, 1/6HP

B-B Communication Bus Terminals: Low voltage, Class II, 2-wire polarity-insensitive, digital communicating link to other Control or Zoning modules.

Electrical Connections (Line Voltage): Wire-clamp screw terminals; maximum 2 x 14 AWG each on line voltage terminals

Environmental Ratings:

Control and Zoning Panel Temperature Rating: 32°F to 130°F (0°C to 55°C)

Operating Humidity Range (% RH): 5 to 90% RH, non-condensing

Temperature Ratings:

Secondary Loop Mixing (Supply) Design Temp Range: 70°F to 210°F (21°C to 99°C)

Secondary Loop Mixing (Supply) Min. Control Temp Range: OFF, 35°F to 150°F (OFF, 2°C to 66°C)

Secondary Loop Mixing (Supply) Max. Control Temp Range: OFF, 80°F to 210°F (OFF, 27°C to 99°C)

Sensor Temperature Rating: -58°F to 230°F (-50°C to 110°C)

Inputs/Outputs:

Auxiliary (Demand) Input: External dry contacts connection only

DHW Demand Input: External dry contacts connection only

Secondary Sensor Input: External dry contacts connection only

Mixing Valve (Com, O, C) Output: 24 Vac, 0.5A, 12VA

Modulating Output: 0-10 or 2-10 Vdc for variable speed pump or modulating mixing valve

User Interface (Setting, Programming): 8-character, 3-line LCD Display with a 3 button keypad

Thermostat Compatibility: Digital non-communicating thermostats and/or AQ1000 Series 2-wire communicating thermostats

Secondary (Mixed) Loop Sensor: 10K ohm NTC thermistor at 77°F (25°C) ± 0.5°F (±0.3°C). Lead length: 10 ft. (3.0 m); up to 500 ft. (150 m) using 18 AWG or larger wire, beta=3892

Dimensions (HxWxD): 8.0 x 9.4 x 3.3 in. (20.3 x 23.8 x 8.5 cm) approximate

Weight: 3.9 lb. (1.8 kg)

Approvals: Canadian Standards Association: Certified, File No. LR76030

ORDERING INFORMATION

When purchasing replacement and modernization products from your TRADELINE® wholesaler or distributor, refer to the TRADELINE® Catalog or price sheets for complete ordering number.

If you have additional questions, need further information, or would like to comment on our products or services, please write or phone:

1. Your local Honeywell Automation and Control Products Sales Office (check white pages of your phone directory).
2. Honeywell Customer Care
1885 Douglas Drive North
Minneapolis, Minnesota 55422-4386

In Canada—Honeywell Limited/Honeywell Limitée, 35 Dynamic Drive, Toronto, Ontario M1V 4Z9.

International Sales and Service Offices in all principal cities of the world. Manufacturing in Australia, Canada, Finland, France, Germany, Japan, Mexico, Netherlands, Spain, Taiwan, United Kingdom, U.S.A.

1 INSTALLATION PREPARATION

When Installing this Product...

1. Read these instructions carefully. Failure to follow them could damage the product or cause a hazardous condition.
2. Check the ratings given in the instructions and on the product to make sure the product is suitable for the application.
3. Installers must be trained, experienced, and licensed service technicians.
4. Follow local codes for installation and application.
5. After installation is complete, check out the product operation as printed in these instructions.

! WARNING

**Risk of electrical shock.
Can cause severe injury, property damage or death.**
Disconnect power supply before installation and before servicing.

Check That You Have All the Necessary Equipment For a Successful Installation

- AQ2000 Series components:
 - AQ2000 boiler Control Panel (such as AQ250, AQ25A, AQ251, or AQ252)
 - AQ254 "Add-A-Temperature" Expansion Control Panel
 - AQ Expansion Zoning Panel (at least one Expansion Zoning Panel must be connected to an AQ254 to provide input from zone thermostats associated with the mixed temperature loop controlled by the AQ254)
 - Digital thermostats (one for every space heating zone being controlled)
- Secondary loop supply temperature sensor (included with the AQ254 control panel)
- Mixing device (injection pump, floating 2-, 3- or 4-way motorized mixing valve, modulating 0-10 Vdc [or 2-10 Vdc] motorized mixing valve or variable speed pump)
- Secondary loop pump
- Low voltage thermostat wire
- Zoning equipment (zone valves or pumps)

The AQ254 is designed to be connected to an AQ2000 boiler Control Panel - it cannot be operated as a standalone device.

The AQ254 Control Panel can control a maximum of 16 zones by connecting additional Expansion Zoning Panels to the AQ254 Control Panel. The hydronic system can be expanded by 16 zones for each AQ254 connected to the AQ2000 network. A maximum of three (3) AQ254 Panels may be connected to an existing AQ2000 Control Panel for a maximum of 64 zones connected on the AQUATROL® network.

Read All Instructions Carefully Before Proceeding

The AQ254 Control Panel is a part of a totally new family of hydronic controls. And although they - and other AQ2000 system components - are very easy to install and operate, they are different than other hydronic controls that you have previously installed. So take a moment to read through this

Product Data sheet before beginning the installation. Failure to follow them could damage the product or cause a hazardous condition.

Familiarize Yourself With the AQ254 Control Panel Layout

The AQ254 "Add-A-Temperature" Expansion Control Panel consists of two functional components (see Fig. 1 on page 3):

- The AQ10X38 transformer (power supply module), which connects to 120 Vac power and supplies 24 Vac power to the Expansion Control Module and any connected Zoning Modules.
- The Mixing Control Module, AQ15400B, which controls the mixing device (pump or valve) to maintain the secondary loop temperature according to the method of reset (outdoor or load adaptive reset).

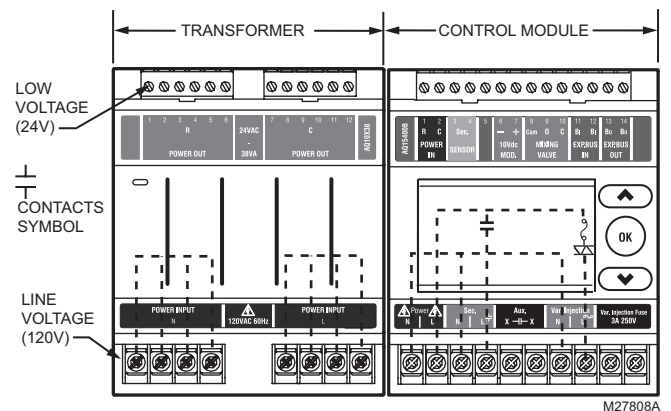


Fig. 1. AQ254 Expansion Control Panel layout.

The top terminals of the AQ254 carry low voltage (24 Vac) power and the bottom terminals carry line voltage (120 Vac) power. This is illustrated in Fig. 1.

The powered terminals on the bottom of the AQ254 are connected internally, as shown in by the dashed lines in Fig. 1. The voltage supplied to the N and L terminals is also available at the SEC pump and variable speed injection pump terminal pairs when the hot (⊕) relays are switched.

The 38 VA transformer included with the AQ254 has sufficient capacity to provide low voltage power to the AQ15400B Control Module as well as up to 16, AQ1000 thermostats.

All low voltage contacts (terminals 3 to 14) on the top of the AQ15400B Control Module are internally-powered.

IMPORTANT

Voltage must not be applied to the low voltage terminals or the internal electronics of the AQ15400B could be damaged.

The 10kΩ sensor for measuring the secondary loop (mixed) temperature is the only low voltage input on the AQ254 Control Panel (besides the 24 Vac R and C supply terminals). There are two low voltage outputs: a 0-10Vdc (or 2-10Vdc)

modulating signal to drive a modulating mixing valve or a variable speed pump, and a 24 Vac set of terminals that provides a floating signal to a motorized mixing valve.

Line voltage outputs include a secondary pump relay and a variable speed injection output which drives a fixed speed circulating pump at a varying speed depending on the heat input required for the secondary mixed loop.

On the bottom of the Control Module, there is a set of line voltage-rated auxiliary (AUX.) dry contacts that can be programmed to close under several predefined conditions, making this Control Panel a very versatile mixing controller for hydronic systems.

MOUNTING

Since the AQ254 "Add-A-Temperature" Panel is an Expansion Control Panel, it functions as an "add-on" control to an existing Main AQ2000 Series Boiler Control. The AQ254 is designed to be connected to an AQ2000 boiler Control Panel - it cannot be operated as a standalone device.

IMPORTANT

The Main AQ2000 Series Control Panel (an AQ250, AQ25A, AQ251, or AQ252), and any Expansion Zoning Panels connected to the Main panel) must be mounted on the wall of the mechanical room before the AQ254 can be installed.

Mount AQ254 Control Panel

Mount the control panel on the wall using Fig. 2 as a guide:

1. Remove the wire channel plugs from the AQ254.
2. Mount the AQ254 on the right hand end of the main AQ2000 Series Control Panel (or Expansion Zoning Panel).
3. Reverse the wire channel plugs and re-insert them into the groove from where they were removed to form a wiring channel between the main AQ2000 Series Control Panel (or Expansion Zoning Panel) and the "Add-A-Temperature" Control Panel.
4. Install the two top screws, mount the panel, and install the two lower screws.

Mount Expansion Zoning Panel(s)

If there are Expansion Zoning Panels to install, mount them to the wall now:

1. Remove wire channel plugs from the AQ254 Control Panel and any Expansion Zoning Panels (see Fig. 2).
2. Mount Expansion Zoning Panel on the right-hand end of the AQ254 Control Panel. Install two top screws of the Expansion Zoning Panel, ensuring it is level with the adjoining Control Panel, and install two lower screws.
3. Reverse wire channel plugs and re-insert them into their slot, to form a wiring channel between the Control Panel and the Expansion Zoning Panel. Refer to Figure Fig. 5 on page 7 for an example of an installation with multiple AQ254 Expansion Control Panels
4. Repeat steps 1–3 for any additional Expansion Zoning Panels.

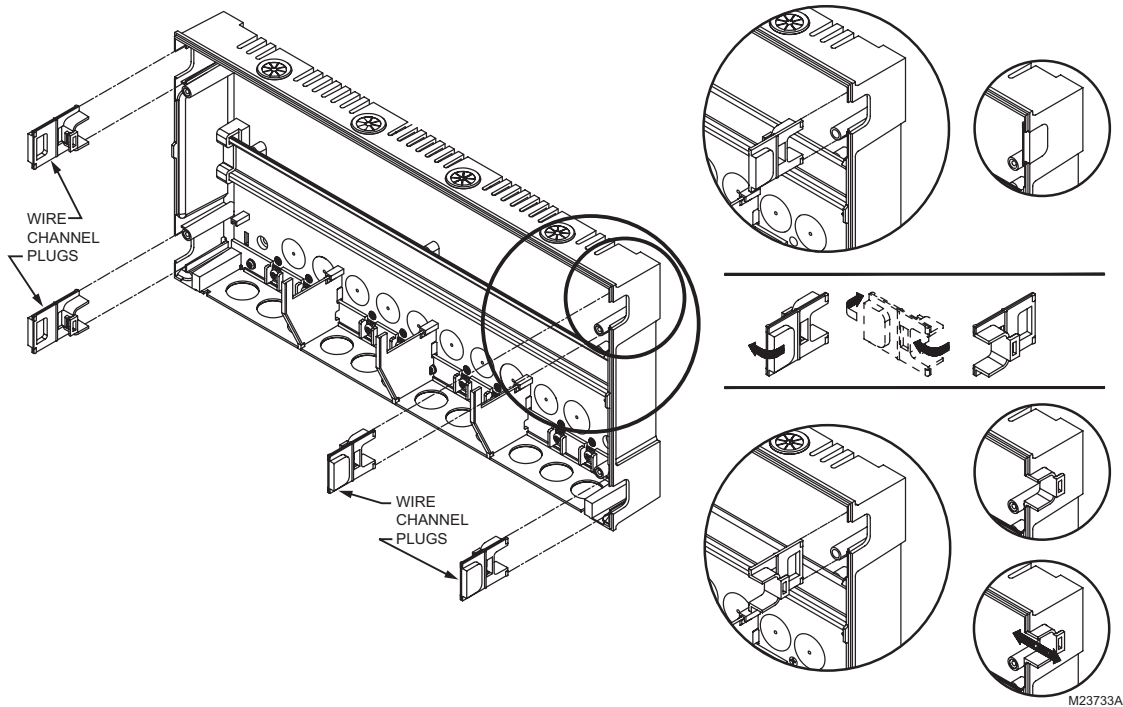


Fig. 2. Orientation of wire channel plugs for creating pass-through wire channel and for joining Control Panel to Expansion Zoning Panels.

Mount and Wire Thermostats in the Zones

Install the thermostats on the walls in the zones that are to be controlled by the AQ2000 Series panels, and (if not done already) run low voltage thermostat wire (24 gauge or heavier) from the thermostats back to the Zoning Modules connected to the AQ254 Control Panel.

When using AQ1000 thermostats, refer to the installation instructions included with the AQ1000 thermostats.

Connect floor sensors (part # AQ12C20) to the thermostats for any space heating zones with in-floor heating, where temperature regulation of the floor is required.

Spare Fuse

The AQ254 includes a fuse to protect the electronic circuit that drives the variable speed injection pump output. Although it is unlikely that the fuse will be blown – as injection pumps rarely if ever exceed the 1/6 HP rating for this output – there is a spare fuse attached to the side of the AQ254 housing. See Fig. 3 for location of this spare fuse. If additional replacement fuses are needed, please contact Honeywell Technical Support at 1-800-318-0815.

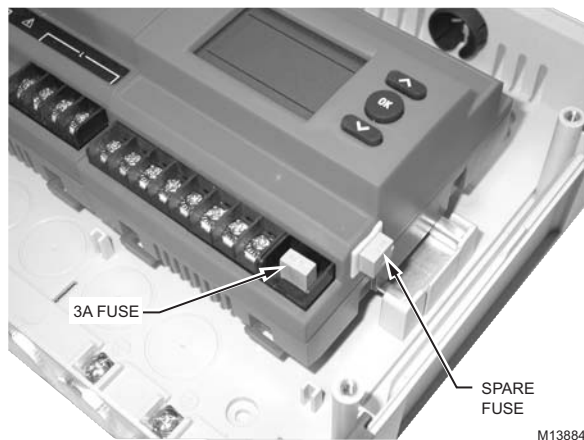


Fig. 3. Location of spare fuse for AQ254 Expansion Control Panel

2 WIRING PROCEDURE

The AQ254 Control Panel is pre-wired at the factory, making for faster installation:

- The low voltage output terminals located at the top of the AQ10X38 transformer are wired to the R and C input terminals of the AQ15400B Control Module, and
- The line voltage terminals on the bottom of the AQ10X38 transformer are connected to the N and L terminals on the bottom of the AQ15400B Control Module.

NOTES: If not otherwise specified, low voltage wiring should be run with 18 gauge thermostat wire and line voltage wiring should be run with 14 gauge wire. AQUATROL line voltage screw terminals are only approved for use with 14 gauge copper conductors.

Several wiring diagrams are included in this document. For additional information, refer to <http://customer.honeywell.com> or your local distributor.

Beginning with the top left of Fig. 4 on page 6 and moving clockwise around the panel, wire components to the AQ254 Expansion Control Panel and Expansion Zoning Panels (if installed) in the following six steps:

- "Step 1 – Low Voltage Transformer Wiring" on page 7
- "Step 2 – Low Voltage Control Panel Wiring" on page 7
- "Step 3 – Communications Bus Wiring" on page 8
- "Step 4 – Line Voltage Wiring" on page 8
- "Step 5 – Connection to Expansion Zoning Panels" on page 8
- "Step 6 – Connection to Line Voltage Power" on page 8

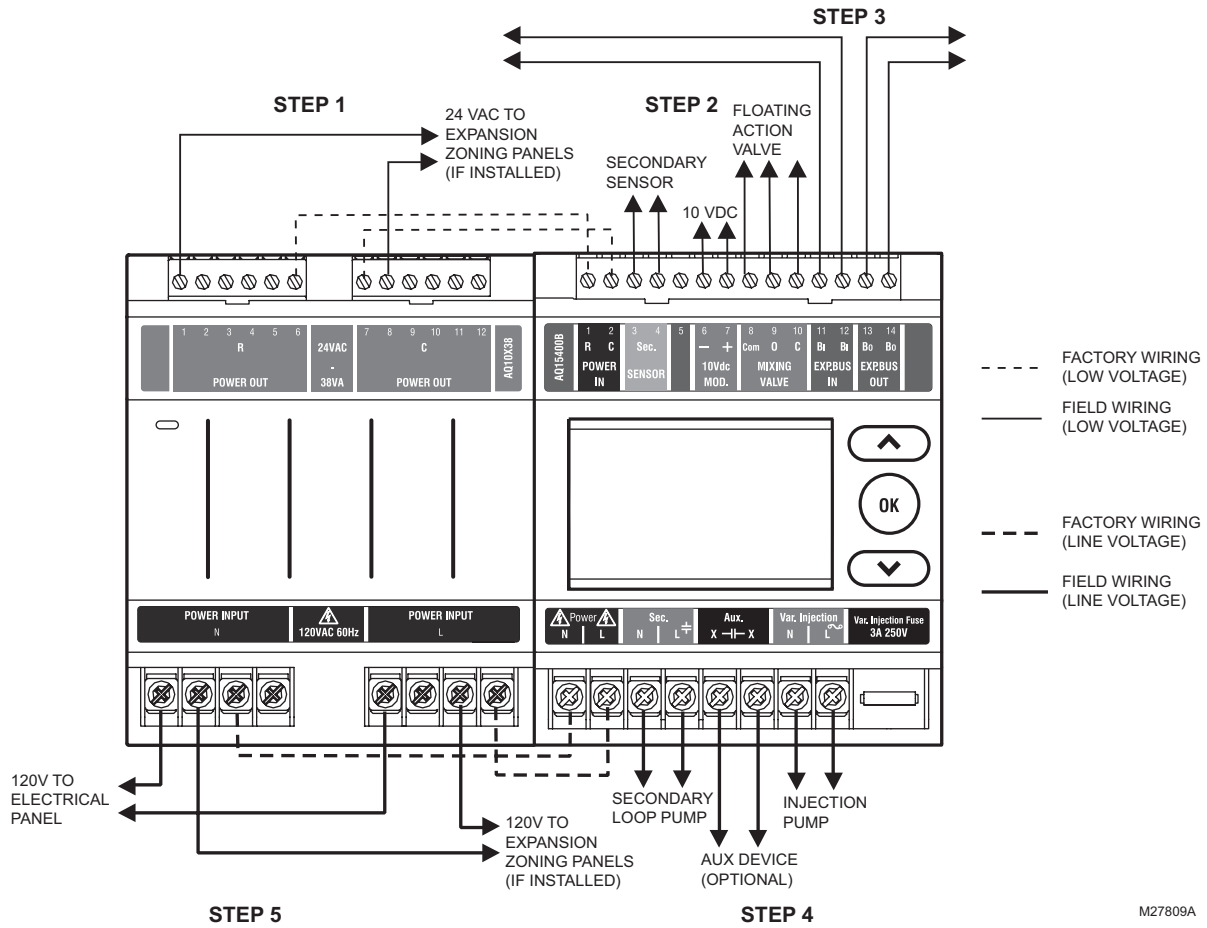
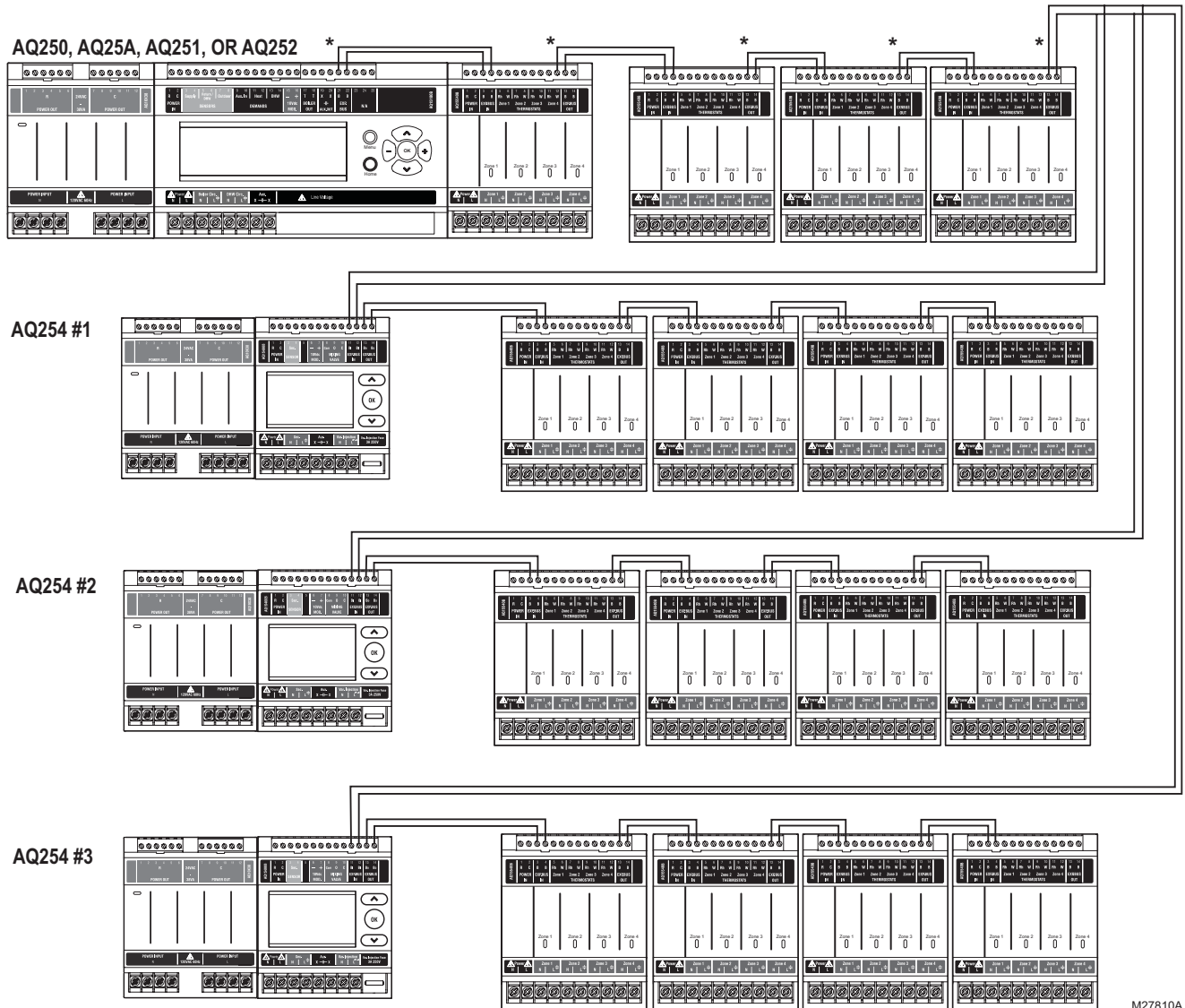


Fig. 4. Wiring sequence.



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Fig. 5. Wiring procedure for multiple AQ254 Expansion Control Panels to an AQ2000 Series network.

Step 1 – Low Voltage Transformer Wiring

Factory pre-wiring of the Control Panels is shown as dotted lines in Fig. 4 on page 6.

In addition to the pre-wiring, run low voltage jumper wires from available R and C terminals on the top of the AQ254's transformer to the R and C terminals on the top of any Expansion Zoning Panel connected to the AQ254.

Step 2 – Low Voltage Control Panel Wiring

- a. Connect the Secondary loop temperature sensor to terminals 3 and 4 of the AQ15400B Control Module.
- b. If using the 10Vdc modulating output to drive a mixing valve or variable speed pump, connect the modulating device's motor leads to terminals 6 and 7.
- c. If using a floating action motorized mixing valve, connect the valve's actuator wires to terminals 8, 9 and 10, being careful to connect the COM wire to terminal 8, the Open wire to terminal 9, and the Close wire to terminal 10.

The AQ254 outputs three separate signals for controlling a mixing device (10Vdc, floating action and variable speed pump) from three different outputs on the Control Module, but only one of these three signals should be used to drive the chosen mixing device.

The variable speed signal is produced by the Control Module in response to calls for heat from the zones connected to the AQ254 and the water supply temperature in the secondary loop, measured by the secondary loop's temperature sensor. The secondary loop's supply water temperature is reset (similar to resetting the boiler loop temperature) according to either the outdoor temperature (OUTDOOR) or the measured load of the system (LOAD), from internal thermostat feedback. The type of reset applied to the secondary loop (OUTDOOR or LOAD) can be selected in the AQ254's programming menus at system set-up. Refer to section 3, "Program and Configure the Expansion Control Panel" on page 9.

Step 3 – Communications Bus Wiring

Connect the communication bus wiring from the Exp Bus Out (terminals 13 and 14) of the last Zoning Module or Panel connected to the AQ2000 Series Master Control Panel, to the Exp.In connection (terminals 11 and 12) of the AQ254.

Connect the communication bus wiring from the Exp. Out (terminals 13 and 14) of the AQ15400B Control Module to the Exp Bus In connection (terminals 3 and 4) of the first Expansion Zoning Panel. Wire any additional Expansion Zoning Panels connected to the AQ254 in a daisy-chain fashion, connecting the Exp Bus Out (terminals 13 and 14) of one Expansion Zoning Panel to the Exp Bus In connection (terminals 3 and 4) of the next Zoning Expansion Panel.

If more than one AQ254 Control Panel will be installed in this system, note that the Communication Bus wiring for each AQ254 Panel must connect to the data bus of the Main AQ2000 Series Control Panel or the Expansion Zoning Panels connected to it (i.e. Group A on the AQ network); See Fig. 5 on page 7 for wiring multiple AQ254 Expansion Control Panels to an AQ2000 Series network. Any of the connection points marked as location “*” in Fig. 5 are acceptable.

Step 4 – Line Voltage Wiring

Next, connect the line voltage equipment – the secondary system pump (SEC) and, if required, the variable speed injection pump (Var. Injection) – to the bottom of the AQ15400B Control Module.

If an optional AUX.Pump or other line voltage device will be used with the line voltage-rated AUXiliary dry contacts, wire it in at this point. The AUX.Pump dry contacts are line voltage-rated but unpowered. To connect a line voltage auxiliary device to these contacts, such as a group pump, power the device from the N and L terminals on the bottom of the AQ1540 Control Module, running the L (hot) lead through the AUX.Pump contacts and then to the installed device. See Figure 6 for an example of how to connect a group pump to the Aux.Pump contacts of the AQ254. If a low voltage device is connected to the AUX.Pump contacts, the wire insulation must be suitable for use in line voltage enclosures.

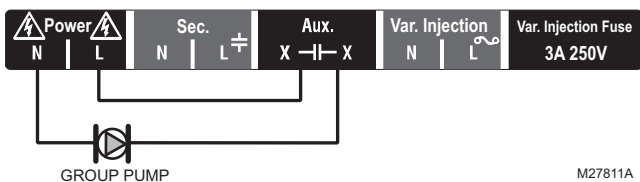


Fig. 6. Wiring of the AUX. Pump line voltage-rated dry contacts (example shown is a group pump).

Step 5 – Connection to Expansion Zoning Panels

Connect the N and L line voltage inputs of the AQ254 (at the bottom of the AQ10X38 transformer) to the N and L line voltage inputs on the bottom of the Expansion Zoning Panel (the AQ10X38 transformer for Valve Zoning Panels) or the Zoning Module itself (for Pump Zoning Panels). A service switch should be installed on the hot (L) lead to the distribution panel.

NOTE: For information related to wiring any connected Expansion Zoning Panels, see “AQ2000 Series Expansion Zoning Panels - Product Data sheet” Honeywell literature number 69-1981.

Step 6 – Connection to Line Voltage Power

Finally, provide line voltage power to the AQ254 “Add-A-Temperature” Expansion Control Panel by connecting one of the sets of N and L terminals located on its AQ10X38 transformer to the corresponding N and L terminals on the AQ10X38 transformer of the AQ2000 Series Main Boiler Control Panel (e.g. AQ250, AQ25A, AQ251, AQ252, etc.), or directly to the electrical distribution panel. A service switch should be installed on the hot (L) lead to the distribution panel.

Switch on power to the AQ254 in order to configure its operating settings.

IMPORTANT

Be careful not to overload the electrical circuit to which these Control Panels are connected. Calculate the potential full load amp draw of all line voltage equipment combined (system and zone pumps) and if necessary, split up the Control Panels on more than one 15A fused circuit.

If the AQ254 and the main AQ2000 Series Control Panel are connected to separate circuits at the distribution panel, ensure that both circuits are in phase with each other



CAUTION

Electrical Shock or Equipment Damage Hazard. Can shock individuals or short equipment circuitry. When line voltage is applied to the AQ254 Control Panel and the front cover of the Panel is removed, there is a risk of electrocution. Be careful to avoid contact with the line voltage (N and L) terminals, either with your fingers or with metal tools (such as a screwdriver) when power is applied to the Control Panel.

3 PROGRAM AND CONFIGURE THE EXPANSION CONTROL PANEL

Control Panel Programming Defaults

Operation of the AQ254 Control Module is set by the menu selections accessible through the Control Module's LCD screen. See "AQ254 – System Programming" on page 9 for instructions.

The AQ254 Control Panels are shipped from the factory with pre-defined values for all program settings. These factory default settings are commonly used by hydronics contractors across North America. Usually, most of the settings only need to be checked by the installing contractor to make sure they are suitable for the job, rather than having to input all the settings from scratch.

