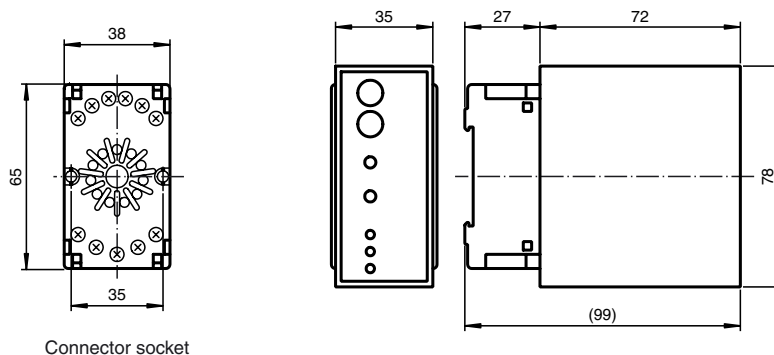


Evaluation unit UH3-T1-KT



Dimensions



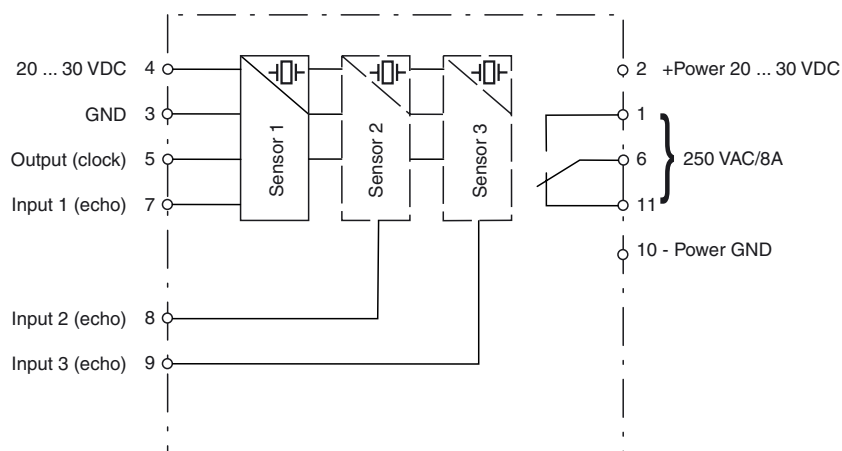
Connector socket

Features

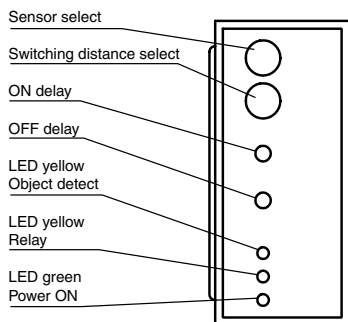
- External evaluation for ultrasonic sensors UB...-H1, -H2 and -H3
- Relay output for high power
- Pull-in/Drop-out delay can be set
- Normally open/closed
- Switch point can be selected in steps in the sensing range



Electrical connection



Indicator/Operating means



Technical Data

General specifications

Measuring frequency approx. 16 Hz

Indicators/operating means

Rotary switch sensor select: setting the switch-point behaviour
distance select: setting the operating distance

Electrical specifications

Operating voltage 20 ... 30 V DC, ripple 10 %_{SS}

No-load supply current I_0 ≤ 120 mA (without sensors)

Input

Input type for max. 3 ultrasonic sensors in
direct detection mode: UB 500/2000/4000/6000, UJ 3000/6000
or for a through beam barrier: UB 2000 (e.g.)

Output

Output type changeover contact terminals 6 to 1 (NO) and 11 (NC)

Contact loading AC: 8 A/250 V

Energized/de-energized delay 270°-potentiometer: ON delay, between 0.2 s ... 8 s (± 10%)

270°-potentiometer: OFF delay, between 0.2 s ... 8 s (± 10%)

Standard conformity

Standards EN 60947-5-2

Ambient conditions

Ambient temperature -20 ... 60 °C (253 ... 333 K)

Storage temperature

Mechanical specifications

Connection plug socket 11-pin, attached using 2 x M3 screws or snapped-on to 35 mm standard rail according to EN 50022
Base is included with delivery

Material

Housing modular housing

Mass 110 g

Ordering code

UH3-T1-KT

Description

The UH3-T1-KT is a back-end unit for ultrasonic sensors with external evaluation logic. It features direct-detection and through-beam operating modes. All sensors of the types H3, H1 and H2 can be connected to the unit.

When an object is detected, a relay trips a change-over contact. The action and release delays can be adjusted independently of one another. In direct-detection mode the unit generates a clock signal for the sensors and determines the object distance on the basis of the echo time. A switching point can be set in steps in the detection range.

In barrier mode the clock signal starts the ultrasonic pulse from the device in the transmitter/sender. The receiver generates an echo signal when it picks up the ultrasonic signal. If this echo signal is not received, the evaluation unit trips the output relay.

Notes

1 Initial operation

A maximum of three sensors can be connected in direct-detection mode. The sensors are clocked synchronously and their outputs are connected in an inclusive OR circuit. They receive their operating power from the evaluation unit. The back-end unit is protected against polarity reversal. The ultrasonic sensors must be connected to the pin base in accordance with the terminal assignment before plugging in the evaluation unit.

