Fundamentals of Ultrasonic Detection

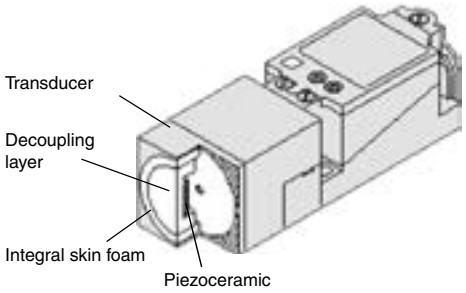
Physics and technology of ultrasonic sensors

Sound with a frequency higher than approx. 16 kHz cannot be detected by the human ear–this is referred to as ultrasound. Like sound in the audible frequency range, it propagates at a speed of around 344m/s in the air. The distance of an object can thus be accurately determined by evaluating the known speed of sound and the measured sound travel time.

Ultrasonic sensors are ideal for consistent object detection, even in harsh and problematic conditions. Objects made from different materials and with different shapes, colors, or consistencies are reliably detected.

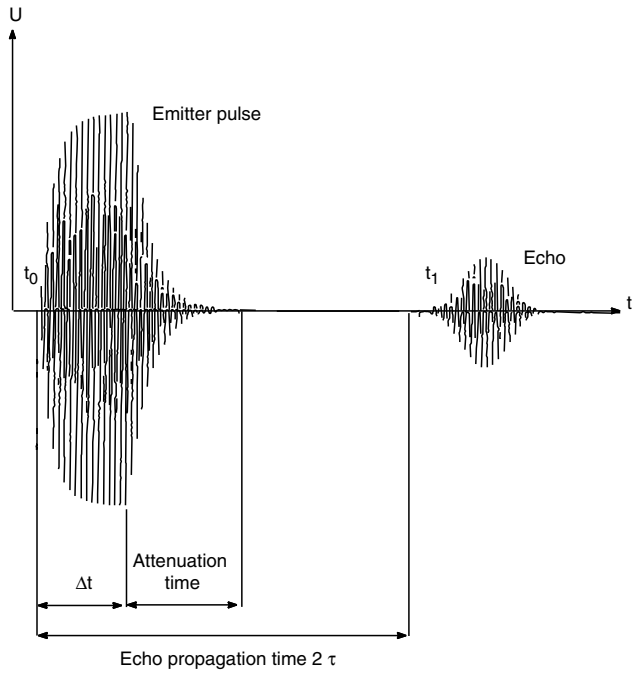
Pepperl+Fuchs ultrasonic sensors incorporate a piezoelectric converter as the sonic emitter and receiver. A patented decoupling layer made from a special plastic is used to couple the ultrasonic waves in the surrounding air.

Ultrasonic sensors are available with switching and/or analog outputs. Depending on the model, different output functions are available.



Blind zone

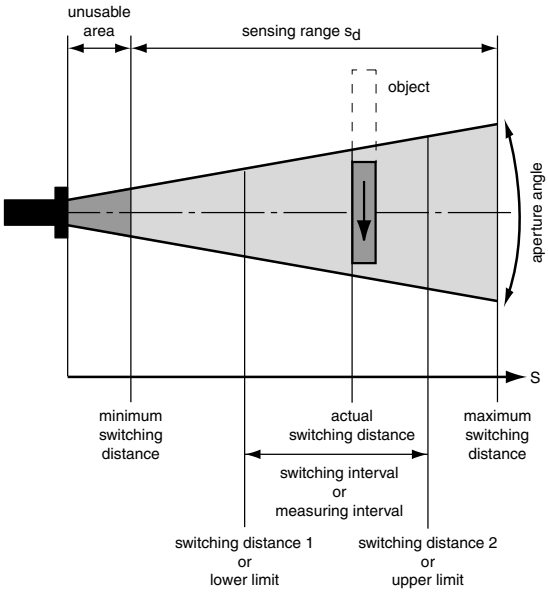
The ultrasonic converter transmits a burst of sound and converts the pulse echo into electric voltage. The integrated microcontroller calculates the distance of the object based upon the echo travel time and speed of sound. The transmission period and delay period of the ultrasonic converter result in a blind zone in which the ultrasonic sensor is not able to detect any objects.



Detection range

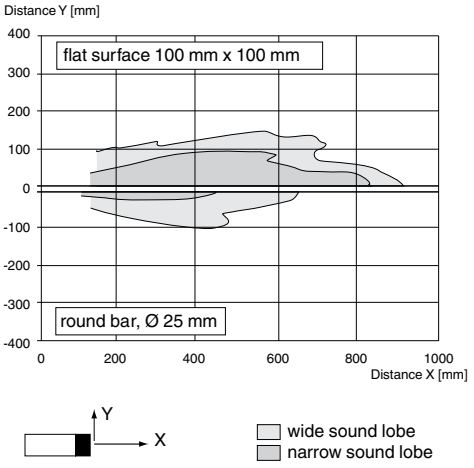
The active area of the ultrasonic sensor is known as the detection range and is limited by the shortest and longest operating distance. The longest operating distance is included in the model number.

The ultrasonic sensor detects objects within its detection range, regardless of whether they approach axially or move sideways in the sound beam.



Response curves

The following figure illustrates the response areas for two typical objects. The specified object is detected within this area.



The upper part of the diagram illustrates the response characteristic on a level panel measuring 100 mm x 100 mm, the lower part using a rod with a diameter of 25 mm as the object. Many sensors include a feature for setting the sound beam width. Both sound beam shapes are shown in the diagram.

The information in the type designation relates to a normal level panel measuring 100 mm x 100 mm. This panel must be perpendicular to the propagation direction of the ultrasonic signal. The sound is reflected away from upright objects and the echo does not reach the sensor.

Consider the General Notes on the Information in the Pepperl+Fuchs Product Catalogs
Copyright Pepperl+Fuchs
Pepperl+Fuchs Group www.pepperl-fuchs.com
USA: +1 330 486 0001 fa-info@us.pepperl-fuchs.com
Germany: +49 621 776-4411 fa-info@de.pepperl-fuchs.com
Singapore: +65 6779 9091 fa-info@sg.pepperl-fuchs.com
PEPPERL+FUCHS SENSING YOUR NEEDS

Environmental influences

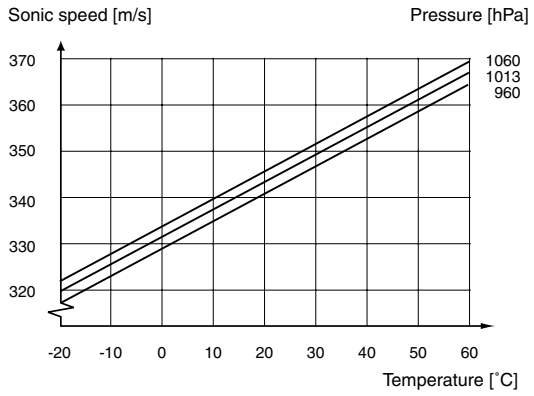
Due to the physical properties of sound propagation, the detection range and speed of the ultrasonic signal are influenced by the following factors:

-Air temperature

-Relative humidity

-Air pressure

The following diagram illustrates the theoretical relationship between air temperature, air pressure, and the speed of sound.



Daily air pressure fluctuations have a negligible effect on the speed of sound.

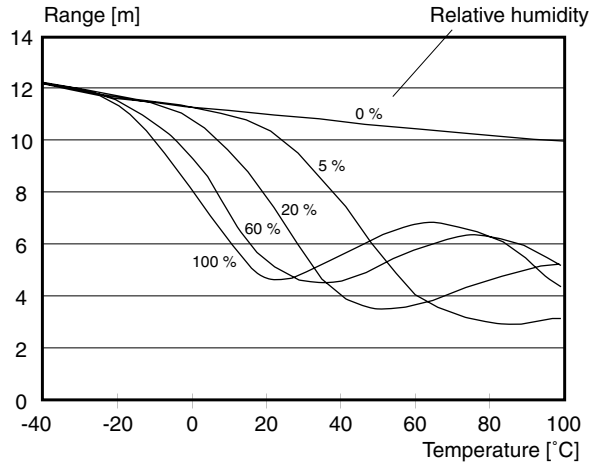
Temperature

Fluctuations in air temperature in the object area have an indirect effect upon the propagation of sound waves and therefore upon the accuracy of the sensor. Typically this changes the speed of sound by 0.17%/K. If, for example, the temperature increases from 20 °C ... 40 °C, the speed of sound increases by approx. 3.5% and a fixed object will appear closer to the sensor. To prevent this from happening, most ultrasonic sensors include temperature compensation; an electric probe measures the ambient temperature.

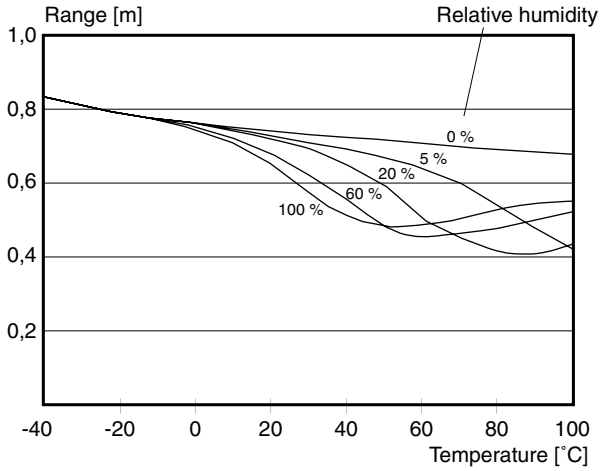
Ultrasonic sensors incur a certain amount of self-heating, which depends on the housing design and installation. During the first 60 minutes after switching on the sensor, this leads to an additional temperature error of max. 2%.

Erratic temperature changes cannot be compensated for due to the lag in the temperature probe.

The following diagram illustrates the effect of air temperature and humidity on the detection range of an ultrasonic sensor. In principle, the correlations apply to all ultrasonic sensors, in relation to the respective detection range.



UC4000-30GM-...



UC500-30GM-...

Low temperatures increase the detection range regardless of air humidity. At high temperatures, the detection range is reduced and this is increasingly influenced by relative air humidity.

The detection range details included in the data sheets relate to an ambient temperature of 20 °C and 50% relative air humidity.

Rain or snow

Light rain or snow does not affect the operation of ultrasonic sensors. Mounting the sensor at an inclined position prevents water or snow from collecting on the surface of the converter.

Object properties

Ultrasonic sensors can detect solid, liquid, and granular objects. Material properties such as transparency, color, or surface treatment (shiny or matt) do not affect detection reliability.

Level and flat surfaces located at a right angle to the converter axis provide an ideal reflection. The maximum angular deviation of the object from the ideal position is approx. ± 3°.

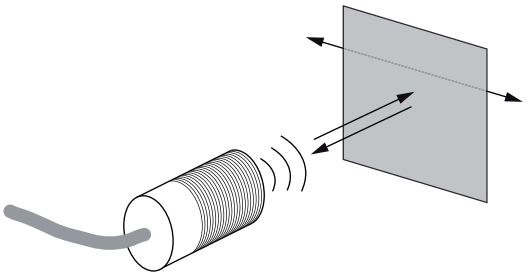
Rough surfaces result in diffuse reflection of a portion of the sound energy and the detection range decreases. The surface roughness does, however, allow for greater angular deviation.

Selecting and Commissioning an Ultrasonic Sensor

1. Operating principle

Ultrasonic diffuse mode sensor

The sender and receiver are located in the same housing. The object acts as a sound reflector.

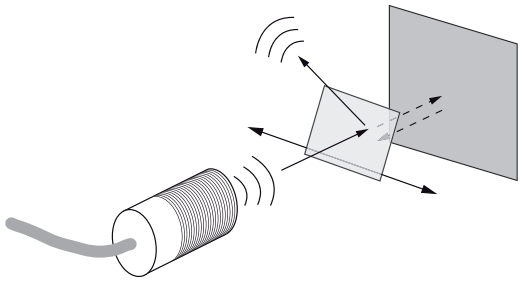


Features:

- *Simple installation, just one sensing head*
- *The detection range depends on the surface properties and the pitch angle of the object*
- *Measuring frequency is lower compared with a thru-beam sensor*
- *Background suppression*

Ultrasonic retroreflective sensor

The sender and receiver are located in the same housing. The ultrasonic beam is reflected by a fixed reflector. Objects that appear in the sound beam change the measured distance and absorb or deflect the sound.

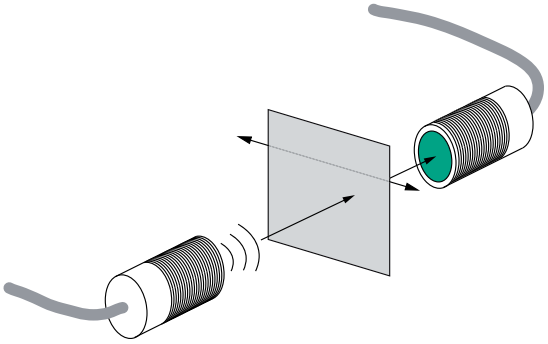


Features:

- *Simple installation, just one sensing head*
- *Reliable detection of problematic objects (sound-absorbing objects, angled surfaces)*

Ultrasonic thru-beam sensor

The emitter and receiver are separate and mounted opposite each other. If the ultrasonic beam is interrupted by an object, the switching output is activated.



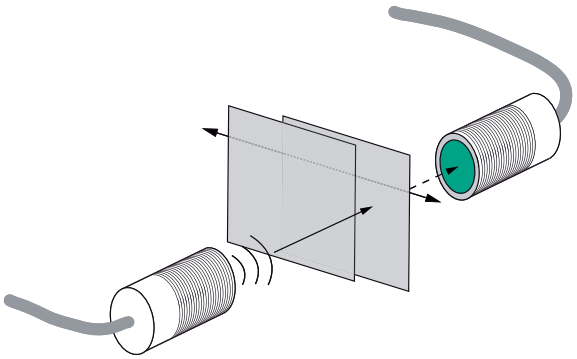
Features:

- *Large distance between emitter and receiver*
- *Low susceptibility to interference, suitable for difficult operating conditions*
- *Fast response times*
- *Two separate units to wire*

Ultrasonic double feed detection

Ultrasonic double feed detection is performed using ultrasonic thru-beam sensors, consisting of an ultrasonic emitter and an ultrasonic receiver with integrated evaluation that are optimized especially for these applications:

- *Double sheet control*
- *Label detection*
- *Adhesive strip detection*
- *Double feed detection*



Double sheet control can detect three different states:

- *No sheet*
- *Single sheet*
- *Double sheet*

During detection of labels and splices, the system can distinguish the tag material from the labels and the adhesive strip from the basic material.

Double feed detection is similar to double sheet control and distinguishes between no, one, or two instances of a material (e.g., sheet metals, wooden boards, glass panels).

2. Output function

Analog distance measurement

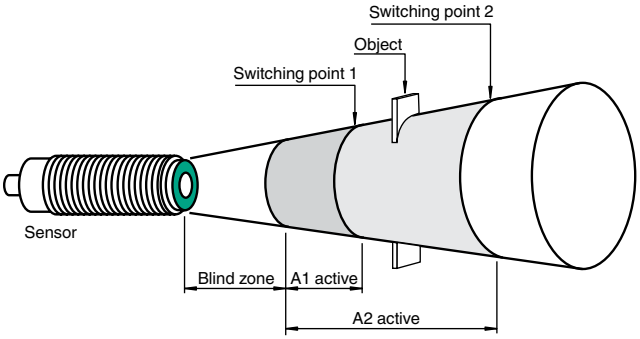
The sensor determines the distance from an object by measuring the time interval between emitting an ultrasonic signal and the arrival of the reflected echo. The sensors operate in diffuse mode. Depending on the model, different analog outputs are available:

- *Analog output voltage: 0 V ... 10 V*
- *Analog output current: 4 mA ... 20 mA*
- *Serial output, RS232*
- *IO-Link*

Trip point mode

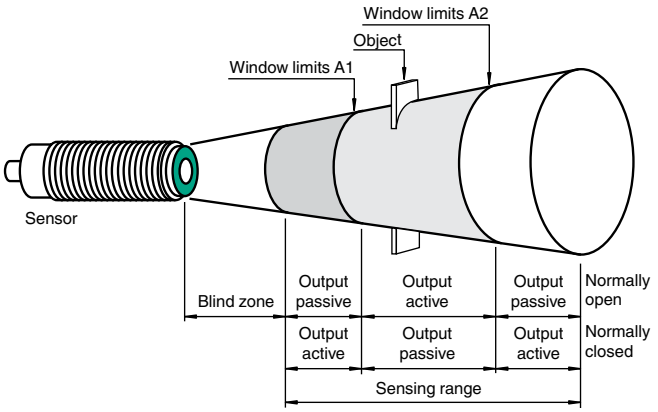
In the case of sensors with independent trip points, the output is activated if the object is located within the respective switching area.

This trip point can be set via Teach-in or a potentiometer.



Window mode

In window mode, the output is activated if the object is located in the switching window. The window limits are configurable.



Consider the General Notes on the Information in the Pepperl+Fuchs Product Catalogs
Copyright Pepperl+Fuchs
Pepperl+Fuchs Group www.pepperl-fuchs.com
USA: +1 330 486 0001 fa-info@us.pepperl-fuchs.com
Germany: +49 621 776-4411 fa-info@de.pepperl-fuchs.com
Singapore: +65 6779 9091 fa-info@sg.pepperl-fuchs.com
PEPPERL+FUCHS SENSING YOUR NEEDS

Retroflective mode

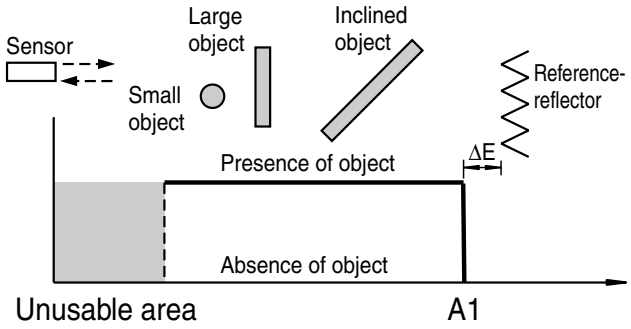
In retroflective mode, a fixed reflector is positioned.

The sensor output switches in the following cases:

- *The sensor detects an object that is located in front of the reflector. The echo from the reflector must not necessarily be suppressed.*
- *The sensor does not receive an echo.*

This can be caused by sound-absorbent material or an inclined reflector.

The position of the reference reflector must not be changed.



Hysteresis mode

In hysteresis mode, the evaluation window is limited by two trip points (near and far). If the object approaches the near switch point, the state of the switching output changes. To change the state of the switching output again, the object must reach the far trip point. Both trip points create an adjustable hysteresis window.

This operating mode can be used to control a pump. If the filling level reaches the filler mark, the pump is switched on. The pump then switches off again once the filling level has dropped to below the minimum level.

3. Electric outputs

For an overview of electric output types for our sensors, see page 14 onwards in our catalog.

NPN/PNP/push-pull transistor output

Ultrasonic sensors can have NPN, PNP, or push-pull outputs.

Relay output

Different ultrasonic sensors have relay contact outputs. The maximum switching power and type of voltage are included in the respective data sheet. The mechanical service life data relates to the number of switching operations for the unloaded relay contacts. These values are reached with a low electric load. Under nominal load, the service life reduces to that of the value specified for the electric service life. The service life data relates to MTBF values.

Analog output

Analog outputs are available as current outputs and voltage outputs. The output current and output voltage are proportional to the object's distance. The limits of the analog window can be programmed within the measuring range.

Serial interface

Sensors with a serial interface can be programmed via this interface. The measured distance of the object and the switching states are transferred.

Parameterization is carried out using the ULTRA 3000 service program or a terminal program and individual commands. A list of available commands is included in the respective sensor data sheets.

IO-Link

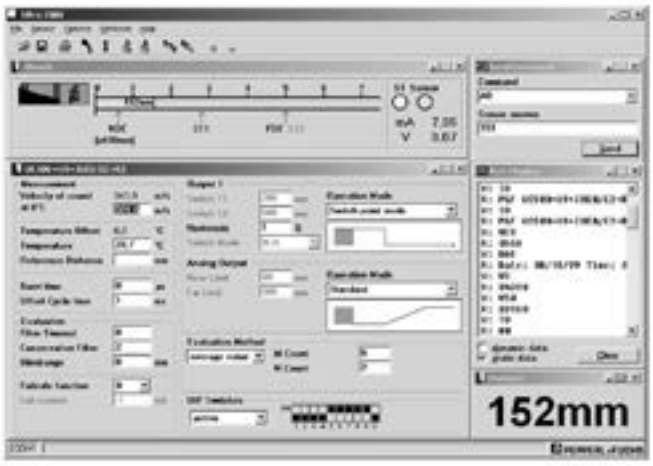
The bidirectional IO-Link interface enables the user to access the switching states and the object distance information directly in the control unit without the need for a complex analog value transfer. The sensor can be easily parameterized from the control unit. The IO-Link interface also transfers diagnosis data from the sensor to the control unit.

4. Programming

ULTRA 3000

The ULTRA 3000 parameterization software facilitates sensor programming by providing direct communication between an RS232 programmable ultrasonic sensor and a Windows computer. You can easily define and display the sensor parameters, display the commands transferred to and from the sensor, and call up the last measured distance. You also have precise control of functions that are not available in normal sensors, such as:

- *Detection range and limits*
- *Extended detection ranges*
- *Blind zone*
- *Sensitivity (sound beam width)*
- *Number of pulses evaluated per output*
- *Hysteresis*
- *Sound burst times*
- *Temperature offset*
- *Output mode*

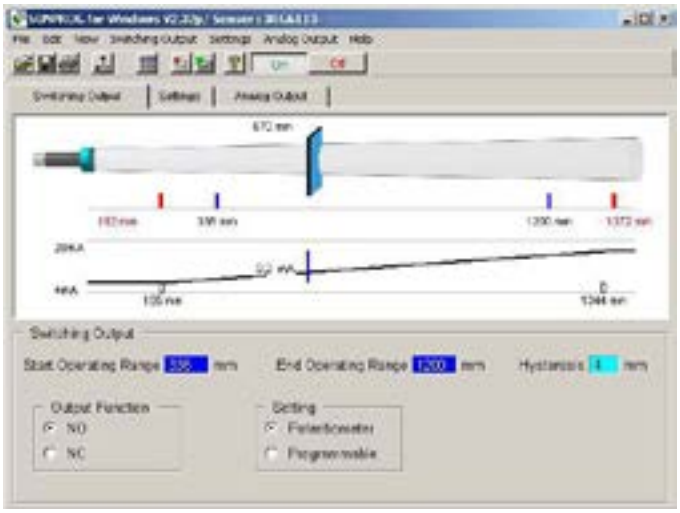


You can download ULTRA 3000 free of charge at www.pepperl-fuchs.com (Products -> Software) or via a direct link on the product page for each sensor compatible with ULTRA 3000.