Although these factory default values are suitable for many installations, Honeywell recommends that they be reviewed, and changed as necessary, to get optimal performance of the hydronic system controlled by the AQ2000 Series products.

AQ254 – System Programming

This section describes how to navigate the user interface using the keypad and LCD display, and how to program the AQ254 Control Panel, which begins on page 10.

NOTES:

1. For information related to configuring Expansion Zoning Panels connected to the AQ254, see *AQ2000 Series Expansion Zoning Panels - Product Data* Honeywell literature number 69-1981.
2. For information related to installing and configuring the zone thermostats, refer to the Installation guide for the appropriate AQ1000 thermostat.

Keypad

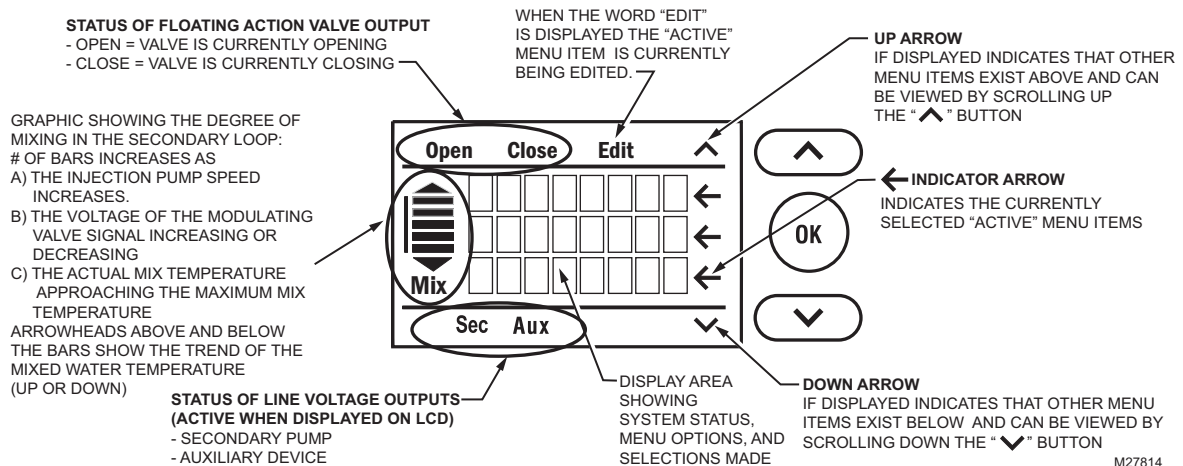
The AQ254 User Interface consists of an LCD screen (8 characters by 3 rows) and a 3-button keypad for navigating the menus, as illustrated in Fig. 7.

- OK:** The OK button of the AQ254 has five uses:
1. To view the System Status page.
 - Push the OK button once.
 2. To enter the INSTALLER menu to change a parameter.
 - Press and hold this button for 3 seconds to enter or leave the INSTALLER menu.
 3. To enter a sub-menu while in the INSTALLER menus.
 4. To toggle a parameter between two pre-defined values (applicable when editing a value while in INSTALLER mode).
 5. To enter EDIT mode when changing a parameter's value or setting.
- ^ / v:** The ^ / v buttons of the AQ254 have three uses while in the INSTALLER menus:
1. To scroll UP/DOWN in the menu screen.
 2. To increase/decrease a menu item's value (when EDITing a value).
 3. To scroll through the possible values of a parameter (applicable when editing a value).

LCD Display

- The LCD on the AQ254 Control Panel is used to:
- Monitor system status and performance.
 - Select and/or modify control settings for the system.
 - Diagnose and troubleshoot system problems.

The layout of the display is logical and simple to navigate. The information is displayed so that the installer can see at a glance which group of zones is being controlled by the AQ254 (Group B, C, or D) and the operating temperature of the Secondary loop. All system information is displayed in simple, straightforward English for quick system diagnosis. Fig. 7 illustrates the layout and features of the LCD display panel and keypad.



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Fig. 7. LCD display and keypad layout.

LCD Display Navigation

This section describes how the keypad is used to navigate the LCD display and menus.

The LCD displays up to three lines of text at a time. For menus with more than three lines, use the up and down buttons (▲ or ▼) to scroll through the menu options. As the menu is scrolled up or down, the indicator arrow (←) shows which menu item is active.

1. If the active menu item is part of a list of predefined options (e.g., AUX.PUMP operation), press the OK button to edit this value (the word EDIT displays on the top right portion of the AQ254 LCD screen) and then press either the “-” or “+” button to scroll through the available options. With the indicator arrow (←) beside the chosen option, press the OK button again to accept this value, exit EDIT mode, and return to the previous menu. The option’s value is automatically saved upon exiting EDIT mode.
2. If the active menu item requires you to define a value (e.g. a setpoint), position the indicator arrow beside the menu item and press the OK button to edit this value (the word EDIT displays on the top right portion of the AQ254 LCD screen) and then press either the “-” or “+” button to change the value for the menu item until the desired value is shown. Press the OK button again to accept this value and return to the previous menu. Again, the option’s value is automatically saved upon exiting EDIT mode.
3. If the active menu item leads to a further sub-menu, pressing the OK displays that sub-menu. Scroll through this sub-menu to position the indicator arrow (←) beside the menu item to be reviewed or modified. Press the OK button to edit this value (the word “EDIT” displays on the top right portion of the AQ254 LCD screen). Choose one of the options provided or input the desired value for the menu item. Press the OK button again and your selection is saved.
4. To define or modify another item within the same menu, scroll the UP and DOWN buttons (▲ or ▼) until the indicator arrow (←) is beside the desired option and repeat Steps 1 through 3.

To move back (up) one level within a menu, scroll to the bottom of the current menu list and – with the active indicator arrow (←) beside the EXIT option, press the OK button.

To leave INSTALLER MODE and return to the Home Page display screen, press and hold the OK button for 3 seconds from any menu location within the INSTALLER menu.

HOME PAGE DISPLAY

The Home Page is the default view displayed on the AQ254 Control Panel’s LCD screen (refer to “Home Page and System Status Page” on page 14 in the “Appendix”).

The Home Page together with the System Status Page provide a service contractor extensive diagnostic information for troubleshooting the installation.

Programming the AQ254

Program the AQ254 by using the keypad and LCD display to select parameters from the Installer menu. Refer to Fig. 7 on page 9 for an illustration of the LCD screen and keypad.

NOTE: The figures in “Installer Menu Structure” on page 19 provide a graphical layout of the AQ254’s Installer menu.

When a new AQ2000 component is connected on the AQUATROL network, it is seamlessly integrated in the system after a few seconds. If one or more components are disconnected or stop providing data to the network, a message will appear on the System Status page of the AQ254’s LCD of the main AQ2000 Control Panel until the fault is corrected.

System Status Page

The System Status Page is intended for use by the building owner to view the system state and status.

NOTE: If there are any problems with the system’s operation, the AQ254 displays error codes on the System Status Page display of the LCD panel. For details on these, refer to “Troubleshooting” on page 13.

Refer to Table 2 on page 14 in the “Appendix” for all of the possible status messages for the AQ254 Expansion Control Panel, the factory default values and permissible ranges for each option, and a brief description of each setting.

Installer Menu

The Installer Menu is used to:

- Set up and modify the Loop and Mixing settings.
- Access the Test and Purge functions to facilitate quick and simple commissioning of the system.

TO ACCESS THE INSTALLER MENU:

Press and hold the OK button for 3 seconds.

Refer to Table 3 on page 15 in the “Appendix” for all of the Installer Menu options for the Control Panel, the factory default values and permissible ranges for each option, and a brief description of how each setting affects the AQ254’s operation.

4 TEST AND CHECK OUT THE INSTALLATION

Startup

IMPORTANT

Apply power to the AQ254 Control Panel only after all of the AQ2000 SERIES components (Control Panel, thermostats, sensors, Zoning Panels) have been connected to the other equipment in the hydronic heating system (boiler, zone valves or pumps, DHW, Aquastat[®], etc.).

When powered, the AQ254 Control Panel begins its start-up routine, establishing communication with all other AQ2000 Series components on the AQUATROL network.

Test

The TEST feature enables the installer to checkout all of the system's outputs, sensors, and zone equipment as part of system commissioning (Checkout).

The TEST operation can be accessed via the TEST menu in the INSTALLER mode of either the main AQ2000 Series Control Panel or the AQ254 Expansion Control Panel. To begin testing the installation, position the indicator arrow (←) beside the equipment group to be tested [OUTPUTS, SENSORS, or ZONES] and press the OK button.

Test Outputs

- When TEST OUTPUTS is selected, the AQ254 LCD displays a list of all outputs that can be tested. To select an output to test, position the indicator arrow (←) beside that output and press the OK button to activate the output's relay. As each output is activated, a word icon for that output displays at the top or bottom of the LCD display (refer to Fig. 7 on page 9). The TEST routine activates the output relay until the OK button is pressed to turn off that output.
- To test additional outputs, navigate the list using the Up or Down arrow (▲ or ▼), position the indicator arrow (←) beside that output and press the OK button to begin testing. Press the OK button to de-activate the output relay and stop the test.
- When finished testing the outputs, scroll to the bottom of the TEST OUTPUTS menu to the EXIT menu item and press OK to move up one menu level to the main TEST menu.

NOTE: Any combination of outputs can be activated at the same time when testing the outputs.

Test Sensors

Scroll down to position the indicator arrow beside the SENSOR menu item and press OK.

When SENSOR is selected, the AQ254 LCD displays the temperature that the SECONDARY sensor is measuring. If the sensor is malfunctioning or is not properly connected to the AQUATROL network, the value "- -" displays beside the SEC item on the LCD screen, instead of the mixed loop temperature. If the sensor reports a temperature that is illogical, investigate further by referring to "Troubleshooting" on page 13.

To leave the TEST SENSOR menu, scroll down to the EXIT menu item and press OK to move up one menu level to the main TEST menu.

Test Zones

Scroll down to position the indicator arrow beside the ZONES menu item and press OK.

- When ZONES is selected, the Installer can test all space heating zones connected to the AQ254 simultaneously or individually.
- If zones are tested simultaneously (ALL), all zone equipment is energized. There is a start delay of 1/10th of a second between each pump or valve to minimize the effect of inrush currents from the devices' motors.
- To test zones individually, position the indicator arrow (←) beside a selected zone and press the OK button to energize it. Press the OK button again to de-energize it. As each zone is tested, the Status LED on the Zoning Module associated with that zone is illuminated. To test additional zones, position the indicator arrow (←) beside the zone to be tested, press the OK button to energize the zone's pump or valve and then press the OK button again to de-energize it.
- When finished testing the zones, scroll down to the EXIT menu item and press and hold the OK button for 3 seconds to return to the Home Page display.

Checkout

1. In Installer mode, disable the Warm Weather Shut Down (WWSD) temperature setting on the Main AQ2000 Series Control Panel by increasing the WWSD setting to 100°F (37°C). This way, the WWSD will not interfere with the zone operation during checkout.
The WWSD setting can be found in the INSTALLER mode of the AQ25A, AQ251, or AQ252 in the "INSTALLER MENU > EQUIPMENT SETUP > BOILER SETTINGS" menu.

NOTE: Disabling WWSD does not apply to systems where an AQ250 is the Main AQ2000 Series Control Panel, as the AQ250 does not have the option of connecting an outdoor sensor to it.

2. Turn down the DHW AQUASTAT, if present, to avoid interfering with space heating control operation.
3. Turn up the set point of one of the AQ254's zone thermostats that is associated with the SECondary mixed water loop.
 - 3.1 The zone valve or pump associated with that zone will turn on.
 - 3.2 The Boiler T-T relay of the Main AQ2000 Series Control Panel is activated (Boiler displays in the DEMANDS section of the Control Module's LCD screen).
 - 3.3 The SECondary pump connected to the AQ254 is energized (SEC displays in the OUTPUTS section of the AQ254's LCD screen).
 - 3.4 The Boiler pump relay is activated (PRIMary displays in the OUTPUTS section of the LCD screen).
 - 3.5 The mixing device, injection pump or mixing valve, is energized and the word INJ (for an injection pump) or OPEN (for a mixing valve) displays on the AQ254's LCD screen.
 - 3.6 Depending on the settings for the AUX.PUMP (line voltage-rated dry contacts) on the AQ254, these contacts may also close, and if so, the word AUX displays in the OUTPUTS section of the LCD screen.

4. Turn down the set point of the AQ1000 zone thermostat. The zone valve or pump associated with that zone will turn off.
5. The Boiler T-T, SECondary pump, and Boiler pump relay outputs will be de-activated.

Repeat steps 2-5 for all zones associated with the AQ254's mixed temperature loop.

6. Turn up the DHW AQUASTAT to simulate a call for domestic hot water.
 - 6.1 If the DHW device is a pump, the DHW relay output will be energized immediately. The Boiler pump relay will remain off.
 - 6.2 If the DHW device is a valve, the Boiler pump relay will come on after a delay to allow the zone valve to fully open. This delay is installer-defined from the EQUIPMENT SETUP>ZONING>TIME TO OPEN menu of the Main AQ2000 Series Control Panel.
 - 6.3 Turn up the set point of one of the AQ1000 zone thermostats connected to the AQ254.
 - 6.3.1 If the DHW relay is configured to control a pump, and DHW Priority is selected, the Boiler and the associated zone pumps relay will remain off.
 - 6.3.2 If the DHW relay is configured to control a valve, and DHW Priority is selected, the Boiler pump will be activated after a delay for the DHW zone valve to open, but the associated zone relays will remain off.
 - 6.3.3 If DHW Priority is disabled, space heating zone pumps and valves will operate even during a call for DHW.
7. Turn down the DHW AQUASTAT to end the call for domestic hot water. Space heating operation should continue (if DHW priority is disabled) or resume (if DHW priority is enabled).
8. Repeat steps 3 through 7 for all space heating zones connected to an AQ254.

5 PURGE AIR FROM ALL SYSTEM AND ZONE PIPING

The PURGE operation on the AQ254 Expansion Control Panel allows the installer to purge all zones (loops) sequentially, or each zone individually, for a period of time selected in the TEST > PURGE menu. Purge time can be adjusted in increments of one minute, up to a maximum of 30 minutes per loop to be purged. After using the AQ254's menus to select which loops to purge (ALL loops, or an individual loop) and for how long, position the indicator arrow (←) beside the START option and press the OK button. The START display will change to STOP and the AQ254 display will begin counting down the time remaining for the purge cycle.

Purging All Loops

When the purge time has elapsed for the first loop, the control will proceed to subsequent loops and perform the purge operation on each of them. After all selected loops have been purged, the display shows COMPLETE.

Note that only the loops controlled by the AQ254 are purged. This means that:

1. Zones that are programmed to use water on the Primary (boiler) loop will have their pump running while the Boiler pump (on the Main AQ2000 Series Control Panel) is not running;
2. Other AQ254 loops will not have been purged when the COMPLETE indication displays.

To remedy to this, it is preferable to use the Main AQ2000 Series Control Panel's PURGE operation, which has the overall system control to achieve an efficient PURGE routine for all zones

6 DOCUMENT AND KEEP A RECORD OF ALL SYSTEM SETTINGS

After the hydronic installation with the AQ254 Control Panel has been set up and is operating properly, it's important to document all the system settings for future reference.

Job Records

All AQ2000 Series Panels are shipped with Installation Job Records for documenting these settings. These should be filled out completely and saved in the Installing Contractor's files.

Save Feature

In addition to the hardcopy Installation Job Records, the AQ254 Control Panel has a convenient Save feature that allows the installing contractor to save the specific equipment setting for this installation in the AQ254's memory for future recall, in case the system's settings are inadvertently changed. This feature is found in the SETUP > SAVE menu of the AQ254.

There are three levels of settings in the AQ254's memory – CURRENT, FACTORY and SETUP.

- **CURRENT** settings are the settings that are currently displayed in any of the menus and are the settings that the AQ254 uses to operate. Any time a value is changed in any of the menus, the CURRENT settings are changed and these new settings are instantly used by the AQ254 Control Panel.
- **FACTORY** settings are the default values loaded at the factory and are the starting point for programming the AQ254. These values are permanently stored in memory and cannot be over-written or erased. The AQ254 can be restored to factory settings through the FACTORY option in the SAVE / RESTORE sub-menu. A warning prompt, RESTORE FACTORY—ARE YOU SURE?, displays and YES or NO must be chosen before proceeding. If YES is selected, the FACTORY settings are copied to the AQ254's CURRENT settings and the Control Panel begins to operate with these values immediately.
- **SETUP** settings are the specific settings for this installation which an installer has saved after the AQ254 is set up and operating well. These are saved for future recall, in case the system's settings are inadvertently changed.
 - To save settings for the first time, navigate to the SETUP > SAVE menu. Position the indicator arrow (←) beside SAVE and press OK. This saves current system settings to the SETUP values.

- To retrieve the SETUP values at any time in the future, return to the SETUP > RESTORE menu and select RESTORE to load those values as the CURRENT settings. The system will now operate according to these retrieved settings.
- If the current settings are modified after a RESTORE operation is performed, choosing SAVE subsequently will save these new settings, overwriting the previous SAVE settings stored in the AQ254's memory.



CAUTION

If you change any system settings after a RESTORE SETUP operation, you change the current settings that the AQ254 uses as its basis of operation.

- NOTE: There are two types of equipment settings used by the AQ2000 network to control the operation of the heating system: Zone Settings and System Settings.
- a. When using AQ1000 thermostats, Zone Settings are designed to be adjustable by the User or the Installer and are stored in the faceplate of the AQ1000 thermostat. If the faceplates of two AQ1000 thermostats are switched, the settings (setpoints, zone minimum, zone maximum, etc.) will also be switched. These settings are NOT SAVED with the SETUP > SAVE operation.
 - b. System Settings are designed to be adjustable only by the system installer and are stored in the AQ2000 Control Modules (AQ250, AQ251, AQ25A, AQ252, AQ254, etc.). These are the settings that are saved with the SETUP > SAVE operation.

TROUBLESHOOTING

The following information helps the installer correctly identify system problems, making troubleshooting much faster.

Table 1 describes the possible status notices and error messages that can be communicated.

System Status Information

To aid in troubleshooting hydronic systems controlled by an AQ254, the operational status of the system is shown on the System Status page. Status notices and error messages display as appropriate, i.e., only those that are pertinent to the system's current operation will be displayed.

See Table 2 on page 14 for a complete list of system status messages. The System Status page is available from the Home Page by pushing the OK button once.

This diagnostic information is very valuable and the System Status page is the first place a contractor should look for information when troubleshooting system problems.

Power Disruption

The system settings of the AQ254 are stored in non-volatile memory and are updated as they are changed. When a power disruption occurs, the current system configuration is retained in memory. When power is restored, the AQ254 Expansion Control Panel enters auto-detection mode, reads its previously-stored settings and all AQUATROL network components are initialized according to their saved parameters.

NOTE: Power disruptions have no impact on the AQ254's saved settings, as they are stored in non-volatile memory and will remain saved indefinitely.

Table 1. LCD Status Notices and Error Messages.

LCD Display	Meaning
NO GRP A	No network communication with the Main AQ2000 Series Control Panel (AQ250, AQ25A, AQ251, AQ252) is available. Check the wiring of the Exp. IN bus connection.
NO ZONES	No zones are detected on the AQ254's sub-network.
NO SENSR	No secondary sensor has been connected to the AQ254.
IDLE	No activity on the secondary (mixed) loop and/or the zones associated with the AQ254.
DMND:XX	Percentage "XX" of the heating demand for the secondary (mixed) loop and/or the zones associated with the AQ254. The example show a demand of 100%.

APPENDIX

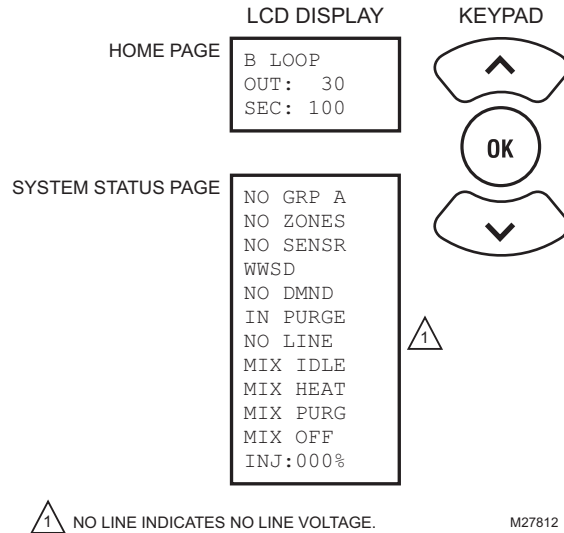
The appendix provides AQ254 Expansion Control Panel User interface information for the:

- The Home Page and System Status Page
- Installer Programming menu
- Programming menu structure. See page 19.

Home Page and System Status Page

The Home Page is the default display for the control panel. It provides general system information.

Press the OK button on the keypad to display the System Status Page.



NO LINE INDICATES NO LINE VOLTAGE.

M27812

Fig. 8. Home Page display, System Status Page display, and keypad.

Table 2. Home Page and System Status Page.

Menu Option	Range	Description
HOME Page		
X LOOP	B, C, or D	Defines whether this AQ254 is the first (B), second (C), or third (D) AQ254 Expansion Control Panel connected to the main AQ2000 Series Control Panel.
OUT:		Displays the outdoor temperature.
SEC:		Displays the temperature measured by the secondary mixed water sensor.
TGT:		Displays the mixed water temperature target calculated by the AQ254 controller.
SYSTEM STATUS^a		
NO GRP A		No network communication with the Main AQ2000 Series Control Panel (AQ250, AQ25A, AQ251, AQ252) is available. Check the wiring of the Exp. IN connection.
NO ZONES		No zones are detected on the AQ254's sub-network. Check the wiring of the Exp. OUT connection.
NO SENSR		No secondary sensor has been connected to the AQ254
WWSD		The system is in Warm Weather Shutdown mode; calls for heat from the space heating zones connected to the AQ254 will not be served.
NO DMND		No activity on the secondary (mixed) loop and/or the zones associated with the AQ254
IN PURGE		Purge operation is active somewhere on the AQ network.
NO LINE VOLTAGE		No line voltage has been detected on the N and L (line voltage input) terminals on the AQ254 Expansion Control Module.
MIX IDLE		MIX items display only one at a time. They indicate whether the AQ254 mixing equipment is de-energized because the target temperature has been reached while an AQ254 zone is still being served (MIX IDLE), actively drawing hot water from the PRImary loop (MIX HEAT), in purge operation following a heating cycle (MIX PURG), or OFF.
MIX HEAT		
MIX PURG		
MIX OFF		
INJ: XX%		Injection percentage displays from 0% to 100%.

^a Status notices and error messages display as appropriate. Only those that are pertinent to the system's current operation are displayed.

Installer Programming Menu

The Installer Menu allows you to set up and modify system settings that typically would be adjusted by a trained installer. These include settings such as mixing temperatures limits, injection, and valve operation.

System statistics, testing, and purging are also available from the Installer Menu.

Illustrations of the complete Installer Menu begin on page 19.

To access the Installer Menu, press and hold the OK button for 3 seconds.

NOTE: To exit Installer Mode, select the Installer Exit menu option.

Table 3. Installer Menu.

EQUIPMENT SETUP			
Menu Option	Range	Factory Default	Description
MIXING			
Settings that the AQ254 uses for Secondary loop operation			
MIX HIGH TEMP:	-- 80°F to 210°F (27°C to 99°C)	140°F (60°C)	The maximum temperature that the control can use as a target for the secondary loop supply water. The MIX HIGH TEMP cannot be set below the MIX LOW TEMP setting. • "--" means Off (not used).
MIX LOW TEMP:	-- 35°F to 150°F (2°C to 66°C)	95°F (35°C)	The minimum temperature that the control can use as a target for the secondary loop supply water. The MIX LOW TEMP cannot be set above the MIX HIGH TEMP setting. • "--" means Off (not used).
RESET:	AUTO / OUTDOOR / LOAD / NONE	AUTO	Selects the calculation method (algorithm) that the control uses to set the target temperature for the secondary loop supply water. AUTO option applies the same reset method selected for the main AQ2000 Series Control Panel.
DESIGN TEMP:	-- 70°F to 210°F (21°C to 99°C)	120°F (49°C)	The supply water temperature required in the mixed temperature SECondary loop when the outdoor temperature is at the OUTDOOR LOW temperature. • "--" means Off (not used).
10V MOD:	DISABLE / 0V to 10V / 2V to 10V	DISABLE	Produces voltage on the 10 Vdc low voltage terminals (6 and 7) according to the setting chosen.
INJECT.:	ENABLE / DISABLE	ENABLE	
MIX.VLV:	DISABLE / ENABLE	DISABLE	
VLV OPEN TIME:	5 to 230 seconds	160 (seconds)	Available only when MIX.VLV = ENABLE
VLV ACTION:	DIRECT / REVERSE	DIRECT	Available only when MIX.VLV = ENABLE
- EXIT -	n/a	n/a	Exits this sub-menu and returns to the Installer menu.
PRI/SEC			
Identifies the heating water loop that each space heating zone is supplied by: the primary boiler loop (PRI) or the secondary mixed loop (SEC). Displays the PRI/SEC sub-menu with the following selections for all or individual zones:			
ALL PRI	n/a	n/a	Applicable only to the 16 zones of this AQ254 group of zones (B, C, or D).
ALL SEC	n/a	n/a	Applicable only to the 16 zones of this AQ254 group of zones (B, C, or D).
B-01: ... D-16:	SEC / PRI	SEC	Individual zone selection: B-01: PRI/SEC B-02: PRI/SEC ... D-16: PRI/SEC
- EXIT -	n/a	n/a	Exits this sub-menu and returns to the Installer menu.

Table 3. Installer Menu. (Continued)

EQUIPMENT SETUP			
Menu Option	Range	Factory Default	Description
AUX	Settings which the AQ252 uses to control the closure of the AUX.OUT dry contacts.		
AUX:	ZONE OPN / BOILER / GROUP	ZONE OPN	Based on the setting chosen, the AQ252 closes the AUX OUT dry contact terminals when: <ul style="list-style-type: none"> • ZONE OPN: The end switch of any zone valve on this AQ254's group of zones closes or a zone pump energizes. • BOILER: The boiler pump energizes. • GROUP: Any of the thermostats in a Group of zones (identified by the Zoning Module's DIP switch #7 [AUX] being switched to YES) energize.
SETUP	Options for saving settings or restoring previously-saved settings.		
SAVE	n/a	n/a	Enables installer to SAVE system settings once the system has been set up and is working well; Designed to facilitate quick recovery to proper system operation in the event of inadvertently changing control settings (e.g., tampering with the system settings by an inexperienced user).
RESTORE	n/a	n/a	Selecting this option restores all settings to those saved by the Installer with the SAVE operation. RESTORE is only displayed as a menu option if installer settings have previously been saved using the SAVE menu item. <ul style="list-style-type: none"> • Only displays if the installer has previously saved the (non-factory default) settings using the SAVE feature.
FACTORY	n/a	n/a	Selecting this option restores all settings to their factory defaults.
- EXIT -	n/a	n/a	Exits this sub-menu and returns to the Installer menu.
TEST	Tests the outputs, sensor, and zones connected to the AQ254 to ensure correct operation, and provides the Purge feature.		
OUTPUTS	Tests the individual system outputs to ensure correct operation.		
SEC PUMP	ON / OFF	OFF	Energizes / de-energizes the line voltage terminals (9 and 10) marked Sec. when switched to ON / OFF respectively.
INJ PUMP	0% to 100%	0%	Produces a variable voltage on the Var.Injection line voltage terminals, according to the setting chosen (0% to 100%) in increments of 10%.
MIX VLV	OFF / OPEN ON / CLOSE ON	OFF	Energizes the Open terminal (9) or the Close terminal (10), as selected, of the Motorized Mixing Valve to open or close the valve.
10V MOD	0V to 10V	0V	Produces voltage on the 10 Vdc low voltage terminals (17 and 18), according to the setting chosen (0V to 10V), in increments of 1V.
AUX	ON / OFF (close / open)	OFF (open)	Closes / opens the line voltage rated dry contacts marked Aux. when switched to ON / OFF, respectively.
SEC PUMP	ON / OFF	OFF	Energizes / de-energizes the line voltage terminals marked Sec. when switched to ON / OFF respectively.
EXIT	n/a	n/a	Exits this sub-menu and returns to the Installer menu.

