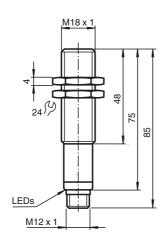
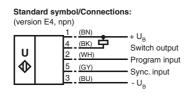
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Imput/Output Model Number UB500-18GM75-E4-V15 Single head system Features • Switch output • Selectable sound lobe width • Program input • Synchronization options • Deactivation option • Temperature compensation • Very small unusable area Diagrams Characteristic response curve Detentor Ypmi Suth output Songe of protection Bearn width Proy small unusable area Diagrams Characteristic response curve Dimere Ypmi	ynchronous connection, bi-directional avel: -U _B +1 V evel: +4 V+U _B ut impedance: > 12 kΩ ochronization pulse: ≥ 100 μs, synchronization interpulse riod: ≥ 2 ms 5 Hz 5 Hz /n, n = number of sensors rogram input, erating range 1: -U _B +1 V, operating range 2: +4 V B ut impedance: > 4.7 kΩ; program pulse: ≥ 1 s witch output NPN Normally open/closed , programmable 0 mA , short-circuit/overload protected V
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UB500-18GM75-E4-V15 Single head system Features • Switch output • Switch output • Selectable sound lobe width • Program input • Synchronization options • Deactivation option • Temperature compensation • Very small unusable area Diagrams Characteristic response curve Diateree Y [mn] ⁴⁰⁰ ¹⁰¹ ²⁰¹ ⁴⁰⁰ ⁶⁰⁰ ⁸⁰⁰ ¹⁰⁰⁰ ¹⁰⁰⁰ ¹⁰¹ ²⁰¹ ⁴⁰⁰ ⁶⁰⁰ ⁸⁰⁰ ¹⁰⁰⁰ ¹⁰¹	5 Hz /n, n = number of sensors rogram input, erating range 1: $-U_B \dots +1 V$, operating range 2: $+4 V \dots$ B ut impedance: > 4.7 k Ω ; program pulse: ≥ 1 s witch output NPN Normally open/closed , programmable D mA , short-circuit/overload protected V %
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 Very small unusable area Diagrams Connection type Connetin type Con) 85 °C (-40 185 °F)
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Mass 6 Factory settings Output SS Output SS Output SS Distance Y [mm] Output SS Output SS Output SS Deam width We Compliance with standards and directives Standard conformity Standards E UL approval CC CCC approval CC	oxy resin/hollow glass sphere mixture; foam polyurethane
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Output Standards and directives Standards and directives Standards and certificates UL approval CCC approval CCC approval CCC approval CCC approval	g
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300 00 <t< th=""><th>itch point A2: 500 mm</th></t<>	itch point A2: 500 mm
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Beam width w Compliance with standards and directives Standard conformity Standards E Approvals and certificates UL approval CCC approval CCC approval CCC approval	put behavior: NO contact
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Standard conformity Standards E Standards E Approvals and certificates UL approval CCC approval CCC approval CCC approval	
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Approvals and certificates UL approval UL approval CSA approval CCC approval CCC approval CCC approval	60947-5-2:2007 + A1:2012 60947-5-2:2007 + A1:2012
-300 round bar, Ø 25 mm -400 200 400 600 800 1000 Distance X [mm] Distance X [mm] CCC approval CC	
-400 CSA approval CC CC CC approval CC CC Approval CC CC Approval CC CC CC Approval CC	Lus Listed, General Purpose
0 200 400 600 800 1000 Distance X [mm] CCC approval CC	SAus Listed, General Purpose
Y wide sound lobe	C approval / marking not required for products rated \leq 36
	- approvary manning not required for products rated ≥30
to "General Notes Relating to Pepperl+Fuchs Product Information".	
rl+Fuchs Group USA: +1 330 486 0001 Germany: +49 621 776 4411 Singapore: +65 67. epperl-fuchs.com fa-info@us.pepperl-fuchs.com fa-info@de.pepperl-fuchs.com fa-info@g.pepperl-fuc	9091 FEPPERL+FUCHS



Dimensions



Electrical Connection



Wire colors in accordance with EN 60947-5-2.

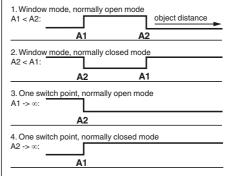
Pinout



Wire colors in accordance with EN 60947-5-2

1	BN	(brown)
2	WH	(white)
3	BU	(blue)
4	BK	(black)
5	GY	(gray)

Programmable output modes



5. A1 -> ∞ , A2 -> ∞ : Object presence detection mode Object detected: Switch output closed No object detected: Switch output open

Refer to "General Notes Relating to Pepperl+Fuchs Product Information". Pepperl+Fuchs Group www.pepperl-fuchs.com

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Accessories

UB-PROG2 Programming unit

OMH-04

Mounting aid for round steel ø 12 mm or sheet 1.5 mm ... 3 mm

BF 18

Mounting flange, 18 mm

BF 18-F

Mounting flange with dead stop, 18 mm

BF 5-30

Universal mounting bracket for cylindrical sensors with a diameter of 5 ... 30 mm

UVW90-K18 Ultrasonic -deflector

V15-G-2M-PVC Female cordset, M12, 5-pin, PVC cable

M18K-VE

Description of Sensor Functions

Programming procedure

The sensor features a programmable switch output with two programmable switch points. Programming the switch points and the operating mode is done by applying the supply voltage $-U_B$ or $+U_B$ 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 recognized the target during the programming procedure.

Note:

Switching points may only be specified directly after Power on. A time lock secures the adjusted switching points against unintended modification 5 minutes after Power on. To modify the switching points later, the user may specify the desired values only after a new Power On.