SONPROG

The SONPROG PC interface and associated software enable the ultrasonic sensors in F65 and F260 housing designs to be adjusted individually in line with the needs of the respective application. For example, the following parameters can be set:

- *Start and end of the switching range*
- *Hysteresis*
- *Switching frequency*
- *Start and end of the analog characteristic*
- *Analog characteristic rising or falling*
- *End of the blind zone*
- *End of the detection range*
- *Averaging*
- *Attenuation*
- *Multiplex function*
- *Temperature compensation*
- *Function as a diffuse mode sensor or ultrasonic sensor*
- *Level measurement mode*



The start and end of the switching range and analog range can be taught at the touch of a button, and parameter sets can be copied from one sensor to another.

You can download SONPROG free of charge in the download area at www.pepperl-fuchs.com or via a direct link on the product page for each sensor compatible with SONPROG.

ULTRA-PROG-IR

The ULTRA-PROG-IR PC program and associated UC-18/30GM-IR programming device enable ultrasonic sensors with an infrared interface to be adjusted easily in line with the application requirements. The existing wiring to the sensor need not be removed as the programming device snaps on to the sensor. The distance and the quality of several echoes can be visualized in real time. Communication with the sensor does not affect the measuring task in the sensor.

Examples of adjustable parameters:

- *Start and end of the switching range*
- *Hysteresis*
- *Switching frequency*
- *Start and end of the analog characteristic*
- *Analog characteristic rising or falling*
- *End of the blind zone*
- *End of the detection range*
- *Averaging*
- *Attenuation*
- *Multiplex function*
- *Temperature compensation*
- *Function as a diffuse mode sensor or ultrasonic sensor*
- *Level measurement mode*

IO-Link/PACTware

The IO-Link interface enables ultrasonic sensors from the UC…-18GM-.. IO and UC…-30GM-..IO Series to be configured and parameterized with ease. It is also possible to carry out diagnostics for the connected sensor. The IO-Link Master01 USB is used to communicate between the sensor and the PC. ***PACTware*** parameterization and diagnostics software is used together with the corresponding DTM.

PACTware is an open, manufacturer-independent user interface that is used in areas such as the parameterization of ultrasonic sensors.

You can download ***PACTware*** free of charge at www.pepperl-fuchs.com or via a direct link on the product page for each sensor with an IO-Link.

5. Resolution/measurement accuracy

Resolution

Pepperl+Fuchs UC-type ultrasonic sensors are fitted internally with an integrated 12-bit D/A converter. A resolution of 12 bits corresponds to 4096 levels. The echo travel time is determined at a resolution of approx. 1 µs. This equates to a distance resolution of around 0.18 mm. This maximum sensor resolution is reached with a maximum measurement window of 750 mm. Up to this window size, the resolution depends solely on the pulse frequency of the microcontroller. The D/A converter determines the resolution by selecting a larger measurement window. This is calculated according to the following formula:

(upper limit – lower limit) / 4096

Example:

A UC4000-30GM-IUR2-V1 sensor is set with the following parameters.

Upper limit: 3500 mm

Lower limit: 800 mm

With this setting, the sensor resolution is

(3500 mm - 800 mm) / 4096 = 0.66 mm

Measurement accuracy/characteristic deviation

To determine the absolute accuracy of the measured value for an ultrasonic sensor, the following influencing factors must be taken into consideration:

- *Temperature*
- *Atmospheric pressure*
- *Relative humidity*
- *Atmospheric turbulence*
- *Hot spots in the ambient air around the sensor or the object*
- *Sensor at operating temperature state*

Consideration of these influences can provide measurement accuracy of better than 2%.

Reproducibility and linearity are better than 0.2% (under constant ambient conditions)

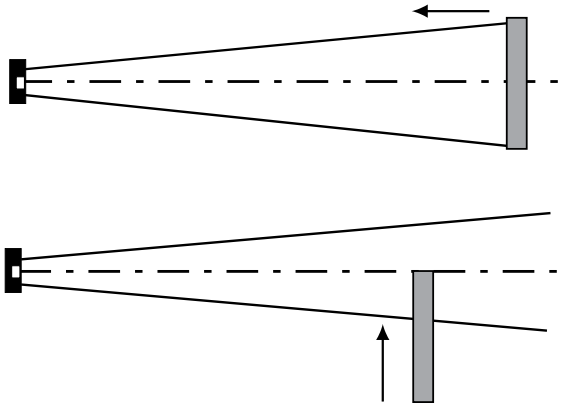
Consider the General Notes on the Information in the Pepperl+Fuchs Product Catalogs
Copyright Pepperl+Fuchs
Pepperl+Fuchs Group www.pepperl-fuchs.com
USA: +1 330 486 0001 fa-info@us.pepperl-fuchs.com
Germany: +49 621 776-4411 fa-info@de.pepperl-fuchs.com
Singapore: +65 6779 9091 fa-info@sg.pepperl-fuchs.com
PEPPERL+FUCHS SENSING YOUR NEEDS

6. Installation and operation

Ultrasonic sensors can be installed and operated in any location. However, the excessive build-up of dust or dirt should be avoided. When cleaning the ultrasonic sensors, make sure that the sensor area (decoupling layer) and the integral foam surrounding the converter are not damaged. Water droplets or crusting on the decoupling layer affect the functioning of the ultrasonic sensor. Minor deposits of dust are not critical.

Actuating direction

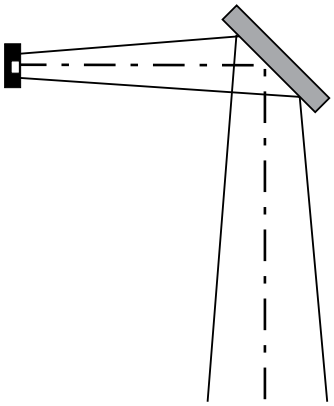
The objects to be detected can enter into the sound beam from all sides. The anticipated trip points are defined based on the detection ranges and response curves specified in the data sheets.



Deflection of the beam angle

The beam angle can be deflected using flat, level reflectors. However, the signal may not be deflected more than twice because the

signal attenuation that occurs with each deflection reduces the detection range.

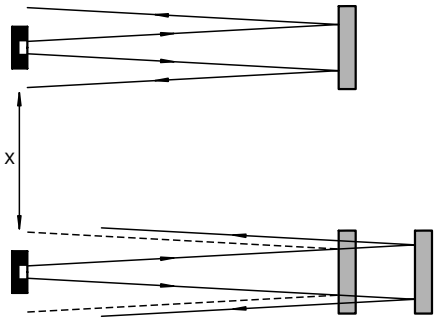


Note:

The reflector areas must be accurately aligned. For some of its sensor types, Pepperl+Fuchs offers reflectors designed for 90° angle deflection.

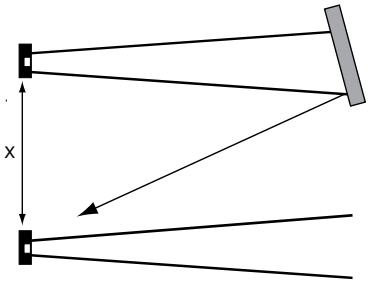
Mutual interference

To prevent mutual interference, the minimum distances between sensors with the same detection range must be taken into account, as specified in the following graphics.

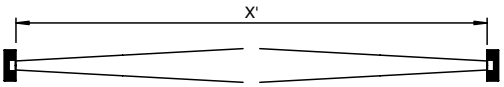


Detection range mm	X m	Detection range mm	X m
to 500 to 2000	> 0.3 > 1.0	to 4000 to 6000	> 2.0 > 2.5

The specified values are to be taken as guidelines. They apply if the beam angles are aligned parallel to one another and the object surfaces are located at right angles to the axes of the beam angle. The actual required distance "X" depends on the alignment, the type of target to be detected, and the conditions relating to other objects that are located in the beam angle.



The distances specified below must be taken into account when mounting sensors opposite one another.



Detection range mm	X' m	Detection range mm	X' m
to 500 to 2000	> 2.0 > 8.0	to 4000 to 6000	> 16.0 > 25.0

If interference occurs, it may be necessary to increase the distance "X" or activate the synchronization function if required. Pepperl+Fuchs offers a range of sensors that are fitted with synchronization inputs for this purpose. These sensors can be used in synchronous or multiplex mode.

Synchronization can be achieved using an external synchronization signal

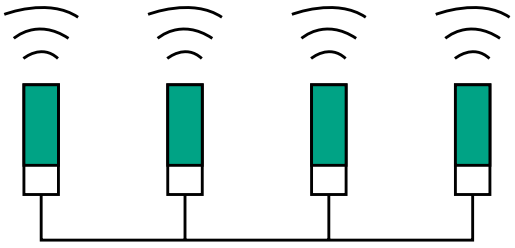
or even through self-synchronization for some sensor types. Synchronized and unsynchronized sensors must not be mounted opposite each other.

Avoiding interference

If several sensors are operated in very close proximity to each other, they can cause mutual interference, meaning that reliable detection is no longer possible. Synchronizing the transfer cycles for all sensors makes it possible to reduce the interference-free minimum distance between the sensors.

Multiplex mode

Operating the sensor in multiplex mode enables ultrasonic bursts to be staggered, which prevents one or more units from emitting signals at the same time.



Synchronization ports connected

The sensors are activated on a cycle over a short period. It should be noted that with this operation mode, the multiplex time T is extended by factor N, where N indicates the number of sensors operated in multiplex mode.

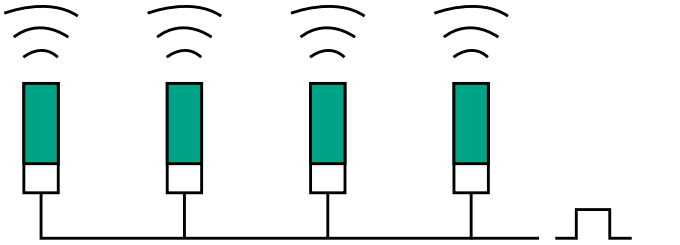
$T_{multiplex} = N \times T_{sensor}$ and $f_{sync} = 1/T_{multiplex}$

If different types of sensors are used, the entire cycle time equates to the total of the cycle times for the individual sensors.

$Tmultiplex = T_1 + T_2 + T_3 \ldots + T_N$

When using self-synchronization, the sensors operate in multiplex mode.

Synchronized mode

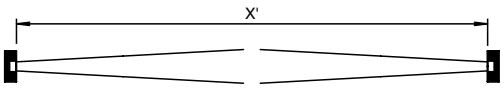


Synchronization ports conneted

external clock

In this operating mode, the synchronization inputs for all sensors are linked and are controlled collectively by an external clock-pulse source. In contrast to multiplex mode, this does not increase the cycle time. Synchronization mode is suitable for monitoring larger areas but is also useful in confined spaces because little distance is required between the sensors.

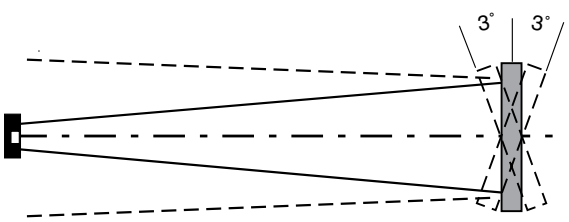
The distances specified below must be taken into account when mounting sensors opposite one another.



Detection range mm	X' m	Detection range mm	X' m
to 500 to 2000	> 2.0 > 8.0	to 4000 to 6000	> 16.0 > 25.0

Measuring plates/objects

Ultrasonic sensors can detect solid, liquid, and granulated objects. The surface properties of the object are important for the evaluation of the echo by the sensor. All level and flat surfaces that are positioned at a right angle to the beam angle enable an ideal reflection. The measuring plate may have a maximum angle deviation of +/- 3º in order to guarantee reliable detection.



Material properties such as transparency, color, or surface treatment (shiny or matt) do not affect detection reliability. Rough surfaces result in diffuse reflection of a portion of the sound energy, which decreases the detection range.

However, the roughness of the surface allows for greater angle deviation due to the predominantly diffuse reflection of the ultrasonic signal. This enables detection of the filling level or angle of repose for granular materials with an angle deviation of up to 45° (with reduced detection range).

The following objects are suitable for detection:

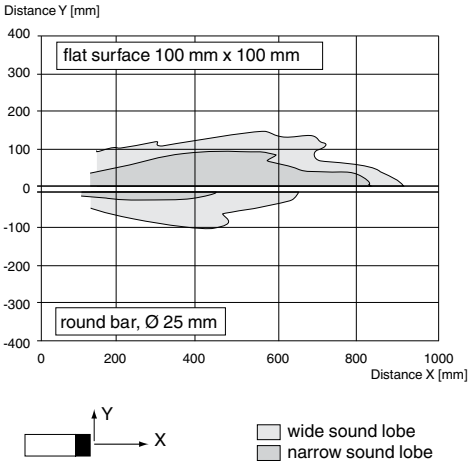
- *All flat and fixed objects that are aligned at a right angle to the beam angle*
- *All fixed objects that are randomly aligned and have a rough surface that causes a diffuse reflection*
- *Surfaces of fluids at an angle of < 3° from the axis of the beam angle*

The following materials are not suitable:

- *Materials that absorb ultrasonic signals such as felt, cotton, rough textiles, or foam*
- *Materials with temperatures exceeding 100 °C*

Sensors with an adjustable beam angle width

Some series offer an adjustable beam angle that enables the sensors to be used in confined spaces where objects can be spread out laterally in the beam angle. Such conditions would result in inaccurate switching characteristics or incorrect readings for sensors that do not include this function. Adjusting the shape of the beam angle does not affect the maximum detection range.



The graphic above illustrates the characteristic response curve of sensor UB500-F42 for two different objects:

- *Rod with 25 mm diameter (lower part) and*
- *Level area measuring 100 mm x 100 mm (upper part).*

It can be seen that the selection of a slim beam reduces the radial detection range. As a result, the sensor can be mounted in confined spaces.

Consider the General Notes on the Information in the Pepperl+Fuchs Product Catalogs
Copyright Pepperl+Fuchs
Pepperl+Fuchs Group www.pepperl-fuchs.com
USA: +1 330 486 0001 fa-info@us.pepperl-fuchs.com
Germany: +49 621 776-4411 fa-info@de.pepperl-fuchs.com
Singapore: +65 6779 9091 fa-info@sg.pepperl-fuchs.com
PEPPERL+FUCHS SENSING YOUR NEEDS

Special Sensor Properties for Special Applications

Chemically-resistant sensors

The range of UCC-type ultrasonic sensors from Pepperl+Fuchs includes a wide selection of sensors with increased resistance to chemically aggressive vapors and media. The housings of these sensors are made from stainless steel and the converter is coated with a PTFE film.

Sensors with a rotatable transducer

Sensors with a rotatable transducer offer total flexibility in terms of aligning the measurement beam. Rotatable converters are included in the *VariKont*, *VariKont* L, 30GM, and F260 Series.

Sensors with an offset transducer

The solution for applications where it is difficult to use an ultrasonic sensor due to space restrictions. To save space, the transducer is located in a small threaded housing that is connected to the control interface of the sensor via a cable. The sensor at the measurement site requires very little installation space. The rest of the sensor is mounted at another location where there is sufficient space.

A further benefit is the good accessibility to the display and operator elements on the amplifier when the measurement site is located at an inaccessible location within your plant or machine.

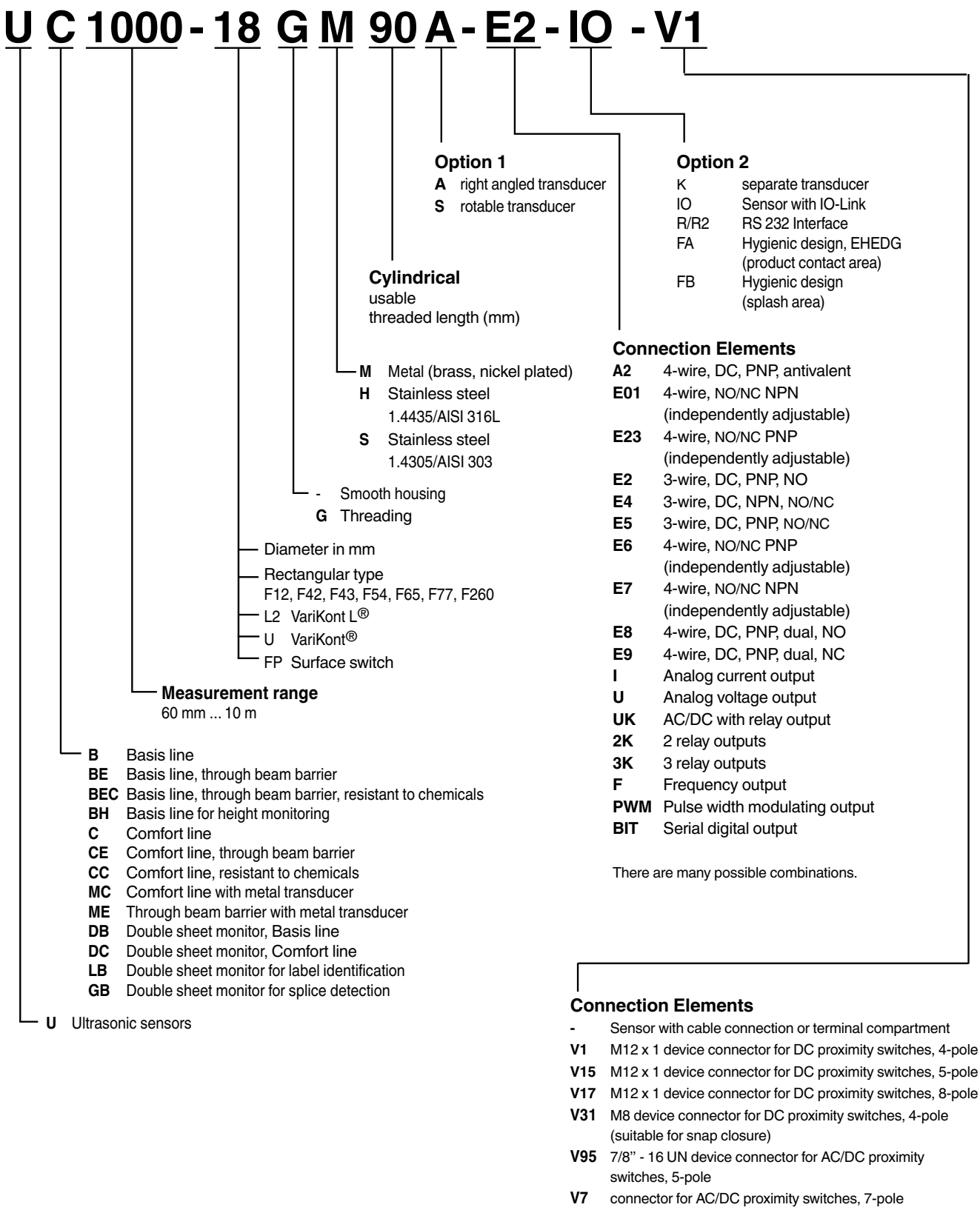
Sensors for the food industry

The food and drink industry environment places extremely high requirements on machinery and components. Pepperl+Fuchs has therefore developed sensors for this sector in line with current standards. Our sensor solutions fulfill the globally applicable standards and guidelines for the food and drink industry, such as EHEDG and FDA.

Benefits

- *Quick and ffiefficient cleaning*
- *Short cleaning times*
- *Microbiological safety*
- *Greater machine availability*

Type Code, Ultrasonic Sensors



Consider the General Notes on the Information in the Pepperl+Fuchs Product Catalogs
Copyright Pepperl+Fuchs
Pepperl+Fuchs Group www.pepperl-fuchs.com
USA: +1 330 486 0001 fa-info@us.pepperl-fuchs.com
Germany: +49 621 776-4411 fa-info@de.pepperl-fuchs.com
Singapore: +65 6779 9091 fa-info@sg.pepperl-fuchs.com
PEPPERL+FUCHS SENSING YOUR NEEDS

Properties

- Up to 400 mm sensing range
- DC, switching output
- Ø12 mm cylindrical housing
- Connector version

Your Benefit

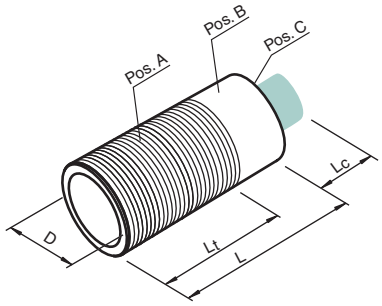
- Smallest diameter cylindrical model
- Teach-wire or UB-PROG2 pushbutton configurable

Technical Data

*For detailed data and product description refer to the data sheets at **www.pepperl-fuchs.com***

General Data	
Operating voltage	10 ... 30 V DC , ripple 10 $\%_{SS}$
No-load supply current	≤ 30 mA
Rated operational current	100 mA , short-circuit/overload protected
Input type	1 program input
LED yellow	indication of the switching state flashing: program function object detected
LED red	solid red: Error red, flashing: program function, object not detected
Ambient temperature	-25 ... 70 °C (-13 ... 158 °F)
Material	
Housing	brass, nickel-plated
Transducer	epoxy resin/hollow glass sphere mixture; foam polyurethane, cover PBT
Protection degree	IP67
Connection type	Device connector M12 x 1 , 4-pin

Model Number	green = preferred type	UB120-12GM-E4-V1	UB120-12GM-E5-V1	UB200-12GM-E4-V1	UB200-12GM-E5-V1	UB400-12GM-E4-V1	UB400-12GM-E5-V1
Sensing range	15 ... 120 mm	●	●				
	15 ... 200 mm			●	●		
	30 ... 400 mm					●	●
Transducer frequency	approx. 850 kHz	●	●				
	approx. 400 kHz			●	●		
	approx. 310 kHz					●	●
Output type	1 switch output NPN Normally open/ closed , programmable	●		●		●	
	1 switch output PNP Normally open/ closed , programmable		●		●		●
Switching frequency	≤ 52 Hz	●	●				
	≤ 13 Hz			●	●		
	≤ 8 Hz					●	●
Approvals and Certificates							
UL approval	cULus Listed, General Purpose	●	●	●	●	●	●
CSA approval	cCSAus Listed, General Purpose	●	●	●	●	●	●
Dimensions							
Length L [mm]		64					
Diameter D [mm]		12					
Thread length l_t [mm]		41					
Connector area l_c [mm]		6					
LED position		Pos. B					



Accessories

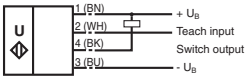
This and more accessories can be found in chapter 3.5 from page 673
See pages from 972 ... for cordsets
See pages 1068 ... for mounting aids

UB-PROG2	Programming unit
BF 5-30	Universal mounting bracket for cylindrical sensors with a diameter of 5 ... 30 mm
BF 12	Mounting flange, 12 mm
BF 12-F	Mounting flange with dead stop, 12 mm
V1-G-2M-PVC	Cable socket, M12, 4-pin, PVC cable
V1-W-2M-PUR	Cable socket, M12, 4-pin, PUR cable
UVW90-M12	Ultrasonic -deflector

Electrical Connection

UB200-12GM-E4-V1
UB400-12GM-E4-V1
UB120-12GM-E4-V1

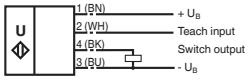
Standard symbol/Connections:
(version E4, npn)



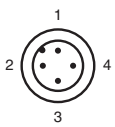
Core colours in accordance with EN 60947-5-2.