Table 3. Installer Menu. (Continued)

EQUIPMENT SETUP			
Menu Option	Range	Factory Default	Description
TEST (continued)			
SENSOR Tests the secondary mixed loop temperature sensor to ensure correct operation			
SEC	-- LO -49° to 257°F (-45° to 125°C) HI	n/a	Displays the temperature measured by the secondary mixed water sensor. <ul style="list-style-type: none"> • "--" means sensor is disconnected • LO means temperature reading is below -49°F (-45°C) • HI means temperature reading is above 257°F (125°C)
EXIT	n/a	n/a	Exits this sub-menu and returns to the Installer menu.
ZONES Tests the zone equipment individually, or sequentially, to ensure correct operation			
ALL	n/a	OFF	Sequentially energizes / de-energizes all zones connected to the AQ254 group of zones. <ul style="list-style-type: none"> • 0 displays when the AQ254 Control Module has confirmation that the zone's pump is de-energized or its valve is fully closed. • 1 displays when the AQ254 Control Module has confirmation that the zone's pump is energized or its valve is fully open. <p>In the case of pump zoning, the 1 displays no more than 5 seconds after the activation of the relay. In the case of valve zoning, the 1 displays either when the zone valve operating time (defined in EQUIPMENT SETUP > ZONING > ZONE VALVES TIME TO OPEN on the main AQ2000 Series Control Panel) has elapsed (AQ1554P2) or when the valve's end switch is closed (AQ1574V4).</p>
ZONE B-1 0/1 ... ZONE B-16 0/1	0/1	0	Energizes / de-energizes each zone individually. <ul style="list-style-type: none"> • 0 displays when the AQ254 Control Module has confirmation that the zone's pump is de-energized or its valve is fully closed. • 1 displays when the AQ254 Control Module has confirmation that the zone's pump is energized or its valve is fully open.
EXIT	n/a	n/a	Exits this sub-menu and returns to the Installer menu.
PURGE Purges all (or individual) zones for the period of time selected in the PURGE TIME menu option			
PURGE TIME	1 to 30 (minutes)	5:00 (minutes)	Duration of purge for each zone selected.
PURGE	PURG ALL / DHW / PURGE 1 ... PURGE 16	ALL	Installer selects which zones to purge (all, only DHW, or individual zones).
START PURGE	START PURGE / STOP PURGE	n/a	Starts and Stops purge operation.
PURGE OFF	WAIT VALVE / PURGE COMPLETE	n/a	Indicates status of the system during a Purge operation. Displays only if START PURGE is active.
EXIT	n/a	n/a	Exits this sub-menu and returns to the Installer menu.

Table 3. Installer Menu. (Continued)

EQUIPMENT SETUP			
Menu Option	Range	Factory Default	Description
STATISTICS	Displays the summary activity (hours of operation or cycles since last reset)		
LAST RST	Max. 24,855 days (68 years)	0	Number of days since last reset.
AUX.PMP:	Maximum of 596,523 hours (68 years)	0H	Hours of operation of the relay since last reset.
SEC PMP:	Maximum of 596,523 hours (68 years)	0H	Hours of operation of the relay since last reset.
INJ PMP:	Maximum of 596,523 hours (68 years)	0H	Hours of operation of the relay since last reset.
AUX OUT ACTIV	Maximum of 596,523 hours (68 years)	0H	Hours of operation of the relay since last reset.
MIX.VLV. OP. CYCLE	Maximum of 10,000,000 cycles	0	Displays number of valve open cycles since last reset.
MIX.VLV. CL. CYCLE	Maximum of 10,000,000 cycles	0	Displays number of valve close cycles since last reset.
RESET ? ARE YOU SURE?	YES / NO	NO	Selecting this item resets all of the summary and zone activity values to zero.
- EXIT -	Exits the Installer menu and returns to the Home Page.		

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AQ255 and AQ257 Series Expansion Zoning Panels

PRODUCT DATA



FEATURES

The AQ255/AQ257 Series Expansion Zoning Panels have the following features:

- **Availability of 4 Expansion Zoning Panels.**
- **Zone control of either pumps or zone valves, in multiples of 4 zones**
- **4-zone or 8-zone models for pump zoning; 4-zone models for zone valves**
- **Ability to use both zone valve models and zone pump models in the same installation**
- **Zone valve panels contain an AQ10X38 transformer (power supply module), which connects to 120 Vac power and supplies 24 Vac power to the Zoning Module.**
- **Communications between components via the AQUATROL® network, using communication bus wiring.**
- **Any panel can be configured to activate a group pump when zones are active**
- **Zone valve models can be used with Normally Open or Normally closed valves**
- **Can be installed up to 500 ft. away from main AQ2000 Control Panel, for convenient operation of remote zoning equipment**

PRODUCT DESCRIPTION

The AQ255/AQ257 Series Expansion Zoning Panels provide additional zoning capacity for an existing hydronic installation controlled by an AQ2000 Series Boiler Control Panel such as an AQ250 Relay Boiler Control, an AQ251 Reset Boiler Control, or an AQ252 Universal Injection/Mixing Boiler Reset Control.

IMPORTANT

To ensure correct installation and proper operation of the zoning panel, perform the 7 installation steps in the order numbered in the "Content" below.

	Content
Specifications	2
1 Installation Preparation	3
2 Mounting	5
3 Wiring Procedure	5
4 Configure the Expansion Zoning Panel(s) DIP Switches	6
5 Test and Check Out the Installation	8
6 Purge Air from all System and Zone Piping	9
7 Document and Keep a record of all System Settings	9
Troubleshooting	11
Appendix	12
Wiring Diagrams	12



SPECIFICATIONS

The AQ2000 Series Expansion Zoning Panels are listed in Table 1.

Table 1. AQ2000 Series Expansion Zoning Panels.

Expansion Zoning Panel	Zoning Module	# of Zoning Modules	Transformer included
AQ25542B	AQ15540B	1	No
AQ25582B	AQ15540B	2	No
AQ25742B	AQ15540B	1	Yes
AQ25744B	AQ15740B	1	Yes

Application: Controls zoning operations for hydronic zoning systems.

Power and Electrical Ratings:

Power Supply: 120 Vac / 60Hz

B-B Communication Bus Terminals: Low voltage, Class II, 2-wire polarity-insensitive, digital communicating link to other Control or Zoning modules

Zone Pump Output Rating: 120 Vac, 5A, 1/3 HP

Zone Valve Output Rating: 24 Vac, 0.5A, 12VA

Electrical Connections (Line Voltage): Wire-clamp screw terminals; maximum 2 x 14 AWG each on line voltage terminals

Environmental Ratings:

Temperature Rating: 32°F to 130°F (0°C to 55°C)

Operating Humidity Range (% RH): 5 to 90% RH, non-condensing

Temperature Ratings:

Sensor Temperature Rating: -58°F to 230°F (-50°C to 110°C)

Inputs/Outputs:

R-C Input: 24 Vac Class II

R-C Output (on transformer; AQ25742B and AQ25744B only): 38 VA, 24 Vac Class II

Thermostat Compatibility: Digital non-communicating thermostats and/or AQ1000 Series 2-wire communicating thermostats

Dimensions (HxWxD): 8.0 x 9.4 x 3.3 in. (20.3 x 23.8 x 8.5 cm) approximate

Weight: 3.9 lb. (1.8 kg)

Approvals: Canadian Standards Association: Certified, File No. LR76030

ORDERING INFORMATION

When purchasing replacement and modernization products from your TRADELINE® wholesaler or distributor, refer to the TRADELINE® Catalog or price sheets for complete ordering number.

If you have additional questions, need further information, or would like to comment on our products or services, please write or phone:

1. Your local Honeywell Automation and Control Products Sales Office (check white pages of your phone directory).
2. Honeywell Customer Care
1885 Douglas Drive North
Minneapolis, Minnesota 55422-4386

In Canada—Honeywell Limited/Honeywell Limitée, 35 Dynamic Drive, Toronto, Ontario M1V 4Z9.

International Sales and Service Offices in all principal cities of the world. Manufacturing in Australia, Canada, Finland, France, Germany, Japan, Mexico, Netherlands, Spain, Taiwan, United Kingdom, U.S.A.

1 INSTALLATION PREPARATION

NOTES: Throughout these instructions, the following terminology conventions are used:

- **AQ155** refers to the AQ15540B Zoning Module.
- **AQ157** refers to the AQ15740B Zoning Module.
- **AQ255** refers to all of the AQ25542B, AQ25582B and AQ25742B Expansion Zoning Panels.
- **AQ257** refers to the AQ25744B Expansion Zoning Panel. Where there are specific instructions or details relating to the -42B, -82B, or -44B Expansion Zoning Panels, the full model number is used (e.g., AQ25744B).
- **AQ2000 Series Control Panel** is used when the information applies to any of the AQ2000 Series Boiler Control Panels, including AQ25A, AQ250, AQ251, AQ252, etc.
- **Control Module** refers to the component within the AQ2000 Series Control Panel that performs the master control operations.
- **Control Panel** refers to an assembled product, consisting of a transformer, Control Module and (if applicable) a Zoning Module, all contained within an AQ2000 panel enclosure.
- **Expansion Zoning Panel** refers to an assembled product, consisting of a Zoning Module and (if applicable) a transformer, contained within an AQ2000 panel enclosure.
- **Zoning Module** refers to the component within the AQ2000 Series Control Panel that controls zoning operations. Zoning Modules are available in either 4-zone or 8-zone configurations.

When Installing this Product...

1. **Read these instructions carefully. Failure to follow them could damage the product or cause a hazardous condition.**
2. **Check the ratings given in the instructions and on the product to make sure the product is suitable for the application.**
3. **Installers must be trained, experienced, and licensed service technicians.**
4. **Follow local codes for installation and application.**
5. **After installation is complete, check out the product operation as printed in these instructions.**

WARNING

Risk of electrical shock.

Can cause severe injury, property damage or death. Disconnect power supply before installation and before servicing.

Check That You Have All the Necessary Equipment For a Successful Installation

- AQ2000 Series components
 - AQ2000 Series Control Panel – already installed
 - AQ Expansion Zoning Panel(s)
 - Digital Thermostats (one for every space heating zone being controlled)
- Low voltage thermostat wire
- Zoning equipment (zone valves or pumps)

Read All Instructions Carefully Before Proceeding

The AQ2000 Series Control Panels are a part of a totally new family of hydronic controls. And although they, and other AQ2000 system components, are very easy to install and operate, they are different than other hydronic controls that you have previously installed. Take a moment to read through this document before beginning the installation. Failure to follow these instructions could damage the product or cause a hazardous condition.

Familiarize Yourself With the AQ255 / AQ257 Expansion Zoning Panel

Refer to Fig. 1 on page 4. In general, the top terminals of all AQ255 / AQ257 Expansion Zoning Panels carry low voltage (24Vac) power and the bottom terminals carry either line voltage (120 Vac) power for the AQ25542B and AQ25582B models, or low voltage (24 Vac) power for the AQ25742B and AQ25744B models. The two exceptions to this are:

1. AQ25744B Expansion Zoning Panel for use with zone valves with end switches.
2. AQ25742B Expansion Zoning Panel when used with low voltage zone valves without end switches.

For these the two exceptions, the bottom terminals of the AQ10X38 Transformer carry line voltage (120 Vac), but the bottom terminals of the Zoning Module will carry low voltage (24 Vac) power.

AQ255 AND AQ257 SERIES EXPANSION ZONING PANELS

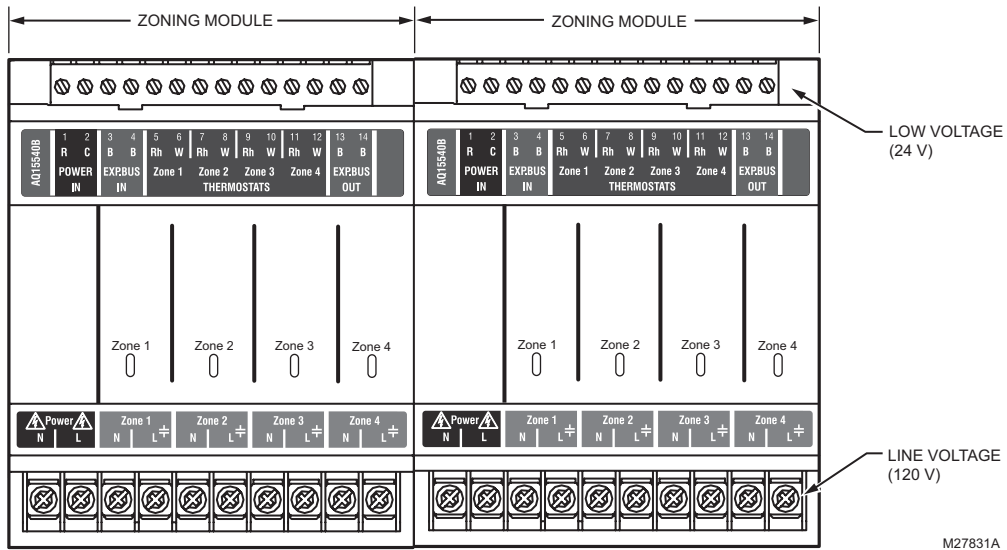


Fig. 1. AQ255 Expansion Zoning Panel Layout (AQ25582B shown).

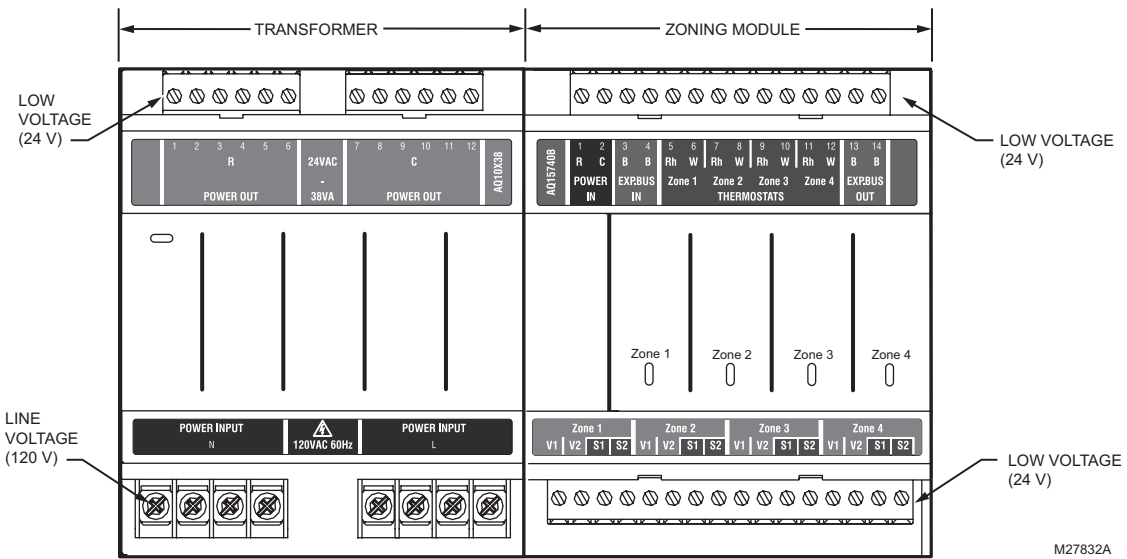


Fig. 2. AQ257 Expansion Zoning Panel Layout (AQ25744B shown).

2 MOUNTING

This section describes how to mount the Expansion Zoning Panels and thermostats.

Mount Expansion Zoning Panel(s)

1. Remove wire channel plugs from the Control Panel and any Expansion Panels (see Fig. 3).
2. Mount Expansion Zoning Panel on the right-hand end of the Main Control Panel.

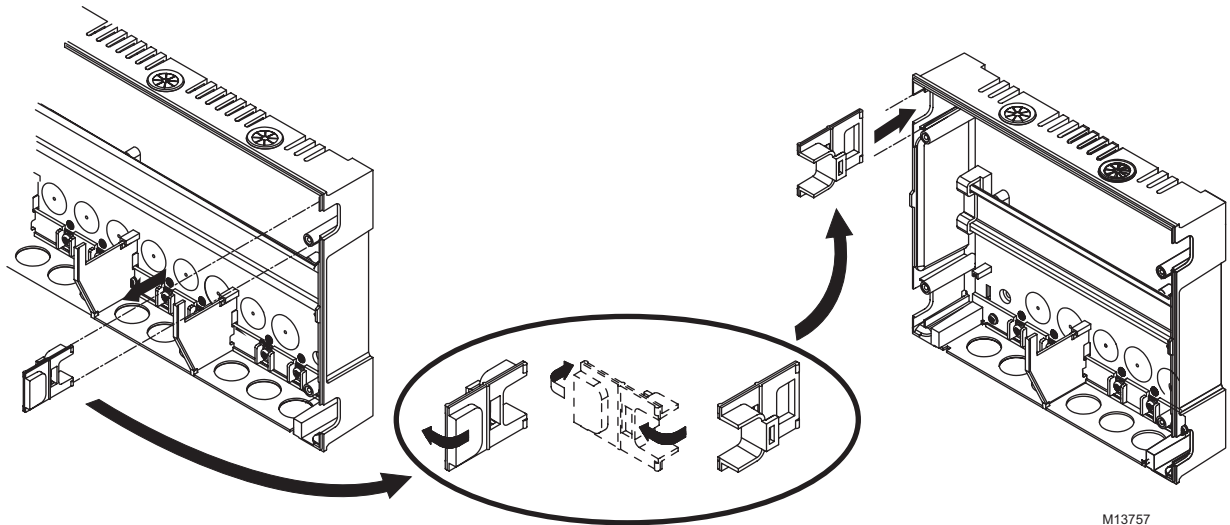


Fig. 3. Orientation of wire channel plugs for creating pass-through wire channel and for joining Main Control Panel to Expansion Zoning Panels.

Mount and Wire Thermostats in the Zones

Install the thermostats on the walls in the zones that are to be controlled by the AQ2000 Control Panels and Expansion Zoning Panels.

When using AQ1000 thermostats, refer to the included installation instructions included with that model.

If not done already, run low voltage thermostat wire (24 gauge or heavier) from the thermostats back to the Expansion Zoning Panel for use in section 3, "Wiring Procedure".

NOTE: If not otherwise specified, low voltage wiring should be run with 18 gauge thermostat wire and line voltage wiring should be run with 14 gauge wire. AQUATROL line voltage screw terminals are approved for use with 22 to 12 gauge copper conductors.

Several wiring diagrams are included in this document. For additional information, refer to <http://customer.honeywell.com> or your local distributor.

3 WIRING PROCEDURE

The AQ255 / AQ257 Expansion Zoning Panels are pre-wired at the factory, making for faster installation.

- For the AQ25742B and AQ25744B models, the low voltage output terminals located at the top of the transformer are wired to the R and C input terminals at the top of the Zoning Module. In addition, for the AQ25742B model, the low

3. Reverse wire channel plugs and re-insert them into their slot to form a wiring channel between the Main Control Panel and the Expansion Zoning Panel (see Fig. 3) and to connect the two panels together.
4. Install two top screws of the Expansion Zoning Panel, ensuring it is level with the adjoining Main Control Panel, and install two lower screws.
5. Repeat steps 1–4 for any additional Expansion Zoning Panels.

voltage output terminals located at the top of the transformer are wired to the R and C input terminals at the bottom of the Zoning Module.

- For the AQ25582B model, which contains two AQ15540B Zoning Modules, the B-B "Exp.Bus OUT" terminals of the Zoning Module on the left side are wired to the B-B "Exp.Bus IN" terminals of the Zoning Module on the right side.

NOTE: For examples of wiring Expansion Zoning Panels to AQ2000 Series Control Panels and wiring additional low voltage VA capacity, refer to the "Wiring Diagrams" section in the "Appendix" beginning on page 12.

Wiring the AQ255 / AQ257 Expansion Zoning Panel to an AQ2000 Series Control Panel

To wire the Expansion Zoning Panel to an AQ2000 Series Control Panel or another AQ255 / AQ257 Expansion Zoning Panel:

1. Ensure the power to the AQ2000 Series Main Control Panel is disconnected before proceeding.
2. For each zone to be added to the existing AQ2000 system, connect one zone thermostat to its corresponding TH input terminals on the top of the Expansion Zoning Panel being installed.
3. The B-B "Exp.Bus IN" terminals of the Expansion Zoning Panel being installed connect to the B-B "Exp.Bus OUT" terminals on the Control Module or previously installed Zoning Module on the furthest right side of the AQ2000 Series installation. These connections are polarity

insensitive, so it does not matter which of the BB “Exp.Bus OUT” terminals is connected to which of the B-B “Exp.Bus IN” terminals.

4. Wire the zoning equipment to the output terminals (bottom edge) of the Expansion Zoning Panel – line voltage circulators or valves for the AQ25542B and AQ25582B and low voltage zone valves for the AQ25742B and AQ25744B.
5. Bring power to the Expansion Zoning Panel as follows:
 - a. AQ25542B: run 14 AWG jumper wires from the N and L terminals on the bottom of the AQ2000 Series Control Panel’s AQ10X38 transformer to the N and L terminals on the bottom of the AQ15540B module.
 - b. AQ25582B: run 14 AWG jumper wires from the N and L terminals on the bottom of the AQ2000 Series Control Panel’s AQ10X38 transformer to the N and L terminals on the bottom of EACH AQ15540B Zoning Module.
 - c. AQ25742B: run 14 AWG jumper wires from the N and L terminals on the bottom of the AQ2000 Series Control Panel’s AQ10X38 transformer to the N and L terminals on the bottom of the AQ25742B’s transformer module (AQ10X38).
 - d. AQ25744B: run 14 AWG jumper wires from the N and L terminals on the bottom of the AQ2000 Series Control Panel’s AQ10X38 transformer to the N and L terminals on the bottom of the AQ25744B’s transformer module (AQ10X38).

The AQ255 / AQ257 Expansion Zoning Panels can control up to 4 space heating zones (or 8, for the AQ25582B Expansion Zoning Panel). The heart of each Expansion Zoning Panel is its Zoning Module. The corresponding Panels and Modules are shown in Table 1 on page 2.

For the -42B and -82B Panels, line voltage pumps are used for the zoning equipment so low voltage (24 Vac) power is not required. That’s why there isn’t a transformer included with these Panels. A small amount of low voltage power is required to power the electronic components inside the Zoning Modules, and this is supplied by jumper wires connecting the R and C terminals of the AQ2000 Series Control Panel’s AQ10X38 transformer with the R and C terminals on the AQ15540B Zoning Module.

For the -42B and -44B Valve Panels, an AQ10X38 transformer is included to provide sufficient low voltage power to drive the zone valves.

4 CONFIGURE THE EXPANSION ZONING PANEL(S) DIP SWITCHES

Setting up the AQ255 / AQ257 Expansion Zoning Panels is quick, simple and straightforward. All that’s needed is to check and if necessary adjust, the DIP switch settings.

For all Expansion Zoning Panels, DIP switches are located behind the blank cover in the left most section of the Zoning Module (beside the section labeled Zone 1). Refer to Fig. 4. The DIP switches come pre-set from the factory with default settings that are the most commonly-used by hydronics contractors across North America. That means that most of the settings only need to be checked by the installing contractor to make sure they’re suitable for the job, rather than having to adjust the DIP switch settings from scratch, which is a great time savings.

Although for many installations, these factory default DIP switch settings will be suitable, Honeywell recommends that they be reviewed and changed, as necessary, to get optimal performance of the hydronic system controlled by the AQ2000 Series products.

Expansion Zoning Module DIP Switch Location

The AQ15540B (pump Zoning Module) and AQ15740B (valves with end switches Zoning Module) both have DIP switches in 8-switch banks and are concealed behind snap-on covers, as shown in Fig. 4. A chart of the different settings for each DIP switch is affixed to the inside of the DIP switch covers.

More detailed explanations for these DIP switch settings, including the pre-set factory defaults for each, are shown in Table 2 on page 7.

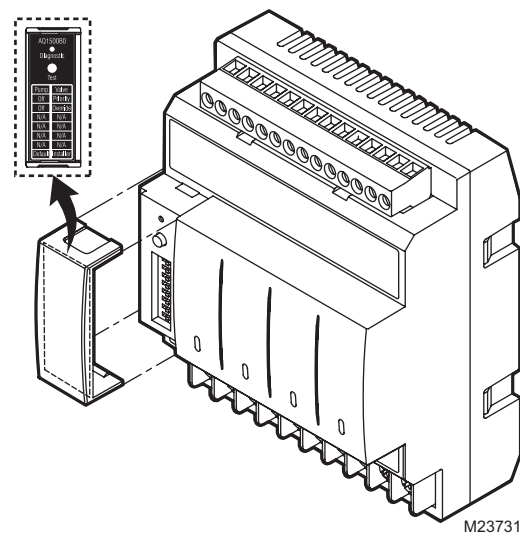


Fig. 4. Location of concealed DIP switches for AQ155 / AQ157 Expansion Zoning Modules.

Expansion Zoning Module DIP Switch Settings

Refer to Table 2 on page 7 and check all DIP switch settings. If necessary, change the switch settings to suit the desired operation of the hydronic installation.

1. DIP switches #1-4 define the identity (or address) of each zone on the AQ network. This is how the Control Module knows that, for example, the zone labeled Zone 1 on the first Zoning Module is different than the zone labeled Zone 1 on another Zoning Module.

NOTE: If more than one Zoning Module is connected to an AQ2000 Series Control Panel, DIP switches #1-4 must be set to uniquely identify each Module and its zones. If any of these four DIP switches is set to the right hand (ON) position for two or more zoning modules - for example, if two zoning modules both have their DIP switch #1 in the ON position - the AQ2000 Series control will operate unpredictably.

- a. For the first Zoning Module connected to an AQ2000 Series Control Module (this first Zoning Module is often included as a component of the main AQ2000

- Series Control panel), make sure that DIP switch #1 is set to the right hand position (ON) and DIP switches #2- 4 are set to the left (OFF).
- b. For the second Zoning Module connected to an AQ2000 Series Control Module, make sure that DIP switch #2 is set to the right hand position (ON) and DIP switches #1, 3, and 4 are set to the left.
 - c. For the third Zoning Module connected to an AQ2000 Series Control Module, make sure that DIP switch #3 is set to the right hand position (ON) and DIP switches #1, 2, and 4 are set to the left.
 - d. For the fourth Zoning Module connected to an AQ2000 Series Control Module, make sure that DIP switch #4 is set to the right hand position (ON) and DIP switches #1, 2, and 3 are set to the left.
2. Review the settings for DIP switches 5 through 8 of each Zoning Module connected to an AQ2000 Series Control Panel to ensure they are correct before system start-up.
 - a. DIP Switch 5 enables or disables Zone Synchronization:
 - The factory setting enables Zone Synchronization, which is an energy saving feature of the AQ2000 panels. Zone Synchronization coordinates zone demands to start at the same time when the boiler cycle begins. The AQ2000 functions as activating valves. The valve logic induces a delay before activating the boiler pump even when zone pumps are used. When Zone Synchronization is not selected, the zone demands are served whenever they call for heat.
 - The Zone Synchronization feature replaces the pump/valve selection of previous AQ2000 versions.
 - b. Dip Switch 8 functionality:
 - The factory setting enables 1-stage per zoned thermostat. The zoning module operates as four 1-stage zones.
 - When using a 2-stage thermostat, set DIP switch 8 to 2-Stg. The 2-stage selection uses TH1 and TH2 inputs for 2-stage thermostat control. For the selected zone, TH1 is the first stage input from the thermostat and TH2 is the second stage input. Inputs TH3 and TH4 operate in same manner. The 2-stage selection reduces the zoning module to a 2 zone module from a 4 zone module.
 - When using digital 2-stage thermostats (non-AQ1000 thermostats), the system set-up process changes slightly. During system set-up, create an artificial demand on the zoning module by increasing the set point on the thermostat. The artificial demand is required during the PRI/SEC setup menu to select the primary and secondary loop for each zone and stage.
 3. Replace the DIP switch cover of each Expansion Zoning Panel.
 - If DIP switches were set for a zoning module included in the main AQ2000 Control Panel, be sure to replace the DIP switch cover on the Zoning Module before replacing the main Control Panel's front cover.
 4. The Expansion Zoning Panel is now ready for Test and Checkout. Continue with 5, "Test and Check Out the Installation" on page 8.

Table 2. AQ15540B Zoning Module (Pump Zoning Module) DIP Switch Arrangement.

DIP Switch	Switch Description	Label and Factory Settings
1 2 3 4	<p>Zone Address: The positions of these 4 DIP switches define the unique address for each zone on the AQUATROL network. For each group of 4 zones, there can be only one DIP switch in the right hand (ON) position.</p> <p>The correct DIP switch settings for each zone module are:</p> <ul style="list-style-type: none"> • First Zone (1-4) Module: 1 = ON position; 2, 3, and 4 = OFF position • Second Zone (5-8) Module: 2 = ON position; 1, 3, and 4 = OFF position • Third Zone (9-12) Module: 3 = ON position; 1, 2, and 4 = OFF position • Fourth Zone (13-16) Module: 4 = ON position; 1, 2, and 3 = OFF position 	
5	<ul style="list-style-type: none"> • If set to SYNC, zone synchronization is enabled. • If set to NOT, zone synchronization is disabled. 	
6	<ul style="list-style-type: none"> • If zone valves are normally closed (N.C.), set the NC/NO DIP switch to the OFF position. • If zone valves are normally open (N.O.), set the NC/NO DIP switch to the ON position. 	
7	<ul style="list-style-type: none"> • If set to Group (ON position), the AUX Pump contacts on the Control Module are switched when any of the zones on this Zoning Module are active.^a • If set to - (OFF position), the AUX Pump contacts are not affected by activity on these zones. 	
8	<ul style="list-style-type: none"> • If set to 2-stage (ON position), then 2-stage operation is activated on thermostat inputs. The zoning module operates as two 2-stage zones. • If set to 1-stage (OFF position), then operates as four 1-stage zones. 	

^a If used with an AQ250 RelayPlus Control Panel, the AQ15000B Boiler Control Module's DIP switch #5 must be set to "GROUP" position and DIP switch #6 must be set to "MAIN" position. If used with an AQ25A, AQ251 or AQ252 Control Panel, the EQUIPMENT SETUP > AUXILIARY I/O > AUX PUMP menu option on the Control Panel must be set to "GROUP."

5 TEST AND CHECK OUT THE INSTALLATION

If this AQ255 / AQ257 Expansion Zoning Panel is part of a completely new AQ2000 installation, refer to the Test and Check Out Procedure (for a complete AQ2000 system) in the Product Data document for the main AQ2000 Series Control Panel. The form numbers (and models) are: 69-1974 (AQ251), 69-1986 (AQ252), or 69-2119 (AQ25A).

