VFD Reference Guide

In-The-Field Tool

Honeywell

NXS Basic Speed Control

What You Need

- Drive Type (NXL, NXS)
- Motor nameplate data
- Speed Signal spec
  - Signal Type (volts, milliamps)
  - Range (0-10, 2-10; 0-20, 4-20)

Navigating The Tree

The left and right arrows move you from one menu to another.

P2.1 _ P2.2 _ P2.3

The up and down arrows move you within a menu.

Etc.

Active Faults		P2.1.3
Keypad Control	**OR**	P2.1.2
Parameters		P2.1.1

Monitor

The "Home" menu is all the way to the left and includes:

- M1 – Monitoring Values
- M2 – Parameter Menu. Sub menus (depending on application selection) include:
  - P2.1 – Basic Parameters*
  - P2.2 – Input Signals*
  - P2.3 – Output Signals
  - P2.4 – Drive Control Parameters
  - P2.5 – Prohibit Frequency Parameters
  - P2.6 – Motor Control Parameters
  - P2.7 – Protections
  - P2.8 – Autorestart Parameters
- K3 – Keypad Control
- M4 – Active Faults
- M5 – Fault History
- M6 – System Menu
- M7 – Expander Board Parameters

* used in this application

Changing a Value

To change a value:

- Navigate to the appropriate parameter (P2.1.x).
- Press the right arrow to make value "flash".
- Use the up and down arrows to select new value.
- Press **enter** to accept new value or the left arrow to cancel.

Application Selection

Select the **Basic** application (M6_S.6.x)

- S6.2 – Basic

Set Application Parameters –

Others will appear but can be left as default values

- P2.1 – Min Frequency: Ensure this is set to zero or desired minimum speed. "Off" is accomplished with Stop signal.
- P2.2 – Max Frequency: Ensure this is set to 60 Hz so motor can run at full speed.
- P2.3 – Acceleration Time 1: Set this to 30 seconds for a fan; 10 seconds for a pump.

Motor Nameplate Data

- P2.5 – Current Limit: 1.5 x FLA
- P2.6 – Motor Voltage: (230, 480)
- P2.7 – Motor Frequency: (typically 60 Hz)
- P2.8 – Motor Speed: (1725 RPM etc.)
- P2.9 – Motor Current:

System Characteristics

- I/O Reference: Set to 0 (AI1,default) for volt signal or 1 (AI2) for milliamp signal

Drive Control Place (K3 _P3.1)

- P3.1 – Control Place: Set to **Keypad** for testing. Once configuration is correct, set to default, **I/O terminal**, for drive to accept remote speed signal.
  - I/O terminal
  - Keypad
  - Fieldbus

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NXS PID Speed Control

What You Need

- Drive Type (NXL, NXS)
- Motor nameplate data
- Sensor spec
  - Signal Type (volts, milliamps)
  - Range (0-10, 2-10; 0-20, 4-20)
  - Desired setpoint

Navigating The Tree

The left and right arrows move you from one menu to another.

P2.1 _ P2.2 _ P2.3

The up and down arrows move you within a menu.

Etc.

Active Faults		P2.1.3
Keypad Control	**OR**	P2.1.2
Parameters		P2.1.1

Monitor

The "Home" menu is all the way to the left and includes:

- M1 – Monitoring Values
- M2 – Parameter Menu. Sub menus (depending on application selection) include:
  - P2.1 – Basic Parameters*
  - P2.2 – Input Signals*
  - P2.3 – Output Signals
  - P2.4 – Drive Control Parameters
  - P2.5 – Prohibit Frequency Parameters
  - P2.6 – Motor Control Parameters
  - P2.7 – Protections
  - P2.8 – Autorestart Parameters
- K3 – Keypad Control*
- M4 – Active Faults
- M5 – Fault History
- M6 – System Menu*
- M7 – Expander Board Parameters

* used in this application

Application Selection

Select the **PID** application (M6_S.6.x)

- S6.2 – PID-Control

Parameters To Set *(P2 _P2.1 __P2.1.x)*

- P2.1.1 – Min Frequency: Ensure this is set to zero or desired minimum speed. "Off" is accomplished with Stop signal.
- P2.1.2 – Max Frequency: Ensure this is set to 60 Hz so motor can run at full speed.
- P2.1.3 – Acceleration Time 1: Set this to 30 seconds for a fan; 10 seconds for a pump.