UB200-12GM-E5-V1
UB400-12GM-E5-V1
UB120-12GM-E5-V1

Standard symbol/Connections:
(version E5, pnp)



Core colours in accordance with EN 60947-5-2.



Wire colors in accordance with EN 60947-5-2

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

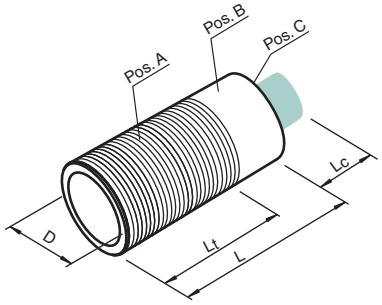
Date of issue 04/08/2015

Properties

- Up to 400 mm sensing range
- DC, analog output
- Ø12 mm cylindrical housing
- Connector version

Your Benefit

- Smallest diameter cylindrical model
- Teach-wire or UB-PROG2 pushbutton configurable



Technical Data

*For detailed data and product description refer to the data sheets at **www.pepperl-fuchs.com***

General Data	
No-load supply current	≤ 30 mA
Resolution	0.17 mm
Deviation of the characteristic curve	± 1 % of full-scale value
Input type	1 program input
LED yellow	solid yellow: object in the evaluation range yellow, flashing: program function, object detected
LED red	solid red: Error red, flashing: program function, object not detected
Ambient temperature	-25 ... 70 °C (-13 ... 158 °F)
Material	
Housing	brass, nickel-plated
Transducer	epoxy resin/hollow glass sphere mixture; foam polyurethane, cover PBT
Protection degree	IP67
Connection type	Device connector M12 x 1 , 4-pin

Model Number	green = preferred type	UB120-12GM-I-V1	UB120-12GM-U-V1	UB200-12GM-I-V1	UB200-12GM-U-V1	UB400-12GM-I-V1	UB400-12GM-U-V1
Sensing range	15 ... 120 mm	●	●				
	15 ... 200 mm			●	●		
	30 ... 400 mm					●	●
Transducer frequency	approx. 850 kHz	●	●				
	approx. 400 kHz			●	●		
	approx. 310 kHz					●	●
Operating voltage	10 ... 30 V DC , ripple 10 %SS	●		●		●	
	15 ... 30 V DC , ripple 10 %SS		●		●		●
Output type	1 analog output 0 ... 10 V		●		●		●
	1 analog output 4 ... 20 mA	●		●		●	
Approvals and Certificates							
UL approval	cULus Listed, General Purpose	●	●	●	●	●	●
CSA approval	cCSAus Listed, General Purpose	●	●	●	●	●	●

Dimensions	
Length L [mm]	64
Diameter D [mm]	12
Thread length l_t [mm]	41
Connector area l_c [mm]	6
LED position	Pos. B

Accessories

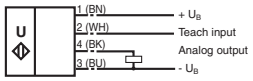
This and more accessories can be found in chapter 3.5 from page 673
See pages from 972 ... for cordsets See pages 1068 ... for mounting aids

UB-PROG2	Programming unit
BF 5-30	Universal mounting bracket for cylindrical sensors with a diameter of 5 ... 30 mm
BF 12	Mounting flange, 12 mm
BF 12-F	Mounting flange with dead stop, 12 mm
V1-G-2M-PVC	Cable socket, M12, 4-pin, PVC cable
V1-W-2M-PUR	Cable socket, M12, 4-pin, PUR cable
UVW90-M12	Ultrasonic -deflector

Electrical Connection

UB200-12GM-U-V1
UB400-12GM-U-V1
UB120-12GM-U-V1

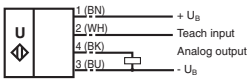
Standard symbol/Connections:
(version U)



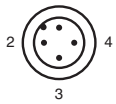
Core colors in accordance with EN 60947-5-2.

UB200-12GM-I-V1
UB400-12GM-I-V1
UB120-12GM-I-V1

Standard symbol/Connections:
(version I)



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



Wire colors in accordance with EN 60947-5-2

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

Date of issue: 04/08/2015

Consider the General Notes on the Information in the Pepperl+Fuchs Product Catalogs
Copyright Pepperl+Fuchs

Pepperl+Fuchs Group www.pepperl-fuchs.com
USA: +1 330 486 0001 fa-info@us.pepperl-fuchs.com
Germany: +49 621 776-4411 fa-info@de.pepperl-fuchs.com
Singapore: +65 6779 9091 fa-info@sg.pepperl-fuchs.com
PEPPERL+FUCHS SENSING YOUR NEEDS

Technical Data

*For detailed data and product description refer to the data sheets at **www.pepperl-fuchs.com***

Model Number	UBC250-12GM-E5-V1
Sensing range	30 ... 250 mm
Transducer frequency	approx. 310 kHz
Operating voltage	10 ... 30 V DC , ripple 10 %$_{SS}$
No-load supply current	≤ 30 mA
Output type	1 switch output PNP Normally open/closed , programmable
Rated operational current	100 mA , short-circuit/overload protected
Switching frequency	≤ 8 Hz
Input type	1 program input
Ambient temperature	0 ... 70 °C (32 ... 158 °F)
Material	
Housing	Stainless steel 1.4435 / AISI 316L O-ring for cover sealing: EPDM
Transducer	PTFE (diaphragm surface)
Protection degree	IP68 / IP69K
Connection type	Device connector M12 x 1 , 4-pin

Approvals and Certificates	
UL approval	cULus Listed, General Purpose
CSA approval	cCSAus Listed, General Purpose

Dimensions	
Length L [mm]	65
Diameter D [mm]	12
Cap diameter D_1 [mm]	15
Thread length l_t [mm]	41
Cap length l_1 [mm]	12
Connector area l_c [mm]	7.5

Properties

- 250 mm sensing range
- DC, switching output
- Ø12 mm cylindrical housing
- Connector version

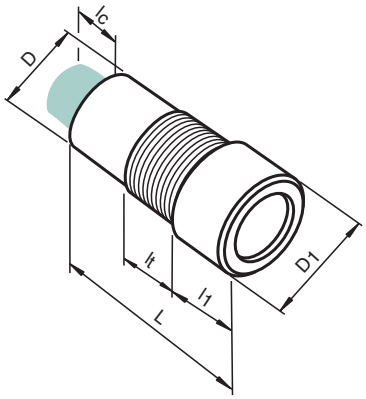
Your Benefit

- PTFE-coated transducer and 316L stainless steel barrel for maximum chemical resistance
- Teach-wire or UB-PROG2 pushbutton configurable

Accessories

This and more accessories can be found in chapter 3.5 from page 673
See pages from 972 ... for cordsets See pages 1068 ... for mounting aids

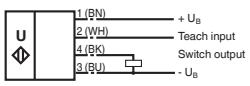
UB-PROG2	Programming unit
BF 5-30	Universal mounting bracket for cylindrical sensors with a diameter of 5 ... 30 mm
BF 12	Mounting flange, 12 mm
BF 12-F	Mounting flange with dead stop, 12 mm
V1-G-2M-PVC	Cable socket, M12, 4-pin, PVC cable
V1-W-2M-PUR	Cable socket, M12, 4-pin, PUR cable



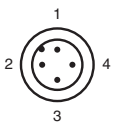
Electrical Connection

UBC250-12GM-E5-V1

Standard symbol/Connections:
(version E5, pnp)



Core colours in accordance with EN 60947-5-2.



Wire colors in accordance with EN 60947-5-2

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

Date of issue 04/08/2015

Technical Data

*For detailed data and product description refer to the data sheets at **www.pepperl-fuchs.com***

Model Number	UBH60/30-12GM-U-V1
Measurement range	object thickness (d) : 0 ... 30 mm
Transducer frequency	approx. 850 kHz
Operating voltage	15 ... 30 V DC , ripple 10 %$_{SS}$
No-load supply current	≤ 30 mA
Output type	1 analog output 0 ... 10 V
Resolution	0.17 mm
Deviation of the characteristic curve	± 1 % of full-scale value
Input type	1 function input
LED yellow	solid: object in evaluation range
LED red	solid red: Error red, flashing: program function, object not detected
Ambient temperature	-25 ... 70 °C (-13 ... 158 °F)
Material	
Housing	brass, nickel-plated
Transducer	epoxy resin/hollow glass sphere mixture; foam polyurethane, cover PBT
Protection degree	IP67
Connection type	Device connector M12 x 1 , 4-pin
Approvals and Certificates	
UL approval	cULus Listed, General Purpose
CSA approval	cCSAus Listed, General Purpose
Dimensions	
Length L [mm]	64
Diameter D [mm]	12
Thread length l_t [mm]	41
Connector area l_c [mm]	6
LED position	Pos. B

Properties

- 0 ... 30 mm high accuracy height measurement
- DC, analog output
- Ø12 mm cylindrical housing
- Connector version

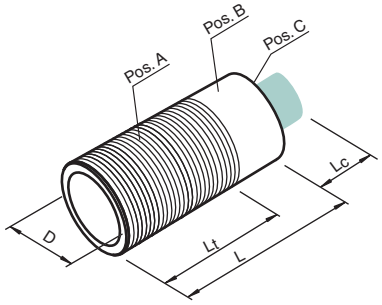
Your Benefit

- High-resolution thickness measurement
- Temperature compensation activated upon power-up

Accessories

This and more accessories can be found in chapter 3.5 from page 673
See pages from 972 ... for cordsets See pages 1068 ... for mounting aids

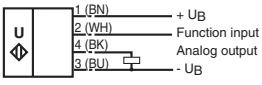
BF 5-30	Universal mounting bracket for cylindrical sensors with a diameter of 5 ... 30 mm
BF 12	Mounting flange, 12 mm
BF 12-F	Mounting flange with dead stop, 12 mm
V1-G-2M-PVC	Cable socket, M12, 4-pin, PVC cable
V1-W-2M-PUR	Cable socket, M12, 4-pin, PUR cable



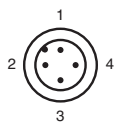
Electrical Connection

UBH60/30-12GM-U-V1

Standard symbol/Connections:



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



Wire colors in accordance with EN 60947-5-2

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

Date of issue: 04/08/2015

Consider the General Notes on the Information in the Pepperl+Fuchs Product Catalogs
Copyright Pepperl+Fuchs
Pepperl+Fuchs Group www.pepperl-fuchs.com
USA: +1 330 486 0001 fa-info@us.pepperl-fuchs.com
Germany: +49 621 776-4411 fa-info@de.pepperl-fuchs.com
Singapore: +65 6779 9091 fa-info@sg.pepperl-fuchs.com
PEPPERL+FUCHS SENSING YOUR NEEDS

Technical Data

*For detailed data and product description refer to the data sheets at **www.pepperl-fuchs.com***

General Data	
Operating voltage	10 ... 30 V DC , ripple 10 %$_{SS}$
No-load supply current	≤ 20 mA
Rated operational current	200 mA , short-circuit/overload protected
Input type	1 program input
LED green	Power on
LED yellow	indication of the switching state flashing: program function object detected
LED red	permanently red: Error red, flashing: program function, object not detected
Ambient temperature	-25 ... 70 °C (-13 ... 158 °F)
Material	
Housing	brass, nickel-plated
Transducer	epoxy resin/hollow glass sphere mixture; foam polyurethane, cover PBT
Protection degree	IP67
Connection type	Device connector M12 x 1 , 4-pin

Model Number	green = preferred type	UB300-18GM40-E5-V1	UB300-18GM40-E4-V1	UB800-18GM40-E4-V1	UB800-18GM40-E5-V1
Sensing range	30 ... 300 mm	●	●		
	50 ... 800 mm			●	●
Transducer frequency	approx. 390 kHz	●	●		
	approx. 255 kHz			●	●
Output type	1 switch output E4, NPN, NO/NC, programmable		●	●	
	1 switch output E5, PNP NO/NC, programmable	●			●
Switching frequency	≤ 13 Hz	●	●		
	≤ 4 Hz			●	●
Approvals and Certificates					
UL approval	cULus Listed, General Purpose	●	●	●	●
CSA approval	cCSAus Listed, General Purpose	●	●	●	●

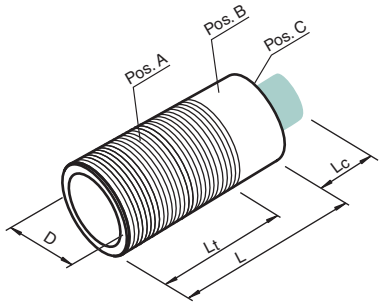
Dimensions	
Length L [mm]	39,2
Diameter D [mm]	18
Thread length l_t [mm]	24,5
Connector area l_c [mm]	10
LED position	Pos. C

Properties

- 300 mm and 800 mm sensing range versions
- DC, switching output
- Ø18 mm cylindrical housing
- Connector version

Your Benefit

- Short barrel length for space-restricted mounting
- Ultra bright rear-view LEDs
- Flexible configuration via Teach-wire or UB-PROG2 pushbutton



Accessories

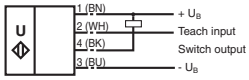
This and more accessories can be found in chapter 3.5 from page 673
See pages from 972 ... for cordsets
See pages 1068 ... for mounting aids

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
V1-G-2M-PVC	Cable socket, M12, 4-pin, PVC cable
V1-W-2M-PUR	Cable socket, M12, 4-pin, PUR cable

Electrical Connection

UB300-18GM40-E4-V1
UB800-18GM40-E4-V1

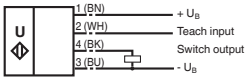
Standard symbol/Connections:
(version E4, npn)



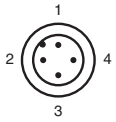
Core colours in accordance with EN 60947-5-2.

UB800-18GM40-E5-V1
UB300-18GM40-E5-V1

Standard symbol/Connections:
(version E5, pnp)



Core colours in accordance with EN 60947-5-2.



Wire colors in accordance with EN 60947-5-2

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

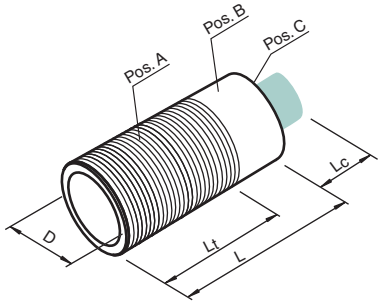
Date of issue 04/08/2015

Properties

- 300 mm and 800 mm sensing range versions
- DC, analog output
- Ø18 mm cylindrical housing
- Connector version

Your Benefit

- Short barrel length for space-restricted mounting
- Ultra bright rear-view LEDs
- Flexible configuration via Teach-wire or UB-PROG2 pushbutton



Technical Data

*For detailed data and product description refer to the data sheets at **www.pepperl-fuchs.com***

General Data	
No-load supply current	≤ 20 mA
Resolution	0.4 mm at max. sensing range
Deviation of the characteristic curve	± 1 % of full-scale value
Input type	1 program input
LED green	Power on
LED yellow	permanently yellow: object in the evaluation range yellow, flashing: program function, object detected
LED red	permanently red: Error red, flashing: program function, object not detected
Ambient temperature	-25 ... 70 °C (-13 ... 158 °F)
Material	
Housing	brass, nickel-plated
Transducer	epoxy resin/hollow glass sphere mixture; foam polyurethane, cover PBT
Protection degree	IP67
Connection type	Device connector M12 x 1 , 4-pin

Model Number	green = preferred type	UB300-18GM40-I-V1	UB300-18GM40-U-V1	UB800-18GM40-I-V1	UB800-18GM40-U-V1
Sensing range	30 ... 300 mm	●	●		
	50 ... 800 mm			●	●
Transducer frequency	approx. 390 kHz	●	●		
	approx. 255 kHz			●	●
Operating voltage	10 ... 30 V DC , ripple 10 %SS	●		●	
	15 ... 30 V DC , ripple 10 %SS		●		●
Output type	1 analog output 0 ... 10 V		●		●
	1 analog output 4 ... 20 mA	●		●	
Approvals and Certificates					
UL approval	cULus Listed, General Purpose	●	●	●	●
CSA approval	cCSAus Listed, General Purpose	●	●	●	●

Dimensions	
Length L [mm]	39,2
Diameter D [mm]	18
Thread length l_t [mm]	24,5
Connector area l_c [mm]	10
LED position	Pos. C

Accessories

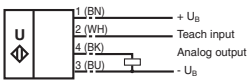
This and more accessories can be found in chapter 3.5 from page 673
See pages from 972 ... for cordsets See pages 1068 ... for mounting aids

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
V1-G-2M-PVC	Cable socket, M12, 4-pin, PVC cable
V1-W-2M-PUR	Cable socket, M12, 4-pin, PUR cable

Electrical Connection

UB300-18GM40-U-V1
UB800-18GM40-U-V1

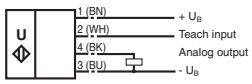
Standard symbol/Connections:
(version U)



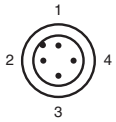
Core colors in accordance with EN 60947-5-2.

UB300-18GM40-I-V1
UB800-18GM40-I-V1

Standard symbol/Connections:
(version I)



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



Wire colors in accordance with EN 60947-5-2

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

Date of issue: 04/08/2015

Consider the General Notes on the Information in the Pepperl+Fuchs Product Catalogs
Copyright Pepperl+Fuchs

Pepperl+Fuchs Group www.pepperl-fuchs.com
USA: +1 330 486 0001 fa-info@us.pepperl-fuchs.com
Germany: +49 621 776-4411 fa-info@de.pepperl-fuchs.com
Singapore: +65 6779 9091 fa-info@sg.pepperl-fuchs.com
PEPPERL+FUCHS SENSING YOUR NEEDS

Technical Data

*For detailed data and product description refer to the data sheets at **www.pepperl-fuchs.com***

Model Number	UBC400-18GH40-I-V1
Sensing range	40 ... 400 mm
Transducer frequency	approx. 255 kHz
Operating voltage	10 ... 30 V DC , ripple 10 $\%_{SS}$
No-load supply current	≤ 20 mA
Output type	1 analog output 4 ... 20 mA, short-circuit/overload protected
Resolution	0.4 mm at max. sensing range
Deviation of the characteristic curve	± 1 % of full-scale value
Input type	1 program input lower evaluation limit A1: $-U_B$ ... +1 V, upper evaluation limit A2: +4 V ... $+U_B$ input impedance: > 4.7 kΩ, pulse duration: ≥ 1 s
Ambient temperature	0 ... 70 °C (32 ... 158 °F)
Material	
Housing	Stainless steel 1.4435 / AISI 316L O-ring for cover sealing: EPDM
Transducer	PTFE
Protection degree	IP67
Connection type	Device connector M12 x 1 , 4-pin

Approvals and Certificates	
UL approval	cULus Listed, General Purpose
CSA approval	cCSAus Listed, General Purpose

Dimensions	
Length L [mm]	43
Diameter D [mm]	18
Head diameter D_1 [mm]	22
Head length l_1 [mm]	13
Thread length l_t [mm]	15
Connector area l_c [mm]	10

Properties

- 400 mm sensing range
- DC, analog output
- Ø18 mm cylindrical housing
- Connector version

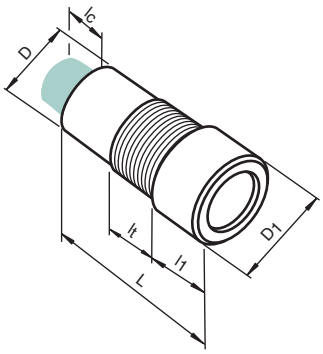
Your Benefit

- Short barrel length for space-restricted mounting
- PTFE-coated transducer and 316L stainless steel barrel for maximum chemical resistance
- Flexible configuration via Teach-wire or UB-PROG2 pushbutton

Accessories

This and more accessories can be found in chapter 3.5 from page 673
See pages from 972 ... for cordsets See pages 1068 ... for mounting aids

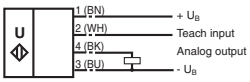
UB-PROG2	Programming unit
OMH-04	Mounting aid for round steel ø 12 mm or sheet 1.5 mm ... 3 mm
BF 18	Mounting flange, 18 mm
BF 18-F	Mounting flange with dead stop, 18 mm
BF 5-30	Universal mounting bracket for cylindrical sensors with a diameter of 5 ... 30 mm
V1-G-2M-PVC	Cable socket, M12, 4-pin, PVC cable
V1-W-2M-PUR	Cable socket, M12, 4-pin, PUR cable



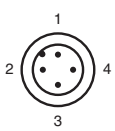
Electrical Connection

UBC400-18GH40-I-V1

Standard symbol/Connections:
(version I)