If this Expansion Zoning Panel is being added (as a retrofit project) to an AQ2000 system already in operation, then only the zones of this Panel need to be tested and checked out.

Startup

Apply power to the AQ2000 Series Control Panel only after all of the AQ2000 components (Control Panel, thermostats, sensors, Zoning Modules/Panels) have been wired to the other components in the hydronic heating system (boiler, zone valves or pumps, DHW Aquastat®, etc.).

Once powered, the AQ2000 Series Control Panel begins its start-up routine, establishing communication with all other AQ2000 components on the AQUATROL network.



CAUTION

Electrical Shock or Equipment Damage Hazard. Can shock individuals or short equipment circuitry. When line voltage is applied to an AQ255 / AQ257 Expansion Zoning Panel and the front cover of the Panel is removed, there is a risk of electrocution. Be careful to avoid contact with the line voltage (N and L) terminals, either with your fingers or with metal tools (such as a screwdriver) when power is applied to the Control Panel.

Test and Checkout Routines

For Expansion Zoning Panels connected to AQ250 Control Panels, continue with the "Test Expansion Zoning Panels used with AQ250 Control Panels" section.

For Expansion Zoning Panels connected to AQ25A, AQ251, or AQ252 Control Panels, go to "Test Expansion Zoning Panels used with AQ25A, AQ251, and AQ252 Control Panels" on page 8.

Test Expansion Zoning Panels used with AQ250 Control Panels

Auto Test - AQ155 / AQ157 Zoning Modules

Auto Test operation for Zoning Modules enables the installer to test all zones wired to the Zoning Module by sequentially activating the zoning equipment connected to each zone output. Each step of the Auto Test routine may be paused or skipped by pressing the Test button.

STATUS LEDS

Every status LED light (Zone 1, Zone 2, Zone 3, Zone 4) will be turned on for 15 seconds when its corresponding output is activated during Auto Test.

DIAGNOSTIC LED

This light is used by the AQ155 / AQ157 to communicate diagnostic data to the user:

- Constantly ON indicates that the unit is working properly.
- Constant, fast blinking indicates that the unit is in the Auto Test mode. Constant, slow blinking indicates that Auto Test mode has been paused.
- Coded blinking is used to communicate an error code to the user. Refer to the Troubleshooting section of these instructions for an explanation of these codes.

NOTE: NOTE: The DIAGNOSTIC LED is OFF when the AQ155 / AQ157 Zoning Module is not powered.

Auto Test Sequence of Operation

1. When the Auto Test button is pressed, Zone 1 of the Zoning Module energizes and the DIAGNOSTIC LED on the AQ155 / AQ157 begins to blink quickly. Zone 1 remains energized for 15 seconds, then shuts off
2. Following that, each of the remaining zones energizes sequentially (starting with Zone 2) for 15 seconds, and then shuts off.
3. After Zone 4 de-energizes, the AQ155 / AQ157 exits the Auto Test routine and the DIAGNOSTIC LED on the Module returns to steady illumination (no blinking).

NOTE: This Auto Test routine works for Zoning Modules when connected to any AQ2000 Series Control Panel.

If no errors were detected in the Auto Test routine, the AQ255 / AQ257 is now ready for operation. If errors were detected, refer to "Troubleshooting" on page 11 for details.

Test Expansion Zoning Panels used with AQ25A, AQ251, and AQ252 Control Panels

If this AQ255 / AQ257 Expansion Zoning Panel is connected to an AQ25A, AQ251 or AQ252 Control Panel, the Test and Check Out procedure can be done either manually (by following the preceding method outlined in the "Auto Test - AQ155 / AQ157 Zoning Modules" on page 8 of this document), or through the Control Panel's Test and Purge tools. The TEST feature enables the installer to checkout the system's zone equipment as part of system commissioning (Checkout).

NOTE: If checking out the operation of more than the newly-added Expansion Zoning Module, refer to the Product Data document for the main AQ2000 Series Control Panel: AQ25A (form 69-2119), AQ251 (form 69-1974) or AQ252 (form 69-1986).

Test Zones

When TEST ZONES is selected, the Installer can test zones connected to the AQ25A, AQ251 or AQ252 (space heating and DHW) simultaneously or individually.

If zones are tested simultaneously (TEST: ALL ZONES), zone pumps energize immediately (with a delay of 1/10th of a second delay between each pump to minimize the effect of inrush currents from the pumps' motors) along with the main boiler pump.

When zone valves are tested simultaneously, the valves are energized immediately but the boiler pump is energized only after either:

- a. the valves end switches close, or
- b. the TIME TO OPEN value (in the EQUIPMENT SETUP > ZONING menu) has elapsed, to allow enough time for the zone valves to fully open.

A zero (0) displayed after a zone's ID address (e.g., Zone A1 0, A2 0, ... A16 0) indicates that the Control Module has received confirmation that the zone's pump relay is not energized or its zone valve is fully closed.

Similarly, a one (1) displayed after a zone's ID address (e.g., Zone A1 1, A2 1, ... A16 1) indicates that the Control Module has received confirmation that the zone's pump relay is energized or its zone valve is fully open.

To test zones individually, position the indicator arrow (←) beside a selected zone and press the "+" button to energize it, and then press the "-" button to de-energize it. As each zone is tested, the Status LED on the Zoning Module associated with that zone illuminates. To test additional zones, position the indicator arrow (←) beside the zone to be tested, press the "+" button to energize the zone's pump or valve, and then press the "-" button to de-energize it. When finished testing the zones, press the MENU button to return to the SETUP >TEST AND PURGE menu.

6 PURGE AIR FROM ALL SYSTEM AND ZONE PIPING

For Expansion Zoning Panels connected to AQ250 Control Panels, continue with the "AQ250 Models" section.

For Expansion Zoning Panels connected to AQ25A, AQ251, or AQ252 Control Panels, go to "AQ25A, AQ251 and AQ252 models" on page 9.

AQ250 Models

Purging air from all zones in the hydronic system can be easily accomplished with the AQ250 by using a modification to the AUTO TEST feature as follows:

1. To purge all zones on the AQ250 network at the same time, press the TEST button on the AQ15000B Control Module. All zone equipment relays energize simultaneously and remain energized for the duration of the Auto Test routine.
2. The AQ250 then begins its Auto Test routine, starting with energizing the Boiler pump.
3. When the Boiler pump LED lights up, quickly press the TEST button to pause the Auto Test routine. The DIAGNOSTIC LED blinks slowly while in paused mode.
4. The Boiler pump and all zones continue to be energized (and therefore are purging their loops of air) until the TEST button is pressed again.
5. When the boiler loop has been purged sufficiently, press the TEST button again to energize the AUX relay. If there is a pump connected to the AUX output, press the TEST button again as soon as the AUX LED is illuminated, to perform the purge routine on the AUX loop. If the AUX loop does not need to be purged, or there is not a pump connected to the AUX relay, press the TEST button again to advance to the next step in the test sequence.

6. When the DHW device energizes, its LED lights up. Quickly press the TEST button to pause the Auto Test routine and purge the DHW loop for as long as necessary. The DIAGNOSTIC LED blinks slowly while the Auto Test is paused.
7. When the DHW loop has been purged sufficiently, press the TEST button again to advance to the next step in the test sequence (shorting the Boiler T-T dry contacts). Press the TEST button again to skip this step and finish the Purge procedure.
8. The Auto Test routine is complete when the DIAGNOSTIC LED steadily illuminates (no blinking).

If additional purging is required for any zone, the Auto Test procedure can be activated for any Zoning Module by pressing the TEST button located above that Zoning Module's DIP switches. Refer to the "Auto Test Sequence of Operation" on page 8.

AQ25A, AQ251 and AQ252 models

The PURGE operation on the AQ25A, AQ251, and AQ252 Control Panels allow the installer to purge all zones (loops) sequentially, or each zone individually, for a period of time PURGE TIME selected in the EQUIPMENT SETUP >TEST AND PURGE > PURGE menu. PURGE TIME can be adjusted in multiples of one (1) minute, up to a maximum of 30 minutes per loop to be purged.

Once you have selected which loops to purge (ALL loops, or an individual loop) and for how long (using the Control Panel's menus), position the indicator arrow (←) beside the START PURGE option and press the OK button. The START PURGE display changes to STOP PURGE and the Control Panel's display begins counting down the time remaining for the purge cycle. When the purge time has elapsed for the first loop, the control proceeds to subsequent loops and performs the PURGE operation on each of them. After all selected loops are purged, the display changes to PURGE COMPLETED.

7 DOCUMENT AND KEEP A RECORD OF ALL SYSTEM SETTINGS

Once the hydronic installation with the AQ2000 Series Control Panel has been set up, and the entire installation is operating properly, it is important to document all the system settings for future reference.

Job Records

All AQ2000 Series Expansion Zoning Panels are shipped with Installation Job Records for documenting these settings. These should be filled out completely and saved in the Installing Contractor's files.

SAVE Feature (AQ25A, AQ251, and AQ252 Control Panels)

In addition to the hardcopy Installation Job Records, the AQ25A, AQ251, and AQ252 Control Panels have a convenient SAVE feature that allows the installing contractor to save the specific equipment setting for this installation in the Control Panel's memory for future recall, in case the system's settings are inadvertently changed. This feature is found in the EQUIPMENT SETUP > SAVE/RESTORE sub-menu of the Control Panel.

There are three levels of settings in the AQ25A's memory – CURRENT, FACTORY and SETUP.

- **CURRENT** settings are the settings that are currently displayed in any of the menus and are the settings that the Control Panel uses to operate. Any time a value is changed in any of the menus, the CURRENT settings are changed and these new settings are instantly used by the Control Panel.
- **FACTORY** settings are the default values loaded at the factory and are the starting point for programming the AQ25A, AQ251 or AQ252 Control Panel. These values are permanently stored in memory and cannot be over-written or erased. The Control Panel can be restored to factory settings through the RESTORE FACTORY option in the SAVE / RESTORE sub-menu. A warning prompt, RESTORE FACTORY—ARE YOU SURE?, displays and YES or NO must be chosen before proceeding. If YES is selected, the FACTORY settings are copied to the Control Panel's CURRENT settings and the Control Panel begins to operate with these values immediately.
- **SETUP** settings are the specific settings for this installation which an installer has saved after the Control Panel is set up and operating well. These are saved for future recall, in case the system's settings are inadvertently changed.

- To save this installation's settings for the first time, go to the Control Panel's EQUIPMENT SETUP > SAVE/RESTORE sub-menu. Position the indicator arrow (←) beside SAVE SETUP and press OK. This saves the current system settings to the SETUP values.
- To retrieve the SETUP values at any time in the future, go to the EQUIPMENT SETUP > SAVE/RESTORE sub-menu and select RESTORE SETUP to load those values into the AQ25A as the CURRENT settings. The system will now operate according to these retrieved settings.
- If the current settings are modified after a RESTORE SETUP operation is performed, simply select SAVE SETUP again to overwrite these new settings into the SAVE settings memory.



CAUTION

If you change any system settings after a RESTORE SETUP operation, you change the current settings that the Control Panel (AQ25A, AQ251, or AQ252) uses as its basis of operation.

TROUBLESHOOTING

The following information helps the installer correctly identify system problems, making troubleshooting much faster. Table 3 describes the possible error codes that can be communicated on the AQ155 / AQ157 Zoning Modules' DIAGNOSTIC LEDs.

Troubleshooting When Using Expansion Zoning Panels with an AQ2000 Series Control Panel

Communications Loss

Because all AQ2000 Series components communicate with each other via the dedicated AQUATROL network when controlling a hydronic system, one possible failure mode of an AQ25A, AQ251, or AQ252 Control Panel would be loss of communication between the Control Module and any connected Zoning Modules, or between a Zoning Module and any zone thermostats connected to the AQUATROL network. In general, the Control Module:

- Periodically tries to re-establish communication with any lost components on the network.
- Initializes any component that re-establishes its communication.
- Displays an error code on the Control Panel's System Status page, until the error is corrected and/or communication is re-established.

Control Module Reaction

When the AQ25A, AQ251, or AQ252 control loses communication with any number of zones for more than one minute (as long as there's still at least one zone communicating on the AQUATROL network), its Control Panel continues to deliver heat to the other non-communicating zones and the address of each lost zone (e.g., A-7, B-4) displays on the Control Panel's System Status page.

When communication is lost with all zones, the AQ25A, AQ251, or AQ252 enters BOILER FREEZE PROTECTION mode, in which it fires the boiler and then activates the Boiler (supply) pump and zone equipment for a period of 10 minutes every hour. This should provide sufficient heat to the system to prevent a building from freezing up until communication is re-established between the AQ2000 Series components.

Zoning Module Reaction

When a Zoning Module loses communication with the Control Module (as long as there is at least one other Zoning Module communicating with the Control Module), the Zoning Module operates its pumps or valves in a conventional, non-synchronized zoning fashion. That is, it operates according to the demands from the thermostats, without zone synchronization or waiting for permission from the Control Module to operate. This allows the zones to extract any heat provided by the boiler.

When communication is lost between a Zoning Module and any of its thermostats, that zone is invisible to the Control Module. The Zoning Module stops serving that zone and the zone's pump or valve de-energizes. Under this condition, the AQ2000 Series control operates in the same way as non-networked heating systems.

- The AQ250 provides Control Module diagnostic information via the DIAGNOSTIC LEDs located above the DIP switches on the AQ1500 Control Module.
- The AQ25A, AQ251 or AQ252 presents Control Module diagnostic information on the Home Page display of its LCD.

All AQ2000 Series Control Panels provide Zoning Module diagnostic information via the DIAGNOSTIC LEDs located above the DIP switches on their Zoning Module(s).

Troubleshooting When Using Expansion Zoning Panels with AQ25A, AQ251, or AQ252 models

If a zone loses communication with the Control Module or is malfunctioning, this can be seen in the AQ25A/AQ251/AQ252 Control Panel's System Status Page. The System Status Page display indicates which zone has lost communication with the Control Panel (for diagnostics and troubleshooting).

If a zone has been permanently, and intentionally, disconnected from the network, turn off the Control Panel at the distribution panel and wait 10 seconds. Power the control back up and, as part of its boot up routine, the AQ25A/AQ251/AQ252 will detect all equipment connected to the network. In doing this, the control no longer recognizes the disconnected zone and the LOST ZONE message disappears from the System Status page.

Table 3. AQ155 / AQ157 Zoning Module LED Display and System Condition.

DIAGNOSTIC LED Status		System Condition	Action Required
Steady (no blinking)		No system problem detected	None
Fast blinking (4 blinks per second)		Auto Test is in operation	None. Allow the control to finish its Auto Test routine.
Slow blinking (2 blinks every 3 seconds)		Auto Test has been paused.	Press the Test button to resume the Auto Test routine.
Coded blinking = ERROR	2 blinks, then pause	Freeze protection activated across the entire AQUATROL network	All zones have lost communication with the Control Module. Check B-B wiring between the Control Module and each Zoning Module.
	3 blinks, then pause	Communication lost with <u>all</u> thermostats on the Zoning Module	Check thermostat wiring to each Zoning Module.

APPENDIX

This appendix provides examples for wiring Expansion Zoning Panels to AQ2000 Series Control Panels and wiring additional low voltage VA capacity.

Wiring Diagrams

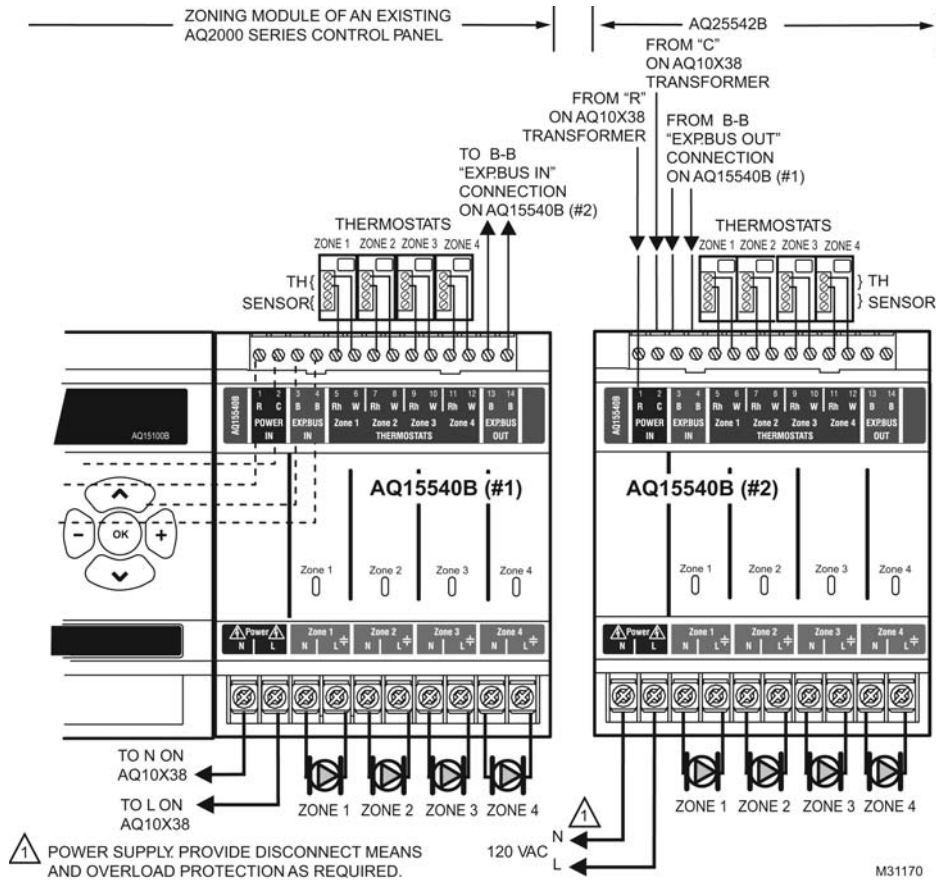


Fig. 5. Wiring of AQ25542B Expansion Zoning Panel to AQ2000 Series Control Panel.

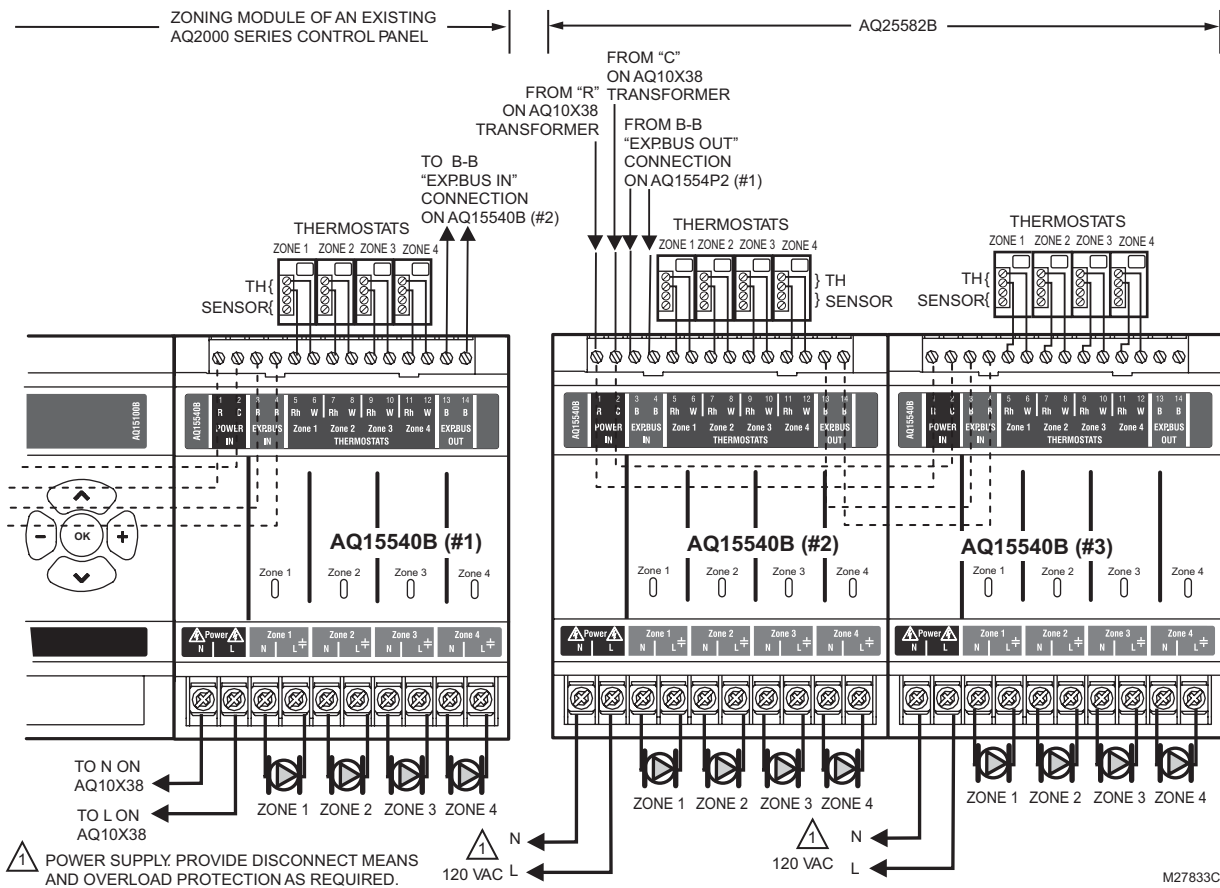


Fig. 6. Wiring of AQ25582B Expansion Zoning Panel to AQ2000 Series Control Panel.

NOTE: When wiring zone valves with end switches, note the transformer's VA:
 If low voltage zone valves with end switches are used for zone control, make sure the selected zone valves do not draw more power (VA) than the 38 VA capacity of the AQ10X38 transformer supplied with the AQ2000 Series Control Panel. This integral transformer has enough power to operate 4 motorized zone valves (such as Honeywell V8043E valves or 4 valves using low-amperage draw, heat motor actuators, such as Honeywell MV100 actuators), plus power the electronics of the AQ2000 Series Control Module and up to 16 AQ1000 thermostats. If zone valves with high-amperage draw, heat motor actuators are used (such as Taco 500 series zone valves), additional 24 Vac transformer capacity will need to be wired to the Zoning Module to power the valves. See Fig. 7 on page 14 for recommended wiring of additional low voltage VA capacity to AQ2000 Series Zoning Modules.

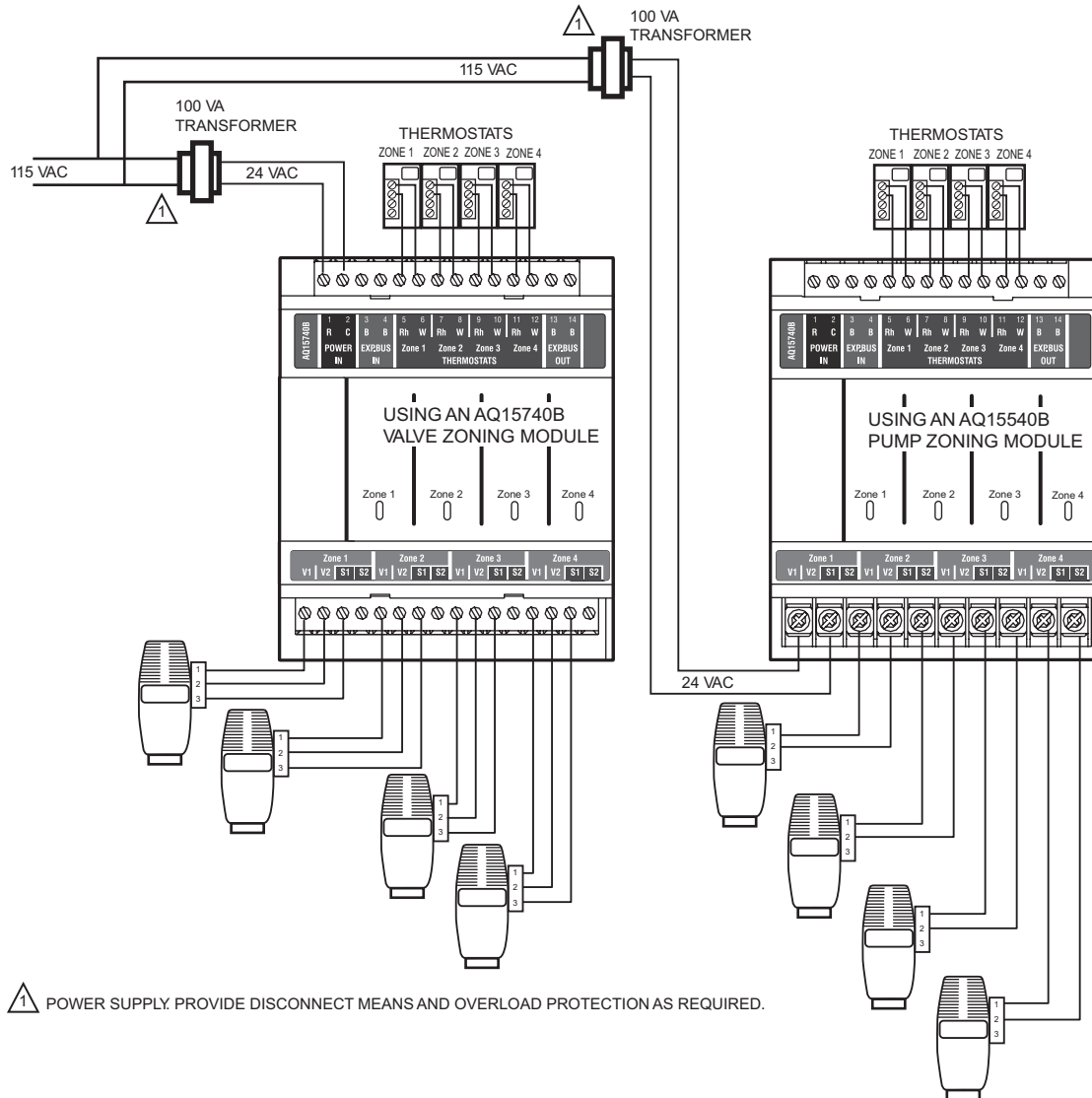


CAUTION

Equipment Damage Hazard.

Can damage internal circuitry of Zoning Module.

The ES1 and ES2 terminals of the AQ15740B Zoning Module are powered terminals and must only be connected to a set of dry contacts, such as a zone valve motor's end switch. If power is applied to these contacts (for example, by running line voltage through the zone valves' end switches to bring on a circulator feeding those valves), the internal circuitry of the Zoning Module will be damaged, in which case the warranty for this product will be voided.



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Fig. 7. Wiring of additional low voltage VA capacity.

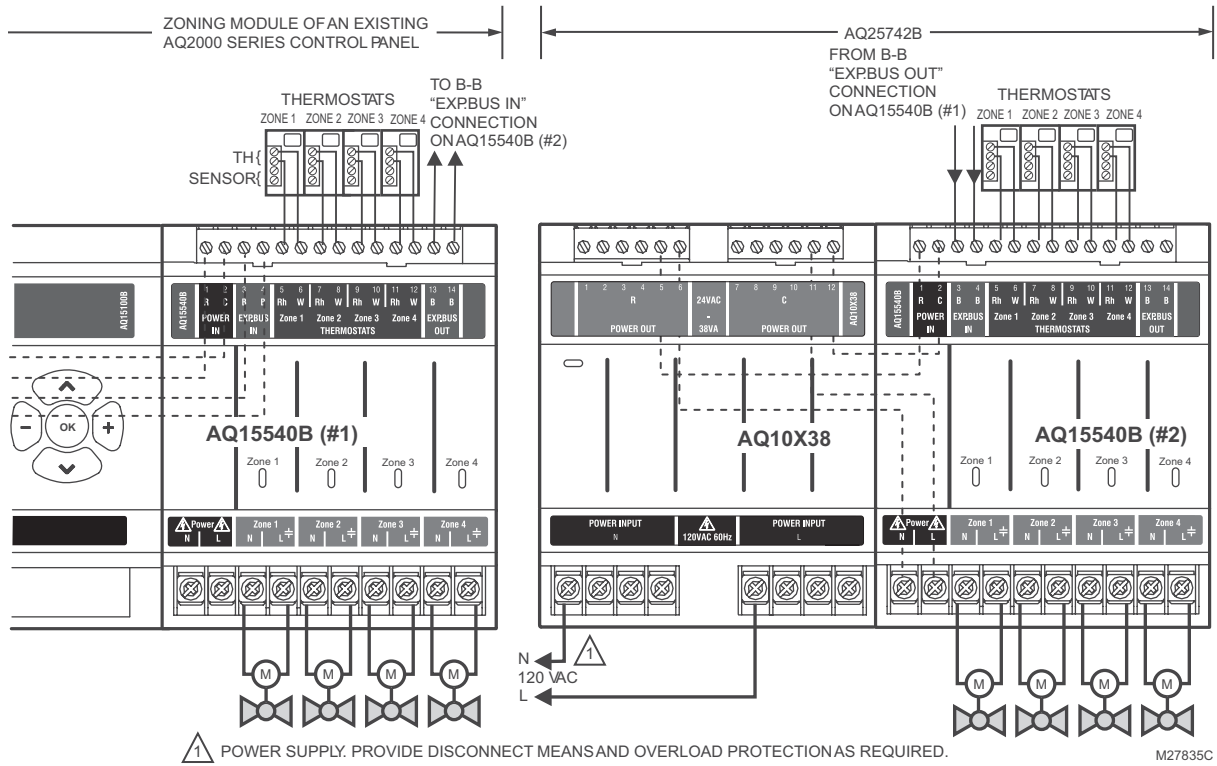


Fig. 8. Wiring of AQ25742B Expansion Zoning Panel to AQ2000 Series Control Panel.