Motor Nameplate Data

- P2.1.5 – Current Limit: 1.5 x FLA
- P2.1.6 – Motor Voltage: (230, 480)
- P2.1.7 – Motor Frequency: (typically 60 Hz)
- P2.1.8 – Motor Speed: (1725 RPM etc.)
- P2.1.9 – Motor Current:

PID Reference

- P2.1.11 – Keypad Reference:

PID Characteristics (P2 _P2.2 __P2.2.x)

- P2.2.9 – Actual Value Input: This is your sensor signal
  – **AI1** for 2 – 10V – **AI2** for 4 – 20mA **(default)**
- P2.2.16 – This is your signal range if using AI1. Set to 0 – 100%
  – 0 – 100% **(default)** – 4 – 20mA
  – Custom Range
- P2.2.22 – This is your signal range if using AI2. Set to 0 – 100%
  – 0 – 20mA – 4 – 20mA **(default)**
  – Custom Range

PID Reference (K3 _P3.1 _P3.4)

- P3.4 – PID Reference: Set Percentage (Set-Point ÷ Span) to appropriate value. For example: Set-point is 250 psig, and the sensor span is 0 to 300 psig. Divide 250 by 300. This equals 0.83, or 83%. That's the value you enter at parameter 3.4 is 83.00

Drive Control Place (K3 _P3.1)

- P3.1 – Control Place: Set to **Keypad** for testing. Once configuration is correct, set to default, **I/O terminal**, for drive to accept remote speed signal.
  – I/O terminal – Keypad
  – Fieldbus

NXL Basic Speed Control

What You Need

- Drive Type (NXL, NXS)
- Motor nameplate data
- Speed Signal spec
  – Signal Type (volts, milliamps)
  – Range (0-10, 2-10; 0-20, 4-20)

Navigating The Tree

The left and right arrows move you from one menu to another.

P2.1 _ P2.2 _ P2.3

The up and down arrows move you within a menu.

E7		
S6		P2.1.3
K3	**OR**	P2.1.2
P2		P2.1.1
M1		

The “Home” menu is all the way to the left and includes:

- M1 – Monitoring Values
- P2 – Top-level Parameter Menu. Sub menus are:

– P2.1 – Basic Parameters*	– P2.2 – Input Signals*
– P2.3 – Output Signals	– P2.4 – Drive Control Parameters
– P2.5 – Prohibit Frequency Parameters	– P2.6 – Motor Control Parameters
– P2.7 – Protections	– P2.8 – Autorestart Parameters
– P2.9 – PID Reference Parameters	– P2.10 – Pump/Fan Control Parameters

- K3 – Keypad Control
- S6 – System Menu
- E7 – Expander Board Parameters

*used in this application

Changing a Value

To change a value:

- navigate to the appropriate parameter (P2.1.x).
- Press the right arrow to make value “flash”.
- Use the up and down arrows to select new value.
- Press **enter** to accept new value or the left arrow to cancel.

Parameters To Set

- P2.1.1 – Min Frequency: Ensure this is set to zero or desired minimum speed. "Off" is accomplished with Stop signal.
- P2.1.2 – Max Frequency: Ensure this is set to 60 Hz so motor can run at full speed.
- P2.1.3 – Acceleration Time 1: Set this to 30 seconds for a fan; 10 seconds for a pump

Motor Nameplate Data

- P2.1.6 – Motor Voltage: (230, 480)
- P2.1.7 – Motor Frequency: (typically 60 Hz)
- P2.1.8 – Motor Speed: (1725 RPM etc.)

System Characteristics

- P2.1.11 – Start Function: Set to 1-Flying Start
- P2.1.14 – I/O Reference: Set to 0 (AI1,default) for volt signal or 1 (AI2) for milliamp signal

Control Characteristics (P2 _P2.2 __P2.2.x)

- P2.2.5 – AI1 Signal Selection: This must agree with P2.1.14. Set to 10 for AI1 (Volts) or 11 for AI2 (Milliamps)
- P2.2.6 – AI1 Signal Range: Leave as default (3) for 0 - 10V or change to (4) for 2 - 10V. This should agree with 2.1.14
  - 1=0 mA to 20 mA (MF4 and above)
  - 2=4 mA to 20 mA (MF4 and above)
  - 3=0 V to 10 V
  - 4=2 V to 10 V
- P2.2.12 – AI2 Signal Range: Leave as default (2) for 4 – 20mA or change to (1) for 0 – 20mA. This should agree with 2.1.15
  - 1=0 mA to 20 mA
  - 2=4 mA to 20 mA
  - 3=0 V to 10 V
  - 4=2 V to 10 V