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



Wire colors in accordance with EN 60947-5-2

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

Date of issue: 04/08/2015

Technical Data

*For detailed data and product description refer to the data sheets at **www.pepperl-fuchs.com***

General Data	
Operating voltage	10 ... 30 V DC , ripple 10 %$_{SS}$
No-load supply current	≤ 20 mA
Rated operational current	200 mA , short-circuit/overload protected
Input type	1 program input
LED green	Power on
LED yellow	indication of the switching state flashing: program function object detected
LED red	permanently red: Error red, flashing: program function, object not detected
Ambient temperature	-25 ... 70 °C (-13 ... 158 °F)
Material	
Housing	brass, nickel-plated
Transducer	epoxy resin/hollow glass sphere mixture; foam polyurethane, cover PBT
Protection degree	IP67
Connection type	Device connector M12 x 1 , 4-pin

Model Number		UB300-18GM40A-E4-V1	UB300-18GM40A-E5-V1	UB800-18GM40A-E4-V1	UB800-18GM40A-E5-V1
	green = preferred type				
Sensing range	30 ... 300 mm	●	●		
	50 ... 800 mm			●	●
Transducer frequency	approx. 390 kHz	●	●		
	approx. 255 kHz			●	●
Output type	1 switch output E4, NPN, NO/NC, programmable	●		●	
	1 switch output E5, PNP NO/NC, programmable		●		●
Switching frequency	≤ 13 Hz	●	●		
	≤ 4 Hz			●	●
Approvals and Certificates					
UL approval	cULus Listed, General Purpose	●	●	●	●
CSA approval	cCSAus Listed, General Purpose	●	●	●	●

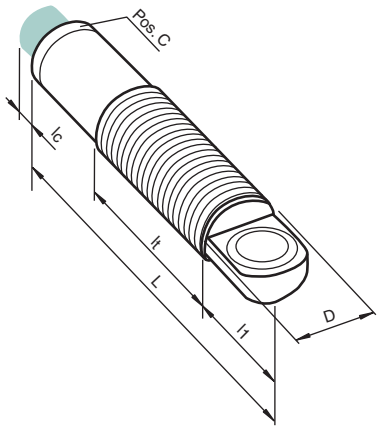
Dimensions	
Length L [mm]	57,7
Diameter D [mm]	18
Transducer length l_1 [mm]	18,5
Thread length l_t [mm]	24,5
Connector area l_c [mm]	10
LED position	Pos. C

Properties

- 300 mm and 800 mm sensing range versions
- DC, switching output
- Ø18 mm cylindrical housing, angled head
- Connector version

Your Benefit

- Right-angle transducer for space-restricted mounting
- Ultra bright LEDs
- Flexible configuration via Teach-wire or UB-PROG2 pushbutton



Accessories

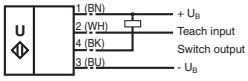
This and more accessories can be found in chapter 3.5 from page 673
See pages from 972 ... for cordsets
See pages 1068 ... for mounting aids

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
V1-G-2M-PVC	Cable socket, M12, 4-pin, PVC cable
V1-W-2M-PUR	Cable socket, M12, 4-pin, PUR cable

Electrical Connection

UB300-18GM40A-E4-V1
UB800-18GM40A-E4-V1

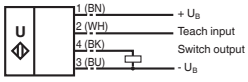
Standard symbol/Connections:
(version E4, npn)



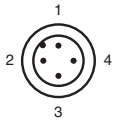
Core colours in accordance with EN 60947-5-2.

UB300-18GM40A-E5-V1
UB800-18GM40A-E5-V1

Standard symbol/Connections:
(version E5, pnp)



Core colours in accordance with EN 60947-5-2.



Wire colors in accordance with EN 60947-5-2

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

Date of issue: 04/08/2015

Consider the General Notes on the Information in the Pepperl+Fuchs Product Catalogs
Copyright Pepperl+Fuchs
Pepperl+Fuchs Group www.pepperl-fuchs.com
USA: +1 330 486 0001 fa-info@us.pepperl-fuchs.com
Germany: +49 621 776-4411 fa-info@de.pepperl-fuchs.com
Singapore: +65 6779 9091 fa-info@sg.pepperl-fuchs.com
PEPPERL+FUCHS SENSING YOUR NEEDS

Technical Data

*For detailed data and product description refer to the data sheets at **www.pepperl-fuchs.com***

General Data	
No-load supply current	≤ 20 mA
Resolution	0.4 mm at max. sensing range
Deviation of the characteristic curve	± 1 % of full-scale value
Input type	1 program input
LED green	Power on
LED yellow	permanently yellow: object in the evaluation range yellow, flashing: program function, object detected
LED red	permanently red: Error red, flashing: program function, object not detected
Ambient temperature	-25 ... 70 °C (-13 ... 158 °F)
Material	
Housing	brass, nickel-plated
Transducer	epoxy resin/hollow glass sphere mixture; foam polyurethane, cover PBT
Protection degree	IP67
Connection type	Device connector M12 x 1 , 4-pin

Model Number	green = preferred type	UB300-18GM40A-I-V1	UB300-18GM40A-U-V1	UB800-18GM40A-I-V1	UB800-18GM40A-U-V1
Sensing range	30 ... 300 mm	●	●		
	50 ... 800 mm			●	●
Transducer frequency	approx. 390 kHz	●	●		
	approx. 255 kHz			●	●
Operating voltage	10 ... 30 V DC , ripple 10 %$_{SS}$	●		●	
	15 ... 30 V DC , ripple 10 %$_{SS}$		●		●
Output type	1 analog output 0 ... 10 V		●		●
	1 analog output 4 ... 20 mA	●		●	
Approvals and Certificates					
UL approval	cULus Listed, General Purpose	●	●	●	●
CSA approval	cCSAus Listed, General Purpose	●	●	●	●

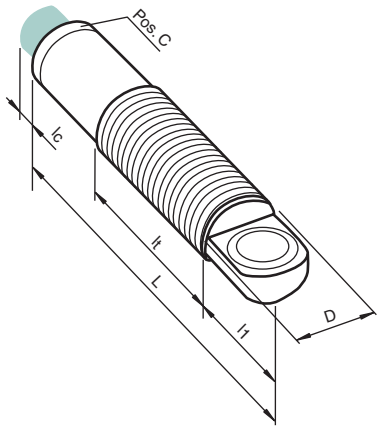
Dimensions	
Length L [mm]	57,7
Diameter D [mm]	18
Transducer length l_1 [mm]	18,5
Thread length l_t [mm]	24,5
Connector area l_c [mm]	10
LED position	Pos. C

Properties

- 300 mm and 800 mm sensing range versions
- DC, analog output
- Ø18 mm cylindrical housing, angled head
- Connector version

Your Benefit

- Right-angle transducer for space-restricted mounting
- Ultra bright LEDs
- Flexible configuration via Teach-wire or UB-PROG2 pushbutton



Accessories

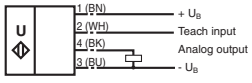
This and more accessories can be found in chapter 3.5 from page 673
See pages from 972 ... for cordsets See pages 1068 ... for mounting aids

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
V1-G-2M-PVC	Cable socket, M12, 4-pin, PVC cable
V1-W-2M-PUR	Cable socket, M12, 4-pin, PUR cable

Electrical Connection

UB300-18GM40A-U-V1
UB800-18GM40A-U-V1

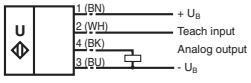
Standard symbol/Connections:
(version U)



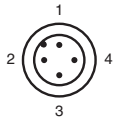
Core colors in accordance with EN 60947-5-2.

UB300-18GM40A-I-V1
UB800-18GM40A-I-V1

Standard symbol/Connections:
(version I)



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



Wire colors in accordance with EN 60947-5-2

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

Date of issue 04/08/2015

Technical Data

*For detailed data and product description refer to the data sheets at **www.pepperl-fuchs.com***

General Data	
Operating voltage	10 ... 30 V DC , ripple 10 %$_{SS}$
No-load supply current	≤ 50 mA
Rated operational current	200 mA , short-circuit/overload protected
Input type	1 program input,
Synchronization	1 synchronous connection, bi-directional
LED yellow	indication of the switching state flashing: program function object detected
LED red	permanently red: Error red, flashing: program function, object not detected
Ambient temperature	-25 ... 70 °C (-13 ... 158 °F)
Material	
Housing	brass, nickel-plated
Transducer	epoxy resin/hollow glass sphere mixture; foam polyurethane, cover PBT
Protection degree	IP65
Connection type	Device connector M12 x 1 , 5-pin

Model Number	green = preferred type	UB500-18GM75-E4-V15	UB500-18GM75-E5-V15	UB1000-18GM75-E4-V15	UB1000-18GM75-E5-V15
Sensing range	30 ... 500 mm	●	●		
	70 ... 1000 mm			●	●
Transducer frequency	approx. 380 kHz	●	●		
	approx. 255 kHz			●	●
Output type	1 switch output NPN Normally open/ closed , programmable	●		●	
	1 switch output PNP Normally open/ closed , programmable		●		●
Switching frequency	max. 8 Hz	●	●		
	max. 3 Hz			●	●
Approvals and Certificates					
UL approval	cULus Listed, General Purpose	●	●	●	●
CSA approval	cCSAus Listed, General Purpose	●	●	●	●

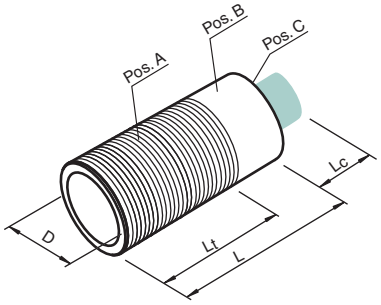
Dimensions	
Length L [mm]	75
Diameter D [mm]	18
Thread length l_t [mm]	48
Connector area l_c [mm]	10
LED position	Pos. C

Properties

- 500 mm and 1000 mm sensing range versions
- DC, switching output
- Ø18 mm cylindrical housing
- Connector version

Your Benefit

- Ultra bright rear-view LEDs
- Flexible configuration via Teach-wire or UB-PROG2 pushbutton



Accessories

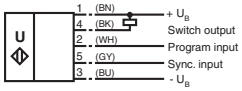
This and more accessories can be found in chapter 3.5 from page 673
See pages from 972 ... for cordsets
See pages 1068 ... for mounting aids

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	Cable socket, M12, 5-pin, PVC cable
V15-W-2M-PUR	Cable socket, M12, 5-pin, PUR cable

Electrical Connection

UB500-18GM75-E4-V15
UB1000-18GM75-E4-V15

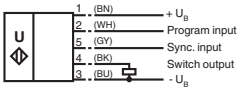
Standard symbol/Connections:
(version E4, npn)



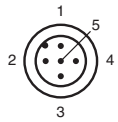
Wire colors in accordance with EN 60947-5-2.

UB500-18GM75-E5-V15
UB1000-18GM75-E5-V15

Standard symbol/Connections:
(version E5, pnp)



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



Wire colors in accordance with EN 60947-5-2

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

Date of issue: 04/08/2015

Consider the General Notes on the Information in the Pepperl+Fuchs Product Catalogs
Copyright Pepperl+Fuchs
Pepperl+Fuchs Group www.pepperl-fuchs.com
USA: +1 330 486 0001 fa-info@us.pepperl-fuchs.com
Germany: +49 621 776-4411 fa-info@de.pepperl-fuchs.com
Singapore: +65 6779 9091 fa-info@sg.pepperl-fuchs.com
PEPPERL+FUCHS SENSING YOUR NEEDS

Technical Data

*For detailed data and product description refer to the data sheets at **www.pepperl-fuchs.com***

General Data	
Operating voltage	10 ... 30 V DC , ripple 10 %$_{SS}$
No-load supply current	≤ 50 mA
Rated operational current	2 x 100 mA , short-circuit/overload protected
Input type	1 program input,
LED yellow	indication of the switching state flashing: program function object detected
LED red	"Error", object uncertain in program function: No object detected
Ambient temperature	-25 ... 70 °C (-13 ... 158 °F)
Material	
Housing	brass, nickel-plated
Transducer	epoxy resin/hollow glass sphere mixture; foam polyurethane, cover PBT
Protection degree	IP65
Connection type	Device connector M12 x 1 , 5-pin

Model Number	green = preferred type	UB500-18GM75-E6-V15	UB500-18GM75-E7-V15	UB1000-18GM75-E6-V15	UB1000-18GM75-E7-V15
Sensing range	30 ... 500 mm	●	●		
	70 ... 1000 mm			●	●
Transducer frequency	approx. 380 kHz	●	●		
	approx. 255 kHz			●	●
Output type	2 switch outputs NPN, normally open/ closed , programmable		●		●
	2 switch outputs PNP, NO/NC, program-mable	●		●	
Switching frequency	max. 8 Hz	●	●		
	max. 3 Hz			●	●
Approvals and Certificates					
UL approval	cULus Listed, General Purpose	●	●	●	●
CSA approval	cCSAus Listed, General Purpose	●	●	●	●

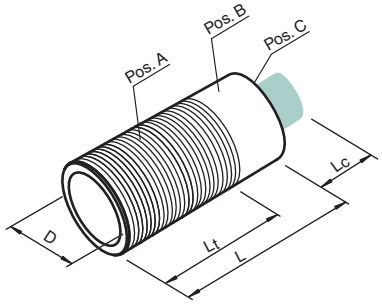
Dimensions	
Length L [mm]	75
Diameter D [mm]	18
Thread length l_t [mm]	48
Connector area l_c [mm]	10
LED position	Pos. C

Properties

- 500 mm and 1000 mm sensing range versions
- DC, 2 switching outputs
- Ø18 mm cylindrical housing
- Connector version

Your Benefit

- Dual outputs, either both N.O. or N.C.
- Ultra bright rear-view LEDs
- Flexible configuration via Teach-wire or UB-PROG3 pushbutton



Accessories

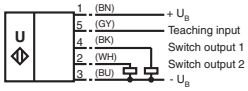
This and more accessories can be found in chapter 3.5 from page 673
See pages from 972 ... for cordsets
See pages 1068 ... for mounting aids

UB-PROG3	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	Cable socket, M12, 5-pin, PVC cable
V15-W-2M-PUR	Cable socket, M12, 5-pin, PUR cable

Electrical Connection

UB500-18GM75-E6-V15
UB1000-18GM75-E6-V15

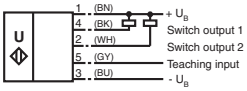
Standard symbol/Connections:
(version E6, pnp)



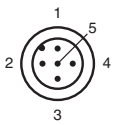
Core colours in accordance with EN 60947-5-2.

UB500-18GM75-E7-V15
UB1000-18GM75-E7-V15

Standard symbol/Connections:
(version E7, npn)



Core colours in accordance with EN 60947-5-2.



Wire colors in accordance with EN 60947-5-2

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

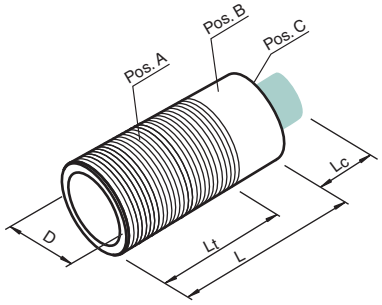
Date of issue 04/08/2015

Properties

- 500 mm and 1000 mm sensing range versions
- DC, 2 switching outputs
- Ø18 mm cylindrical housing
- Connector version

Your Benefit

- Dedicated N.O. (1) and N.C. (1) outputs
- Ultra bright rear-view LEDs
- Flexible configuration via Teach-wire or UB-PROG3 pushbutton



Technical Data

*For detailed data and product description refer to the data sheets at **www.pepperl-fuchs.com***

General Data	
Operating voltage	10 ... 30 V DC , ripple 10 %$_{SS}$
No-load supply current	≤ 50 mA
Rated operational current	2 x 100 mA , short-circuit/overload protected
Input type	1 program input,
LED yellow	indication of the switching state flashing: program function object detected
LED red	"Error", object uncertain in program function: No object detected
Ambient temperature	-25 ... 70 °C (-13 ... 158 °F)
Material	
Housing	brass, nickel-plated
Transducer	epoxy resin/hollow glass sphere mixture; foam polyurethane, cover PBT
Protection degree	IP65
Connection type	Device connector M12 x 1 , 5-pin

Model Number		UB500-18GM75-E01-V15	UB500-18GM75-E23-V15	UB1000-18GM75-E01-V15	UB1000-18GM75-E23-V15
Sensing range	30 ... 500 mm	●	●		
	70 ... 1000 mm			●	●
Transducer frequency	approx. 380 kHz	●	●		
	approx. 255 kHz			●	●
Output type	2 switch outputs NPN, normally open/ closed , programmable	●		●	
	2 switch outputs PNP, NO/NC, programmable		●		●
Switching frequency	max. 8 Hz	●	●		
	max. 3 Hz			●	●
Approvals and Certificates					
UL approval	cULus Listed, General Purpose	●	●	●	●
CSA approval	cCSAus Listed, General Purpose	●	●	●	●

Dimensions	
Length L [mm]	75
Diameter D [mm]	18
Thread length l_t [mm]	48
Connector area l_c [mm]	10
LED position	Pos. C

Accessories

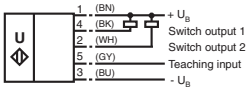
This and more accessories can be found in chapter 3.5 from page 673
See pages from 972 ... for cordsets See pages 1068 ... for mounting aids

UB-PROG3	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	Cable socket, M12, 5-pin, PVC cable
V15-W-2M-PUR	Cable socket, M12, 5-pin, PUR cable

Electrical Connection

UB500-18GM75-E01-V15
UB1000-18GM75-E01-V15

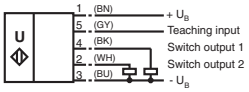
Standard symbol/Connections:
(version E01, npn)



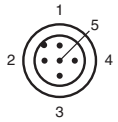
Core colours in accordance with EN 60947-5-2.

UB500-18GM75-E23-V15
UB1000-18GM75-E23-V15

Standard symbol/Connections:
(version E23, pnp)



Core colours in accordance with EN 60947-5-2.



Wire colors in accordance with EN 60947-5-2

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

Date of issue: 04/08/2015

Consider the General Notes on the Information in the Pepperl+Fuchs Product Catalogs
Copyright Pepperl+Fuchs

Pepperl+Fuchs Group www.pepperl-fuchs.com
USA: +1 330 486 0001 fa-info@us.pepperl-fuchs.com
Germany: +49 621 776-4411 fa-info@de.pepperl-fuchs.com
Singapore: +65 6779 9091 fa-info@sg.pepperl-fuchs.com
PEPPERL+FUCHS SENSING YOUR NEEDS

Technical Data

*For detailed data and product description refer to the data sheets at **www.pepperl-fuchs.com***

General Data	
Deviation of the characteristic curve	± 1 % of full-scale value
Input type	1 program input
Synchronization	1 synchronous connection, bi-directional
LED yellow	permanently yellow: object in the evaluation range yellow, flashing: program function, object detected
LED red	permanently red: Error red, flashing: program function, object not detected
Ambient temperature	-25 ... 70 °C (-13 ... 158 °F)
Material	
Housing	brass, nickel-plated
Transducer	epoxy resin/hollow glass sphere mixture; foam polyurethane, cover PBT
Protection degree	IP65
Connection type	Device connector M12 x 1 , 5-pin

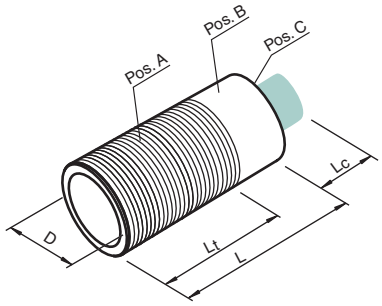
Model Number	green = preferred type	UB500-18GM75-U-V15	UB500-18GM75-I-V15	UB1000-18GM75-I-V15	UB1000-18GM75-U-V15
Sensing range	30 ... 500 mm	●	●		
	70 ... 1000 mm			●	●
Transducer frequency	approx. 380 kHz	●	●		
	approx. 255 kHz			●	●
Operating voltage	10 ... 30 V DC , ripple 10 %$_{SS}$		●	●	
	15 ... 30 V DC , ripple 10 %$_{SS}$	●			●
No-load supply current	≤ 45 mA		●	●	
	≤ 50 mA	●			●
Output type	1 analog output 0 ... 10 V	●			●
	1 analog output 4 ... 20 mA		●	●	
Resolution	0.11 mm at max. sensing range	●			
	0.13 mm at max. sensing range		●		
	0.35 mm			●	●
Approvals and Certificates					
UL approval	cULus Listed, General Purpose	●	●	●	●
CSA approval	cCSAus Listed, General Purpose	●	●	●	●
Dimensions					
Length L [mm]		75			
Diameter D [mm]		18			
Thread length l_t [mm]		48			
Connector area l_c [mm]		10			
LED position		Pos. C			

Properties

- 500 mm and 1000 mm sensing range versions
- DC, analog output
- Ø18 mm cylindrical housing
- Connector version

Your Benefit

- Ultra bright rear-view LEDs
- Flexible configuration via Teach-wire or UB-PROG2 pushbutton



Accessories

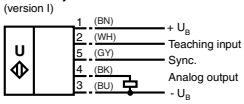
This and more accessories can be found in chapter 3.5 from page 673
See pages from 972 ... for cordsets
See pages 1068 ... for mounting aids

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
UVW90-K18	Ultrasonic -deflector
V15-G-2M-PVC	Cable socket, M12, 5-pin, PVC cable
V15-W-2M-PUR	Cable socket, M12, 5-pin, PUR cable

Electrical Connection

UB1000-18GM75-I-V15
UB500-18GM75-I-V15

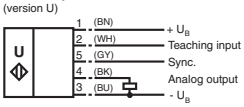
Standard symbol/Connections:
(version I)



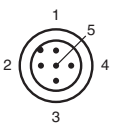
Core colours in accordance with EN 60947-5-2.

UB1000-18GM75-U-V15
UB500-18GM75-U-V15

Standard symbol/Connections:
(version U)



Core colours in accordance with EN 60947-5-2.