AQ255 AND AQ257 SERIES EXPANSION ZONING PANELS

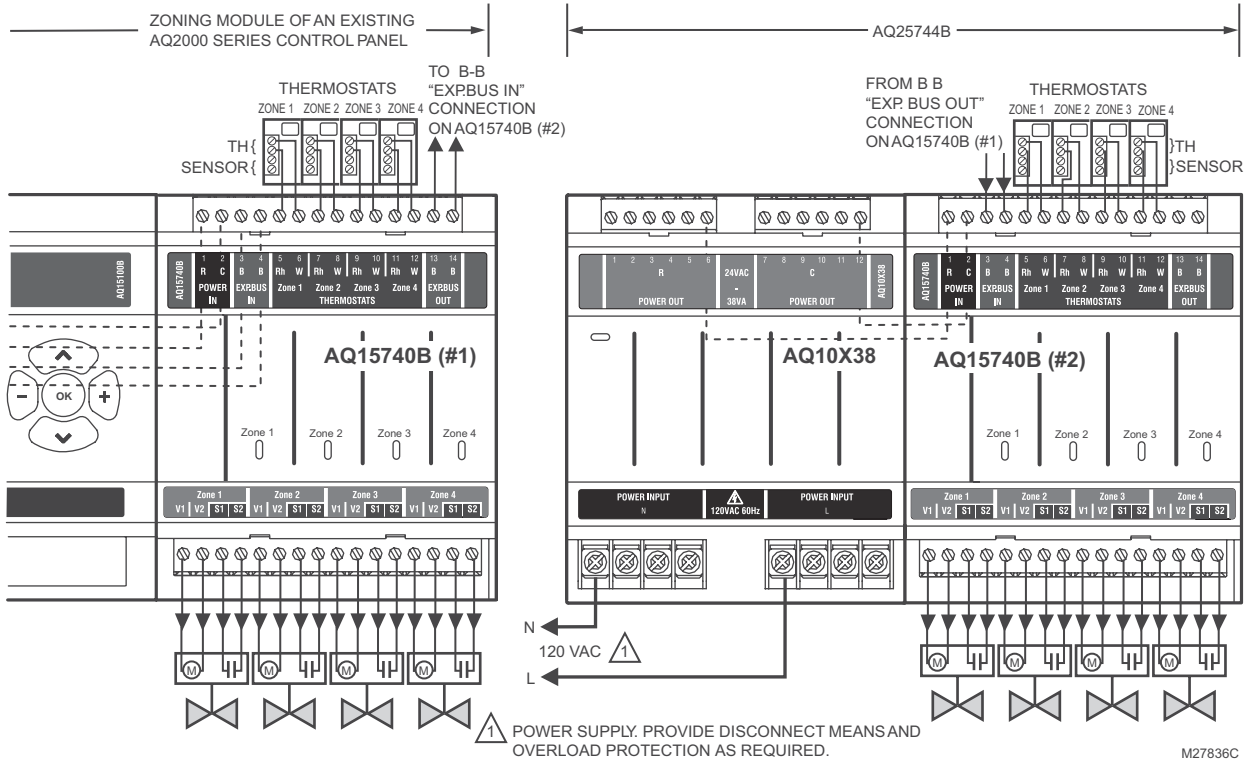


Fig. 9. Wiring of AQ25744B Expansion Zoning Panel to AQ2000 Series Control Panel.

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Thermostats

Honeywell

Hydronic Zoning Thermostat

AQ1000TN2



OWNER'S GUIDE



69-2005EF

Need Help?

For assistance with this product please visit <http://yourhome.honeywell.com>
or call Honeywell Customer Care toll-free at **1-800-468-1502**.

Read and save these instructions.

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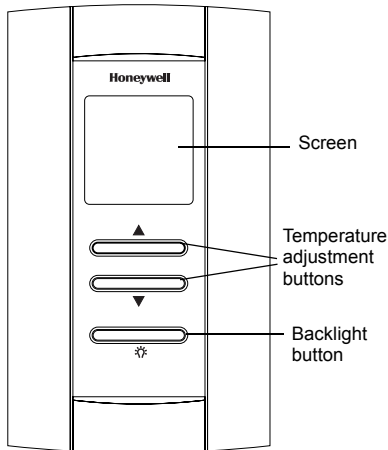
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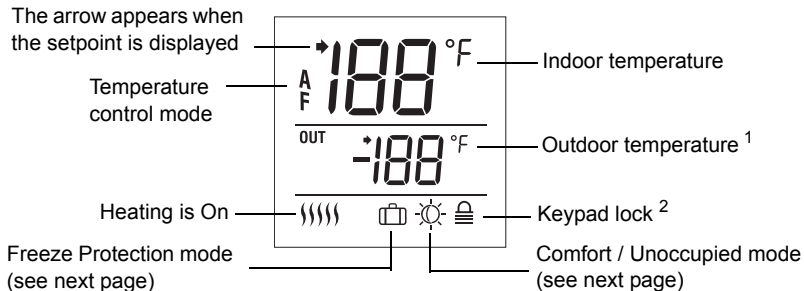
About your new thermostat

Honeywell's AQ1000TN2 hydronic zoning thermostat can be used to control the ambient air temperature or floor temperature. You can choose among the following temperature control modes (see page 8):




- A mode:**
- controls and displays the ambient air temperature
-
- F mode:**
- controls and displays the floor temperature using an external temperature sensor
-
- AF mode:**
- controls and displays the ambient air temperature
 - maintains the floor temperature within desired limits using an external temperature sensor



Screen display



¹ The outdoor temperature will be displayed only if the data is available.

² This icon appears to indicate that the thermostat settings cannot be modified as the hydronic zoning controller has locked the keypad. The backlight  button and the   buttons can still be used to activate the backlight and to display the setpoint.

Power-up / modes of operation

The thermostat is powered through the wires connecting it to the AQ2000 Series hydronic zoning controller. Therefore, the thermostat turns on when the controller is powered. The thermostat can be placed in one of the 3 following modes of operation:

Comfort Mode

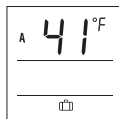
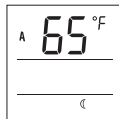
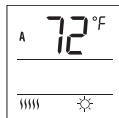
The thermostat is normally in the Comfort mode. In this mode, the temperature is set using the ▲▼ buttons.

Unoccupied Mode






When the Unoccupied mode is activated by the hydronic zoning controller, the temperature setpoint is lowered by the temperature setback value. This value is set in the User's configuration menu (see page 5).

Freeze Protection Mode

When the Freeze Protection mode is activated by the hydronic zoning controller, the thermostat is placed at the Freeze Protection temperature. This value is set in the Installer's configuration menu (see page 10).



User's Configuration Menu

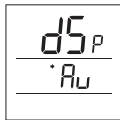
1. Press the backlight  button for 3 seconds to access the configuration menu. The first parameter is displayed.
2. To modify a parameter, press either of the   buttons.
3. To display the next parameter, briefly press the backlight  button.
4. To exit the menu, press the backlight  button for 3 seconds.

The parameters appear in the order shown in the following table.

Parameter	Default setting	Options
Display mode	Automatic	Automatic, °F, °C
Temperature setback	7 °F (4 °C)	0 to 16 °F (0 to 9 °C)
Backlight	Temporary	Temporary / Permanent

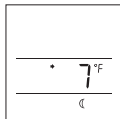
Display Format

Use this parameter to choose the temperature display mode. When the automatic mode is selected, the thermostat displays the temperature format set on the hydronic zoning controller. If °F or °C is selected, the thermostat displays the temperature in the selected format respectively.



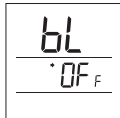
Temperature Setback

When the Unoccupied mode is activated by the hydronic zoning controller (certain controller models only), the temperature setpoint is lowered (set back). Use this parameter to specify the amount of temperature setback.



Backlight

Use this parameter to choose between temporary and permanent backlight. When temporary backlight is selected, the screen is lit for 12 seconds every time any button is pressed.



Temperature Display and Setting

The thermostat generally displays the actual (measured) temperature. To display the setpoint temperature, press one of the ▲▼ buttons once. The setpoint will be displayed for the next 5 seconds. An arrow appears at the left of the setpoint temperature display.

To change the setpoint, press one of the ▲▼ buttons until the desired temperature is displayed. To scroll faster, press and hold the button.

Error Messages

LO The measured temperature is below the thermostat's display range.

HI The measured temperature is above the thermostat's display range.

-- Verify the thermostat and external (floor) sensor connections.

Installation

1. Remove the faceplate from the base by unscrewing the screw underneath the thermostat and tilting the bottom of the faceplate up. Note that the screw remains captive on the base.
2. Insert the wires through the center hole of the base and secure the base to the wall or onto an electrical box.
3. Connect the wires to the terminals (*no polarity to observe*).

Terminal		Description
1	TH	AQ2000 Series hydronic zoning controller connections
2	TH	
3	SENSOR	External sensor connections for floor temperature measurement (required only if the thermostat is set to F or AF mode; see pages 1 and 8)
4	SENSOR	

4. Set the configuration switches (see next page).
5. Re-attach the faceplate to the base and secure with the captive screw.

NOTE: *Keep the thermostat's air vents clean and unobstructed at all times.*

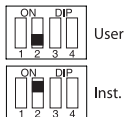
Configuration switches

The configuration (DIP) switches are located behind the thermostat faceplate.

NOTE : DIP switch 1 is not used.

Installer Configuration Menu (switch 2)

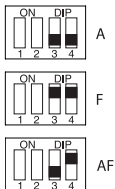
Use DIP switch 2 to set the thermostat in either Installer or User mode.



Temperature Control Mode (switches 3 & 4)

Use DIP switches 3 and 4 to select the temperature control mode (A, F or AF).

NOTE : F or AF mode should be used only when an external (floor) sensor is connected to the thermostat (see page 7).



Installer's Configuration Menu



The parameters in the installer's configuration menu must be modified by qualified personnel only. Incorrect settings can result in property damages.

1. Remove the thermostat from its base.
2. Place switch 2 on the back of the thermostat in the up position (Installer mode).
3. Return the thermostat to its base. The first parameter is displayed.
4. To modify a parameter, press either of the ▲▼ buttons.
5. To view the next parameter, briefly press the backlight * button.
6. To exit the menu, place switch 2 back to its initial position.

The parameters appear in the order shown in the following table.

Parameter	Default setting	Range
Minimum setpoint temperature	41 °F (5 °C)	41 °F (5 °C) to 100 °F (38 °C)
Maximum setpoint temperature	100 °F (38 °C)	41 °F (5 °C) to 100 °F (38 °C)
Freeze Protection temperature	41 °F (5 °C)	41 °F (5 °C) to 100 °F (38 °C)*
Minimum floor limit	41 °F (5 °C)	41 °F (5 °C) to 100 °F (38 °C)
Maximum floor limit	100 °F (38 °C)	41 °F (5 °C) to 100 °F (38 °C)

* The Freeze Protection temperature range is set by the minimum and maximum setpoint temperatures. For example, if you change the minimum setpoint temperature to 50 °F (10 °C), you cannot then set the Freeze Protection temperature lower than 50 °F (10 °C).

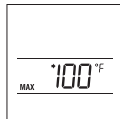
Minimum Setpoint Temperature

This parameter is the minimum temperature at which the thermostat can be set.



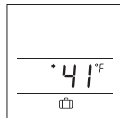
Maximum Setpoint Temperature

This parameter is the maximum temperature at which the thermostat can be set.



Freeze Protection Temperature

This parameter is used to prevent frozen pipes inside the room where the thermostat is located. When the Freeze Protection mode is activated by the hydronic zoning controller, the thermostat is placed at the Freeze Protection temperature.



Minimum Floor Limit Temperature

This parameter is used only if the thermostat has been configured for AF temperature control. If the floor temperature is below that limit, the pump or valve will be activated regardless of the ambient temperature.



Maximum Floor Limit Temperature

This parameter is used only if the thermostat has been configured for AF temperature control. If the floor temperature is above that limit, the pump or valve will be deactivated regardless of the ambient temperature.



Technical Specifications

Power supply: powered by the boiler controller

Default setpoint range: 40 °F to 100 °F (5 °C to 38 °C)

Default floor limit (AF model): 40 °F to 100 °F (5 °C to 38 °C)

Setpoint interval: ± 1.0 °F (0.5 °C)

Indoor temperature display range: 32 °F to 158 °F (0 °C to 70 °C)

Outdoor temperature display range: -58 °F to 212 °F (-50 °C to 100 °C)

Display resolution: ± 1.0 °F (0.5 °C)

Storage: -20 °F to 130 °F (-30 °C to 55 °C)

Controller type: Proportional Integral (PI)

Memory type: All settings are stored in non-volatile memory and are therefore safe during a power outage

2-year limited warranty

Honeywell warrants this product, excluding battery, to be free from defects in the workmanship or materials, under normal use and service, for a period of two (2) years from the date of purchase by the consumer. If at any time during the warranty period the product is determined to be defective or malfunctions, Honeywell shall repair or replace it (at Honeywell's option).

If the product is defective,

- (i) return it, with a bill of sale or other dated proof of purchase, to the place from which you purchased it; or
- (ii) call Honeywell Customer Care at 1-800-468-1502. Customer Care will make the determination whether the product should be returned to the following address: Honeywell Return Goods, Dock 4 MN10-3860, 1885 Douglas Dr. N., Golden Valley, MN 55422, or whether a replacement product can be sent to you.

This warranty does not cover removal or reinstallation costs. This warranty shall not apply if it is shown by Honeywell that the defect or malfunction was caused by damage which occurred while the product was in the possession of a consumer.

Honeywell's sole responsibility shall be to repair or replace the product within the terms stated above. HONEYWELL SHALL NOT BE LIABLE FOR ANY LOSS OR DAMAGE OF ANY KIND,

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THIS WARRANTY IS THE ONLY EXPRESS WARRANTY HONEYWELL MAKES ON THIS PRODUCT. THE DURATION OF ANY IMPLIED WARRANTIES, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, IS HEREBY LIMITED TO THE TWO-YEAR DURATION OF THIS WARRANTY.

Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you. This warranty gives you specific legal rights, and you may have other rights which vary from state to state.

If you have any questions concerning this warranty, please write Honeywell Customer Relations, 1985 Douglas Dr, Golden Valley, MN 55422 or call 1-800-468-1502. In Canada, write Retail Products

ON15-02H, Honeywell Limited/Honeywell Limitée, 35 Dynamic Drive, Scarborough, Ontario M1V4Z9.

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Honeywell

Honeywell

Thermostat de zonage hydronique

AQ1000TN2



GUIDE DU PROPRIÉTAIRE



69-2005EF

Besoin d'aide?

Pour obtenir de l'aide sur ce produit, veuillez consulter le <http://yourhome.honeywell.com>
ou joindre le service à la clientèle en composant sans frais le **1 800 468-1502**

Veillez lire le mode d'emploi et le conserver en lieu sûr.

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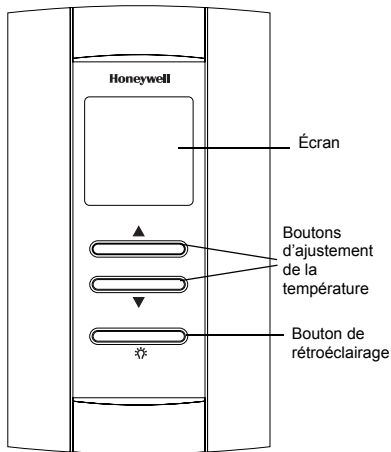
Annexe

Fiche technique	12
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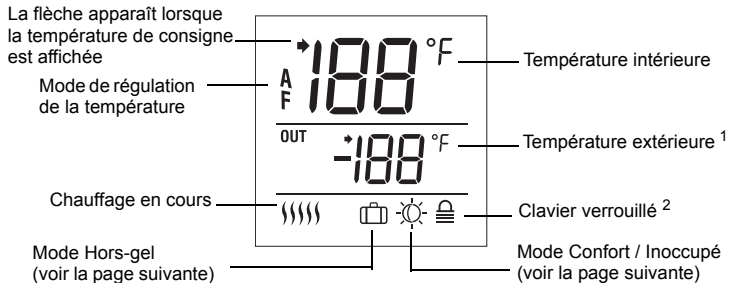
À propos du thermostat

Le thermostat de zonage hydronique AQ1000TN2 de Honeywell permettent de réguler la température ambiante ou la température du plancher. Vous pouvez choisir l'un des modes de régulation de la température suivants (voir la page 8) :

- Mode A :**
- régulation de la température ambiante
-
- Mode F :**
- régulation de la température du plancher au moyen d'une sonde de température externe
-
- Mode AF :**
- régulation de la température ambiante
 - maintien la température du plancher dans les limites désirées au moyen d'une sonde de température externe



Affichage



¹ La température extérieure sera affichée uniquement si les données sont disponibles.

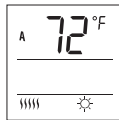
² Cette icône apparaît pour indiquer que les réglages du thermostat ne peuvent être modifiés, puisque le régulateur hydronique de zonage a verrouillé le clavier. Le bouton de rétroéclairage ✨ et les boutons ▲▼ permettent cependant d'activer le rétroéclairage et d'afficher la température de consigne.

Mise sous tension / modes de fonctionnement

Le thermostat est alimenté au moyen des fils qui le relie au régulateur hydronique de zonage Série AQ2000. Le thermostat est donc mis sous tension en même temps que le régulateur. On peut placer le thermostat dans l'un des modes de fonctionnement suivants :

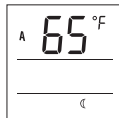
Mode Confort

Le thermostat est normalement en mode Confort. Dans ce mode, la température de consigne est réglée au moyen des boutons ▲▼.



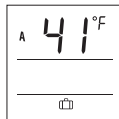
Mode Inoccupé

Lorsque le mode Inoccupé est activé à partir du régulateur, la température de consigne est abaissée. La marge d'abaissement est modifiable à partir du menu de configuration de l'utilisateur (voir la page 5).



Mode Hors-gel

Lorsque le mode Hors-gel est activé à partir du régulateur, le thermostat est placé à la température Hors-gel. Cette valeur est modifiable à partir du menu de configuration de l'installateur (voir la page 10).



Menu de configuration de l'utilisateur

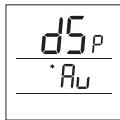
1. Appuyer sur le bouton de rétroéclairage ✱ pendant 3 secondes pour accéder au menu de configuration. Le premier paramètre apparaît.
2. Pour modifier un paramètre, appuyer sur l'un des boutons ▲▼.
3. Pour afficher un autre paramètre, appuyer brièvement sur le bouton de rétroéclairage ✱.
4. Pour sortir du menu de configuration, appuyer sur le bouton de rétroéclairage ✱ pendant 3 secondes.

Les paramètres apparaissent dans l'ordre indiqué dans le tableau suivant.

Paramètre	Valeur par défaut	Options
Mode d'affichage	Automatique	Automatique, °F, °C
Marge d'abaissement de la température	4 °C (7 °F)	0 °C à 9 °C (0 °F à 16 °F)
Rétroéclairage	Temporaire	Temporaire / Permanent

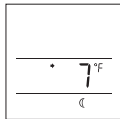
Format d'affichage

Ce paramètre permet de choisir le format d'affichage de la température. Si vous choisissez le mode automatique (Au), le thermostat affichera la température dans le format utilisé par le régulateur hydronique de zonage. Si vous choisissez le mode °F ou °C, le thermostat affichera respectivement la température en °F ou °C.



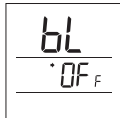
Abaissement de la température

Lorsque le mode Inoccupé est activé à partir du régulateur hydronique de zonage (certains modèles de régulateurs seulement), la température de consigne est abaissée. Ce paramètre permet de déterminer la marge d'abaissement de la température.



Rétroéclairage

Ce paramètre permet de choisir entre le rétroéclairage temporaire et le rétroéclairage permanent. Avec le rétroéclairage temporaire, l'écran s'illumine pendant 12 secondes chaque fois que vous appuyez sur un bouton.



Affichage et réglage de la température

Le thermostat affiche généralement la température réelle (mesurée). Pour afficher la température de consigne, appuyer une fois sur l'un des boutons ▲▼. La température de consigne sera affichée pendant les 5 secondes suivantes. Une flèche apparaît à gauche de la température de consigne affichée.

Pour changer la température de consigne, appuyer sur un des boutons ▲▼ jusqu'à ce que la température désirée soit affichée. Pour faire défiler la température de consigne plus rapidement, maintenir le bouton enfoncé.

Messages d'erreur

- LO** La température mesurée est inférieure à la plage d'affichage.
- HI** La température mesurée est supérieure à la plage d'affichage.
- Vérifier les connexions du thermostat et de la sonde externe (du plancher).

Installation

1. Retirer la façade du socle en desserrant la vis située sous le thermostat et en tirant sur la partie inférieure. Noter que la vis reste captive sur le socle.
2. Insérer les fils à travers l'ouverture du centre du socle et fixer le socle sur le mur ou sur une boîte électrique.
3. Raccorder les fils aux bornes (*aucune polarité*).

Borne		Description
1	TH	Connexion du régulateur hydronique de zonage Série AQ2000
2	TH	
3	SENSOR	Connexion de la sonde externe pour mesurer la température du plancher (requis uniquement si le thermostat est placé en mode F ou AF; voir les pages 1 et 8)
4	SENSOR	

4. Placer les commutateurs de configuration, s'il y a lieu (voir la page suivante).
5. Remettre la façade sur le socle et serrer la vis.

NOTA : Garder les ouvertures d'aération du thermostat propres et dégagées en tout temps.

Commutateurs de configuration

Les commutateurs de configuration (*DIP switch*) sont situés au dos de la façade du thermostat.

NOTA : Le commutateur 1 n'est pas utilisé.

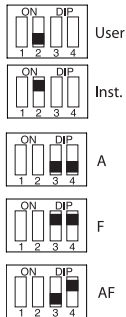
Menu de configuration de l'installateur (commutateur 2)

Utiliser le commutateur 2 pour mettre le thermostat en mode Installateur ou Utilisateur.

Mode de régulation de la température (commutateurs 3 & 4)

Utiliser les commutateurs 3 et 4 pour sélectionner le mode de régulation de la température (A, F ou AF).

NOTA : Utiliser le mode F ou AF uniquement si une sonde externe (pour le plancher) est reliée au thermostat (voir la page 7).



Menu de configuration de l'installateur



Seuls des installateurs compétents sont autorisés de modifier les paramètres du menu de configuration. Des réglages inappropriés peuvent causer des dommages à la propriété.

1. Retirer le thermostat du socle.
2. Positionner le commutateur 2, au dos du thermostat, vers le haut (mode Installateur).
3. Remettre le thermostat sur son socle. Le premier paramètre est affiché.
4. Pour modifier un paramètre, appuyer sur l'un des boutons ▲▼.
5. Pour afficher le paramètre suivant, appuyer brièvement sur le bouton de rétroéclairage ✱.
6. Pour sortir du menu, remettre le commutateur 2 à sa position initiale.

Les paramètres apparaissent dans l'ordre indiqué dans le tableau suivant.

Paramètre	Réglage par défaut	Plage
Température de consigne minimale	5 °C (41 °F)	5 °C (41 °F) à 38 °C (100 °F)
Température de consigne maximale	38 °C (100 °F)	5 °C (41 °F) à 38 °C (100 °F)
Protection Hors-gel	5 °C (41 °F)	5 °C (41 °F) à 38 °C (100 °F)*
Limite minimale du plancher	5 °C (41 °F)	5 °C (41 °F) à 38 °C (100 °F)
Limite maximale du plancher	38 °C (100 °F)	5 °C (41 °F) à 38 °C (100 °F)

* La plage de la température Hors-gel est définie par les températures de consigne minimale et maximale. Par exemple, si vous modifiez la température de consigne minimale à 10 °C (50 °F), vous ne pourrez pas régler la température Hors-gel à une valeur inférieure à 10 °C (50 °F).

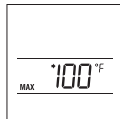
Température de consigne minimale

Ce paramètre est la température minimale à laquelle le thermostat peut être réglé.



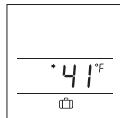
Température de consigne maximale

Ce paramètre est la température maximale à laquelle le thermostat peut être réglé.



Température Hors-gel

Ce paramètre sert à empêcher le gel dans les tuyaux dans la pièce où se situe le thermostat. Lorsque le mode Hors-gel est activé à partir du régulateur hydronique de zonage, le thermostat est placé à la température Hors-gel.



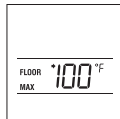
Limite de température minimale du plancher

Ce paramètre servira uniquement si le thermostat est configuré en mode AF. Si la température du plancher est inférieure à cette limite, la pompe ou valve sera activée peu importe la température ambiante.



Limite de température maximale du plancher

Ce paramètre servira uniquement si le thermostat est configuré en mode AF. Si la température du plancher est supérieure à cette limite, la pompe ou valve sera désactivée peu importe la température ambiante.



Fiche technique

Alimentation : Alimenté par le régulateur hydronique de zonage

Plage de réglage par défaut : 5 °C à 38 °C (40 °F à 100 °F)

Limite du plancher par défaut (modèle AF) : 5 °C à 38 °C (40 °F à 100 °F)

Intervalle de consigne : $\pm 0,5$ °C (1,0 °F)

Plage d'affichage de la température intérieure : 0 °C à 70 °C (32 °F à 158 °F)

Plage d'affichage de la température extérieure : -50 °C à 100 °C (-58 °F à 212 °F)

Résolution d'affichage : $\pm 0,5$ °C (1,0 °F)

Entreposage : -30 °C à 55 °C (-20 °F à 130 °F)

Type de régulateur : Proportionnel intégral (PI)

Mémoire : Les réglages sont stockés dans la mémoire non volatile et sont donc conservés lors d'une panne de courant.

Garantie limitée de 2 ans

Honeywell garantit ce produit, à l'exception des piles, contre tout vice de fabrication ou de matière dans la mesure où il en est fait une utilisation et un entretien convenables, et ce, pour deux (2) ans à partir de la date d'achat par le consommateur. En cas de défectuosité ou de mauvais fonctionnement pendant la période de garantie, Honeywell remplacera ou réparera le produit (au gré de Honeywell).

Si le produit est défectueux,

- (i) le retourner, accompagné d'une preuve d'achat indiquant la date d'achat, à l'endroit où il a été acheté, ou
- (ii) s'adresser aux Services à la clientèle de Honeywell en composant le 1 800 468-1502. Les Services à la clientèle détermineront alors si le produit doit être retourné à l'adresse suivante : Honeywell Return Goods, Dock 4 MN10-3860, 1885 Douglas Dr N, Golden Valley, MN 55422, ou si un produit de remplacement peut vous être expédié.

La présente garantie ne couvre pas les frais de retrait ou de réinstallation. La présente garantie ne s'appliquera pas s'il est démontré que la défectuosité ou le mauvais fonctionnement est dû à un endommagement du produit alors que le consommateur l'avait en sa possession.

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Honeywell

7-day Programmable Hydronic Thermostat

AQ1000TP2



OWNER'S GUIDE



69-2245EF

IMPORTANT

This thermostat is to be used with an AQ2000 Series hydronic control panel.

Need Help?

For assistance with this product please visit <http://yourhome.honeywell.com>
or call Honeywell Customer Care toll-free at **1-800-468-1502**.

Read and save these instructions.

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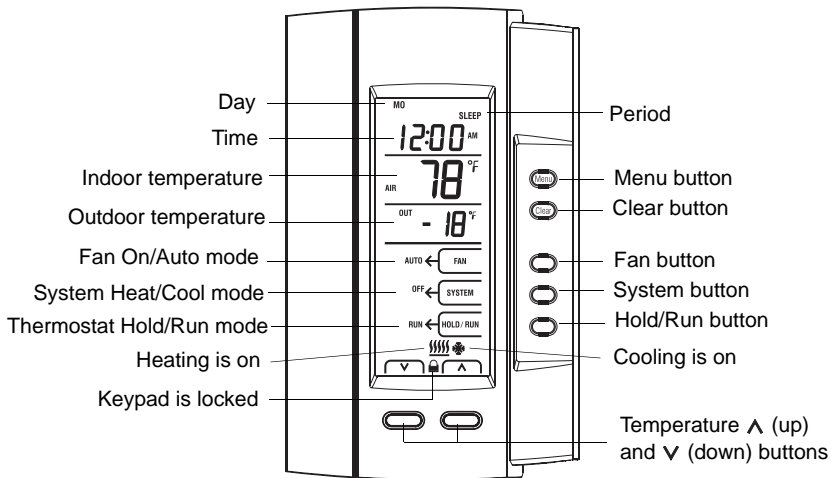
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About your new thermostat

Honeywell's AQ1000TP2 is a programmable thermostat designed to be used with an AQ2000 Series hydronic control panel to operate a hydronic system, a HVAC system or both. It displays both indoor and outdoor temperatures and incorporates the following functions:

- A/F/AF regulation modes:** The thermostat can control the ambient air temperature (**A**), the floor temperature (**F**) or the ambient air temperature with floor temperature limits (**AF**) (see page 19).
- System Heat/Cool modes:** The thermostat can activate a **heating** system or a **cooling** system. The thermostat can also be placed in the **off** position when neither heating nor cooling is required (see page 5).
- Fan On/Auto modes:** When the thermostat is used to activate a fan, the latter can be placed in **Auto** or **On** mode (see page 6).
- Programmable schedule:** The thermostat can be programmed to use up to **4 periods per day**. Each of the 28 periods for the week can have its own start time and temperature setpoints (see page 9).
- Thermostat modes:** The thermostat can be placed in any of the following modes (see page 4):
- In **Hold mode**, the setpoint must be set manually.
 - In **Run mode**, the setpoint is adjusted according to the programmed schedule.
 - The thermostat enters **Temporary Hold mode** when the setpoint is temporarily overridden while in Run mode.
 - When the **Unoccupied mode** is activated by the hydronic control panel, the setpoint is set back by a predetermined temperature margin.
 - When the **Vacancy mode** is activated by the hydronic control panel for further energy savings during periods of extended vacancy, the setpoint will be set to a lower value if the thermostat is in heat mode or to higher value in cool mode.