Terminal assignment of pin base:

Terminal	Function
1	Output - normally-open change-over contact
2	Operating voltage +20 VDC ... 30 VDC
3	Voltage supply for sensors GND
4	Voltage supply for sensors +20 VDC ... 30 VDC
5	Output - clock signal for sensors
6	Output - middle change-over contact
7	Input 1 - echo input from sensor 1
8	Input 2 - echo input from sensor 2
9	Input 3 - echo input from sensor 3
10	Operating voltage GND
11	Output - normally closed change-over contact
12	not used
13	not used

2 Operating controls

16-position rotary switch (sensor select) (0 ... F):

Accessories

Control unit base (for replacement)

UH3-ST

Setting according to the connected sensor type and desired output relay switching behavior

10-position rotary switch (distance select) (0 ... 9):
 Selection of switching point in direct-detection mode
 Selection of sensitivity in through-beam mode

270° potentiometer (ON delay):
 Pick-up delay of relay (0.2 s ... 8 s)

270° potentiometer (OFF delay):
 off delay of relay (0.2 s ... 8 s)

2.1 Sensor select rotary switch

Set the switch according to the connected sensor(s), the detection range and operating mode (direct-detection or through-beam mode) as per the printed table. In addition the switch position determines whether the output relay should pick up (NO) or release (NC) when an object is detected. The following settings are possible depending on the sensor type (see table):

Sensor select	Operating mode	Sensor type	Detection range [mm]	Output relay pick up/release
0/1	probe	UB 500-30GM-H3 / UB500+U9+H3	60 ... 500	p.u.(NO)/rel.(NC)
2/3	probe	UB 2000-30GM-H1/H2	100 ... 1000	p.u.(NO)/rel.(NC)
4/5	probe	UB 2000-30GM-H3	200 ... 2000	p.u.(NO)/rel.(NC)
6/7	probe	UJ 3000+U9+H3	300 ... 3000	p.u.(NO)/rel.(NC)
8/9	probe	UB 4000-30GM-H3	500 ... 4000	p.u.(NO)/rel.(NC)
A/B	probe	UB 6000-30GM-H3 / UB6000-FP-H3	800 ... 6000	p.u.(NO)/rel.(NC)
C/D	through-beam	UB 2000-30GM-H1/H2	10 ... 5000 barrier	pick up/release
E/F	not used			

2.2 Switching point select rotary switch

When in direct-detection mode, the switch can set a custom switching point within the fixed detection range. Ten steps are possible. The switching point can be calculated on the basis of (max. switching point/10) x (switch position + 1).

Example: An object is to be detected with the 4-m sensor UB 4000-30GM-H3 when it reaches a distance of approx. 2400 mm from the sensor. The evaluation unit is to provide a control signal for a positioning device upon detecting the object.

The Sensor Select rotary switch is in position 8 in accordance with the sensor type and desired switching behavior. The position for the switching point rotary switch can be determined as follows for the desired switching point: Detection range (max. switching point) at position 8/9 divide by 10 = 400. 400 x 6 results in the required switching point of 2400 mm. According to the formula above, the distance selector switch should be turned to position 5.

Please note: The shortest switching point in position 0 cannot be less than the sensor's unusable area according to the data sheet (see table)!

In through-beam mode, the switching point switch affects the sensitivity of the barrier. In positions with high numbers, small signal differences are distinguished better than in the 0 position (see application 2).

2.3 ON/OFF Delay potentiometers

The switching action of the output relay can be delayed. The potentiometers permit the independent adjustment of the pick-up and release delays of the relay over a range of 0.2 s ... 8,0 s.

Please note: The pick-up delay must be shorter than the time spent in the switching range by the object!

2.4 Displays

Yellow LED (Object detect)	Object within selected switching range
Yellow LED (Relay)	Switching state of the relay (release/pick up)
Green LED (Power ON)	Ready, power on

3 Deployment

The UH3-T1-KT evaluation unit is optimally suited for situations in which areas, entrances or doors are to be monitored using ultrasonic sensors. The advantages of this unit are:

- The connected ultrasonic sensors do not need evaluation logic of their own.
- Certain events call for a delayed evaluation; the immediate response of sensors with integrated evaluation logic would result in evaluation errors (see application 2)
- Simple parallel switching of up to three sensors results in greater coverage, permitting larger areas to be monitored.
- Higher power levels for actuators can be switched directly via relays.

Detection of very small objects

In beam-interruption mode, the emitter and receiver are mounted on a shared reference line so that the transmitted ultrasonic signal reaches the receiver when there is no object interrupting the signal path.

An arrangement in which the axes of the emitter and receiver intersect, rather than being positioned on the same line, is particularly useful. The intersection of the axes forms a detection area in which very small objects can also be detected.

For example, the reflection of a wire of >1 mm dia. is sufficient to generate an output signal at the receiver. The switching point Select rotary switch affects the evaluation sensitivity of this arrangement. Small objects are detected more reliably in position 8 or 9 than in 0 or 1.