Wire colors in accordance with EN 60947-5-2

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

Date of issue 04/08/2015

Properties

- 500 mm and 1000 mm sensing range versions
- DC, frequency output, PWM output and serial output versions
- Ø18 mm cylindrical housing
- Connector version

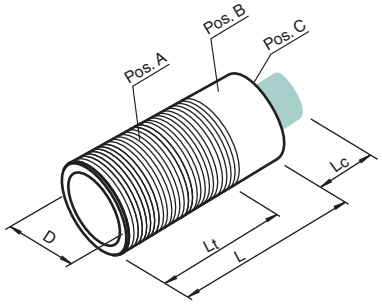
Technical Data

*For detailed data and product description refer to the data sheets at **www.pepperl-fuchs.com***

General Data	
Operating voltage	10 ... 30 V DC , ripple 10 %$_{SS}$
No-load supply current	≤ 50 mA
Resolution	1 mm
Deviation of the characteristic curve	± 1 % of full-scale value
Input type	1 Parameterization input
Synchronization	1 synchronous connection, bi-directional
LED green	Power on
LED red	flashing: error(br>permanent: no object detected
Ambient temperature	-25 ... 70 °C (-13 ... 158 °F)
Material	
Housing	brass, nickel-plated
Transducer	epoxy resin/hollow glass sphere mixture; foam polyurethane, cover PBT
Protection degree	IP65
Connection type	Device connector M12 x 1 , 5-pin

Model Number		UB500-18GM75-F-V15	UB500-18GM75-PWM-V15	UB500-18GM75-BIT-V15	UB1000-18GM75-F-V15	UB1000-18GM75-PWM-V15	UB1000-18GM75-BIT-V15
Sensing range	30 ... 500 mm	●	●	●			
	80 ... 1000 mm				●	●	●
Transducer frequency	approx. 380 kHz	●	●	●			
	approx. 255 kHz				●	●	●
Output type	1 frequency output, push/pull, programmable	●			●		
	1 PWM output, push/pull, programmable		●			●	
	1 serial output, push/pull, programmable			●			●
Approvals and Certificates							
UL approval	cULus Listed, General Purpose	●	●	●	●	●	●
CSA approval	cCSAus Listed, General Purpose	●	●	●	●	●	●

Dimensions	
Length L [mm]	75
Diameter D [mm]	18
Thread length l_t [mm]	52
Connector area l_c [mm]	10
LED position	Pos. B



Accessories

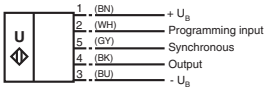
This and more accessories can be found in chapter 3.5 from page 673
See pages from 972 ... for cordsets See pages 1068 ... for mounting aids

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	Cable socket, M12, 5-pin, PVC cable
V15-W-2M-PUR	Cable socket, M12, 5-pin, PUR cable

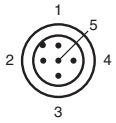
Electrical Connection

UB1000-18GM75-F-V15
UB500-18GM75-F-V15
UB500-18GM75-PWM-V15
UB1000-18GM75-PWM-V15
UB1000-18GM75-BIT-V15
UB500-18GM75-BIT-V15

Standard symbol/Connections:



Core colours in accordance with EN 60947-5-2.



Wire colors in accordance with EN 60947-5-2

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

Date of issue: 04/08/2015

Consider the General Notes on the Information in the Pepperl+Fuchs Product Catalogs
Copyright Pepperl+Fuchs
Pepperl+Fuchs Group www.pepperl-fuchs.com
USA: +1 330 486 0001 fa-info@us.pepperl-fuchs.com
Germany: +49 621 776-4411 fa-info@de.pepperl-fuchs.com
Singapore: +65 6779 9091 fa-info@sg.pepperl-fuchs.com
PEPPERL+FUCHS SENSING YOUR NEEDS

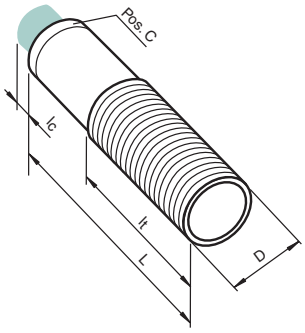
IO-Link

Properties

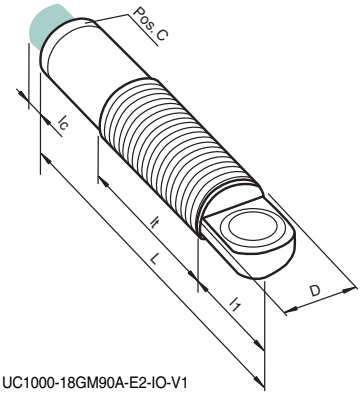
- 1000 mm sensing range
- DC, IO-Link / switching output
- Ø18 mm cylindrical housing, angled and straight versions
- Connector version

Your Benefit

- Continuous IO-Link accessibility to output status and configuration parameters



UC1000-18GM90-E2-IO-V1



UC1000-18GM90A-E2-IO-V1

Technical Data

For detailed data and product description refer to the data sheets at ***www.pepperl-fuchs.com***

General Data	
Sensing range	100 ... 1000 mm
Transducer frequency	approx. 200 kHz
Linearity error	≤ ± 2 mm
Operating voltage	12 ... 30 V DC (including ripple)
No-load supply current	≤ 50 mA
Interface type	IO-Link
Output type	1 switch output PNP, NO SIO mode
Operating current	≤ 200 mA , short-circuit/overload protected
LED green	permanently green: Power on flashes: IO-Link ON
LED yellow	on: object within measuring range
Ambient temperature	-25 ... 70 °C (-13 ... 158 °F)
Material	
Housing	brass, nickel-plated
Transducer	epoxy resin/hollow glass sphere mixture; foam polyurethane, cover PBT
Protection degree	IP67
Connection type	Device connector M12 x 1 , 4-pin

Model Number		UC1000-18GM90-E2-IO-V1	UC1000-18GM90A-E2-IO-V1
Direction of radiation	frontal	●	
	lateral		●
Dimensions			
Length L [mm]		91	119
Diameter D [mm]		18	
Transducer length l_1 [mm]			28
Thread length l_t [mm]		65	
Connector area l_c [mm]		10	
LED position		Pos. C	

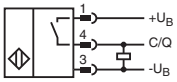
Accessories

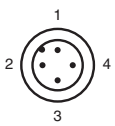
This and more accessories can be found in chapter 3.5 from page 673
See pages from 972 ... for cordsets See pages 1068 ... for mounting aids

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
V1-G-2M-PVC	Cable socket, M12, 4-pin, PVC cable
V1-G-2M-PUR	Cable socket, M12, 4-pin, PUR cable
V1-W-2M-PVC	Cable socket, M12, 4-pin, PVC cable
V1-W-2M-PUR	Cable socket, M12, 4-pin, PUR cable

Electrical Connection

UC1000-18GM90-E2-IO-V1
UC1000-18GM90A-E2-IO-V1





Wire colors in accordance with EN 60947-5-2

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

Date of issue 04/08/2015

Technical Data

*For detailed data and product description refer to the data sheets at **www.pepperl-fuchs.com***

General Data	
Operating voltage	10 ... 30 V DC , ripple 10 %$_{SS}$
No-load supply current	≤ 50 mA
Rated operational current	200 mA , short-circuit/overload protected
Input type	1 program input,
Synchronization	bi-directional
Ambient temperature	-25 ... 70 °C (-13 ... 158 °F)
Material	
Housing	nickel plated brass; plastic components: PBT
Transducer	epoxy resin/hollow glass sphere mixture; polyurethane foam
Protection degree	IP65
Connection type	Device connector M12 x 1 , 5-pin

Model Number	green = preferred type	UB500-30GM-E4-V15	UB500-30GM-E5-V15	UB2000-30GM-E4-V15	UB2000-30GM-E5-V15	UB4000-30GM-E4-V15	UB4000-30GM-E5-V15	UB6000-30GM-E4-V15	UB6000-30GM-E5-V15
Sensing range	30 ... 500 mm	●	●						
	80 ... 2000 mm			●	●				
	200 ... 4000 mm					●	●		
	350 ... 6000 mm							●	●
Transducer frequency	approx. 380 kHz	●	●						
	approx. 180 kHz			●	●				
	approx. 85 kHz					●	●		
	approx. 65 kHz							●	●
Output type	1 switch output NPN , Normally open/ closed , programmable	●		●		●		●	
	1 switch output PNP , Normally open/ closed , programmable		●		●		●		●
Approvals and Certificates									
UL approval	cULus Listed, General Purpose	●	●	●	●	●	●	●	●
CSA approval	cCSAus Listed, General Purpose	●	●	●	●	●	●	●	●

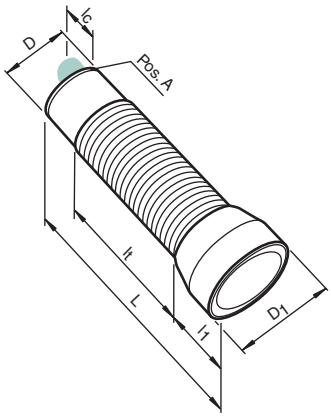
Dimensions				
Length L [mm]	94		108	112
Diameter D [mm]	30			
Transducer diameter D_1 [mm]	30		40	73
Transducer length l_1 [mm]	0		25	32,5
Thread length l_t [mm]	72		61	57,5
Connector area l_c [mm]	10			
LED position	Pos. A			

Properties

- Up to 6000 mm sensing range versions
- DC, switching output
- Ø30 mm cylindrical housing
- Connector version

Your Benefit

- Teach-wire or UB-PROG2 pushbutton configurable



Accessories

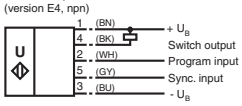
This and more accessories can be found in chapter 3.5 from page 673
See pages from 972 ... for cordsets
See pages 1068 ... for mounting aids

BF 30	Mounting flange, 30 mm
BF 30-F	Mounting flange with dead stop, 30 mm
BF 5-30	Universal mounting bracket for cylindrical sensors with a diameter of 5 ... 30 mm
UB-PROG2	Programming unit
V15-G-2M-PVC	Cable socket, M12, 5-pin, PVC cable
UVW90-M30	Ultrasonic -deflector
V15-W-2M-PUR	Cable socket, M12, 5-pin, PUR cable
UVW90-K30	Ultrasonic -deflector

Electrical Connection

UB500-30GM-E4-V15
UB4000-30GM-E4-V15
UB2000-30GM-E4-V15
UB6000-30GM-E4-V15

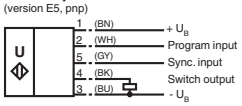
Standard symbol/Connections:
(version E4, npn)



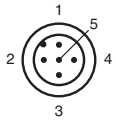
Wire colors in accordance with EN 60947-5-2.

UB2000-30GM-E5-V15
UB6000-30GM-E5-V15
UB4000-30GM-E5-V15
UB500-30GM-E5-V15

Standard symbol/Connections:
(version E5, pnp)



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



Wire colors in accordance with EN 60947-5-2

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

Date of issue: 04/08/2015

Consider the General Notes on the Information in the Pepperl+Fuchs Product Catalogs
Copyright Pepperl+Fuchs
Pepperl+Fuchs Group www.pepperl-fuchs.com
USA: +1 330 486 0001 fa-info@us.pepperl-fuchs.com
Germany: +49 621 776-4411 fa-info@de.pepperl-fuchs.com
Singapore: +65 6779 9091 fa-info@sg.pepperl-fuchs.com
PEPPERL+FUCHS SENSING YOUR NEEDS

Technical Data

*For detailed data and product description refer to the data sheets at **www.pepperl-fuchs.com***

General Data	
Operating voltage	10 ... 30 V DC , ripple 10 %$_{SS}$
No-load supply current	≤ 50 mA
Interface type	RS 232, 9600 Bit/s , no parity, 8 data bits, 1 stop bit
Rated operational current	200 mA , short-circuit/overload protected
Synchronization	bi-directional
Ambient temperature	-25 ... 70 °C (-13 ... 158 °F)
Material	
Housing	stainless steel (1.4305 / AISI 303), PBT plastic parts
Transducer	epoxy resin/hollow glass sphere mixture; polyurethane foam
Protection degree	IP65
Connection type	Device connector M12 x 1 , 5-pin

Model Number		UC500-30GM-E6R2-V15	UC500-30GM-E7R2-V15	UC2000-30GM-E6R2-V15	UC2000-30GM-E7R2-V15	UC4000-30GM-E6R2-V15	UC4000-30GM-E7R2-V15	UC6000-30GM-E6R2-V15	UC6000-30GM-E7R2-V15
Sensing range	30 ... 500 mm	●	●						
	80 ... 2000 mm			●	●				
	200 ... 4000 mm					●	●		
	350 ... 6000 mm							●	●
Transducer frequency	approx. 380 kHz	●	●						
	approx. 180 kHz			●	●				
	approx. 85 kHz					●	●		
	approx. 65 kHz							●	●
Output type	2 switch outputs NPN, NO/NC, programmable		●		●		●		●
	2 switch outputs PNP, NO/NC, programmable	●		●		●		●	
Switching frequency	≤ 0.5 Hz							●	●
	≤ 1 Hz					●	●		
	≤ 2.5 Hz			●	●				
	≤ 7 Hz	●	●						
Approvals and Certificates									
UL approval	cULus Listed, General Purpose	●	●	●	●	●	●	●	●
CSA approval	cCSAus Listed, General Purpose	●	●	●	●	●	●	●	●

Dimensions				
Length L [mm]	94		108	112
Diameter D [mm]	30			
Transducer diameter D_1 [mm]	30		40	73
Transducer length l_1 [mm]	0		25	32,5
Thread length l_t [mm]	72		61	57,5
Connector area l_c [mm]	10			
LED position	Pos. A			
Temperature / program plug	Pos. A , 27,5 mm			

Properties

- **Up to 6000 mm sensing range versions**
- **DC, 2 switching outputs**
- **Ø30 mm cylindrical housing**
- **Connector version**

Your Benefit

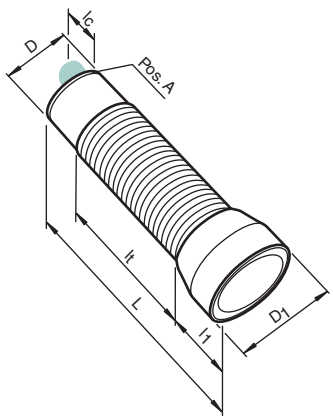
- **Potentiometer-free configuration via programming plug or ULTRA3000 software**

Further Products

In this series, we offer additionally:

UCC1000-30GM-E6R2-V15

Technical data like UC2000-30GM-E6R2-V15 but:
Sensing range: 1000 mm
Transducer: chemical resistant PTFE coated



Accessories

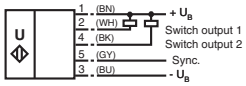
This and more accessories can be found in chapter 3.5 from page 673
See pages from 972 ... for cordsets
See pages 1068 ... for mounting aids

BF 30	Mounting flange, 30 mm
UC-30GM-R2	Programming cable
ULTRA3000	Software for ultrasonic sensors, comfort line
UVW90-M30	Ultrasonic -deflector
V15-G-2M-PVC	Cable socket, M12, 5-pin, PVC cable
V15-W-2M-PUR	Cable socket, M12, 5-pin, PUR cable

Electrical Connection

UC500-30GM-E7R2-V15
UC2000-30GM-E7R2-V15
UC4000-30GM-E7R2-V15
UC6000-30GM-E7R2-V15

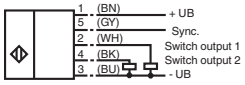
Standard symbol/Connection:
(version E7, npn)



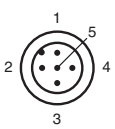
Core colors in accordance with EN 60947-5-2.

UC500-30GM-E6R2-V15
UC2000-30GM-E6R2-V15
UC4000-30GM-E6R2-V15
UC6000-30GM-E6R2-V15
UCC1000-30GM-E6R2-V15

Standard symbol/Connection:
(version E6, pnp)



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



Wire colors in accordance with EN 60947-5-2

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

Date of issue 04/08/2015

Properties

- Up to 6000 mm sensing range versions
- DC, analog outputs
- Ø30 mm cylindrical housing
- Connector version

Your Benefit

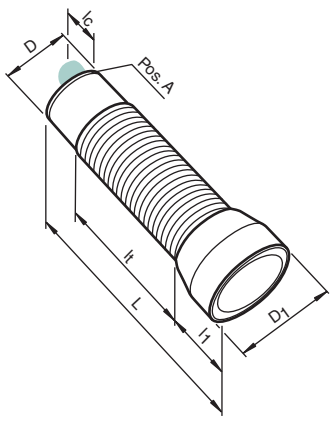
- Potentiometer-free configuration via programming plug or ULTRA3000 software

Further Products

In this series, we offer additionally:

UCC1000-30GM-IUR2-V15

Technical data like UC2000-30GM-IUR2-V15 but:
Sensing range: 1000 mm
Transducer: chemical resistant PTFE coated



Technical Data

*For detailed data and product description refer to the data sheets at **www.pepperl-fuchs.com***

General Data	
Operating voltage	10 ... 30 V DC , ripple 10 %$_{SS}$
Power consumption	≤ 900 mW
Interface type	RS 232, 9600 Bit/s , no parity, 8 data bits, 1 stop bit
Output type	1 current output 4 ... 20 mA 1 voltage output 0 ... 10 V
Deviation of the characteristic curve	≤ 0.2 % of full-scale value
Synchronization	bi-directional
Material	
Housing	stainless steel (1.4305 / AISI 303), PBT plastic parts
Transducer	epoxy resin/hollow glass sphere mixture; polyurethane foam
Protection degree	IP65
Connection type	Device connector M12 x 1 , 5-pin

Model Number		UC300-30GM-IUR2-V15	UC500-30GM-IUR2-V15	UC2000-30GM-IUR2-V15	UC4000-30GM-IUR2-V15	UC6000-30GM-IUR2-V15
Sensing range	15 ... 300 mm	●				
	30 ... 500 mm		●			
	80 ... 2000 mm			●		
	200 ... 4000 mm				●	
	350 ... 6000 mm					●
Transducer frequency	approx. 380 kHz	●	●			
	approx. 180 kHz			●		
	approx. 85 kHz				●	
	approx. 65 kHz					●
Resolution	evaluation range [mm]/4000, but ≥ 0.05 mm	●	●			
	evaluation range [mm]/4000, but ≥ 0.35 mm			●	●	●
Ambient temperature	0 ... 70 °C (32 ... 158 °F)	●				
	-25 ... 70 °C (-13 ... 158 °F)		●	●	●	●
Approvals and Certificates						
UL approval	cULus Listed, General Purpose	●	●	●	●	●
CSA approval	cCSAus Listed, General Purpose	●	●	●	●	●

Dimensions				
Length L [mm]	114		128	132
Diameter D [mm]	30			
Transducer diameter D_1 [mm]	30		40	73
Transducer length l_1 [mm]	0		25	32,5
Thread length l_t [mm]	92		81	77,5
Connector area l_c [mm]	10			
LED position	Pos. A			
Temperature / program plug	Pos. A , 27.5 mm			

Accessories

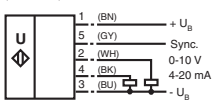
This and more accessories can be found in chapter 3.5 from page 673
See pages from 972 ... for cordsets See pages 1068 ... for mounting aids

BF 30	Mounting flange, 30 mm
BF 30-F	Mounting flange with dead stop, 30 mm
BF 5-30	Universal mounting bracket for cylindrical sensors with a diameter of 5 ... 30 mm
UC-30GM-R2	Programming cable
ULTRA3000	Software for ultrasonic sensors, comfort line
V15-G-2M-PVC	Cable socket, M12, 5-pin, PVC cable
V15-W-2M-PUR	Cable socket, M12, 5-pin, PUR cable

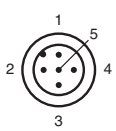
Electrical Connection

UC300-30GM-IUR2-V15
UC500-30GM-IUR2-V15
UC2000-30GM-IUR2-V15
UC4000-30GM-IUR2-V15
UC6000-30GM-IUR2-V15
UCC1000-30GM-IUR2-V15

Standard symbol/Connection:
(version IU)



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



Wire colors in accordance with EN 60947-5-2

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

Date of issue: 04/08/2015

Consider the General Notes on the Information in the Pepperl+Fuchs Product Catalogs
Copyright Pepperl+Fuchs
Pepperl+Fuchs Group www.pepperl-fuchs.com
USA: +1 330 486 0001 fa-info@us.pepperl-fuchs.com
Germany: +49 621 776-4411 fa-info@de.pepperl-fuchs.com
Singapore: +65 6779 9091 fa-info@sg.pepperl-fuchs.com
PEPPERL+FUCHS SENSING YOUR NEEDS

Technical Data

*For detailed data and product description refer to the data sheets at **www.pepperl-fuchs.com***

General Data	
Operating voltage	10 ... 30 V DC , ripple 10 %$_{SS}$
No-load supply current	≤ 50 mA
Interface type	RS 232, 9600 Bit/s , no parity, 8 data bits, 1 stop bit
Output type	2 switch outputs PNP, NO/NC, programmable
Rated operational current	200 mA , short-circuit/overload protected
Synchronization	bi-directional
Ambient temperature	-25 ... 70 °C (-13 ... 158 °F)
Material	
Housing	stainless steel (1.4305 / AISI 303), PBT plastic parts
Transducer	epoxy resin/hollow glass sphere mixture; polyurethane foam
Protection degree	sensor head: IP67 connector sensor head/controller unit: IP52
Connection type	Device connector M12 x 1 , 5-pin

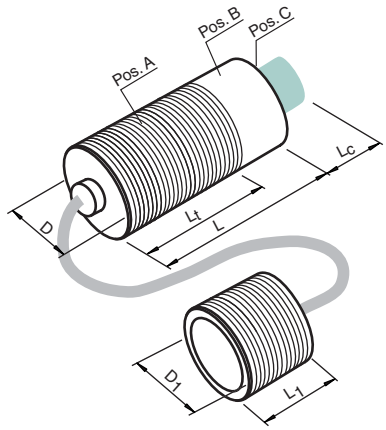
Properties

- 300 mm and 1000 mm sensing range versions
- DC, 2 switching outputs
- Ø30 mm cylindrical housing with separate head
- Connector version

Your Benefit

- Provides maximum sensing range in space-restricted mounting areas
- Potentiometer-free configuration via programming plug or ULTRA3000 software