Overview of display and controls



Powering up and setting the temperature

Powering up

The thermostat is powered through the AQ2000 hydronic control panel. It turns on when the zoning module is energized.


At power-up, the message **ALL ZONES SCHEDULE** will flash for the first 15 seconds if the thermostat has been configured for ALL-ZONES scheduling (see page 19). In this case, at first power-up, the thermostat will adopt the schedule settings from the AQ2000 hydronic control panel*. All thermostats configured for ALL-ZONES scheduling should have therefore the same schedule settings.

** If the AQ2000 controller does not support ALL-ZONES scheduling (manufactured prior to V2 software build), at first power-up the thermostat will initially retain its schedule settings. However, as soon as any modification is made to any of the thermostats configured for ALL-ZONES scheduling, all the other thermostats will adopt the schedule of that thermostat.*

Setting the Temperature manually

The thermostat displays the actual (measured) temperature of the zone.

- To display the setpoint temperature, press the **▲** or **▼** button once. The setpoint will be displayed for the next 5 seconds. **SET HEAT** or **SET COOL** appears at the same time as the setpoint to indicate the thermostat is maintaining the temperature at the heating setpoint or cooling setpoint respectively.
- To change the setpoint, press the **▲** or **▼** button until the desired temperature is displayed. To scroll faster, press and hold the button.

NOTE: *If the hydronic control panel has locked the thermostat's keypad,  appears on the screen. This means the thermostat settings cannot be changed.*

Setting the thermostat Hold/Run mode

Select one of the following modes of operation:

Run mode

Place the thermostat in Run mode using the **HOLD/RUN** button. In this mode, the setpoint is automatically adjusted according to the schedule (see page 9).

Hold Mode

Place the thermostat in Hold mode using the **HOLD/RUN** button. In this mode, any modification to the temperature setpoint must be done manually.

Temporary hold mode

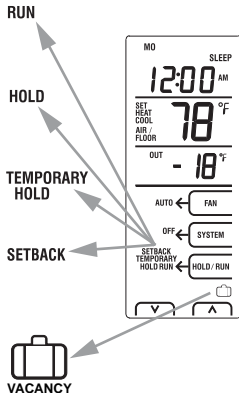
If you modify the setpoint manually while the thermostat is in Run mode or Vacancy mode, it will enter Temporary Hold mode. The Temporary Hold mode and the new temporary setpoint will remain in effect until the end of the current period (if the thermostat was in Run mode) or after 2 hours (if the thermostat was in Vacancy mode).

Unoccupied (Setback) Mode

The thermostat can be placed to Unoccupied mode from Hold mode only. When the Unoccupied mode is activated by the hydronic control panel, the temperature setpoint is lowered (in heat mode) or raised (in cool mode) by a setback margin. The margin is set in the user's configuration menu (see page 14). The thermostat cannot be placed in Unoccupied mode if its setback margin is set to 0.

Vacancy Mode (👤)

When the Vacancy mode (👤) is activated by the hydronic control panel the thermostat uses the Vacancy setpoint temperature. This value is set in the installer's configuration menu of the thermostat (see page 20) or the User Menu of the programmable AQ2000 control panel.



Setting the system Heat/Cool mode

Press the **SYSTEM** button to place the system in one of the following modes of operation:

Cool mode

The air cooling system is on.

Heat mode

The hydronic heating system is on.

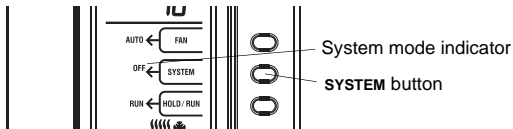
Auto mode

The system is in automatic changeover mode. This means the thermostat switches between heating mode and cooling mode to maintain the desired temperature. Cooling starts when the temperature rises and stays above the cooling setpoint for 15 minutes. Heating starts when the temperature drops and stays below the heating setpoint for 15 minutes.

NOTE: In Hold mode, where you enter only one setpoint, if you set the temperature when the thermostat is in heat mode, it becomes the heating setpoint and the cooling setpoint is equal to the heating setpoint plus 2 °F (1 °C). If you set the temperature when the thermostat is in cool mode, it becomes the cooling setpoint and the heating setpoint is equal to the cooling setpoint minus 2 °F (1 °C).

Off

All cooling and heating are off.



A thermostat can activate heating and cooling at the same time when configured in AF mode. This happens when heating is required to bring the floor above the minimum floor limit and, at the same time, cooling is required as the ambient air above the setpoint temperature. This can be prevented by raising the cooling setpoint and/or lowering the minimum floor limit.

Setting the fan On/Auto mode

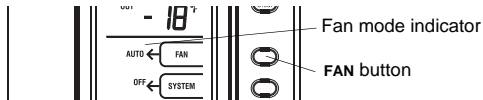
When the thermostat is used to operate a fan in an HVAC system, you can press the **FAN** button to place the fan in one of the two following modes of operation:

On mode

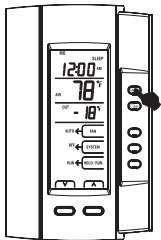
The fan runs all the time.

Auto mode

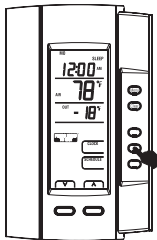
The fan runs only during a call for heat or cool.



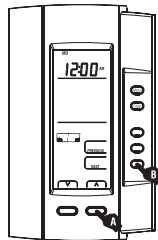
Setting the clock and date



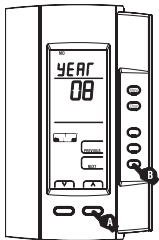
1 Press the **Menu** button.



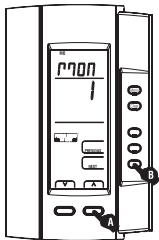
2 Press **CLOCK**.



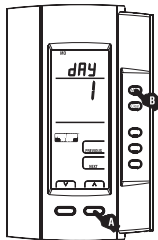
3 Press the **▲** or **▼** button to set the time (**A**). Press and hold the button to scroll faster. Press **NEXT** (**B**).



- 4 Press the \wedge or \vee button to set the year (A). Press NEXT (B).



- 5 Press the \wedge or \vee button to set the month (A). Press NEXT (B).



- 6 Press the \wedge or \vee button to set the day (A). Press the **Menu** button (B) to exit.

NOTE: If you do not press any button for a period of 60 seconds, the thermostat will automatically end the clock and date programming after saving all modifications.

Default schedule

When the thermostat is set to Run mode, it automatically adjusts its temperature setpoint according to the programmed schedule. The schedule consists of 4 periods per day which represents a typical week day. You can program the thermostat to skip the periods that do not apply to your situation. For example, you can skip the Leave and Return periods for the weekend as in the AQ1000TP2 thermostat's default schedule (shown below).

	Monday to Friday			Saturday & Sunday		
Period	Start Time	Heat setpoint*	Cool setpoint*	Start Time	Heat setpoint*	Cool setpoint*
WAKE	6:00 AM	70 °F (21.0°C)	78 °F (25.5 °C)	6:00 AM	70 °F (21.0 °C)	78 °F (25.5 °C)
LEAVE	8:00 AM	62 °F (16.5 °C)	85 °F (29.5 °C)	--	--	--
RETURN	6:00 PM	70 °F (21.0 °C)	78 °F (25.5 °C)	--	--	--
SLEEP	10:00 PM	62 °F (16.5 °C)	82 °F (28.0 °C)	10:00 PM	62 °F (16.5 °C)	82 °F (28.0 °C)

** The thermostat uses the heating setpoint when it is in heating mode and the cooling setpoint when it is in cooling mode.*

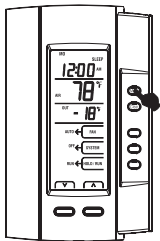
New schedule

You can program up to 4 periods (Wake, Leave, Return and Sleep) per day. To program a period, you need to set the start time, the heating setpoint and the cooling setpoint. You can have a different program every day.

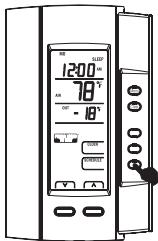
NOTE: The heating setpoint is always at least 2 °F (1 °C) lower than the cooling setpoint. For example, if the heating setpoint is at 77 °F (25 °C) and you lower the cooling setpoint to 78 °F (25.5 °C), the heating setpoint will automatically be adjusted to 76 °F (24.5 °C).

		MO	TU	WE	TH	FR	SA	SU
WAKE	Time							
	Heat							
	Cool							
LEAVE	Time							
	Heat							
	Cool							
RETURN	Time							
	Heat							
	Cool							
SLEEP	Time							
	Heat							
	Cool							

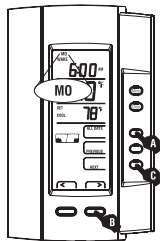
Modifying the schedule



1 Press the **Menu** button*.



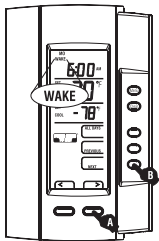
2 Press **SCHEDULE**.



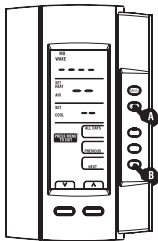
3 Select **ALL DAYS**** (A) or press the **<** or **>** button to select the day (B). Press **NEXT** (C).

* If **ALL ZONES SCHEDULE** appears, any modifications made to the schedule on this thermostat will be applied to other thermostats (see page 19).

** As soon as you select **ALL DAYS**, the displayed settings (start time, heating setpoint and cooling setpoint) will be applied to the displayed period for all 7 days. Afterwards, if you wish to modify the settings for a specific day, you can then select **DAILY**, select the day and make the modifications for that day.



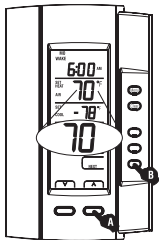
- 4 Press the < or > button to select the period (A). Press NEXT (B).



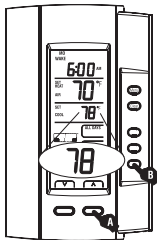
NOTE: To erase the period's settings*, press the **Clear** button (A) once. Press **Clear** again to display and select the period's default settings.

- 5 Press the ▲ or ▼ button to set the start time (A). Press and hold the button to scroll faster. Press NEXT (B).

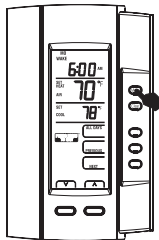
* To skip a period, erase the settings for that period. For example, if you wish to use the Wake and Sleep periods only (as programmed for the weekend in the default schedule), erase the Leave and Return periods.



- 6 Press the \wedge or \vee button to set the heating setpoint (A). Press NEXT (B).



- 7 Press the \wedge or \vee button to set the cooling setpoint (A). Press NEXT (B).



- 8 If necessary, go back to step 3 to set another day or step 4 to set another period. To exit, press the **Menu** button.

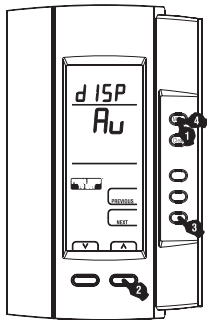
NOTE: If you do not press any button for a period of 60 seconds, the thermostat will automatically exit the schedule programming after saving all modifications.

User's configuration menu

1. Press the **Menu** button for 3 seconds to access the configuration menu. The first parameter is displayed.
2. To modify a parameter, press the \wedge or \vee button.
3. To display the next parameter, press **NEXT**.
4. To exit the menu, press the **Menu** button.

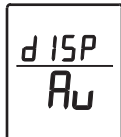
The parameters will appear in the order shown in the following table. Parameter descriptions can be found on page 15.

Parameter	Default setting	Options
Temperature display mode	Automatic	Automatic, °F, °C
Temperature setback	7 °F (4 °C)	0 to 16 °F (0 to 9 °C)
Permanent backlight	Off	On / Off
Time display format	12 hours	12 hours / 24 hours
Automatic Daylight savings time	Off	On / Off



Temperature Display Mode

Use this parameter to choose the temperature display mode. If the automatic mode (AU) is selected, the thermostat displays the temperature in the format specified in the AQ2000 control panel. If °F or °C is selected, the thermostat displays the temperature in the selected format, regardless of the format specified in the AQ2000 control panel.



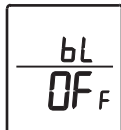
Temperature Setback Amount

When the Unoccupied mode is activated by the programmable AQ2000 control panel, the temperature setpoint is set back (lowered in heat mode or raised in cool mode). Use this parameter to specify the amount of temperature setback.



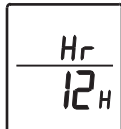
Permanent Backlight

Use this parameter to select whether or not the thermostat's screen is permanently illuminated. If you do not choose permanent backlight, the screen will lit for 12 seconds when any button is pressed.



Time Display Format

Use this parameter to select between the 12-hour format and the 24-hour format.



Automatic Daylight Savings Time

When Automatic Daylight Savings Time is enabled (On), the thermostat automatically switches to daylight savings time on the second Sunday of March and reverts back to normal time on the first Sunday of November.



Alert messages

- LO** The temperature measured by the thermostat is below the thermostat's display range.
- HI** The temperature measured by the thermostat is above the thermostat's display range.
- Er** The thermostat has lost communications with the AQ2000 control panel.
- The thermostat might be defective. The floor sensor may also be defective if the thermostat has been configured for F mode (see page 19). Cooling or heating has stopped.
- FLOOR** When the thermostat has been configured for AF mode (see page 19), **FLOOR** will flash if the floor sensor is defective or not installed. The thermostat will still control the ambient air temperature but will ignore the floor temperature limits.

Installation

1. Remove the thermostat from its wallplate by unscrewing the screw underneath the thermostat and tilting the bottom of the thermostat up. Note that the screw remains captive on the wallplate.
2. Insert the wires through the center hole of the wallplate and secure the wallplate to the wall or onto an electrical box.
3. Connect the wires to the terminals on the thermostat's wallplate (*no polarity to observe*).

NOTE: *The recommended maximum wire length between the thermostat and the AQ2000 control panel will vary according to the wire size. For example, for 22 AWG, use a maximum of 500 ft (150 m).*

Terminal		Description
1	TH	AQ2000 Series hydronic control panel connections
2	TH	
3	SENSOR	External sensor connections for floor temperature measurement (required only if the thermostat is set to F or AF mode; see page 19)
4	SENSOR	

4. If necessary, set the configuration switches (see page 19).
5. Re-install the faceplate to the wallplate and secure with the captive screw.

NOTE: *For optimal comfort control in the zone, keep the thermostat's air vents clean and unobstructed at all times to ensure adequate air flow through the thermostat.*

Configuration switches

The configuration DIP switches are located on the back of the thermostat faceplate.

Scheduling Mode (switch 1)

Use DIP switch 1 to select between 1-ZONE and ALL-ZONES scheduling.

- All thermostats configured for ALL-ZONES scheduling share the same schedule settings as the AQ2000 hydronic control panel. Any schedule modification made on a thermostat will also be applied to the boiler controller and to the other thermostats (see page 3).
- Any schedule modification made to a thermostat configured for 1-ZONE scheduling applies to that thermostat only and does not affect the other thermostats.

Installer's Configuration Menu (switch 2)

Use DIP switch 2 to place the thermostat in either Installer or User mode. Set to Installer mode to access the installation parameters. Otherwise, leave it in User mode.

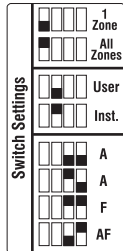
A/F/AF Regulation Mode (switches 3 & 4)

Use DIP switches 3 and 4 to select the regulation mode.

A mode: controls and displays the Ambient air temperature. **AIR** will appear on the screen.

F mode: controls and displays the Floor temperature using an external sensor. **FLOOR** will appear on the screen.

AF mode: controls and displays the Ambient air temperature while maintaining the Floor temperature within desired limits using an external temperature sensor. **AIR/FLOOR** will appear on the screen.



Installer's configuration menu



The parameters in the Installer's configuration menu must be modified by qualified personnel only. Incorrect settings can result in property damage.

1. Remove the thermostat from its wallplate.
2. Place DIP switch 2 on the back of the thermostat in the up position (Installer mode).
3. Return the thermostat to its wallplate. The first parameter is displayed.
NOTE: See pages 21 and 22 for descriptions of the Installer's configuration parameters.
4. To modify a parameter, press the \wedge or \vee button.
5. To save any modification and view the next (or previous) parameter, press **NEXT (or PREVIOUS)**.
6. To exit the menu, return DIP switch 2 to the down position (User mode).

NOTE: *If you exit the menu without first pressing **PREVIOUS** or **NEXT**, any modification made will not be saved.*

Minimum Air Setpoint

This parameter is available only when the thermostat is configured in A or AF mode (see page 19).

Default setting	41 °F (5 °C)
Range	41 °F (5 °C) to 100 °F (38 °C)



Maximum Air Setpoint

This parameter is available only when the thermostat is configured in A or AF mode (see page 19).

Default setting	100 °F (38 °C)
Range	41 °F (5 °C) to 100 °F (38 °C)



Minimum Floor Setpoint

This parameter is available only when the thermostat is configured in F mode (see page 19).

Default setting	41 °F (5 °C)
Range	41 °F (5 °C) to 100 °F (38 °C)



Maximum Floor Setpoint

This parameter is available only when the thermostat is configured in F mode (see page 19).

Default setting	100 °F (38 °C)
Range	41 °F (5 °C) to 100 °F (38 °C)



Vacancy Heating Setpoint

This parameter is the heating setpoint when the thermostat is in Vacancy mode (see page 4).

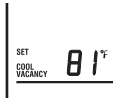
Default setting	41 °F (5 °C)
Range	between the minimum and maximum setpoints



Vacancy Cooling Setpoint

This parameter is the cooling setpoint when the thermostat is in Vacancy mode (see page 4).

Default setting	81 °F (27 °C)
Range	between the minimum and maximum setpoints



Minimum Floor Limit

This parameter is available only if the thermostat is configured in AF mode (see page 19). Heating is activated, regardless of setpoint, if the floor temperature is equal to this setting or below.

Default setting	41 °F (5 °C)
Range	41 °F (5 °C) to 100 °F (38 °C)



Maximum Floor Limit

This parameter is available only if the thermostat is configured in AF mode (see page 19). Heating is disabled, regardless of setpoint, if the floor temperature is equal to this setting or above.

Default setting	100 °F (38 °C)
Range	41 °F (5 °C) to 100 °F (38 °C)



Technical Specifications

Power supply: powered by the zoning module (24 to 34 VDC)

Default setpoint range: 41 °F to 100 °F (5 °C to 38 °C)

Default floor limit (AF mode): 41 °F to 100 °F (5 °C to 38 °C)

Setpoint interval: ± 1.0 °F (0.5 °C)

Indoor temperature display range: 32 °F to 158 °F (0 °C to 70 °C)

Outdoor temperature display range: -58 °F to 212 °F (-50 °C to 100 °C)

Display resolution: ± 1.0 °F (0.5 °C)

Operating temperature: -4 °F to 130 °F (-20 °C to 55 °C)

Storage temperature: -20 °F to 130 °F (-30 °C to 55 °C)

Humidity rating: 5% to 90% RH, non-condensing at 95 °F (35 °C)

Controller type: Proportional Integral (PI)

Memory type: All settings are stored in non-volatile memory and are not erased during a power outage

2-year limited warranty

Honeywell warrants this product, excluding battery, to be free from defects in the workmanship or materials, under normal use and service, for a period of two (2) years from the date of purchase by the installing contractor. If at any time during the warranty period the product is determined to be defective or malfunctions, Honeywell shall repair or replace it (at Honeywell's option).

If the product is defective,

- (i) return it, with a bill of sale or other dated proof of purchase, to the place from which you purchased it; or
- (ii) call Honeywell Customer Care at 1-800-468-1502. Customer Care will make the determination whether the product should be returned to the following address: Honeywell Return Goods, Dock 4 MN10-3860, 1885 Douglas Dr. N., Golden Valley, MN 55422, or whether a replacement product can be sent to you.

This warranty does not cover removal or reinstallation costs. This warranty shall not apply if it is shown by Honeywell that the defect or malfunction was caused by damage which occurred while the product was in the possession of a consumer.

Honeywell's sole responsibility shall be to repair or replace the product within the terms stated above. HONEYWELL SHALL NOT BE LIABLE FOR ANY LOSS OR DAMAGE OF ANY KIND, INCLUDING ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING, DIRECTLY OR INDIRECTLY, FROM ANY BREACH OF ANY WARRANTY, EXPRESS OR IMPLIED, OR ANY OTHER FAILURE OF THIS PRODUCT. Some states do not allow the exclusion or limitation of incidental or consequential damages, so this limitation may not apply to you.

THIS WARRANTY IS THE ONLY EXPRESS WARRANTY HONEYWELL MAKES ON THIS PRODUCT. THE DURATION OF ANY IMPLIED WARRANTIES, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, IS HEREBY LIMITED TO THE TWO-YEAR DURATION OF THIS WARRANTY.

Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you. This warranty gives you specific legal rights, and you may have other rights which vary from state to state.

If you have any questions concerning this warranty, please write Honeywell Customer Relations, 1985 Douglas Dr, Golden Valley, MN 55422 or call 1-800-468-1502. In Canada, write Retail Products ON15-02H, Honeywell Limited/Honeywell Limitée, 35 Dynamic Drive, Scarborough, Ontario M1V4Z9.

Honeywell

Thermostat hydronique programmable 7 jours AQ1000TP2



GUIDE DU PROPRIÉTAIRE



69-2245EF

IMPORTANT

Ce thermostat est conçu pour l'utilisation avec un panneau de commande hydronique de la série AQ2000.

Besoin d'aide?

Pour obtenir de l'aide sur ce produit, veuillez consulter le <http://yourhome.honeywell.com> ou joindre le service à la clientèle en composant sans frais le **1 800 468-1502**

Veillez lire le guide et le conserver en lieu sûr.

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Annexe

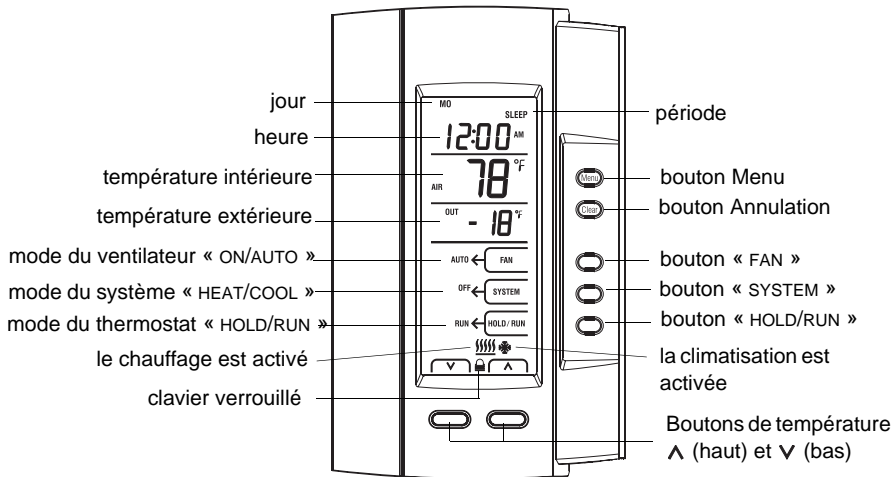
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À propos de votre nouveau thermostat

Le thermostat programmable AQ1000TP2 de Honeywell est conçu pour être utilisé avec un panneau de commande hydronique de la série AQ2000 pour commander un système hydronique et/ou un système CVAC. Il affiche les températures intérieure et extérieure, et est muni des fonctions suivantes :

- Sélection du mode de régulation :** Le thermostat peut réguler la température ambiante (**A**), la température du plancher (**F**) ou la température ambiante avec limites de la température du plancher (**AF**) (voir la page 19).
- Sélection du mode du système :** Le thermostat peut être mis en mode « **HEAT** » pour commander un système de chauffage ou en mode « **COOL** » pour commander un système de climatisation. Le thermostat peut aussi être mis en mode « **OFF** » (arrêt) lorsque ni le chauffage ou la climatisation n'est requis (voir la page 5).
- Sélection du mode du ventilateur :** Lorsque le thermostat commande un ventilateur, celui-ci peut être mis en mode « **AUTO** » (automatique) ou en mode « **ON** » (continu) (voir la page 6).
- Horaire programmable :** Le thermostat peut être programmé pour utiliser jusqu'à **4 périodes par jour**. Chacune des 28 périodes pour toute la semaine peut avoir ses propres heures de début et températures de consigne (voir la page 9).
- Sélection du mode du thermostat :** Le thermostat peut être mis dans n'importe quel des modes suivants (voir la page 4) :
- En mode « **HOLD** » (dérogation permanente), la consigne doit être réglé manuellement.
 - En mode « **RUN** » (programmation), le thermostat ajuste la consigne selon l'horaire programmé.
 - Le thermostat tombe en mode « **TEMPORARY HOLD** » (dérogation temporaire) lorsque la consigne est temporairement outrepassé alors que le thermostat était en mode « **RUN** ».
 - Lorsque le panneau de commande hydronique active le mode « **UNOCCUPIED** » (inoccupé), la consigne est reculée par un intervalle prédéterminé.
 - Lorsque le panneau de commande hydronique active le mode **Vacance** pour davantage d'économie d'énergie pendant des périodes de vacance de longue durée, la température de consigne sera placée à une valeur plus basse si le thermostat est en mode chauffage ou à une valeur plus élevée si le thermostat est en mode climatisation.

Aperçu de l'affichage et des contrôles



Mise sous tension et réglage de la température

Mise sous tension

Le thermostat reçoit l'alimentation à partir du panneau de commande hydronique AQ2000. Il est mis sous tension en même temps que le module de zonage.


Lors de la mise sous tension, le message « **ALL ZONES SCHEDULE** » clignotera pendant les 15 premières secondes si le thermostat a été configuré pour la programmation globale (voir la page 19). Dans ce cas, lors de la première mise sous tension, le thermostat adoptera la programmation du panneau de commande AQ2000*. Tous les thermostats configurés pour la programmation globale devraient avoir ainsi la même programmation.

** Si le contrôleur AQ2000 n'offre pas l'option de programmation globale (fabrications antérieures à la révision V2 du logiciel), lors de la première mise sous tension le thermostat gardera sa programmation initiale. Cependant, dès qu'une modification sera apportée à n'importe quel thermostat configuré pour la programmation globale, tous les autres thermostats adopteront la programmation de ce thermostat.*

Réglage manuel de la température

Le thermostat affiche la température mesurée de la zone.

- Pour afficher la température de consigne, appuyer une fois sur le bouton **▲** ou **▼**. La consigne s'affichera pendant les 5 prochaines secondes. « **SET HEAT** » ou « **SET COOL** » apparaîtra en même temps que la consigne pour indiquer que c'est une consigne de chauffage ou de climatisation respectivement.
- Pour modifier la consigne, appuyer sur le bouton **▲** ou **▼** jusqu'à ce que la température désirée soit affichée. Pour défiler la consigne plus rapidement, maintenir le bouton appuyé.

NOTE: Si le clavier du thermostat est verrouillé (à partir du panneau de commande hydronique),  apparaîtra à l'écran. Cela signifie que les réglages du thermostat ne peuvent être modifiés.

Sélection du mode du thermostat

Sélectionner l'un des modes suivants :

Mode « RUN » (programmation)

Mettre le thermostat en mode « RUN » à l'aide du bouton « HOLD/RUN ». En ce mode, le thermostat ajuste la température de consigne selon l'horaire (voir la page 9).

Mode « HOLD » (dérogation permanente)

Mettre le thermostat en mode « HOLD » à l'aide du bouton « HOLD/RUN ». En ce mode, toute modification de la température de consigne doit être faite manuellement.

Mode « TEMPORARY HOLD » (dérogation temporaire)

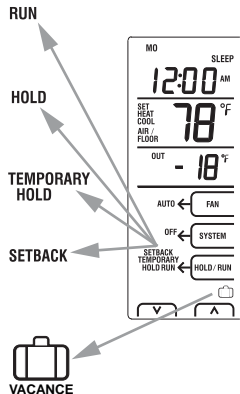
Si vous modifiez la température de consigne manuellement pendant que le thermostat est en mode « RUN » ou en mode Vacances, il tombera en mode « TEMPORARY HOLD ». Ce mode et la nouvelle consigne seront employés jusqu'à la fin de la période en cours (si le thermostat était en mode « RUN ») ou pendant 2 heures (si le thermostat était en mode Vacances).

Mode « SETBACK » (inoccupé)

On ne peut mettre le thermostat en mode Inoccupé qu'à partir du mode « HOLD ». Lorsque le mode Inoccupé est activé par le panneau de commande hydronique, la température de consigne est abaissée (en mode chauffage) ou augmentée (en mode climatisation) par une marge de recul. La marge est réglée à partir du menu de configuration de l'utilisateur (voir la page 14). Il est impossible de mettre le thermostat en mode inoccupé si sa marge de recul est réglée à 0.