Drive Control Place (K3 _P3.1)

- P3.1 – Control Place: Set to (2 – Keypad) for testing. Once configuration is correct, set to default (1 – I/O terminal) for drive to accept remote speed signal.
  - 1=I/O terminal
  - 2=Keypad
  - 3=Fieldbus

NXL PID Control

What You Need

- Drive Type (NXL, NXS)
- Motor nameplate data
- Speed Signal spec
  – Signal Type (volts, milliamps)
  – Range (0-10, 2-10; 0-20, 4-20)
  – Desired setpoint

Navigating The Tree

The left and right arrows move you from one menu to another.

P2.1 _ P2.2 _ P2.3

The up and down arrows move you within a menu.

E7		
S6		P2.1.3
K3	**OR**	P2.1.2
P2		P2.1.1
M1		

The "Home" menu is all the way to the left and includes:

- M1 – Monitoring Values
- P2 – Top-level Parameter Menu. Sub menus are:

– P2.1 – Basic Parameters*	– P2.2 – Input Signals*
– P2.3 – Output Signals	– P2.4 – Drive Control Parameters
– P2.5 – Prohibit Frequency Parameters	– P2.6 – Motor Control Parameters
– P2.7 – Protections	– P2.8 – Autorestart Parameters
– P2.9 – PID Reference Parameters	– P2.10 – Pump/Fan Control Parameters

- K3 – Keypad Control
  – P3.5 – PID Reference*
- S6 – System Menu
  – P6.3 – Copy Parameters*
- E7 – Expander Board Parameters

*used in this application

Changing a Value

To change a value:

- navigate to the appropriate parameter (P2.1.x).
- Press the right arrow to make value "flash".
- Use the up and down arrows to select new value.
- Press enter to accept new value or the left arrow to cancel.

Reset Parameters to Factory Defaults

- P6.3.1 – Parameter sets: Select option **5** to load factory defaults

Parameters To Set *(P2 _P2.1 __P2.1.x)*

- P2.1.1 – Min Frequency: Ensure this is set to zero or desired minimum speed. "Off" is accomplished with Stop signal.
- P2.1.2 – Max Frequency: Ensure this is set to 60 Hz so motor can run at full speed.
- P2.1.3 – Acceleration Time 1: Set this to 30 seconds for a fan; 10 seconds for a pump

Motor Nameplate Data

- P2.1.6 – Motor Voltage: (230, 480)
- P2.1.7 – Motor Frequency: (typically 60 Hz)
- P2.1.8 – Motor Speed: (1725 RPM etc.)

System Characteristics

- P2.1.11 – Start Function: Set to 1-Flying Start

Control Characteristics (P2 _P2.2 __P2.2.x)

- P2.2.5 – AI1 Signal Selection: This must agree with P2.1.14. Set to 10 for AI1 (Volts) or 11 for AI2 (Milliamps)
- P2.2.6 – AI1 Signal Range: Leave as default (3) for 0 - 10V or change to (**4**) for 2 - 10V. This should agree with 2.1.14
  – 1=0 mA to 20 mA (MF4 and above) – 3=0 V to 10 V
  – 2=4 mA to 20 mA (MF4 and above) – 4=2 V to 10 V

PID Characteristics (P2 _P2.9 __P2.9.x)

- P2.9.1 – PID Activation: Set to Option 1 to activate
- P2.9.2. – PID Reference: Set to Option 2 (Reference from Keypad)
- P2.9.3 – Actual Value Input: This is your sensor signal Leave as default (1) for 4 – 20mA or change to (0) for 2 – 10V
  – 0=2 V to 10 V – 1=4 mA to 20 mA

PID Reference (K3 _P3.1 _P3.5)

- P3.5 – PID Reference: Set Percentage (Set-Point – Minimum ÷ Span) to appropriate value. For example: Set-point is 250 psig, and the sensor span is 0 to 300 psig. Divide 250 by 300. This equals 0.83, or 83%. That's the value you enter at parameter 3.5 is 83.00

Drive Control Place (K3 _P3.1)