Model Number		UC300-30GM-E6R2-K-V15	UC1000-30GM-E6R2-K-V15
Sensing range	30 ... 300 mm	●	
	80 ... 1000 mm		●
Transducer frequency	approx. 380 kHz	●	
	approx. 180 kHz		●
Switching frequency	≤ 2.5 Hz		●
	≤ 7 Hz	●	
Approvals and Certificates			
UL approval	cULus Listed, General Purpose	●	●
CSA approval	cCSAus Listed, General Purpose	●	●
Dimensions			
Length L [mm]		93,5	112
Diameter D [mm]		30	
Transducer diameter D_1 [mm]		18	30
Transducer length l_1 [mm]		25	27
Thread length l_t [mm]		71,5	90
Connector area l_c [mm]		10	
LED position		Pos. C	
Temperature / program plug		Pos. C , 27.5 mm	



Accessories

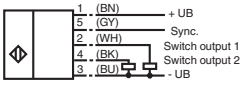
This and more accessories can be found in chapter 3.5 from page 673
See pages from 972 ... for cordsets
See pages 1068 ... for mounting aids

BF 30	Mounting flange, 30 mm
BF 30-F	Mounting flange with dead stop, 30 mm
BF 18	Mounting flange, 18 mm
BF 5-30	Universal mounting bracket for cylindrical sensors with a diameter of 5 ... 30 mm
BF 18-F	Mounting flange with dead stop, 18 mm
UC-30GM-R2	Programming cable
ULTRA3000	Software for ultrasonic sensors, comfort line
V15-G-2M-PVC	Cable socket, M12, 5-pin, PVC cable
V15-W-2M-PUR	Cable socket, M12, 5-pin, PUR cable

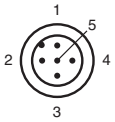
Electrical Connection

UC300-30GM-E6R2-K-V15
UC1000-30GM-E6R2-K-V15

Standard symbol/Connection:
(version E6, pnp)



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



Wire colors in accordance with EN 60947-5-2

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

Date of issue 04/08/2015

Properties

- 300 mm and 1000 mm sensing range versions
- DC, analog outputs
- Ø30 mm cylindrical housing with separate head
- Connector version

Your Benefit

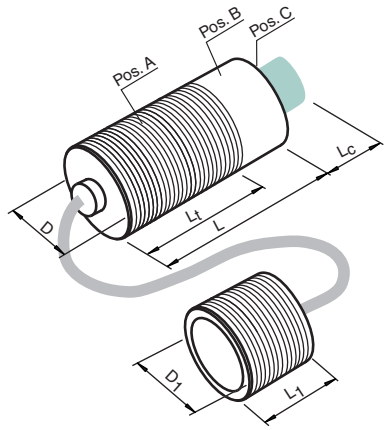
- Provides maximum sensing range in space-restricted mounting areas
- Potentiometer-free configuration via programming plug or ULTRA3000 software

Technical Data

*For detailed data and product description refer to the data sheets at **www.pepperl-fuchs.com***

General Data	
Operating voltage	10 ... 30 V DC , ripple 10 %$_{SS}$
Power consumption	≤ 900 mW
Interface type	RS 232, 9600 Bit/s , no parity, 8 data bits, 1 stop bit
Output type	1 current output 4 ... 20 mA 1 voltage output 0 ... 10 V
Deviation of the characteristic curve	≤ 0.2 % of full-scale value
Synchronization	bi-directional
Ambient temperature	-25 ... 70 °C (-13 ... 158 °F)
Material	
Housing	stainless steel (1.4305 / AISI 303), PBT plastic parts
Transducer	epoxy resin/hollow glass sphere mixture; polyurethane foam
Protection degree	sensor head: IP67 connector sensor head/controller unit: IP52
Connection type	Device connector M12 x 1 , 5-pin

Model Number		UC300-30GM-IUR2-K-V15	UC1000-30GM-IUR2-K-V15
Sensing range	30 ... 300 mm	●	
	80 ... 1000 mm		●
Transducer frequency	approx. 380 kHz	●	
	approx. 180 kHz		●
Resolution	evaluation range [mm]/4000, but ≥ 0.05 mm	●	
	evaluation range [mm]/4000, but ≥ 0.35 mm		●
Approvals and Certificates			
UL approval	cULus Listed, General Purpose	●	●
CSA approval	cCSAus Listed, General Purpose	●	●
Dimensions			
Length L [mm]		112	
Diameter D [mm]		30	
Transducer diameter D_1 [mm]		18	30
Transducer length l_1 [mm]		25	27
Thread length l_t [mm]		90	
Connector area l_c [mm]		10	
LED position		Pos. C	
Temperature / program plug		Pos. C , 27.5 mm	



Accessories

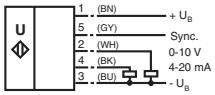
This and more accessories can be found in chapter 3.5 from page 673
See pages from 972 ... for cordsets
See pages 1068 ... for mounting aids

BF 18	Mounting flange, 18 mm
BF 30	Mounting flange, 30 mm
BF 18-F	Mounting flange with dead stop, 18 mm
BF 30-F	Mounting flange with dead stop, 30 mm
BF 5-30	Universal mounting bracket for cylindrical sensors with a diameter of 5 ... 30 mm
UC-30GM-R2	Programming cable
ULTRA3000	Software for ultrasonic sensors, comfort line
DA5-IU-2K-V	Process control and indication equipment
V15-G-2M-PVC	Cable socket, M12, 5-pin, PVC cable
V15-W-2M-PUR	Cable socket, M12, 5-pin, PUR cable

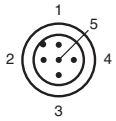
Electrical Connection

UC300-30GM-IUR2-K-V15
UC1000-30GM-IUR2-K-V15

Standard symbol/Connection:
(version IU)



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



Wire colors in accordance with EN 60947-5-2

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

Date of issue: 04/08/2015

Consider the General Notes on the Information in the Pepperl+Fuchs Product Catalogs
Copyright Pepperl+Fuchs

Pepperl+Fuchs Group
www.pepperl-fuchs.com
USA: +1 330 486 0001
fa-info@us.pepperl-fuchs.com
Germany: +49 621 776-4411
fa-info@de.pepperl-fuchs.com
Singapore: +65 6779 9091
fa-info@sg.pepperl-fuchs.com

PEPPERL+FUCHS
SENSING YOUR NEEDS

Technical Data

*For detailed data and product description refer to the data sheets at **www.pepperl-fuchs.com***

General Data	
Operating voltage	12 ... 30 V DC (including ripple)
No-load supply current	≤ 50 mA
Potentiometer	Switching output 1 and Switching output 2 adjustable
Interface type	Infrared
Output type	2 switch outputs PNP, NO (NC programmable)
Operating current	Per 150 mA , short-circuit/overload protected
Input/output type	1 synchronization connection, bidirectional / TEACH-IN input, programmable
Ambient temperature	-25 ... 70 °C (-13 ... 158 °F)
Material	
Housing	brass, nickel-plated
Transducer	epoxy resin/hollow glass sphere mixture; polyurethane foam
Protection degree	IP65
Connection type	Device connector M12 x 1 , 5-pin

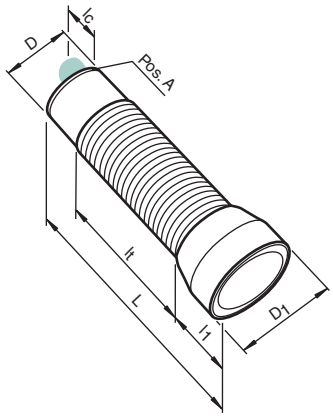
Model Number		UC500-30GM70-2E2R2-V15	UC2000-30GM70-2E2R2-V15	UC3500-30GM70-2E2R2-V15	UC6000-30GM70-2E2R2-V15
Sensing range	45 ... 500 mm	●			
	100 ... 2000 mm		●		
	200 ... 3500 mm			●	
	350 ... 6000 mm				●
Transducer frequency	approx. 300 kHz	●			
	approx. 200 kHz		●		
	approx. 120 kHz			●	
	approx. 80 kHz				●
Approvals and Certificates					
UL approval	cULus Listed, General Purpose	●	●	●	●
CSA approval	cCSAus Listed, General Purpose	●	●	●	●
Dimensions					
Diameter D [mm]		30			
Length L [mm]		99,3			121,2
Thread length l_t [mm]		74,7			62
Transducer diameter D_1 [mm]		30			65
Transducer length l_1 [mm]		0,3		0,5	36,5
Connector area l_c [mm]		10,5			

Properties

- Up to 6000 mm sensing range versions
- DC, 2 switching outputs
- Ø30 mm cylindrical housing
- Connector version

Your Benefit

- Simple potentiometer-based configuration
- Optional, expanded configuration control via ULTRA-PROG-IR software and interface



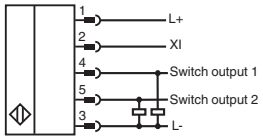
Accessories

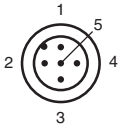
This and more accessories can be found in chapter 3.5 from page 673
See pages from 972 ... for cordsets
See pages 1068 ... for mounting aids

BF 30	Mounting flange, 30 mm
BF 5-30	Universal mounting bracket for cylindrical sensors with a diameter of 5 ... 30 mm
V15-G-2M-PUR	Cable socket, M12, 5-pin, PUR cable
V15-W-2M-PUR	Cable socket, M12, 5-pin, PUR cable
UC-18/30GM-IR	Interface cable
ULTRA-PROG-IR	Service program

Electrical Connection

UC500-30GM70-2E2R2-V15
UC2000-30GM70-2E2R2-V15
UC3500-30GM70-2E2R2-V15
UC6000-30GM70-2E2R2-V15





Wire colors in accordance with EN 60947-5-2

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

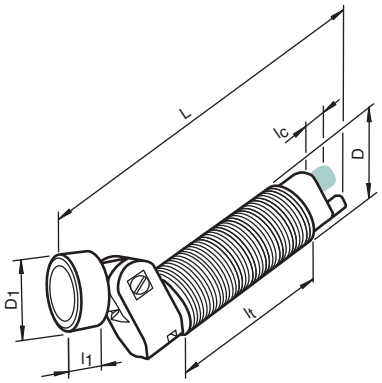
Date of issue 04/08/2015

Properties

- Up to 6000 mm sensing range versions
- DC, 2 switching outputs
- Ø30 mm cylindrical housing with adjustable head
- Connector version

Your Benefit

- Simple potentiometer-based configuration
- Optional, expanded configuration control via ULTRA-PROG-IR software and interface



Technical Data

*For detailed data and product description refer to the data sheets at **www.pepperl-fuchs.com***

General Data	
Operating voltage	12 ... 30 V DC (including ripple)
No-load supply current	≤ 50 mA
Potentiometer	Switching output 1 and Switching output 2 adjustable
Interface type	Infrared
Output type	2 switch outputs PNP, NO (NC programmable)
Operating current	Per 150 mA , short-circuit/overload protected
Input/output type	1 synchronization connection, bidirectional / TEACH-IN input, programmable
Ambient temperature	-25 ... 70 °C (-13 ... 158 °F)
Material	
Housing	brass, nickel-plated
Transducer	epoxy resin/hollow glass sphere mixture; polyurethane foam
Protection degree	IP65
Connection type	Device connector M12 x 1 , 5-pin

Model Number		UC500-30GM70S-2E2R2-V15	UC2000-30GM70S-2E2R2-V15	UC3500-30GM70S-2E2R2-V15	UC6000-30GM70S-2E2R2-V15
Sensing range	45 ... 500 mm	●			
	100 ... 2000 mm		●		
	200 ... 3500 mm			●	
	350 ... 6000 mm				●
Transducer frequency	approx. 300 kHz	●			
	approx. 200 kHz		●		
	approx. 120 kHz			●	
	approx. 80 kHz				●
Approvals and Certificates					
UL approval	cULus Listed, General Purpose	●	●	●	●
CSA approval	cCSAus Listed, General Purpose	●	●	●	●

Dimensions		
Diameter D [mm]	30	
Length L [mm]	126	143,5
Thread length l_t [mm]	74,4	
Transducer diameter D_1 [mm]	30	65
Transducer length l_1 [mm]	28	37,2
Connector area l_c [mm]	10,5	

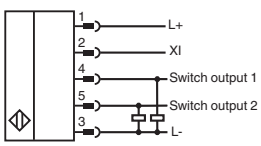
Accessories

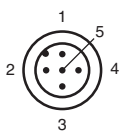
This and more accessories can be found in chapter 3.5 from page 673
See pages from 972 ... for cordsets See pages 1068 ... for mounting aids

BF 30	Mounting flange, 30 mm
BF 5-30	Universal mounting bracket for cylindrical sensors with a diameter of 5 ... 30 mm
V15-G-2M-PUR	Cable socket, M12, 5-pin, PUR cable
V15-W-2M-PUR	Cable socket, M12, 5-pin, PUR cable
UC-18/30GM-IR	Interface cable
ULTRA-PROG-IR	Service program

Electrical Connection

UC500-30GM70S-2E2R2-V15
UC2000-30GM70S-2E2R2-V15
UC3500-30GM70S-2E2R2-V15
UC6000-30GM70S-2E2R2-V15





Wire colors in accordance with EN 60947-5-2

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

Date of issue: 04/08/2015

Consider the General Notes on the Information in the Pepperl+Fuchs Product Catalogs
Copyright Pepperl+Fuchs

Pepperl+Fuchs Group www.pepperl-fuchs.com
USA: +1 330 486 0001 fa-info@us.pepperl-fuchs.com
Germany: +49 621 776-4411 fa-info@de.pepperl-fuchs.com
Singapore: +65 6779 9091 fa-info@sg.pepperl-fuchs.com

PEPPERL+FUCHS SENSING YOUR NEEDS

Technical Data

*For detailed data and product description refer to the data sheets at **www.pepperl-fuchs.com***

General Data	
Operating voltage	12 ... 30 V DC (including ripple)
No-load supply current	≤ 50 mA
Potentiometer	Switching output 1 and Switching output 2 adjustable
Interface type	Infrared
Output type	2 switch outputs PNP, NO (NC programmable)
Operating current	Per 150 mA , short-circuit/overload protected
Input/output type	1 synchronization connection, bidirectional / TEACH-IN input, programmable
Ambient temperature	-25 ... 70 °C (-13 ... 158 °F)
Material	
Housing	brass, nickel-plated
Transducer	epoxy resin/hollow glass sphere mixture; polyurethane foam
Protection degree	IP65
Connection type	Device connector M12 x 1 , 5-pin

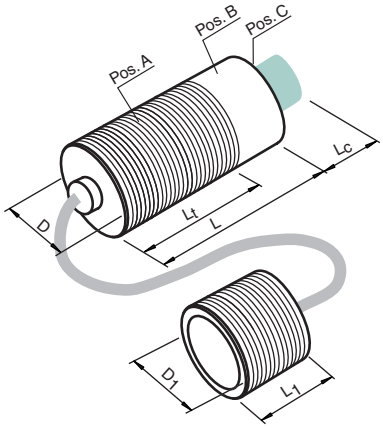
Model Number		UC500-30GM70-2E2R2-K-V15	UC2000-30GM70-2E2R2-K-V15
Sensing range	45 ... 500 mm	●	
	100 ... 2000 mm		●
Transducer frequency	approx. 300 kHz	●	
	approx. 200 kHz		●
Approvals and Certificates			
UL approval	cULus Listed, General Purpose	●	●
CSA approval	cCSAus Listed, General Purpose	●	●
Dimensions			
Diameter D [mm]		30	
Length L [mm]		111,3	
Thread length l_t [mm]		74,4	
Transducer diameter D_1 [mm]		18	
Transducer length l_1 [mm]		26,7	
Connector area l_c [mm]		10,5	

Properties

- 500 mm and 2000 mm sensing range versions
- DC, 2 switching outputs
- Ø30 mm cylindrical housing with separate head
- Connector version

Your Benefit

- Provides maximum sensing range in space-restricted mounting areas
- Simple potentiometer-based configuration
- Optional, expanded configuration control via ULTRA-PROG-IR software and interface



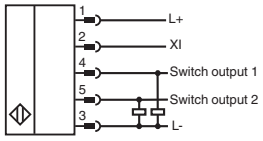
Accessories

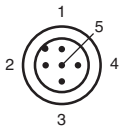
This and more accessories can be found in chapter 3.5 from page 673
See pages from 972 ... for cordsets
See pages 1068 ... for mounting aids

BF 30	Mounting flange, 30 mm
BF 5-30	Universal mounting bracket for cylindrical sensors with a diameter of 5 ... 30 mm
V15-G-2M-PUR	Cable socket, M12, 5-pin, PUR cable
V15-W-2M-PUR	Cable socket, M12, 5-pin, PUR cable
UC-18/30GM-IR	Interface cable
ULTRA-PROG-IR	Service program

Electrical Connection

UC500-30GM70-2E2R2-K-V15
UC2000-30GM70-2E2R2-K-V15





Wire colors in accordance with EN 60947-5-2

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

Date of issue 04/08/2015

Properties

- Up to 6000 mm sensing range versions
- DC, analog and switching output
- Ø30 mm cylindrical housing
- Connector version

Your Benefit

- Simple potentiometer-based configuration
- Optional, expanded configuration control via ULTRA-PROG-IR software and interface

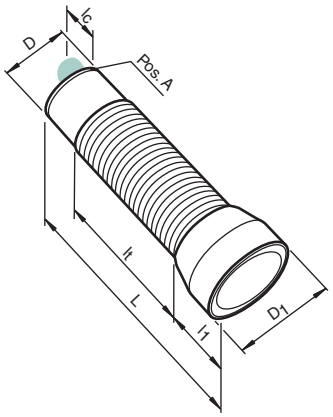
Technical Data

*For detailed data and product description refer to the data sheets at **www.pepperl-fuchs.com***

General Data	
Operating voltage	20 ... 30 V DC (including ripple)
No-load supply current	≤ 50 mA
Potentiometer	switch output adjustable
Interface type	Infrared
Output type	1 switch output PNP, NO (NC programmable)
Operating current	300 mA , short-circuit/overload protected
Input/output type	1 synchronization connection, bidirectional / TEACH-IN input, programmable
Ambient temperature	-25 ... 70 °C (-13 ... 158 °F)
Material	
Housing	brass, nickel-plated
Transducer	epoxy resin/hollow glass sphere mixture; polyurethane foam
Protection degree	IP65
Connection type	Device connector M12 x 1 , 5-pin

Model Number		UC500-30GM70-IE2R2-V15	UC500-30GM70-UE2R2-V15	UC2000-30GM70-IE2R2-V15	UC2000-30GM70-UE2R2-V15	UC3500-30GM70-IE2R2-V15	UC3500-30GM70-UE2R2-V15	UC6000-30GM70-UE2R2-V15	UC6000-30GM70-IE2R2-V15
	green = preferred type								
Sensing range	45 ... 500 mm	●	●						
	100 ... 2000 mm			●	●				
	200 ... 3500 mm					●	●		
	350 ... 6000 mm							●	●
Transducer frequency	approx. 300 kHz	●	●						
	approx. 200 kHz			●	●				
	approx. 120 kHz					●	●		
	approx. 80 kHz							●	●
Output type	1 voltage output 0 ... 10 V , ascending/ descending programmable		●		●		●	●	
	1 current output 4 ... 20 mA , ascending/ descending programmable	●		●		●			●
Approvals and Certificates									
UL approval	cULus Listed, General Purpose	●	●	●	●	●	●	●	●
CSA approval	cCSAus Listed, General Purpose	●	●	●	●	●	●	●	●

Dimensions					
Diameter D [mm]	30				
Length L [mm]	99,3				121,2
Thread length l_t [mm]	74,7				62
Transducer diameter D_1 [mm]	30				65
Transducer length l_1 [mm]	0,3		0,5		36,5
Connector area l_c [mm]	10,5				



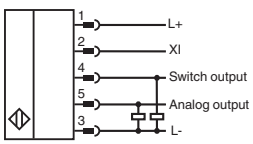
Accessories

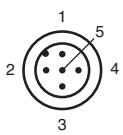
This and more accessories can be found in chapter 3.5 from page 673
See pages from 972 ... for cordsets See pages 1068 ... for mounting aids

BF 30	Mounting flange, 30 mm
BF 5-30	Universal mounting bracket for cylindrical sensors with a diameter of 5 ... 30 mm
V15-G-2M-PUR	Cable socket, M12, 5-pin, PUR cable
V15-W-2M-PUR	Cable socket, M12, 5-pin, PUR cable
UC-18/30GM-IR	Interface cable
ULTRA-PROG-IR	Service program

Electrical Connection

UC500-30GM70-IE2R2-V15
UC500-30GM70-UE2R2-V15
UC2000-30GM70-IE2R2-V15
UC2000-30GM70-UE2R2-V15
UC3500-30GM70-IE2R2-V15
UC3500-30GM70-UE2R2-V15
UC6000-30GM70-IE2R2-V15
UC6000-30GM70-UE2R2-V15





Wire colors in accordance with EN 60947-5-2

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

Date of issue: 04/08/2015

Consider the General Notes on the Information in the Pepperl+Fuchs Product Catalogs
Copyright Pepperl+Fuchs
Pepperl+Fuchs Group www.pepperl-fuchs.com
USA: +1 330 486 0001 fa-info@us.pepperl-fuchs.com
Germany: +49 621 776-4411 fa-info@de.pepperl-fuchs.com
Singapore: +65 6779 9091 fa-info@sg.pepperl-fuchs.com
PEPPERL+FUCHS SENSING YOUR NEEDS

Technical Data

*For detailed data and product description refer to the data sheets at **www.pepperl-fuchs.com***

General Data	
Operating voltage	20 ... 30 V DC (including ripple)
No-load supply current	≤ 50 mA
Potentiometer	switch output adjustable
Interface type	Infrared
Output type	1 switch output PNP, NO (NC programmable)
Operating current	300 mA , short-circuit/overload protected
Input/output type	1 synchronization connection, bidirectional / TEACH-IN input, programmable
Ambient temperature	-25 ... 70 °C (-13 ... 158 °F)
Material	
Housing	brass, nickel-plated
Transducer	epoxy resin/hollow glass sphere mixture; polyurethane foam
Protection degree	IP65
Connection type	Device connector M12 x 1 , 5-pin