Mode Vacances (👛)

Quand le mode Vacances (👛) est activé par le panneau de commande hydronique, le thermostat utilise la température de consigne Vacances. Cette valeur est réglée à partir du menu de configuration de l'installateur du thermostat (voir la page 20) ou à partir du menu utilisateur du panneau de commande programmable AQ2000.



Sélection du mode du système

Appuyer sur le bouton « SYSTEM » pour mettre le système dans l'un des modes de fonctionnement suivants :

Mode « COOL » (climatisation)

Le système de climatisation est opérationnel.

Mode « HEAT » (chauffage)

Le système hydronique est opérationnel.

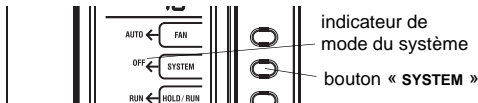
Mode « AUTO » (automatique)

Le système est en mode de changement automatique. Ceci signifie que le thermostat passe du mode chauffage au mode climatisation ou vice versa pour garder la température désirée. La climatisation débute lorsque la température grimpe et se maintient au-dessus de la consigne de climatisation pendant 15 minutes. Le chauffage débute lorsque la température descend et se maintient au-dessous de la consigne de chauffage pendant 15 minutes.

NOTA : En mode « Hold », où on ne règle qu'une seule température de consigne, si vous réglez la température lorsque le thermostat est en mode chauffage, celle-ci devient la consigne de chauffage et la consigne de climatisation est égale à la consigne de chauffage plus 1 °C (2 °F). Si vous réglez la température lorsque le thermostat est en mode climatisation, celle-ci devient la consigne de climatisation et la consigne de chauffage est égale à la consigne de climatisation moins 1 °C (2 °F).

« OFF » (arrêt)

Le chauffage et la climatisation sont désactivés.



Il est possible qu'un thermostat active le chauffage et la climatisation en même temps lorsqu'il est configuré en mode AF. Cette situation se produit lorsque le chauffage est activé parce que la température du plancher est inférieure à la limite minimale du plancher et, en même temps, la climatisation est activée parce que l'air ambiante est supérieure à la température de consigne. Si vous voulez éviter que cela se produise, augmentez la consigne de climatisation ou diminuez la limite minimale du plancher.

Sélection du mode du ventilateur

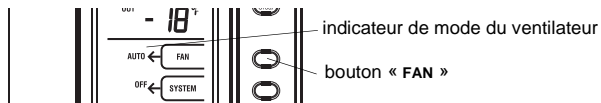
Quand le thermostat est utilisé pour commander un ventilateur du système CVAC, vous pouvez appuyer sur le bouton « FAN » pour mettre le ventilateur dans l'un des deux modes de fonctionnement suivants :

Mode « ON » (continu)

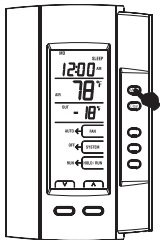
Le ventilateur fonctionne sans arrêt.

Mode « AUTO » (automatique)

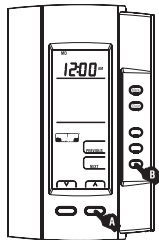
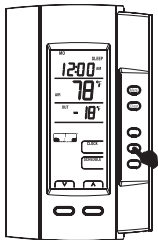
Le ventilateur fonctionne seulement lors d'une demande de chauffage ou de climatisation.



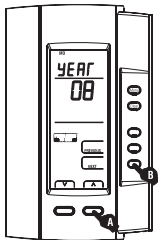
Réglage de l'horloge et de la date



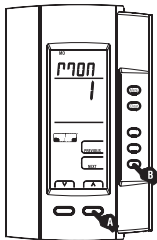
- ❶ Appuyer sur le bouton **Menu**. ❷ Appuyer sur « **CLOCK** » (horloge).



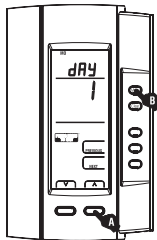
- ❸ Appuyer sur le bouton **▲** ou **▼** pour régler l'heure (**A**). Maintenir le bouton enfoncé pour défiler l'heure plus rapidement. Appuyer sur **NEXT** (**B**).



- 4 Appuyer sur le bouton **▲** ou **▼** pour régler l'année (A). Appuyer sur **NEXT** (B).



- 5 Appuyer sur le bouton **▲** ou **▼** pour régler le mois (A). Appuyer sur **NEXT** (B).



- 6 Appuyer sur le bouton **▲** ou **▼** pour régler le jour (A). Appuyer sur le bouton **Menu** pour sortir de la programmation (B).

NOTA : Si vous n'appuyez sur aucun bouton pendant 60 secondes, le thermostat automatiquement enregistrera toute modification et sortira de la programmation.

Horaire par défaut

Lorsqu'on met le thermostat en mode « RUN », il ajuste automatiquement la température de consigne selon l'horaire programmé. L'horaire se compose de 4 périodes par jour, ce qui représente un jour de semaine typique. Vous pouvez programmer le thermostat pour sauter les périodes qui ne s'appliquent pas à votre situation. Par exemple, pour la fin de semaine, vous pouvez sauter les périodes de départ et de retour tel que dans l'horaire par défaut du thermostat AQ1000TP2 (ci-dessous).

Période	lundi à vendredi			samedi & dimanche		
	Heure du début	Consigne de chauffage*	Consigne de climatisation*	Heure du début	Consigne de chauffage*	Consigne de climatisation*
« WAKE » (RÉVEIL)	6:00 AM	70 °F (21.0 °C)	78 °F (25.5 °C)	6:00 AM	70 °F (21.0 °C)	78 °F (25.5 °C)
« LEAVE » (DÉPART)	8:00 AM	62 °F (16.5 °C)	85 °F (29.5 °C)	--	--	--
« RETURN » (RETOUR)	6:00 PM	70 °F (21.0 °C)	78 °F (25.5 °C)	--	--	--
« SLEEP » (COUCHER)	10:00 PM	62 °F (16.5 °C)	82 °F (28.0 °C)	10:00 PM	62 °F (16.5 °C)	82 °F (28.0 °C)

** Le thermostat utilise la consigne de chauffage lorsqu'il est en mode chauffage et la consigne de climatisation lorsqu'il est en mode climatisation.*

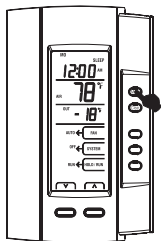
Nouvel horaire

Vous pouvez programmer jusqu'à 4 périodes (« WAKE » [réveil], « LEAVE » [départ], « RETURN » [retour] et « SLEEP » [coucher]) par jour. Pour programmer une période, vous devez régler l'heure du début de la période, la consigne de chauffage et la consigne de climatisation. Il est possible d'avoir un programme différent à chaque jour.

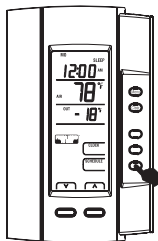
NOTA : La consigne de chauffage est toujours au moins 2 °F (1 °C) inférieure à la consigne de climatisation. Par exemple, si le chauffage de consigne est de 77 °F (25 °C) et vous descendez la consigne de climatisation à 78 °F (25.5 °C), la consigne de chauffage sera automatiquement ajusté à 76 °F (24.5 °C).

		«MO» (LU)	«TU» (MA)	«WE» (ME)	«TH» (JE)	«FR» (VE)	«SA» (SA)	«SU» (DI)
RÉVEIL	Début							
	Chauffage							
	Climatisation							
DÉPART	Début							
	Chauffage							
	Climatisation							
RETOUR	Début							
	Chauffage							
	Climatisation							
COUCHER	Début							
	Chauffage							
	Climatisation							

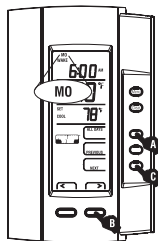
Modification de l'horaire



- ❶ Appuyer sur le bouton **Menu***.



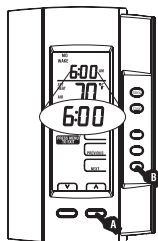
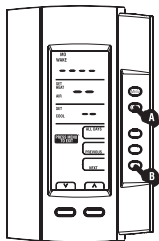
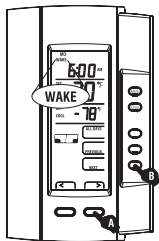
- ❷ Appuyer sur **SCHEDULE**.



- ❸ Sélectionner **ALL DAYS**** (A) ou appuyer sur le bouton **<** ou **>** pour sélectionner le jour (B). Appuyer sur **NEXT** (C).

* Si « **ALL ZONES SCHEDULE** » (programmation globale) apparaît à l'écran, toute modification d'horaire faite sur le thermostat sera appliquée aux autres thermostats (voir la page 19).

** Aussitôt que vous sélectionnez « **ALL DAYS** », les réglages affichés (heure du début, consignes de chauffage et de climatisation) seront appliqués à la période affichée pour tous les 7 jours. Si vous voulez par la suite modifier les réglages pour un jour spécifique, vous pourrez sélectionner « **DAILY** » (quotidien) et sélectionner le jour pour ensuite y apporter des modifications.

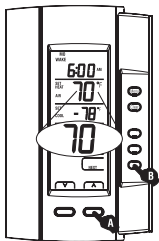


- 4 Appuyer sur le bouton < ou > pour sélectionner la période (A). Appuyer sur NEXT (B).

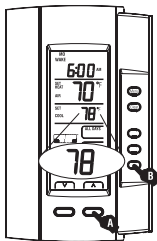
NOTA: Pour effacer les réglages de la période, appuyer une fois sur le bouton **Clear** (A). Appuyer de nouveau sur **Clear** pour afficher et sélectionner les réglages par défaut.

- 5 Appuyer sur le bouton \wedge ou \vee pour régler l'heure du début (A). Maintenir le bouton enfoncé pour défiler l'heure plus rapidement. Appuyer sur NEXT (B).

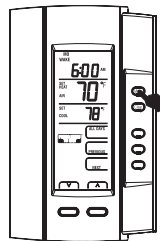
* Pour sauter une période, effacer ses réglages. Par exemple, si vous désirez utiliser les périodes « **WAKE** » et « **SLEEP** » seulement (tel que programmé pour la fin de semaine dans l'horaire par défaut), effacer les périodes « **LEAVE** » et « **RETURN** ».



- 6 Appuyer sur le bouton ▲ ou ▼ 7 pour régler la consigne de chauffage (A). Appuyer sur NEXT (B).



- 7 Appuyer sur le bouton ▲ ou ▼ 8 pour régler la consigne de climatisation (A). Appuyer sur NEXT (B).



Au besoin, retourner à l'étape 3 pour modifier les réglages d'un autre jour ou à l'étape 4 pour régler une autre période. Pour sortir de la programmation, appuyer sur le bouton **Menu**.

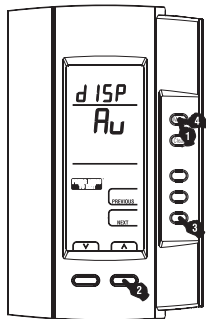
NOTA : Si vous n'appuyez sur aucun bouton pendant 60 secondes, le thermostat enregistrera automatiquement toute modification et sortira de la programmation.

Menu de configuration de l'utilisateur

1. Appuyer sur le bouton **Menu** pendant 3 secondes pour accéder au menu de configuration. Le premier paramètre est affiché.
2. Pour modifier un paramètre, appuyer sur le bouton **▲** ou **▼**.
3. Pour afficher le paramètre suivant, appuyer sur **NEXT**.
4. Pour sortir du menu, appuyer sur le bouton **Menu**.

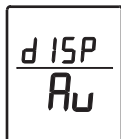
Les paramètres apparaîtront dans l'ordre tel qu'ils apparaissent dans le tableau suivant. Les descriptions des paramètres sont à la page 15.

Paramètre	Réglage par défaut	Options
Mode d'affichage de la température	automatique	automatique, °F, °C
Recul de la température	7 °F (4 °C)	0 à 16 °F (0 à 9 °C)
Rétroéclairage permanent	« OFF » désactivé	« ON/OFF » (activé/désactivé)
Format d'affichage de l'heure	12 heures	12 heures / 24 heures
Passage automatique à l'heure avancée	« OFF » désactivé	« ON/OFF » (activé/désactivé)



Mode d'affichage de la température

Ce paramètre permet de choisir le mode d'affichage de la température. Quand le mode automatique (Au) est sélectionné, le thermostat affiche la température dans le format tel que spécifié dans le panneau de commande AQ2000. Si le °F ou le °C est sélectionné, le thermostat affiche la température dans le format sélectionné, sans tenir compte du format spécifié dans le panneau de commande AQ2000.



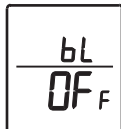
Recul de la température

Lorsque le mode Inoccupé est activé à partir du panneau de commande programmable AQ2000, la température de consigne subit un recul (une baisse en mode chauffage ou une augmentation en mode climatisation). Ce paramètre permet de spécifier le montant de recul de la température.



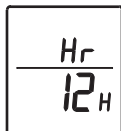
Rétroéclairage permanent

Ce paramètre permet de sélectionner ou non le rétroéclairage permanent. Si vous n'optez pas pour le rétroéclairage permanent, l'écran s'illuminera pendant 12 secondes à chaque fois que vous appuyez sur un bouton.



Format d'affichage de l'heure

Ce paramètre permet de sélectionner entre le format 12 heures et le format 24 heures.



Passage automatique à l'heure avancée

Lorsque le passage automatique à l'heure avancée est activée (On), le thermostat passe automatiquement à l'heure avancée au deuxième dimanche de mars et retourne à l'heure normale au premier dimanche de novembre.



Messages d'alerte

- LO** La température mesurée est au-dessous de la plage d'affichage du thermostat.
- HI** La température mesurée est au-dessus de la plage d'affichage du thermostat.
- Er** Le thermostat a perdu tout lien de communication avec le panneau de commande AQ2000.
- Le thermostat pourrait être défectueux. La sonde du plancher pourrait aussi être défectueuse si le thermostat est configuré en mode F (voir la page 19). Le chauffage ou la climatisation est arrêté.
- FLOOR** Lorsque le thermostat est configuré en mode AF (voir la page 19), « **FLOOR** » clignotera si la sonde du plancher est défectueuse ou non installée. Le thermostat continuera à réguler la température de l'air ambiante mais ignore les limites de température du plancher.

Installation

1. Enlever le thermostat de sa plaque murale en desserrant la vis située sous le thermostat et en tirant sur la partie inférieure. Noter que la vis reste captive sur la plaque murale.
2. Insérer les fils à travers de l'ouverture au centre de la plaque murale et fixer la plaque murale sur le mur ou sur une boîte électrique.
3. Raccorder les fils aux bornes sur la plaque murale (*aucune polarité à respecter*).

NOTA : La longueur maximale de fil recommandée entre le thermostat et le panneau de commande AQ2000 varie selon le calibre du fil. Par exemple, utiliser un maximum de 500 pieds(150 m) pour du fil de calibre 22 (AWG).

Borne		Description
1	TH	Connexion au panneau de commande hydronique AQ2000
2	TH	
3	SENSOR	Connexion de la sonde externe pour mesurer la température du plancher (requis uniquement si le thermostat est placé en mode F ou AF; voir la page 19)
4	SENSOR	

4. Positionner les sélecteurs de configuration, s'il y a lieu (voir la page 19).
5. Retourner le thermostat sur la plaque murale et serrer la vis.

NOTA : Pour un confort optimal à l'intérieur de la zone, garder les ouvertures d'aération du thermostat propres et dégagées en tout temps afin d'assurer une bonne circulation d'air dans le thermostat.

Sélecteurs de configuration

Les sélecteurs de configuration sont situés à l'arrière de la façade du thermostat.

Mode de programmation (sélecteur 1)

Sélecteur 1 permet de choisir entre la programmation « 1-ZONE » (locale) et la programmation « ALL-ZONES » (globale).

- Tous les thermostats configurés pour la programmation « ALL-ZONES » se servent du même horaire que le panneau de commande hydronique AQ2000. Toute modification à l'horaire apportée à un thermostat sera également apportée au régulateur de chaudière et aux autres thermostats (voir la page 3).
- Toute modification à l'horaire apportée à un thermostat configuré pour la programmation « 1-ZONE » n'affecte que le thermostat en question et non les autres thermostats.

Menu de configuration de l'installateur (sélecteur 2)

Sélecteur 2 permet de placer le thermostat en mode « Inst. » (Installateur) ou en mode « User » (Utilisateur). Placer en mode Installateur pour accéder aux paramètres d'installation. Sinon, laisser en mode Utilisateur.

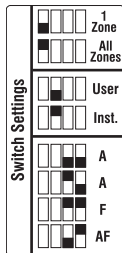
Mode de régulation A/F/AF (sélecteurs 3 & 4)

Sélecteurs 3 et 4 permettent de choisir le mode de régulation.

Mode A : régule et affiche la température ambiante de l'air. AIR s'affichera à l'écran.

Mode F : régule et affiche la température du plancher au moyen d'une sonde externe. FLOOR s'affichera à l'écran.

Mode AF : régule et affiche la température ambiante de l'air tout en gardant la température du plancher entre les limites désirées au moyen d'une sonde externe. AIR/FLOOR s'affichera à l'écran.



Menu de configuration de l'installateur



Seuls des installateurs compétents sont autorisés à modifier les paramètres du menu de configuration. Des mauvais réglages peuvent causer des dommages à la propriété.

1. Enlever le thermostat de la plaque murale.
2. Placer le sélecteur 2, à l'arrière du thermostat, vers le haut (mode Installateur).
3. Retourner le thermostat sur la plaque murale. Le premier paramètre est affiché.

NOTE: *Voir les pages 21 et 22 pour les descriptions des paramètres de configuration de l'installateur.*

4. Pour modifier un paramètre, appuyer sur le bouton \wedge ou \vee .
5. Pour enregistrer toute modification et afficher le paramètre suivant (ou précédent), appuyer sur **NEXT** (ou **PREVIOUS**).
6. Pour sortir du menu, retourner le sélecteur 2 vers le bas (mode Utilisateur).

NOTE: *Si vous sortez du menu sans d'abord appuyer sur **PREVIOUS** or **NEXT**, aucune modification ne sera enregistrée.*

Consigne minimale de l'air ambiant

Ce paramètre est offert seulement si le thermostat est configuré en mode A ou AF (voir la page 19).

Réglage par défaut	5 °C (41 °F)
Plage	5 °C (41 °F) à 38 °C (100 °F)



Consigne maximale de l'air ambiant

Ce paramètre est offert seulement si le thermostat est configuré en mode A ou AF (voir la page 19).

Réglage par défaut	38 °C (100 °F)
Plage	5 °C (41 °F) à 38 °C (100 °F)



Consigne minimale du plancher

Ce paramètre est offert seulement si le thermostat est configuré en mode F (voir la page 19).

Réglage par défaut	5 °C (41 °F)
Plage	5 °C (41 °F) à 38 °C (100 °F)



Consigne maximale du plancher

Ce paramètre est offert seulement si le thermostat est configuré en mode F (voir la page 19).

Réglage par défaut	38 °C (100 °F)
Plage	5 °C (41 °F) à 38 °C (100 °F)



Consigne de chauffage en mode Vacance

Ce paramètre est la consigne de chauffage lorsque le thermostat est en mode Vacance (voir la page 4),

Réglage par défaut	41 °F (5 °C)
Plage	entre les consignes minimale et maximale



Consigne de climatisation en mode Vacance

Ce paramètre est la consigne de climatisation lorsque le thermostat est en mode Vacance (voir la page 4).

Réglage par défaut	81 °F (27 °C)
Plage	entre les consignes minimale et maximale



Limite minimale du plancher

Ce paramètre est offert seulement si le thermostat est en mode AF (voir la page 19). Le chauffage est activé si la température du plancher est égale ou inférieure à la valeur réglée, peu importe la température de consigne.

Réglage par défaut	5 °C (41 °F)
Plage	5 °C (41 °F) à 38 °C (100 °F)



Limite maximale du plancher

Ce paramètre est offert seulement si le thermostat est en mode AF (voir la page 19). Le chauffage est désactivé si la température du plancher est égale ou supérieure à la valeur réglée, peu importe la température de consigne.

Réglage par défaut	38 °C (100 °F)
Plage	5 °C (41 °F) à 38 °C (100 °F)



Fiche technique

Alimentation: à partir du module de zonage (24 à 34 VDC)

Plage de réglage par défaut : 5 °C à 38 °C (41 °F à 100 °F)

Limite du plancher par défaut (mode AF) : 5 °C à 38 °C (41 °F à 100 °F)

Intervalle de consigne : $\pm 0,5$ °C (1,0 °F)

Plage d'affichage de la température intérieure : 0 °C à 70 °C (32 °F à 158 °F)

Plage d'affichage de la température extérieure : -50 °C à 100 °C (-58 °F à 212 °F)

Résolution d'affichage : $\pm 0,5$ °C (1,0 °F)

Température de fonctionnement : -20 °C à 55 °C (-4 °F à 130 °F)

Température d'entreposage : -30 °C à 55 °C (-20 °F à 130 °F)

Humidité: 5% à 90% RH, non-condensé à 35 °C (95 °F)

Type de régulateur : Proportionnel intégral (PI)

Mémoire : Les réglages sont stockés dans la mémoire non volatile et sont donc conservés lors d'une panne de courant.

Garantie limitée de 2 ans

Honeywell garantit ce produit, à l'exception des piles, contre tout vice de fabrication ou de matière dans la mesure où il en est fait une utilisation et un entretien convenables, et ce, pour deux (2) ans à partir de la date d'achat par le consommateur. En cas de défectuosité ou de mauvais fonctionnement pendant la période de garantie, Honeywell remplacera ou réparera le produit (au gré de Honeywell).

Si le produit est défectueux,

- (i) le retourner, accompagné d'une preuve d'achat indiquant la date d'achat, à l'endroit où il a été acheté, ou
- (ii) s'adresser aux Services à la clientèle de Honeywell en composant le 1 800 468-1502. Les Services à la clientèle détermineront alors si le produit doit être retourné à l'adresse suivante : Honeywell Return Goods, Dock 4 MN10-3860, 1885 Douglas Dr N, Golden Valley, MN 55422, ou si un produit de remplacement peut vous être expédié.

La présente garantie ne couvre pas les frais de retrait ou de réinstallation. La présente garantie ne s'appliquera pas s'il est démontré que la défectuosité ou le mauvais fonctionnement est dû à un endommagement du produit alors que le consommateur l'avait en sa possession.

La responsabilité de Honeywell se limite à réparer ou à remplacer le produit conformément aux modalités susmentionnées. HONEYWELL N'EST EN AUCUN CAS RESPONSABLE DES PERTES OU DOMMAGES, Y COMPRIS LES DOMMAGES INDIRECTS OU ACCESSOIRES

DÉCOULANT DIRECTEMENT OU INDIRECTEMENT D'UNE VIOLATION QUELCONQUE D'UNE GARANTIE, EXPRESSE OU TACITE, APPLICABLE AU PRÉSENT PRODUIT NI DE TOUTE AUTRE DÉFECTUOSITÉ DU PRÉSENT PRODUIT. Certaines provinces ne permettent pas l'exclusion ou la restriction des dommages indirects et, par conséquent, la présente restriction peut ne pas s'appliquer.

LA PRÉSENTE GARANTIE TIENT LIEU DE TOUTES LES AUTRES GARANTIES, EXPRESSES OU TACITES, ET LES GARANTIES DE VALEUR MARCHANDE ET DE CONFORMITÉ À UNE FIN PARTICULIÈRE SONT PAR LES PRÉSENTES EXCLUES APRÈS LA PÉRIODE DE DEUX ANS DE LA PRÉSENTE GARANTIE. Certaines provinces ne permettent pas de limiter la durée des garanties tacites et, par conséquent, la présente limitation peut ne pas s'appliquer.

La présente garantie donne au consommateur des droits légaux spécifiques et peut-être certains autres droits qui peuvent varier d'une province à l'autre.

Pour toute question concernant la présente garantie, prière d'écrire aux Services à la clientèle de Honeywell à l'adresse suivante : Honeywell Customer Relations, 1985 Douglas Drive, Golden Valley, MN 55422, ou encore composer le 1 800 468-1502. Au Canada, prière de s'adresser au service des Produits de détail, Honeywell Limited/Honeywell Limitée, 35, Dynamic Drive, Scarborough (Ontario) M1V 4Z9.

Sales Literature

Aquatrol® AQ2000 Series

Electronic Controls for Residential Hydronic Heating

Honeywell



Simple. Powerful. Affordable.

Contractor Install Photos



Johnstone Supply

“Other products out there that I have dealt with are very difficult to set up, very frustrating by the time you are done and usually you have to go back a couple times and re adjust them. The Honeywell AQ panel is amazing, it’s very easy to install and to configure. You are going to get out of it what they say you are going to get out of it.”

– Anonymous

“The AQ2000 can do so much that homeowners are interested in today, including energy savings and prolonging the life of the equipment. It’s great for either new construction or retrofit applications. It is also very user-friendly. What we do, is we build the boiler board at the shop not out at the job site. We will build it and program it in the shop and then we send it out into the field to save time on the job. We spec it all the time. This is what we recommend, we don’t recommend anything else.” – Brian Streich



Palo Heating, Cooling & Plumbing



Ditter Heating and Cooling, Minnesota



Tri-State Mechanical, New York



Downeast Energy, Maine

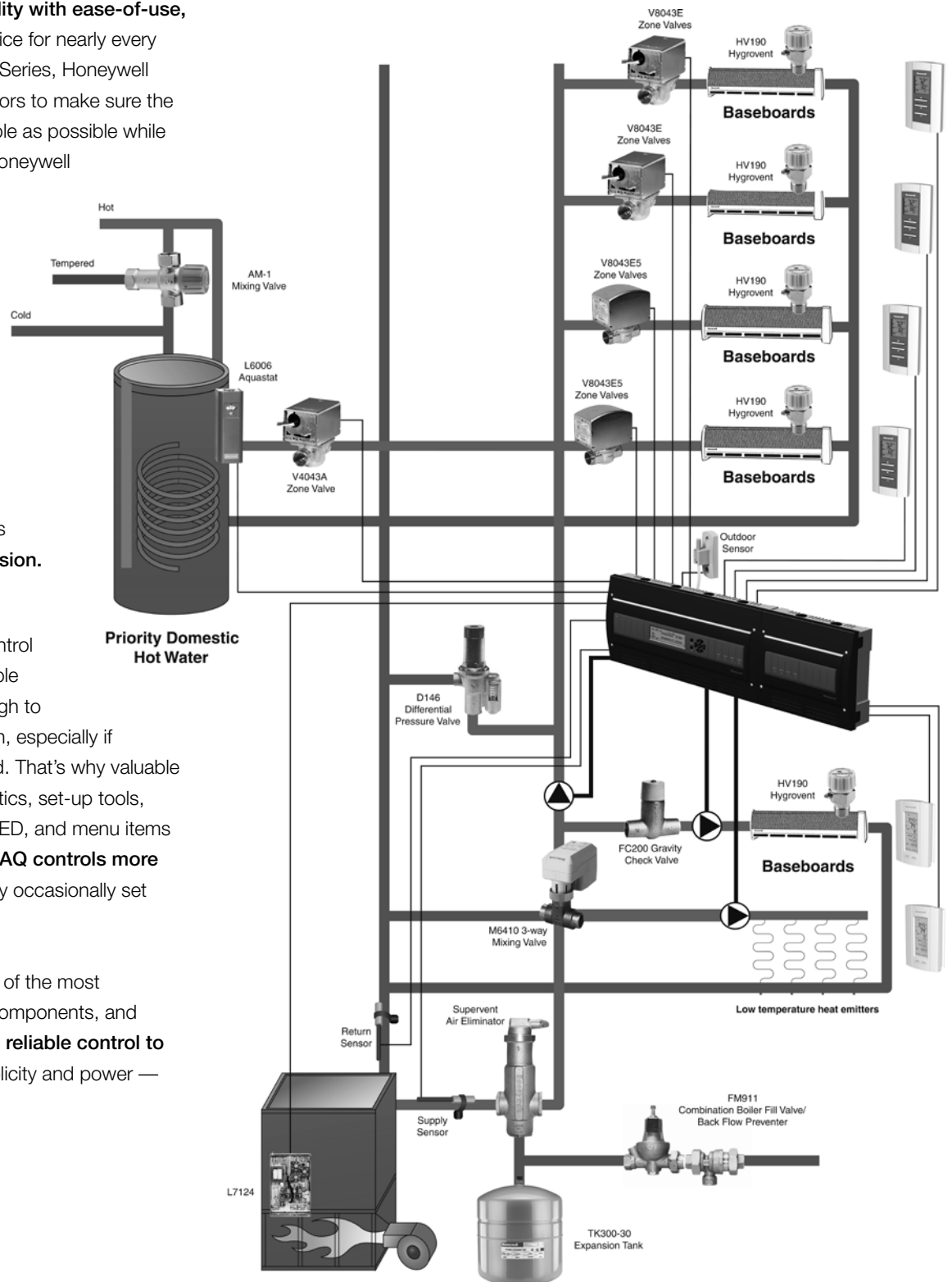
AQ2000 Series Controls Fall Right Into Place

Some hydronic system controls are basic and have limited features and functionality. Others are so complex that they're difficult to install and use or service.