- P3.1 – Control Place: Set to (**2** – Keypad) for testing. Once configuration is correct, set to default (**1** – I/O terminal) for drive to accept remote speed signal.
  – **1**=I/O terminal – **2**=Keypad
  – **3**=Fieldbus

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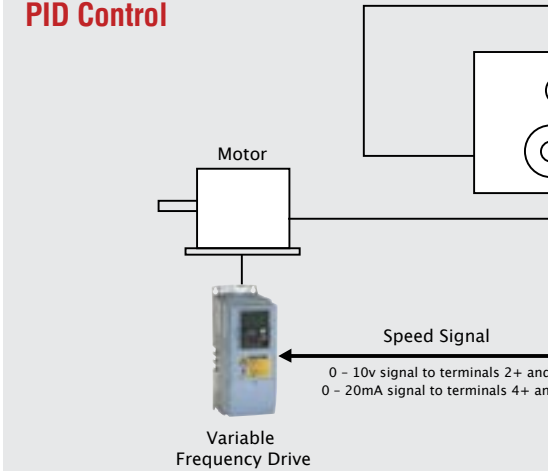
The Only Brand You Need

Because Honeywell has a complete family of variable frequency drives, you have a single source for all your VFD needs. From .5 HP to 450 HP, Honeywell VFDs provide common capabilities and a similar look and feel that ensure specification, installation and operation are as trouble-free as possible. Plus, programming is the same across the line, so you only have to learn one format.

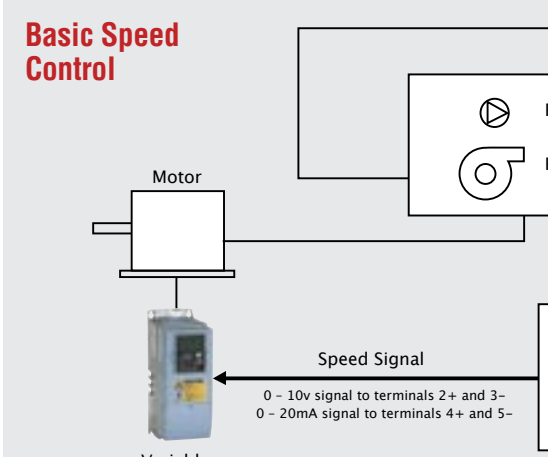
Easy To Use

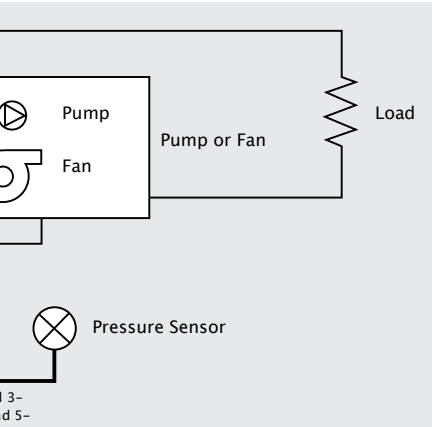
Just unfold to keep the diagrams visible as you look at the reference pages.

PID Control

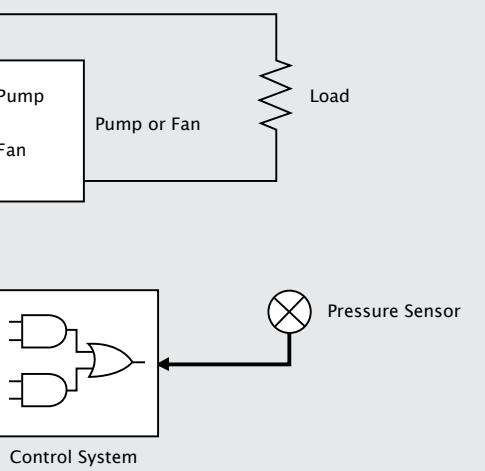


Basic Speed Control




Pump
Fan
Pump or Fan
Load
Pressure Sensor

l 3–
d 5–


Pump
Fan
Pump or Fan
Load
Pressure Sensor
Control System

Automation and Control Solutions
In the U.S.:
Honeywell
1985 Douglas Drive North
Golden Valley, MN 55422-3992

In Canada:
Honeywell Limited
35 Dynamic Drive
Toronto, Ontario M1V 4Z9

In Latin America:
Honeywell
9315 N.W. 112th Avenue
Miami, FL 33178
www.honeywell.com

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