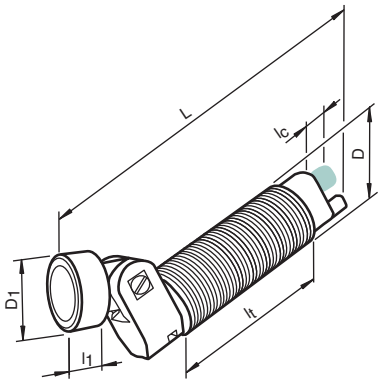
Properties

- Up to 6000 mm sensing range versions
- DC, analog and switching output
- Ø30 mm cylindrical housing with adjustable head
- Connector version

Your Benefit

- Simple potentiometer-based configuration
- Optional, expanded configuration control via ULTRA-PROG-IR software and interface

Model Number		UC500-30GM70S-IE2R2-V15	UC500-30GM70S-UE2R2-V15	UC2000-30GM70S-IE2R2-V15	UC2000-30GM70S-UE2R2-V15	UC3500-30GM70S-IE2R2-V15	UC3500-30GM70S-UE2R2-V15	UC6000-30GM70S-IE2R2-V15	UC6000-30GM70S-UE2R2-V15
Sensing range	45 ... 500 mm	●	●						
	100 ... 2000 mm			●	●				
	200 ... 3500 mm					●	●		
	350 ... 6000 mm							●	●
Transducer frequency	approx. 300 kHz	●	●						
	approx. 200 kHz			●	●				
	approx. 120 kHz					●	●		
	approx. 80 kHz							●	●
Output type	1 voltage output 0 ... 10 V , ascending/ descending programmable		●		●		●		●
	1 current output 4 ... 20 mA , ascending/ descending programmable	●		●		●		●	
Approvals and Certificates									
UL approval	cULus Listed, General Purpose	●	●	●	●	●	●	●	●
CSA approval	cCSAus Listed, General Purpose	●	●	●	●	●	●	●	●
Dimensions									
Diameter D [mm]		30							
Length L [mm]		126						143,5	
Thread length l_t [mm]		74,4							
Transducer diameter D_1 [mm]		30						65	
Transducer length l_1 [mm]		28						37,2	
Connector area l_c [mm]		10,5							



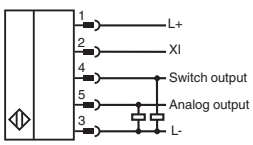
Accessories

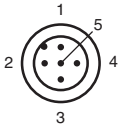
This and more accessories can be found in chapter 3.5 from page 673
See pages from 972 ... for cordsets
See pages 1068 ... for mounting aids

BF 30	Mounting flange, 30 mm
BF 5-30	Universal mounting bracket for cylindrical sensors with a diameter of 5 ... 30 mm
V15-G-2M-PUR	Cable socket, M12, 5-pin, PUR cable
V15-W-2M-PUR	Cable socket, M12, 5-pin, PUR cable
UC-18/30GM-IR	Interface cable
ULTRA-PROG-IR	Service program

Electrical Connection

UC500-30GM70S-IE2R2-V15
UC500-30GM70S-UE2R2-V15
UC2000-30GM70S-IE2R2-V15
UC2000-30GM70S-UE2R2-V15
UC3500-30GM70S-IE2R2-V15
UC3500-30GM70S-UE2R2-V15
UC6000-30GM70S-IE2R2-V15
UC6000-30GM70S-UE2R2-V15





Wire colors in accordance with EN 60947-5-2

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

Date of issue 04/08/2015

Technical Data

*For detailed data and product description refer to the data sheets at **www.pepperl-fuchs.com***

General Data	
Operating voltage	20 ... 30 V DC (including ripple)
No-load supply current	≤ 50 mA
Potentiometer	switch output adjustable
Interface type	Infrared
Output type	1 switch output PNP, NO (NC programmable)
Operating current	300 mA , short-circuit/overload protected
Input/output type	1 synchronization connection, bidirectional / TEACH-IN input, programmable
Ambient temperature	-25 ... 70 °C (-13 ... 158 °F)
Material	
Housing	brass, nickel-plated
Transducer	epoxy resin/hollow glass sphere mixture; polyurethane foam
Protection degree	IP65
Connection type	Device connector M12 x 1 , 5-pin

Model Number	green = preferred type	UC500-30GM70-IE2R2-K-V15	UC500-30GM70-UE2R2-K-V15	UC2000-30GM70-IE2R2-K-V15	UC2000-30GM70-UE2R2-K-V15
Sensing range	45 ... 500 mm	●	●		
	100 ... 2000 mm			●	●
Transducer frequency	approx. 300 kHz	●	●		
	approx. 200 kHz			●	●
Output type	1 voltage output 0 ... 10 V , ascending/ descending programmable		●		●
	1 current output 4 ... 20 mA , ascending/ descending programmable	●		●	
Approvals and Certificates					
UL approval	cULus Listed, General Purpose	●	●	●	●
CSA approval	cCSAus Listed, General Purpose	●	●	●	●

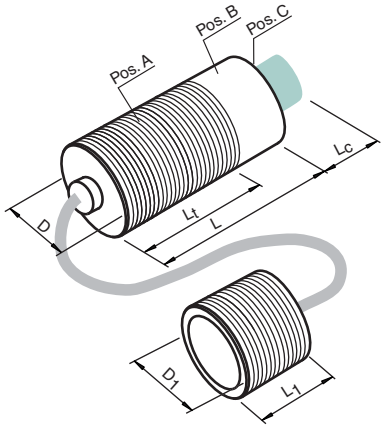
Dimensions	
Diameter D [mm]	30
Length L [mm]	111,3
Thread length l_t [mm]	74,4
Transducer diameter D_1 [mm]	18
Transducer length l_1 [mm]	26,7
Connector area l_c [mm]	10,5

Properties

- 500 mm and 2000 mm sensing range versions
- DC, analog and switching output
- Ø30 mm cylindrical housing with separate head
- Connector version

Your Benefit

- Provides maximum sensing range in space-restricted mounting areas
- Simple potentiometer-based configuration
- Optional, expanded configuration control via ULTRA-PROG-IR software and interface



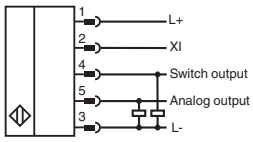
Accessories

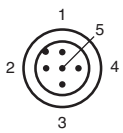
This and more accessories can be found in chapter 3.5 from page 673
See pages from 972 ... for cordsets
See pages 1068 ... for mounting aids

BF 30	Mounting flange, 30 mm
BF 5-30	Universal mounting bracket for cylindrical sensors with a diameter of 5 ... 30 mm
V15-G-2M-PUR	Cable socket, M12, 5-pin, PUR cable
V15-W-2M-PUR	Cable socket, M12, 5-pin, PUR cable
UC-18/30GM-IR	Interface cable
ULTRA-PROG-IR	Service program

Electrical Connection

UC500-30GM70-IE2R2-K-V15
UC500-30GM70-UE2R2-K-V15
UC2000-30GM70-IE2R2-K-V15
UC2000-30GM70-UE2R2-K-V15





Wire colors in accordance with EN 60947-5-2

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

Date of issue: 04/08/2015

Consider the General Notes on the Information in the Pepperl+Fuchs Product Catalogs
Copyright Pepperl+Fuchs

Pepperl+Fuchs Group www.pepperl-fuchs.com
USA: +1 330 486 0001 fa-info@us.pepperl-fuchs.com
Germany: +49 621 776-4411 fa-info@de.pepperl-fuchs.com
Singapore: +65 6779 9091 fa-info@sg.pepperl-fuchs.com
PEPPERL+FUCHS SENSING YOUR NEEDS

Technical Data

*For detailed data and product description refer to the data sheets at **www.pepperl-fuchs.com***

General Data	
Operating voltage	20 ... 30 V DC (including ripple)
No-load supply current	≤ 50 mA
Potentiometer	switch output adjustable
Interface type	Infrared
Output type	1 switch output PNP, NO (NC programmable)
Operating current	300 mA , short-circuit/overload protected
Input/output type	1 synchronization connection, bidirectional / TEACH-IN input, programmable
Ambient temperature	-25 ... 70 °C (-13 ... 158 °F)
Material	
Housing	High grade stainless steel
Transducer	PTFE coated; epoxy resin/hollow glass sphere mixture; polyurethane foam
Protection degree	IP65
Connection type	Device connector M12 x 1 , 5-pin

Properties

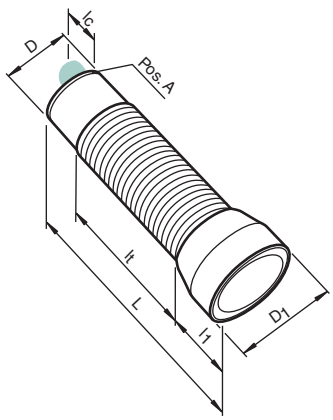
- Up to 6000 mm sensing range versions
- DC, analog and switching output
- Ø30 mm cylindrical housing
- Connector version

Your Benefit

- Chemically resistant PTFE-coated sensing face and corrosion resistant high grade stasinless steel housing
- Simple potentiometer-based configuration
- Optional, expanded configuration control via ULTRA-PROG-IR software and interface

Model Number		UCC500-30GH70-IE2R2-V15	UCC500-30GH70-UE2R2-V15	UCC2000-30GH70-IE2R2-V15	UCC2000-30GH70-UE2R2-V15	UCC3500-30GH70-IE2R2-V15	UCC3500-30GH70-UE2R2-V15	UCC6000-30GH70-IE2R2-V15	UCC6000-30GH70-UE2R2-V15
Sensing range	45 ... 500 mm	●	●						
	100 ... 2000 mm			●	●				
	200 ... 3500 mm					●	●		
	350 ... 6000 mm							●	●
Transducer frequency	approx. 300 kHz	●	●						
	approx. 200 kHz			●	●				
	approx. 120 kHz					●	●		
	approx. 80 kHz							●	●
Output type	1 voltage output 0 ... 10 V , ascending/ descending programmable		●		●		●		●
	1 current output 4 ... 20 mA , ascending/ descending programmable	●		●		●		●	
Approvals and Certificates									
UL approval	cULus Listed, General Purpose	●	●	●	●	●	●	●	●
CSA approval	cCSAus Listed, General Purpose	●	●	●	●	●	●	●	●

Dimensions								
Diameter D [mm]	30							
Length L [mm]	99,3							121,2
Thread length l_t [mm]	74,7							62
Transducer diameter D_1 [mm]	30							65
Transducer length l_1 [mm]	0,3				0,5			36,5
Connector area l_c [mm]	10,5							



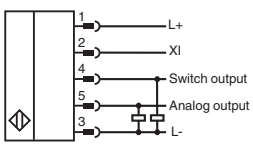
Accessories

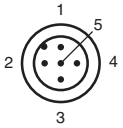
This and more accessories can be found in chapter 3.5 from page 673
See pages from 972 ... for cordsets See pages 1068 ... for mounting aids

BF 30	Mounting flange, 30 mm
BF 5-30	Universal mounting bracket for cylindrical sensors with a diameter of 5 ... 30 mm
V15-G-2M-PUR	Cable socket, M12, 5-pin, PUR cable
V15-W-2M-PUR	Cable socket, M12, 5-pin, PUR cable
UC-18/30GM-IR	Interface cable
ULTRA-PROG-IR	Service program

Electrical Connection

UCC500-30GH70-IE2R2-V15
UCC500-30GH70-UE2R2-V15
UCC2000-30GH70-IE2R2-V15
UCC2000-30GH70-UE2R2-V15
UCC3500-30GH70-IE2R2-V15
UCC3500-30GH70-UE2R2-V15
UCC6000-30GH70-IE2R2-V15
UCC6000-30GH70-UE2R2-V15





Wire colors in accordance with EN 60947-5-2

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

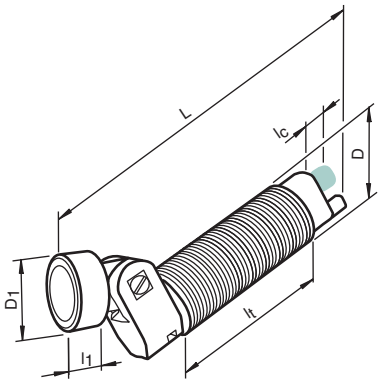
Date of issue 04/08/2015

Properties

- Up to 6000 mm sensing range versions
- DC, analog and switching output
- Ø30 mm cylindrical housing with adjustable head
- Connector version

Your Benefit

- Chemically resistant PTFE-coated sensing face and corrosion resistant high grade stasinless steel housing
- Simple potentiometer-based configuration
- Optional, expanded configuration control via ULTRA-PROG-IR software and interface



Technical Data

*For detailed data and product description refer to the data sheets at **www.pepperl-fuchs.com***

General Data	
Operating voltage	20 ... 30 V DC (including ripple)
No-load supply current	≤ 50 mA
Potentiometer	switch output adjustable
Interface type	Infrared
Output type	1 switch output PNP, NO (NC programmable)
Operating current	300 mA , short-circuit/overload protected
Input/output type	1 synchronization connection, bidirectional / TEACH-IN input, programmable
Ambient temperature	-25 ... 70 °C (-13 ... 158 °F)
Material	
Housing	High grade stainless steel
Transducer	PTFE coated; epoxy resin/hollow glass sphere mixture; polyurethane foam
Protection degree	IP65
Connection type	Device connector M12 x 1 , 5-pin

Model Number		UCC500-30GH70S-IE2R2-V15	UCC500-30GH70S-UE2R2-V15	UCC2000-30GH70S-IE2R2-V15	UCC2000-30GH70S-UE2R2-V15	UCC3500-30GH70S-IE2R2-V15	UCC3500-30GH70S-UE2R2-V15	UCC6000-30GH70S-IE2R2-V15	UCC6000-30GH70S-UE2R2-V15
Sensing range	45 ... 500 mm	●	●						
	100 ... 2000 mm			●	●				
	200 ... 3500 mm					●	●		
	350 ... 6000 mm							●	●
Transducer frequency	approx. 300 kHz	●	●						
	approx. 200 kHz			●	●				
	approx. 120 kHz					●	●		
	approx. 80 kHz							●	●
Output type	1 voltage output 0 ... 10 V , ascending/ descending programmable		●		●		●		●
	1 current output 4 ... 20 mA , ascending/ descending programmable	●		●		●		●	
Approvals and Certificates									
UL approval	cULus Listed, General Purpose	●	●	●	●	●	●	●	●
CSA approval	cCSAus Listed, General Purpose	●	●	●	●	●	●	●	●

Dimensions								
Diameter D [mm]	30							
Length L [mm]	143,5							126
Thread length l_t [mm]	74,4							
Transducer diameter D_1 [mm]	30							65
Transducer length l_1 [mm]	28							37,2
Connector area l_c [mm]	10,5							

Accessories

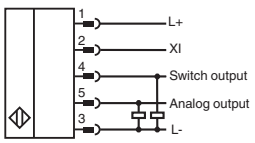
This and more accessories can be found in chapter 3.5 from page 673

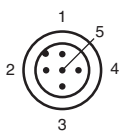
See pages from 972 ... for cordsets See pages 1068 ... for mounting aids

BF 30	Mounting flange, 30 mm
BF 5-30	Universal mounting bracket for cylindrical sensors with a diameter of 5 ... 30 mm
V15-G-2M-PUR	Cable socket, M12, 5-pin, PUR cable
V15-W-2M-PUR	Cable socket, M12, 5-pin, PUR cable
UC-18/30GM-IR	Interface cable
ULTRA-PROG-IR	Service program

Electrical Connection

UCC2000-30GH70S-UE2R2-V15
UCC3500-30GH70S-IE2R2-V15
UCC3500-30GH70S-UE2R2-V15
UCC6000-30GH70S-IE2R2-V15
UCC6000-30GH70S-UE2R2-V15
UCC500-30GH70S-IE2R2-V15
UCC500-30GH70S-UE2R2-V15
UCC2000-30GH70S-IE2R2-V15





Wire colors in accordance with EN 60947-5-2

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

Date of issue: 04/08/2015

Consider the General Notes on the Information in the Pepperl+Fuchs Product Catalogs
Copyright Pepperl+Fuchs
Pepperl+Fuchs Group www.pepperl-fuchs.com
USA: +1 330 486 0001 fa-info@us.pepperl-fuchs.com
Germany: +49 621 776-4411 fa-info@de.pepperl-fuchs.com
Singapore: +65 6779 9091 fa-info@sg.pepperl-fuchs.com
PEPPERL+FUCHS SENSING YOUR NEEDS

Technical Data

*For detailed data and product description refer to the data sheets at **www.pepperl-fuchs.com***

General Data	
Operating voltage	20 ... 30 V DC (including ripple)
No-load supply current	≤ 50 mA
Potentiometer	switch output adjustable
Interface type	Infrared
Output type	1 switch output PNP, NO (NC programmable)
Operating current	300 mA , short-circuit/overload protected
Input/output type	1 synchronization connection, bidirectional / TEACH-IN input, programmable
Ambient temperature	-25 ... 70 °C (-13 ... 158 °F)
Material	
Housing	High grade stainless steel
Transducer	PTFE coated; epoxy resin/hollow glass sphere mixture; polyurethane foam
Protection degree	IP65
Connection type	Device connector M12 x 1 , 5-pin

Model Number		UCC500-30GH70-IE2R2-K-V15	UCC500-30GH70-UE2R2-K-V15	UCC2000-30GH70-IE2R2-K-V15	UCC2000-30GH70-UE2R2-K-V15
Sensing range	45 ... 500 mm	●	●		
	100 ... 2000 mm			●	●
Transducer frequency	approx. 300 kHz	●	●		
	approx. 200 kHz			●	●
Output type	1 voltage output 0 ... 10 V , ascending/ descending programmable		●		●
	1 current output 4 ... 20 mA , ascending/ descending programmable	●		●	
Approvals and Certificates					
UL approval	cULus Listed, General Purpose	●	●	●	●
CSA approval	cCSAus Listed, General Purpose	●	●	●	●

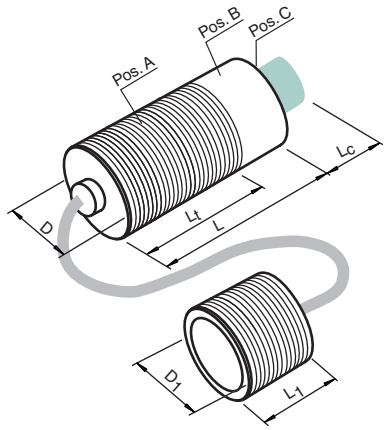
Dimensions	
Diameter D [mm]	30
Length L [mm]	111,3
Thread length l_t [mm]	74,4
Transducer diameter D_1 [mm]	18
Transducer length l_1 [mm]	26,7
Connector area l_c [mm]	10,5

Properties

- 500 mm and 2000 mm sensing range versions
- DC, analog and switching output
- Ø30 mm cylindrical housing with separate head
- Connector version

Your Benefit

- Chemically resistant PTFE-coated sensing face and corrosion resistant high grade stasinless steel housing
- Provides maximum sensing range in space-restricted mounting areas
- Simple potentiometer-based configuration
- Optional, expanded configuration control via ULTRA-PROG-IR software and interface



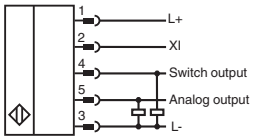
Accessories

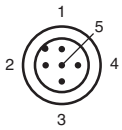
This and more accessories can be found in chapter 3.5 from page 673
See pages from 972 ... for cordsets
See pages 1068 ... for mounting aids

BF 30	Mounting flange, 30 mm
BF 5-30	Universal mounting bracket for cylindrical sensors with a diameter of 5 ... 30 mm
V15-G-2M-PUR	Cable socket, M12, 5-pin, PUR cable
V15-W-2M-PUR	Cable socket, M12, 5-pin, PUR cable
UC-18/30GM-IR	Interface cable
ULTRA-PROG-IR	Service program

Electrical Connection

UCC500-30GH70-IE2R2-K-V15
UCC500-30GH70-UE2R2-K-V15
UCC2000-30GH70-IE2R2-K-V15
UCC2000-30GH70-UE2R2-K-V15





Wire colors in accordance with EN 60947-5-2

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

Date of issue 04/08/2015

Properties

- Up to 6000 mm sensing range versions
- DC, IO-Link and switching output
- Ø30 mm cylindrical housing
- Connector version

Your Benefit

- Simple pushbutton-based configuration
- Continuous IO-Link accessibility to output status and configuration parameters
- Optional, expanded configuration control via PACTware
- High-visibility LED indicators

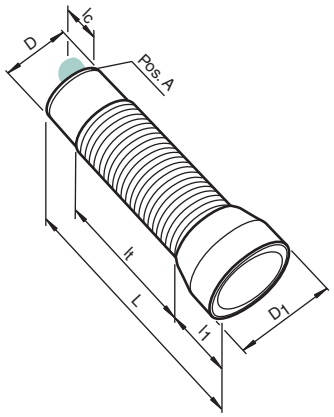
Technical Data

*For detailed data and product description refer to the data sheets at **www.pepperl-fuchs.com***

General Data	
Operating voltage	10 ... 30 V DC , ripple 10 %$_{SS}$
No-load supply current	≤ 60 mA
Power consumption	≤ 1 W
Interface type	IO-Link
SIO mode support	✔
Output type	2 Push-pull outputs, short-circuit protected, reverse polarity protection
Rated operational current	200 mA , short-circuit/overload protected
Input/output type	1 synchronization connection, bidirectional
Ambient temperature	-25 ... 70 °C (-13 ... 158 °F)
Material	
Housing	Stainless steel 1.4305 / AISI 303, TPU, Polyamides
Transducer	epoxy resin/hollow glass sphere mixture; polyurethane foam
Protection degree	IP65/IP67
Connection type	Device connector M12 x 1 , 5-pin

Model Number		UC500-30GM-2EP-IO-V15	UC2000-30GM-2EP-IO-V15	UC4000-30GM-2EP-IO-V15	UC6000-30GM-2EP-IO-V15
Sensing range	35 ... 500 mm	●			
	80 ... 2000 mm		●		
	200 ... 4000 mm			●	
	350 ... 6000 mm				●
Transducer frequency	approx. 380 kHz	●			
	approx. 180 kHz		●		
	approx. 85 kHz			●	
	approx. 65 kHz				●
Switching frequency	≤ 11 Hz	●			
	≤ 4 Hz		●		
	≤ 2 Hz			●	
	≤ 1.5 Hz				●
Approvals and Certificates					
UL approval	cULus Listed, General Purpose	●	●	●	●
CSA approval	cCSAus Listed, General Purpose	●	●	●	●