Honeywell Aquatrol AQ2000 Series electronic controls **combine functionality with ease-of-use**, making them the perfect choice for nearly every application. For the AQ2000 Series, Honeywell worked directly with contractors to make sure the new controls worked as simple as possible while meeting contractor needs. Honeywell also drew upon its control technology knowledge and experience gained through years as a leading hydronics supplier in both Europe and North America. The result was the AQ2000 Series, with everything from a 2-wire communications thermostat protocol that greatly simplifies thermostat **with easy expansion**.

We know most contractors don't program a hydronic control everyday – with all the available features and settings, it's tough to remember what they all mean, especially if acronyms and icons are used. That's why valuable and easily accessed diagnostics, set-up tools, troubleshooting, dot matrix LED, and menu items with full English words make **AQ controls more accessible** to those who only occasionally set up a hydronic system.

Simply put, Honeywell is one of the most trusted names for hydronic components, and the AQ2000 Series gives you **reliable control to run the entire system**. Simplicity and power — that's the AQ2000 Series.



Not a typical system. Illustration for reference purposes only.

Easy To Install. Easy To Use.

Honeywell Aquatrol AQ2000 Series controls are designed to keep even the most complex systems simple.

EASY SELECTION

Selecting the proper components for each system has never been easier:

- Selection tools are available both electronically and hardcopy
- Answering just a few simple questions gets you exactly the right configuration of controls for the job — less than one minute from design to Bill of Materials

EASY INSTALLATION

Ready to use with minimal installer setup:

- All panels come pre-assembled with: modules – transformer, boiler controller, and – for most panels – a zoning module
- Expansion panels allow for system design versatility
- Expansion panels add-on simply and require only six field-installed wires to connect to the system
- Control panel enclosures designed with plenty of finger room for wiring, and multiple ground terminals
- Integral low and line voltage wire conduit within panel enclosure allows you to connect multiple panels together without the need for running wire outside panels to connect them

EASY COMMISSIONING/SET-UP

Get up and running swiftly:

- Pre-programmed with most popular settings
- Armchair programmable (can be programmed at your desk and taken to the jobsite ready to install)
- Auto test program sequentially activates and tests all system inputs and outputs to ensure correct operation
- Convenient purge feature facilitates removal of air from the system at start-up with activation of single or multiple zones as selected, defined by the installer

EASY TROUBLESHOOTING

Multiple features simplify troubleshooting during setup or in the event of a malfunction:

- Zone LEDs are illuminated on calls for heat
- A “quiet, yet audible” click occurs when relays are activated
- Diagnostic data (including zone ID number) is displayed on the LCD with valuable descriptions of system activity (boiler and DHW operation, active inputs, outputs and demands, communication status etc.) For AQ250, diagnostics data are displayed by coded blinking of LEDs

EASY CHOICE

The list of reasons to choose Honeywell AQ2000 Series controls goes on and on:

- Zone synchronization — Extends boiler life and saves energy by minimizing boiler cycling.
- Domestic hot water priority and priority override — Ensures adequate DHW supply even on the coldest days (priority) while still supplying sufficient hot water to space heating zones during sustained DHW demand.
- Boiler post purge – saves energy by delivering retained heat stored in the boiler to space heating or DHW zones where it can be used
- Freeze protection – Increases equipment life by activating all valves and pumps associated with any zones that have either lost communication with the control or if boiler water temperature gets close to freezing
- Pump/valve exercise — Extends equipment life by periodically activating all valves and pumps to prevent seasonal start-up problems.
- Heat demand priority (override) protection – Provides optional system priority to auxiliary loads (pool, spa, etc) if desired.
- Boiler short-cycling protection — Used in combination with zone synchronization to keep boiler on for at least 2 minutes and prevent boiler from firing for at least 2 minutes after the last heating cycle.
- Auto test — Confirms equipment is in working order by energizing and de-energizing all inputs and outputs at time of commissioning. AQ250 tests all inputs/outputs in sequence. AQ25A, AQ251 and AQ252 offer increased flexibility, allowing for testing of only the inputs, outputs, demands and other functions as needed.
- Auto purge — Sequenced purging of all zones, to quickly remove air before system start-up. Not available on the AQ250.

Control Panels – Multi-Zone Systems



AQ250 Relay Control Panels

Zoning Control For Up To 4 Zones:

- Line or low-voltage output
- 1-stage zoning
- Controls pumps or zone valves
- Expandable to 16 zones; plus up to 64 zones by using AQ254 panels

Loaded With Standard Features:

- Use with AQ1000 2-wire “polarity insensitive” communicating thermostats
- Zone synchronization
- Boiler post purge and boiler short cycling protection
- Freeze protection
- Pump/valve exercise
- Domestic hot water priority (override) protection
- Heat demand priority and priority override
- Automated test feature for quick start-up and simple troubleshooting

Model Number	Application
AQ2504B2	For pumps or zone valves w/o end switches
AQ2504B4	For valves with end switches



AQ25A Relay “Plus” Control Panels

All The Great Features Of AQ250 Controls, Plus:

- 1 zone of A/C when used with a AQ1000TP2 thermostat
- Customizable control settings and schedules allow for greater level of control and comfort
- Armchair programmable (can be programmed at your desk and taken to the jobsite ready to install)
- Allows outdoor temperature to be displayed on all thermostats
- Central set-back schedules (wake, leave, return and sleep) available
- Automated purge feature for quick system commissioning
- Lots of valuable diagnostic information to help with troubleshooting
- Data logging of relay activity – ideal for logging run time of all zones and boilers in a system

Model Number	Application
AQ25A4B2	For pumps or zone valves w/o end switches
AQ25A4B4	For zone valves with end switches



AQ251 Reset Control Panels

All the Great Features of the AQ25A, Plus:

- Outdoor temperature compensation boiler reset
- Load adaptive boiler reset

Model Number	Application
AQ2514B2	For pumps or zone valves w/o end switches
AQ2514B4	For zone valves with end switches

Control Panels – Multi-Zone Systems (continued)



AQ252 Reset Control Panel For Multiple Temperatures

All the Great Features of the AQ251 Outdoor Reset Controller Plus:

- The ability to control 2 water temperatures (boiler loop and mixed temperature loop) with injection pump or motorized mixing valves
- Expandable up to 64 zones and 5 reset water temperatures by using AQ254 panels

Model Number	Application
AQ2524M2	For use with pumps or zone valves without end switches
AQ2524M4	For zone valves with end switches



AQ254 Add-A-Temperature Injection/Mixing Expansion Panels

Works with any AQ2000 Control Panel each AQ254:

- Adds the capacity for an extra “reset water temp” to any AQ2000 network
- Expands the network capacity by an additional 16 zones
- Can add up to 3 AQ254 panels to an existing AQ2000 boiler control panel

Model Number	Application
AQ2541E0	Expands an existing AQ2000 installation by up to 16 zones and adds an additional controlled (reset) loop temperature

All AQ2000 Control Panels provide sophisticated management of Domestic Hot Water Tanks (DHW) including:

- DHW priority and DHW priority override
- Internal Set-point - No need to set boiler target temperature when there is a DHW call
- DHW Vacancy Setpoint - For vacation homes, DHW and space heating zones can be set to energy saving setpoint with one switch (Aux-In)
- Option to use the Return sensor as DHW sensor - Can be used to control DHW setpoint
- Optional Auxiliary Out (low voltage) closure on DHW call - Simplified wiring when used with a modulating/condensing boiler
- Optional Auxiliary Pump (line voltage) closure on DHW call - More convenient when using a valve on a DHW loop

4 ZONES + 1

The AQ2000 allows you to use all of your space heating zones for just that! No need to use one of those zones to run your DHW.

Control Panels – Single-Zone Systems For Retrofit Applications



AQ2511BO Boiler Reset Control Panel

Many of the great features of either the AQ251 or AQ252, but without multiple zone control:

- Simple energy savings (from boiler reset) for homes with only one zone of heating

Model Number	Application
AQ2511BO	1 Zone Reset



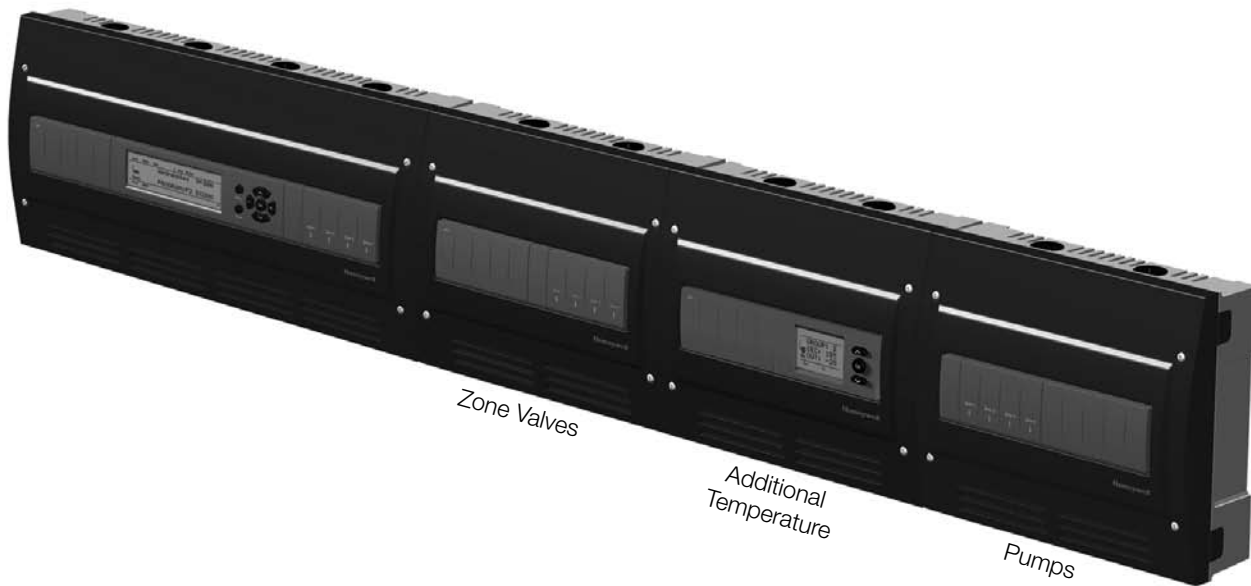
The AQ2511BO can be used with any non-communicating thermostat such as Honeywell's VisionPRO® IAQ, VisionPRO®, FocusPRO®, and PRO Series.

How Does It Work?

The AQ2511BO Panel saves energy by automatically adjusting the boiler's water temperature based on outdoor temperature. This allows the boiler to exactly match the heat it provides with the heat lost by the house. It's like temperature cruise control for your customers house!

The greatest energy savings is in the colder seasons where lower boiler temperature produces longer boiler run times, less cycling, more even heating of the house and less standby losses of heat going up the exhaust vent or into the boiler room where it's not needed.

Expansion Zoning Panels



Model Number	Application
AQ2541E0	Extends the capacity of an AQ2000 network by up to 16 additional zones AND one extra loop temperature
AQ2554V2	4 zones of zone valves without end switches
AQ2574V4	4 zones of zone valves with end switches
AQ2554P2X	4 zones of pumps
AQ2558P2X	8 zones of pumps

AQ255 and AQ257 Expansion Panels

Zoning Expansion Panel Features:

- Controls up to either 4 or 8 zones depending on the model
- Zone synchronization
- Auto test function to check out zones at system start-up
- R-C transformer and B-B data bus terminal connections and network communication for easy expansion
- Status LEDs for easy diagnostics
- Use with 2-wire “polarity insensitive” communicating thermostats
- Expansion panels add-on simply and require only six field-installed wires to connect to the system
- Integral low and line voltage wire conduit within panel enclosure allows you to connect multiple panels together without the need for running wire outside panels to connect them



AQ254 Add-A-Temperature Injection/Mixing Expansion Panels

Even with 64 zones, all zones can still be diagnosed, checked out, and settings adjusted from the main panel without ever having to be in front of the thermostat itself!

The convenient channel connectors allow you to easily add a zone without running wires outside of the panels. This eliminates the risk of having wires exposed to the homeowner outside of the panel, and makes for a clean and organized installation.

To connect the panels, remove the wire channel plugs, reverse them and re-insert them.

Communicating Thermostats – Non-Programmable and Programmable

AQ thermostats were designed exclusively for use with the AQ2000 Controls. They are the only thermostats you need for enhanced communication capabilities with multiple zones.

Note: Non-communicating thermostats can be used for single-zone systems when using an AQ2511B0 Control Panel. Communicating AQ1000 thermostats are required for multi-zone systems.



AQ1000TN2 – Non-Programmable Thermostat

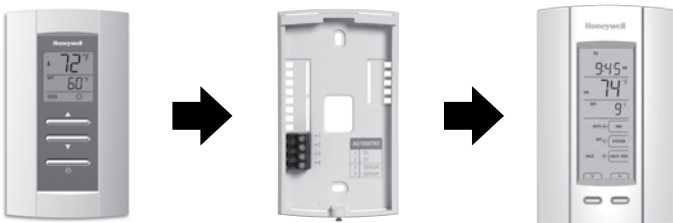
- 2 unique programs per day – Setpoint (WAKE and RETURN) and setback (LEAVE and SLEEP)
- Real Time Indoor and Outdoor temperatures are shown on display (with programmable panels model only)
- Easy 2-wire “polarity insensitive” installation for quick and easy wiring for both retrofit and new construction jobs
- Setpoint and setback for all zones can be programmed at either the thermostat or the main AQ2000 control panel to save time
- Can program thermostats with min/max setpoints AND lock out zone thermostats from the central control panel
- Can connect a floor sensor to any AQ1000 thermostat and control room and floor temperature
- Can display temperature as Fahrenheit or Celsius
- Easy-to-read backlit display
- Settings memory retained in the event of power loss
- Separate installer setup and homeowner menus



AQ1000TP2 – Programmable Thermostat

All The Great Features Of The AQ1000TN2 Thermostat, Plus:

- Programmable with 4 unique programs per day that can be set for all programmable TP2 thermostats from one TP2 thermostat, if desired.
- Can be used for heating and cooling
- Controls 1 zone of cooling (64 zones of heating can be used on the same network when using AQ1000TN2 thermostats)
- Date and time displayed on thermostat and can be set at either the thermostat or the control panel.
- Automatic DST switch over of entire system – controlled by AQTP2 thermostat



Backwards Compatible

New AQ1000TP2 cover plate fits existing AQ1000TN2 back-plate, so upgrades* are easy!

Note: AQ1000TP2 has 4 programs/day capability with previous AQ Panels, but certain features require panels with V2 software and beyond. These features include A/C compatibility, communication of Day/Time of Day, an Auto-Daylight savings time reset.

Sensors and Replacement Modules/Enclosures

Sensors



AQ12C11 Supply/Return Sensor

- Two units Included with AQ250, AQ25A; 3 included with AQ252
- One unit included with each AQ254
- 10 ft length
- Can be mounted on pipe or inserted in immersion well
- Includes the tie wrap



AQ12C10 Outdoor Sensor

- Included with AQ25A, AQ251 and AQ252
- 10 ft length
- Includes the mounting bracket



AQ12C20 Slab/Floor Sensor

- For use with any AQ Control Panel
- Especially suitable for use with in-floor radiant installations to protect floors from overheating and to ensure minimum comfortable floor temperature is maintained
- 15 ft length
- Sold separately

Replacement Modules/Enclosures

Although AQ controls are very robust and designed to Honeywell's demanding standards of quality, we know that sometimes things go wrong on the job site and a component gets damaged. That's the beauty of the AQ2000 panel design – All modules pop off their Din rail, low voltage terminal strips can be separated from the module without rewiring, and a replacement module can be in place in just a couple of minutes!



Transformer Module

- Adds increment of 38 VA power per transformer to drive high VA devices
- Provides professional looking installation when used with AQ11D enclosures
- AQ10X38



Boiler Control Modules

- Provides easy replacement or upgrade from basic boiler control to reset or reset/mixing control
- AQ1500B0 – Replacement for AQ250 Boiler Control Module
- AQ15A0B0 – Replacement for AQ25A Boiler Control Module
- AQ1510B0 – Replacement for AQ25A and AQ251 Boiler Control Module
- AQ1520B0 – Replacement for AQ252 Boiler Control Module
- AQ1540E0 – Replacement for AQ2541E0 Boiler Control Module



Zoning Modules

- AQ1554P2 Zoning – Replacement for Pumps / 2-Wire Valves Zoning Module
- AQ1574V4 Zoning – Replacement for 4-Wire Valves Zoning Module



Enclosures (Case/Covers)

- Suitable for adding extra AQ10X38 transformers to system or hiding system wiring for a tidy professional looking installation
- AQ11D10 - Small (10 DIN width) panel enclosure (with integral DIN mounting rail)
- AQ11D15 - Medium (15 DIN width) panel enclosure (with integral DIN mounting rail)
- AQ11D20 - Large (20 DIN width) panel enclosure (with integral DIN mounting rail)

Boiler Compatibility

Today, there are so many boilers with different types of controls built into them, it can be confusing figuring out which AQ controls to use with which boiler. In general, you should select an AQ2000 control panel to compliment your boiler's capability. Use the convenient selection chart below to select a panel that best suits your job!

Even the “smartest” boilers need zoning controls.

For example, if your boiler already has outdoor reset on board, there's no need for an AQ panel with reset capability. Instead, use an AQ250 control panel to provide smart zoning to the system, such as Zone synch, freeze protection, DHW priority, pump/valve exercise, etc...

An AQ25A Panel has advanced set-up features that decrease installation time.

Consider using an AQ25A panel with a programmable LCD screen to speed up your installation and provide your customer with the added value of having the outdoor temperature displayed on each AQ1000 thermostat!

AQ2000 Control Panel Selection Chart	How many reset water temperatures does the installation have?		
	1	2	3
On/Off Boiler	AQ250 or AQ251	AQ252	AQ252 + AQ254
Modulating/Condensing Boiler With Zone Control	AQ250 or AQ251	AQ252	AQ252 + AQ254
Modulating/Condensing Boiler Without Zone Control	AQ251	AQ252	AQ252 + AQ254

AQ2000 Series - Hydronic Controls Product Selector

When using AQ2000 controls, selecting components could not be easier. All it takes are four easy steps.

- 1. Boiler Supply Water Temperature** – will the AQ2000 control panel provide boiler reset control?
- 2. Zoning equipment** – pumps, valves, 2-wire or 4-wire/end switch
- 3. Number of space heating zones** – do not include DHW in total number of zones
- 4. For Systems With More Than 2 Controlled Water Temperatures** – each additional mixed temperature will require an AQ2541E0 expansion control panel plus sufficient zoning modules to manage the zones associated with the additional water temperature

		No Reset			One System Temperature		
		Zone Pumps	Zone Valves Without End Switches	Zone Valves With End Switches	Zone Pumps	Zone Valves Without End Switches	Zone Valves With End Switches
Control Panel Selection	1 Zone				AQ2511B0		
	2 – 4 Zones	AQ2504B2			AQ2514B2		
			AQ2504B2			AQ2514B2	
	5 – 8 Zones			AQ2504B4			AQ2514B4
		AQ2504B2 + AQ2554P2X or AQ25A4B2 + AQ2554P2X			AQ2514B2 + AQ2554P2X		
			AQ2504B2 + AQ2554P2X or AQ25A4B2 + AQ2554P2X			AQ2514B2 + AQ2554V2	
	9 – 12 Zones			AQ2504B4 + AQ2554P2X or AQ25A4B4 + AQ2554P2X			AQ2514B4 + AQ2574V4
		AQ2504B2 + AQ2558P2X or AQ25A4B2 + AQ2558P2X			AQ2514B2 + AQ2558P2X		
			AQ2504B2 + AQ2554V2 (2) or AQ25A4B2 + AQ2554V2 (2)			AQ2514B2 + AQ2554V2 (2)	
	13 – 16 Zones			AQ2504B4 + AQ2554V4 (2) or AQ25A4B4 + AQ2554V4 (2)			AQ2514B4 + AQ2574V4 (2)
		AQ2504B2 + AQ2558P2X + AQ2554P2X or AQ25A4B2 + AQ2558P2X + AQ2554P2X			AQ2514B2 + AQ2558P2X + AQ2554P2X		
			AQ2504B2 + AQ2554V2 (3) or AQ25A4B2 + AQ2554V2 (3)			AQ2514B2 + AQ2554V2 (3)	
			AQ2504B4 + AQ2554V4 (3) or AQ25A4B4 + AQ2554V4 (3)			AQ2514B4 + AQ2574V4 (3)	

* Panels come with 4 zones pre-wired from factory.

set

Two System Temperature

Zone Pumps	Zone Valves Without End Switches	Zone Valves With End Switches
AQ2524M2		
	AQ2524M2	
		AQ2524M4
AQ2524M2 + AQ2554P2X		
	AQ2524M2 + AQ2554V2	
		AQ2524M4 + AQ2574V4
AQ2524M2 + AQ2558P2X		
	AQ2524M2 + AQ2554V2 (2)	
		AQ2524M4 + AQ2574V4 (2)
AQ2524M2 + AQ2558P2X + AQ2554P2X		
	AQ2524M2 + AQ2554V2 (3)	
		AQ2524M4 + AQ2574V4 (3)

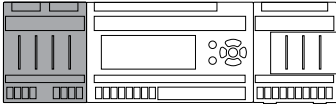
When using AQ2000 controls for more than two water temperatures:

1. Select the control panel for first two temperatures using the chart on the previous page
2. Select the expansion control panel for the third or additional 16 temperature zones using the chart on this page
3. Select the expansion control panel for the fourth or additional 16 temperature zones ALSO using the chart on this page
4. Save the results (drawing) for each selection in a separate file. Print out the drawing, OR - if using Visio or AutoCAD, combine them all into one system drawing

Reset

One System Temperature

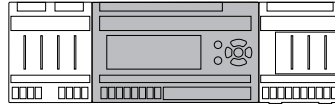
		Zone Pumps	Zone Valves Without End Switches	Zone Valves With End Switches
Control Panel Selection	1 – 4 Zones	AQ2541E0 + AQ2554P2X		
			AQ2541E0 + AQ2554V2	
				AQ2541E0 + AQ2574V4
	5 – 8 Zones	AQ2541E0 + AQ2558P2X		
			AQ2541E0 + AQ2554V2 (2)	
				AQ2541E0 + AQ2574V4 (2)
	9 – 12 Zones	AQ2541E0 + AQ2558P2X + AQ2554P2X		
			AQ2541E0 + AQ2554V2 (3)	
				AQ2541E0 + AQ2574V4 (3)
	13 – 16 Zones	AQ2541E0 + AQ2558P2X (2)		
			AQ2541E0 + AQ2554V2 (4)	
				AQ2541E0 + AQ2574V4 (4)



Transformer Module

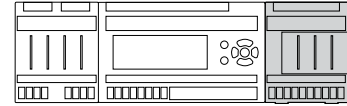
- Powerful 38 VA capacity
- Factory pre-wired to the control and zoning modules
- Powerful enough to drive internal electronics, up to 16 thermostats and 4 zone valves** without needing to add external transformers
- Self-resetting electronic fuse protects transformers from excessive load equipment from zoning

** Applies to most electric and thermally actuated zone valves, like Honeywell V8043E1012 or MT-4. High power-consuming zone valves (such as Taco heat motor valves) will require additional (up to four times more) transformer capacity (VA).



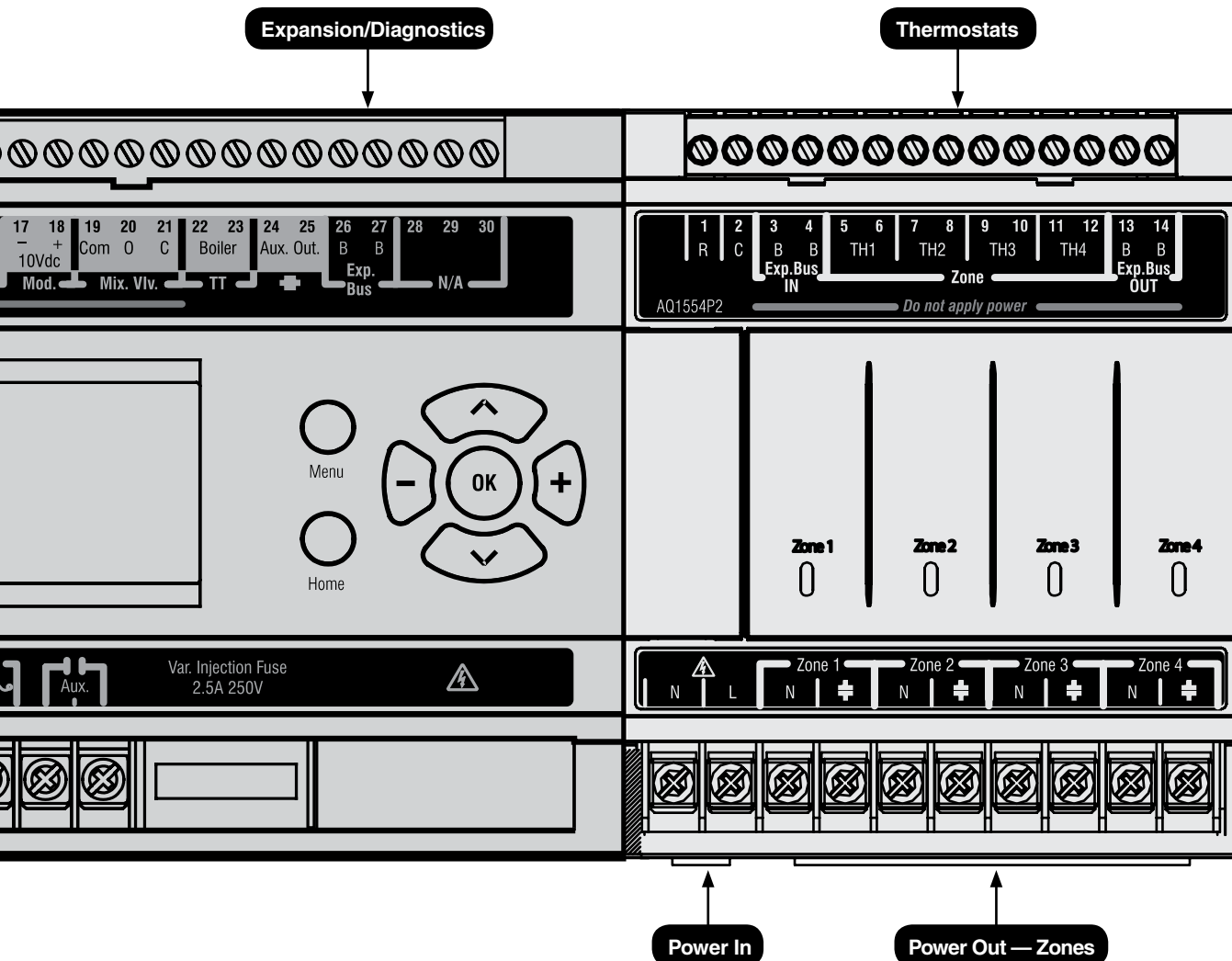
Control Module

- Large dot matrix display with easily understandable menus (full words, no acronyms or icons)
- Displays valuable system information and diagnostics on system status page for quick troubleshooting
- Easy-to-read backlit screen
- Simple and logically laid-out menu selection
- Clearly labeled input and output connections
- Integrated control of Domestic Hot Water — priority and priority override



Zoning Module

- LED lights for valuable diagnostics
- Auto test function allows for sequenced testing of zones; includes pause/restart capability
- Easily switch from zone valves to pumps with same zoning module – just flip one DIP switch
- Allows zoning with either “Normally Open” or “Normally Closed” zone valves
- Zones can be set to operate group pump
- Expansion zoning panels connect quickly and easily and can be connected directly to main AQ panel or in another part of the house – up to 500 feet away!
- Adjacent zoning panels can operate different zone equipment — one panel may control 4 pumps and another may control 4 zone valves



Learn More

For complete details on increasing profits with Honeywell Hydronic Heating Solutions, contact your Honeywell distributor or visit **customer.honeywell.com**.

1-800-328-5111**info@honeywell.com****customer.honeywell.com****Automation and Control Solutions**

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E-mail: info@honeywell.comwww.honeywell.com**Honeywell**

Outdoor Reset Control Panel

AQ2511B0

Honeywell



Warnings about high costs will have homeowners seeking savings. Everywhere homeowners look, they see dire predictions about soaring heating costs this winter. They'll be anxious to find savings, and they'll snap up the savings offered by Honeywell AQ2511B0 panels. You'll be amazed at their ease of installation, making them the perfect choice for energy-saving applications.

AQ2511B0 Outdoor Reset Control Panel

INSTANT ENERGY SAVINGS WITH A SIMPLE INSTALLATION

Outdoor Reset –

Optimizes boiler cycling for efficient operation

Simple Installation –

Pre-Programmed with the most popular settings for quick set up

Application Flexibility –

Can be used with your favorite thermostat or non-communicating zone panel relay panel



Energy Savings –

Reduces energy costs by up to 15%*

Easy Troubleshooting –

LCD displays valuable diagnostics data in plain language

Armchair Programming –

This feature allows you to program the control at your shop and hand over to your tech to install. This ensures the job gets done quickly and done right the first time

For more information

visit thinkhoneywell.com/aq enter code: **AQINST**

See your local wholesaler for pricing and availability.

*Honeywell Inc. 1979 Study; Control Systems Providing Energy Savings with single and multi-zone Hydronic Heating. 15% is the average energy savings and can only be achieved when installing an outdoor reset model, domestic hot water priority is off and the unit is installed as directed.

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