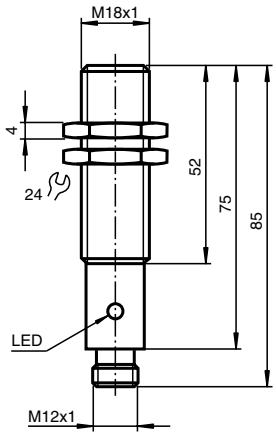
Single head system

UB500-18GM75-E5-V15

Dimensions



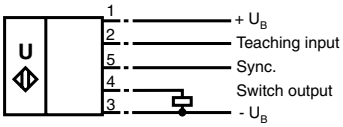
CE

Features

- Switch output
- 5 different output functions can be set
- TEACH-IN input
- Synchronisation options
- Deactivation option
- Temperature compensation

Electrical connection

Standard symbol/Connections:
(version E5, pnp)



Technical data

General specifications		
Sensing range		50 ... 500 mm
Standard target plate		100 mm x 100 mm
Unusable area		0 ... 50 mm
Transducer frequency		approx. 380 kHz
Response delay		approx. 50 ms
Standard conformity		EN 60947-5-2
Indicating/Operating means		
LED yellow		indication of the switching state flashing: teach-in function object detected
LED red		"Error", object uncertain in teach-in function: No object detected
Electrical specifications		
Rated operational voltage	U_e	10 ... 30 V DC, ripple 10 $\%_{SS}$
No-load supply current	I_0	≤ 50 mA
Input/Output		
Synchronisation		1 synchro input 0-level: $-U_B$...+1V; 1-level: +4V...$+U_B$ input impedance: >12 Ω synchronisation pulse: ≥ 100 µs synchronisation pulse interval: ≥ 2 ms
Output		
Output type		1 switch output E5, pnp NO/NC
Rated operational current	I_e	200 mA, short circuit/overload protected
Voltage drop	U_d	≤ 3 V
Switching frequency	f	max. 10 Hz
Range hysteresis	H	≤ 1 % of the set operating distance
Repeat accuracy		≤ 1 %
Temperature influence		≤ 3 %
Input		
Input type		1 teach-in input, operating range 1: $-U_B$ ... + 1 V operating range 2: +4 V ... $+U_B$ input impedance: >4,7 kΩ; teach-in pulse: ≥ 1 s
Synchronisation frequency		
Common mode operation		≤ 100 Hz
Multiplex operation		≤ 100 / n Hz, n = number of sensors
Ambient conditions		
Ambient temperature		-25 ... +70 °C (248 ... 343 K)
Storage temperature		-40 ... +85 °C (233 ... 358 K)
Mechanical specifications		
Protection degree		IP65 according to EN 60529
Connection type		connector V15 (M12 x 1), 5 pin
Material		
Housing		brass, nickel plated
Transducer		epoxy resin/hollow glass sphere mixture; foam polyurethane, cover PBT
Mass		60 g

Note

Model number

UB500-18GM75-E5-V15

Function
Synchronisation
The sensor features a synchronisation input for the suppression of mutual interference. If this input is not used, the sensor will operate using an internally generated clock rate. The synchronisation of multiple sensors can be realised as follows:

External synchronisation:
The sensor can be synchronised by the external application of a square wave voltage. >A synchronisation pulse at the synchronisation input starts a measuring cycle. The pulse must have a duration greater than 100 µs. The measuring cycle starts with the falling edge of a synchronisation pulse. Two operating modes are available:

1. Multiple sensors can be controlled by the same synchronisation signal. The sensors are synchronised.
2. The synchronisation pulses are sent cyclically to individual sensors. The sensors operate in multiplex mode.

Internal synchronisation:
The synchronisation connections of up to 5 sensors capable of internal synchronisation are connected to one another. When power is applied, these sensors will operate in multiplex mode.
The state of the switch output will not change until the switching threshold has been exceeded five times as an average of the five measurements is determined internally. A low level > 1 s or an open synchronisation input will result in the normal operation of the sensor.
Synchronisation cannot be performed during TEACH-IN and vice versa. The sensors must be operated in an unsynchronised manner to teach the switching point.

A high level at the synchronisation input disables the sensor.

Setting the switching points
The ultrasonic sensor features a switch output with two teachable evaluation limits. These are set by applying the supply voltage -UB or +UB to the TEACH-IN input. The supply voltage must be applied to the TEACH-IN input for at least 1 s. LEDs indicate whether the sensor has recognised the target during the TEACH-IN procedure. Evaluation limit A1 is taught with - UB, A2 with + UB.

Five different output functions can be set:
1. Window mode, close function
2. Window mode, open function
3. One switching point, close function
4. One switching point, open function
5. Detection of object presence

Teach window mode, close function:
- Set target to near switching point
- Teach switching point A1 with -UB
- Set target to far switching point
- Teach switching point A2 with +UB

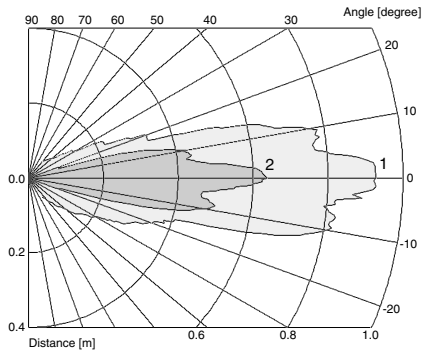
Teach window mode, open function:
- Set target to near switching point
- Teach switching point A2 with +UB
- Set target to far switching point
- Teach switching point A1 with -UB

Teach one switching point, close function:
- Set target to near switching point
- Teach switching point A2 with +UB
- Cover sensor with hand or remove all objects from sensing range
- Teach switching point A1 with -UB

Teach one switching point, normally-closed function:
- Set target to near switching point

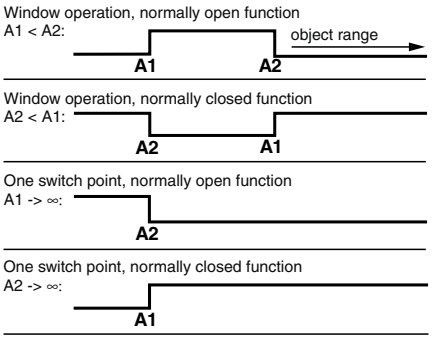
Characteristic curves/ Additional information

Characteristic response curve



Curve 1: flat surface 100 mm x 100 mm
Curve 2: round bar, Ø 25 mm

Programmed switching output function



A1 -> ∞, A2 -> ∞: Detection of presence of object
Object detected: Switch output closed
No object detected: Switch output open

- Teach switching point A1 with -UB
- Cover sensor with hand or remove all objects from sensing range
- Teach switching point A2 with +UB

Teach detection of object presence
- Cover sensor with hand or remove all objects from sensing range
- Teach switching point A1 with -UB
- Teach switching point A2 with +UB
- Default setting of switching points:
- A1: switching point 1, A2: switching point 2

Displays in dependence on operating mode	Red LED	Yellow LED
Teach switch point: Object detected No object detected Object uncertain (TEACH-IN invalid)	 Off Flashing On	 Flashing Off Off
Normal operation	Off	Switching state
Fault	On	Previous state

Ausgabedatum12.06.2001

Ausgabedatum12.06.2001