Note:

If a programming adapter UB-PROG2 is used for the programming procedure, button A1 is assigned to -U_B and button A2 is assigned to +U_B.

Programming of the switch output

Window Modes

Normally open (NO) output

- 1. Place the target at the near end of the desired switch window
- 2. Program the window boundary by applying -U_B to the Teach-In input (yellow LED flashes)
- 3. Disconnect the Teach-In input from -UB to save the switch point
- 4. Place the target at the far end of the desired switch window
- 5. Program the window boundary by applying +U_B to the Teach-In input (yellow LED flashes)
- 6. Disconnect the Teach-In input from $+U_B$ to save the switch point

Normally closed (NC) output

- 1. Place the target at the near end of the desired switch window
- 2. Program the window boundary by applying $+U_B$ to the Teach-In input (yellow LED flashes)
- 3. Disconnect the Teach-In input from $+U_B$ to save the switch point
- 4. Place the target at the far end of the desired switch window
- 5. Program the window boundary by applying -U_B to the Teach-In input (yellow LED flashes)
- 6. Disconnect the Teach-In input from $-U_B$ to save the switch point

Switch Point Modes

Normally open (NO) output

- 1. Place the target at the desired switch point position
- 2. Program the switch point by applying $+U_B$ to the Teach-In input (yellow LED flashes)
- 3. Disconnect the Teach-In input from $+ U_{B}$ to save the switch point
- 4. Cover the sensor face with hand or remove all objects from sensing range
- 5. Apply $-U_B$ to the Teach-In input (red LED flashes)
- 6. Disconnect the Teach-In input from -U_B to save the setting

Normally closed (NC) output

- 1. Place the target at the desired switch point position
- 2. Program the switch point by applying -U_B to the Teach-In input (yellow LED flashes)
- 3. Disconnect the Teach-In input from $\mbox{-}U_{\rm B}$ to save the switch point
- 4. Cover the sensor face with hand or remove all objects from sensing range
- 5. Apply +U_B to the Teach-In input (red LED flashes)
- 6. Disconnect the Teach-In input from +U_B to save the setting

Object Detection Mode

- 1. Cover the sensor face with hand or remove all objects from sensing range
- 2. Apply $-U_B$ to the Teach-In input (red LED flashes)
- 3. Disconnect the Teach-In input from $-U_B$ to save the setting
- 4. Apply $+U_B$ to the Teach-In input (red LED flashes)
- 5. Disconnect the Teach-In input from $\mbox{-}U_{B}$ to save the setting

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Adjusting the sound cone characteristics:

The ultrasonic sensor enables two different shapes of the sound cone, a wide angle sound cone and a small angle sound cone.

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1. Small angle sound cone

- switch off the power supply
- connect the Teach-In input wire to -U_B
- switch on the power supply
- · the red LED flashes once with a pause before the next.
- yellow LED: permanently on: indicates the presence of an object or disturbing object within the sensing range
- disconnect the Teach-In input wire from -U_B and the changing is saved

2. Wide angle sound cone

- switch off the power supply
- connect the Teach-In input wire with +U_B
- switch on the power supply
- · the red LED double-flashes with a long pause before the next.
- yellow LED: permanently on: indicates an object or disturbing object within the sensing range
- disconnect the Teach-In input wire from +UB and the changing is saved

Factory settings

See technical data.

Display

The sensor provides LEDs to indicate various conditions.

	Red LED	Yellow LED
During Normal operation		
Proper operation	Off	Switching state
Interference (e.g. compressed air)	On	remains in previous state
During sensor programming		
Object detected	Off	Flashes
No object detected	Flashes	Off
Object uncertain (programming invalid)	On	Off

Synchronization

This sensor features a synchronization input for suppressing ultrasonic mutual interference ("cross talk"). If this input is not connected, the sensor will operate using internally generated clock pulses. It can be synchronized by applying an external square wave. The pulse duration must be \geq 100 µs. Each falling edge of the synchronization pulse triggers transmission of a single ultrasonic pulse. If the synchronization signal remains low for \geq 1 second, the sensor will revert to normal operating mode. Normal operating mode can also be activated by opening the signal connection to the synchronization input (see note below).

If the synchronization input goes to a high level for > 1 second, the sensor will switch to standby mode. In this mode, the outputs will remain in the last valid output state.

Note:

If the option for synchronization is not used, the synchronization input has to be connected to ground (0 V) or the sensor must be operated via a V1 cordset (4-pin).

The synchronization function cannot be activated during programming mode and vice versa.

The following synchronization modes are possible:

- 1. Several sensors (max. number see technical data) can be synchronized together by interconnecting their respective synchronization inputs. In this case, each sensor alternately transmits ultrasonic pulses in a self multiplexing mode. No two sensors will transmit pulses at the same time (see note below).
- 2. Multiple sensors can be controlled by the same external synchronization signal. In this mode the sensors are triggered in parallel and are synchronized by a common external synchronization pulse.
- 3. A separate synchronization pulse can be sent to each individual sensor. In this mode the sensors operate in external multiplex mode (see note below).
- 4. A high level (+U_B) on the synchronization input switches the sensor to standby mode.

Note:

Sensor response times will increase proportionally to the number of sensors that are in the synchronization string. This is a result of the multiplexing of the ultrasonic transmit and receive signal and the resulting increase in the measurement cycle time.

Installation conditions

If the sensor is installed at places, where the environment temperature can fall below 0 °C, for the sensors fixation, one of the mounting flanges BF18, BF18-F or BF 5-30 must be used.

In case of direct mounting of the sensor in a through hole using the steel nuts, it has to be fixed at the middle of the housing thread. If a fixation at the front end of the threaded housing is required, plastic nuts with centering ring (accessories) must be used.