Dimensions				
Diameter D [mm]	30			
Length L [mm]	81	86	93	
Thread length l_t [mm]	54	36		
Transducer diameter D_1 [mm]	30	40	73	
Transducer length l_1 [mm]	2	25	32	
Connector area l_c [mm]	11			



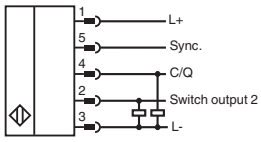
Accessories

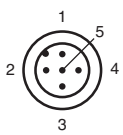
This and more accessories can be found in chapter 3.5 from page 673
See pages from 972 ... for cordsets
See pages 1068 ... for mounting aids

BF 30	Mounting flange, 30 mm
V15-W-2M-PUR	Cable socket, M12, 5-pin, PUR cable
IO-Link-Master01-USB	IO-Link Master
IO-Link-Master-USB DTM	Communication DTM for use of IO-Link-Master
IODD Interpreter	Software for the integration of IODDs in a frame application (e. g. PACTware)
PACTware 4.X	FDT frame application

Electrical Connection

UC500-30GM-2EP-IO-V15
UC2000-30GM-2EP-IO-V15
UC4000-30GM-2EP-IO-V15
UC6000-30GM-2EP-IO-V15





Wire colors in accordance with EN 60947-5-2

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

Date of issue: 04/08/2015

Consider the General Notes on the Information in the Pepperl+Fuchs Product Catalogs
Copyright Pepperl+Fuchs

Pepperl+Fuchs Group www.pepperl-fuchs.com
USA: +1 330 486 0001 fa-info@us.pepperl-fuchs.com
Germany: +49 621 776-4411 fa-info@de.pepperl-fuchs.com
Singapore: +65 6779 9091 fa-info@sg.pepperl-fuchs.com

PEPPERL+FUCHS
SENSING YOUR NEEDS

Technical Data

*For detailed data and product description refer to the data sheets at **www.pepperl-fuchs.com***

General Data	
Operating voltage	10 ... 30 V DC , ripple 10 %$_{SS}$ 15 ... 30 V voltage output
No-load supply current	≤ 60 mA
Power consumption	≤ 1 W
Interface type	IO-Link
SIO mode support	✔
Output type	1 push-pull output, short-circuit protected, reverse polarity protected
Rated operational current	200 mA , short-circuit/overload protected
Analog output	Current output 4 mA ... 20 mA or voltage output 0 V ... 10 V configurable
Deviation of the characteristic curve	≤ 0.2 % of full-scale value
Input/output type	1 synchronization connection, bidirectional
Ambient temperature	-25 ... 70 °C (-13 ... 158 °F)
Material	
Housing	Stainless steel 1.4305 / AISI 303, TPU, Polyamides
Transducer	epoxy resin/hollow glass sphere mixture; polyurethane foam
Protection degree	IP65/IP67
Connection type	Device connector M12 x 1 , 5-pin

Model Number	green = preferred type	UC500-30GM-IUEP-IO-V15	UC2000-30GM-IUEP-IO-V15	UC4000-30GM-IUEP-IO-V15	UC6000-30GM-IUEP-IO-V15
Sensing range	35 ... 500 mm	●			
	80 ... 2000 mm		●		
	200 ... 4000 mm			●	
	350 ... 6000 mm				●
Transducer frequency	approx. 380 kHz	●			
	approx. 180 kHz		●		
	approx. 85 kHz			●	
	approx. 65 kHz				●
Resolution	evaluation range [mm]/4000, but ≥ 0.05 mm	●			
	evaluation range [mm]/4000, but ≥ 0.35 mm		●	●	●
Switching frequency	≤ 11 Hz	●			
	≤ 4 Hz		●		
	≤ 2 Hz			●	
	≤ 1.5 Hz				●
Approvals and Certificates					
UL approval	cULus Listed, General Purpose	●	●	●	●
CSA approval	cCSAus Listed, General Purpose	●	●	●	●

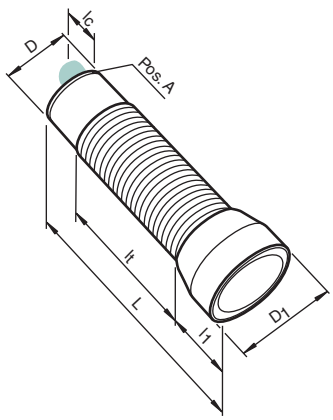
Dimensions				
Diameter D [mm]	30			
Length L [mm]	81	86	93	
Thread length l_t [mm]	54	36		
Transducer diameter D_1 [mm]	30	40	73	
Transducer length l_1 [mm]	2	25	32	
Connector area l_c [mm]	11			

Properties

- **Up to 6000 mm sensing range versions**
- **DC, IO-Link and analog output**
- **Ø30 mm cylindrical housing**
- **Connector version**

Your Benefit

- **Simple pushbutton-based configuration**
- **Continuous IO-Link accessibility to output status and configuration parameters**
- **Optional, expanded configuration control via PACTware**
- **High-visibility LED indicators**



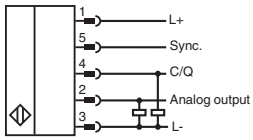
Accessories

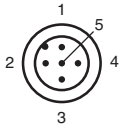
This and more accessories can be found in chapter 3.5 from page 673
See pages from 972 ... for cordsets
See pages 1068 ... for mounting aids

BF 30	Mounting flange, 30 mm
V15-W-2M-PUR	Cable socket, M12, 5-pin, PUR cable
IO-Link-Master01-USB	IO-Link Master

Electrical Connection

UC500-30GM-IUEP-IO-V15
UC2000-30GM-IUEP-IO-V15
UC4000-30GM-IUEP-IO-V15
UC6000-30GM-IUEP-IO-V15





Wire colors in accordance with EN 60947-5-2

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

Date of issue 04/08/2015

Properties

- 3000 mm sensing range
- DC, analog and switching output versions
- Ø30 mm cylindrical housing
- Cable version

Technical Data

*For detailed data and product description refer to the data sheets at **www.pepperl-fuchs.com***

General Data	
Sensing range	200 ... 3000 mm
Transducer frequency	approx. 100 kHz
Operating voltage	10 ... 30 V DC
No-load supply current	≤ 50 mA
Input type	1 program input
Input/output type	1 synchronization connection, bidirectional
Ambient temperature	-25 ... 60 °C (-13 ... 140 °F)
Material	
Housing	Stainless steel 1.4404 / AISI 316L
Transducer	Stainless steel 1.4435 / AISI 316L
Protection degree	IP68 / IP69K
Connection type	cable PUR , 5 m

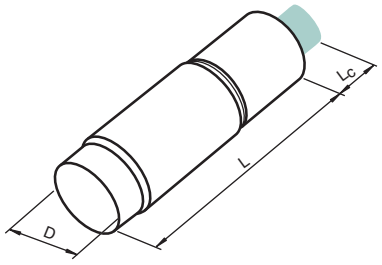
Model Number	green = preferred type	UMC3000-30H-E5-5M-FA	UMC3000-30H-I-5M-FA
Output type	1 analog output 4 ... 20 mA		●
	1 switch output, PNP NO/NC, programmable	●	
Rated operational current	200 mA , short-circuit/overload protected	●	
Resolution	Evaluation range [mm]/3200, however ≥ 0.4 mm		●
Deviation of the characteristic curve	≤ 0.2 % of full-scale value		●
Switching frequency	≤ 2.8 Hz	●	

Dimensions	
Length L [mm]	100
Diameter D [mm]	30
Thread length l_t [mm]	0
Connector area l_c [mm]	11

Accessories

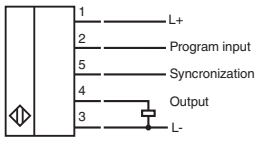
This and more accessories can be found in chapter 3.5 from page 673
See pages from 972 ... for cordsets See pages 1068 ... for mounting aids

UC-PROG1	Programming adapter
V15S-G-0,3M-PUR-WAGO	Male cordset, M12, 5-pin, PUR cable with WAGO terminals
MH-30H-01-FA	Mounting aid, 30 mm acc. to EHEDG



Electrical Connection

UMC3000-30H-E5-5M-FA
UMC3000-30H-I-5M-FA



Wire colors in accordance with EN 60947-5-2

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

Date of issue: 04/08/2015

Consider the General Notes on the Information in the Pepperl+Fuchs Product Catalogs
Copyright Pepperl+Fuchs
Pepperl+Fuchs Group www.pepperl-fuchs.com
USA: +1 330 486 0001 fa-info@us.pepperl-fuchs.com
Germany: +49 621 776-4411 fa-info@de.pepperl-fuchs.com
Singapore: +65 6779 9091 fa-info@sg.pepperl-fuchs.com
PEPPERL+FUCHS SENSING YOUR NEEDS

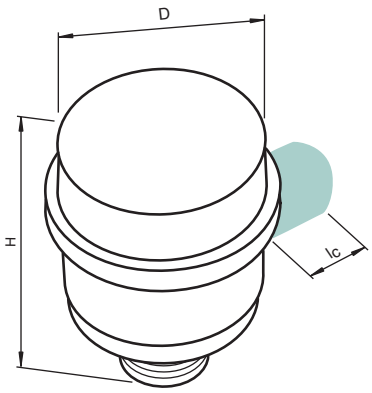
Technical Data

*For detailed data and product description refer to the data sheets at **www.pepperl-fuchs.com***

Model Number	UC500-D1-3K-V7
Sensing range	60 ... 550 mm
Transducer frequency	approx. 380 kHz
Operating voltage	10 ... 253 V DC 20 ... 253 V AC , 47 ... 63 Hz
No-load supply current	< 30 mA with U_B = 30 V DC < 110 mA at U_B = 10 V DC < 25 mA at U_B = 220 V AC
Output type	3 relay outputs, normally open/closed, selectable
Contact loading	253 V AC/150V DC, 3 A (ohm. load)
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
Material	
Housing	cover: PC housing: PBT threaded flange: stainless steel installation connector/cable socket: PETP
Transducer	epoxy resin/hollow glass sphere mixture; polyurethane foam
Protection degree	IP65
Connection	90° V7 (7-pin) cable connector Wire cross section: ≤1.5 mm² cable diameter Ø7 ... 9 mm
Approvals and Certificates	
CCC approval	Certified by China Compulsory Certification (CCC)
Dimensions	
Height H [mm]	106
Diameter D [mm]	75
Connector area l_c [mm]	79

Properties

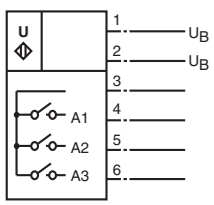
- **500 mm sensing range**
- **AC/DC, 3 relay outputs**
- **Ø30/75 mm cylindrical housing**
- **Connector version**



Electrical Connection

UC500-D1-3K-V7

Normsymbol/Anschluss:



Connector V7

Date of issue 04/08/2015

Properties

- 250 mm and 400 mm sensing range versions
- DC, switching output
- Sub-miniature F77 housing
- Connector version

Your Benefit

- Best-in-class immunity to acoustic interference
- Simple, intuitive range adjustment
- High-end performance and low cost
- Front-view output LED

Technical Data

*For detailed data and product description refer to the data sheets at **www.pepperl-fuchs.com***

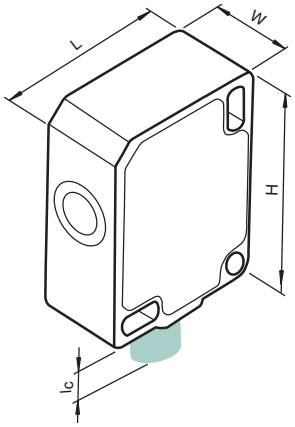
General Data	
Operating voltage	20 ... 30 V DC , ripple 10 %$_{SS}$; 12 ... 20 V DC reduced sensitivity by 90 %
No-load supply current	≤ 20 mA
Output type	1 switch output PNP, NO
Rated operational current	200 mA , short-circuit/overload protected
Input type	1 program input
Ambient temperature	-25 ... 70 °C (-13 ... 158 °F)
Material	
Housing	Polycarbonate
Transducer	epoxy resin/hollow glass sphere mixture; polyurethane foam
Protection degree	IP67
Connection type	M8 x 1 connector , 4-pin

Model Number	green = preferred type	UB250-F77-E2-V31	UB400-F77-E2-V31
Sensing range	20 ... 250 mm	●	
	25 ... 400 mm		●
Transducer frequency	approx. 400 kHz	●	
	approx. 300 kHz		●
Switching frequency	10 Hz	●	
	5 Hz		●
Approvals and Certificates			
UL approval	cULus Listed, General Purpose	●	●
CSA approval	cCSAus Listed, General Purpose	●	●
Dimensions			
Length L [mm]		23	
Width W [mm]		12	
Height H [mm]		31	
Connector area l_c [mm]		9	

Accessories

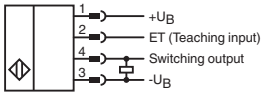
This and more accessories can be found in chapter 3.5 from page 673
See pages from 972 ... for cordsets See pages 1068 ... for mounting aids

UB-PROG4-V31	Programming unit
OMH-ML7-01	Mounting bracket
V31-GM-2M-PVC	M8, 4-pin socket, PVC cable
V31-WM-2M-PVC	M8, 4-pin socket, PVC cable



Electrical Connection

UB250-F77-E2-V31
UB400-F77-E2-V31



Wire colors in accordance with EN 60947-5-2

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

Date of issue: 04/08/2015

Consider the General Notes on the Information in the Pepperl+Fuchs Product Catalogs
Copyright Pepperl+Fuchs

Pepperl+Fuchs Group www.pepperl-fuchs.com
USA: +1 330 486 0001 fa-info@us.pepperl-fuchs.com
Germany: +49 621 776-4411 fa-info@de.pepperl-fuchs.com
Singapore: +65 6779 9091 fa-info@sg.pepperl-fuchs.com
PEPPERL+FUCHS SENSING YOUR NEEDS

Technical Data

*For detailed data and product description refer to the data sheets at **www.pepperl-fuchs.com***

General Data	
Operating voltage	20 ... 30 V DC , ripple 10 %$_{SS}$; 12 ... 20 V DC reduced sensitivity by 90 %
No-load supply current	≤ 20 mA
Rated operational current	200 mA , short-circuit/overload protected
Input type	1 program input
Ambient temperature	-25 ... 70 °C (-13 ... 158 °F)
Material	
Housing	Polycarbonate
Transducer	epoxy resin/hollow glass sphere mixture; polyurethane foam
Protection degree	IP67
Connection type	M8 x 1 connector , 4-pin

Model Number	green = preferred type	UBR250-F77-E2-V31	UBR250-F77-E3-V31	UBR400-F77-E2-V31	UBR400-F77-E3-V31
Sensing range	0 ... 250 mm	●	●		
	0 ... 400 mm			●	●
Transducer frequency	approx. 400 kHz	●	●		
	approx. 300 kHz			●	●
Output type	1 switch output PNP , NC		●		●
	1 switch output PNP, NO	●		●	
Switching frequency	10 Hz	●	●		
	5 Hz			●	●
Approvals and Certificates					
UL approval	cULus Listed, General Purpose	●	●	●	●
CSA approval	cCSAus Listed, General Purpose	●	●	●	●
Dimensions					
Length L [mm]		23			
Width W [mm]		12			
Height H [mm]		31			
Connector area l_c [mm]		9			

Properties

- 250 mm and 400 mm sensing range versions
- DC, switching output
- Sub-miniature F77 housing
- Connector version

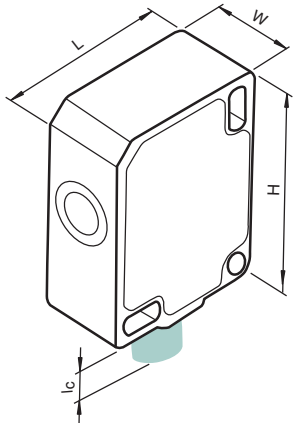
Your Benefit

- Retro-reflective operation
- Best-in-class immunity to acoustic interference
- Simple, intuitive range adjustment
- High-end performance and low cost

Accessories

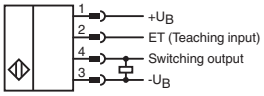
This and more accessories can be found in chapter 3.5 from page 673
See pages from 972 ... for cordsets See pages 1068 ... for mounting aids

UB-PROG4-V31	Programming unit
OMH-ML7-01	Mounting bracket
V31-GM-2M-PVC	M8, 4-pin socket, PVC cable
V31-WM-2M-PVC	M8, 4-pin socket, PVC cable



Electrical Connection

UBR250-F77-E2-V31
UBR400-F77-E2-V31
UBR250-F77-E3-V31
UBR400-F77-E3-V31



Wire colors in accordance with EN 60947-5-2

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

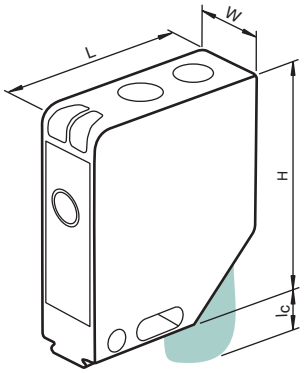
Date of issue 04/08/2015

Properties

- Up to 800 mm sensing range versions
- DC, switching output
- Miniature F12 housing
- Connector version

Your Benefit

- Potentiometer configurable
- Selectable wide/narrow beam width
- Universal sinking-sourcing output
- Rugged metal housing



Technical Data

*For detailed data and product description refer to the data sheets at **www.pepperl-fuchs.com***

General Data	
Operating voltage	10 ... 30 V DC , ripple 10 %$_{SS}$
Output type	Push-pull output, short-circuit protected, reverse polarity protected
Rated operational current	200 mA , short-circuit/overload protected
Synchronization	1 synchronous connection, bi-directional
Ambient temperature	-15 ... 70 °C (5 ... 158 °F)
Material	
Housing	Frame: nickel plated, die cast zinc, Laterals: glass-fiber reinforced plastic PC
Transducer	epoxy resin/hollow glass sphere mixture; foam polyurethane, cover PBT
Protection degree	IP54
Connection type	Device connector M12 x 1 , 5-pin

Model Number		UB120-F12P-EP-V15	UB250-F12P-EP-V15	UB800-F12P-EP-V15
Sensing range	15 ... 150 mm	●		
	20 ... 250 mm		●	
	30 ... 800 mm			●
Transducer frequency	approx. 850 kHz	●		
	approx. 400 kHz		●	
	approx. 310 kHz			●
No-load supply current	≤ 25 mA		●	●
	≤ 60 mA	●		
Switching frequency	max. 4 Hz			●
	20 Hz		●	
	50 Hz	●		
Input type	1 input for sound lobe adjustment		●	●
Approvals and Certificates				
UL approval	cULus Listed, General Purpose	●	●	●
CSA approval	cCSAus Listed, General Purpose	●	●	●
Dimensions				
Length L [mm]			43	
Width W [mm]			15	
Height H [mm]			49	
Connector area l_c [mm]			16	

Accessories

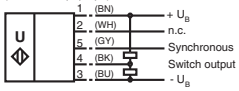
This and more accessories can be found in chapter 3.5 from page 673
See pages from 972 ... for cordsets See pages 1068 ... for mounting aids

OMH-K01	dove tail mounting clamp
OMH-K02	dove tail mounting clamp
OMH-K03	dove tail mounting clamp
OMH-01	Mounting aid for round steel ø 12 mm or sheet 1.5 mm ... 3 mm
OMH-06	Mounting aid for round steel ø 12 mm or sheet 1.5 mm ... 3 mm
OMH-MLV12-HWG	Mounting bracket for series MLV12 sensors
OMH-MLV12-HWK	Mounting bracket for series MLV12 sensors
V15-G-2M-PVC	Cable socket, M12, 5-pin, PVC cable
V15-W-2M-PUR	Cable socket, M12, 5-pin, PUR cable

Electrical Connection

UB120-F12P-EP-V15

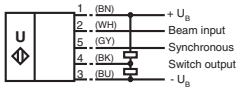
Standard symbol/Connections:
(version EP, pnp/npn)



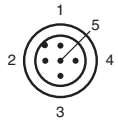
Core colours in accordance with EN 60947-5-2.

UB250-F12P-EP-V15
UB800-F12P-EP-V15

Standard symbol/Connections:
(version EP, pnp/npn)



Core colours in accordance with EN 60947-5-2.



Wire colors in accordance with EN 60947-5-2

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

Date of issue: 04/08/2015

Consider the General Notes on the Information in the Pepperl+Fuchs Product Catalogs
Copyright Pepperl+Fuchs

Pepperl+Fuchs Group www.pepperl-fuchs.com
USA: +1 330 486 0001 fa-info@us.pepperl-fuchs.com
Germany: +49 621 776-4411 fa-info@de.pepperl-fuchs.com
Singapore: +65 6779 9091 fa-info@sg.pepperl-fuchs.com
PEPPERL+FUCHS SENSING YOUR NEEDS

Technical Data

*For detailed data and product description refer to the data sheets at **www.pepperl-fuchs.com***

General Data	
Operating voltage	10 ... 30 V DC
No-load supply current	≤ 30 mA
Output type	Push-pull output, short-circuit protected, reverse polarity protected
Rated operational current	200 mA , short-circuit/overload protected
Input type	1 program input
Synchronization	1 synchronous connection, bi-directional
Ambient temperature	-15 ... 70 °C (5 ... 158 °F)
Material	
Housing	Frame: nickel plated, die cast zinc, Laterals: glass-fiber reinforced plastic PC
Transducer	epoxy resin/hollow glass sphere mixture; foam polyurethane, cover PBT
Protection degree	IP54
Connection type	Device connector M12 x 1 , 5-pin

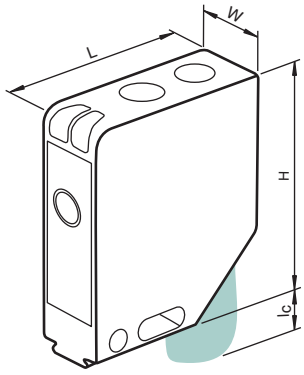
Model Number		UB250-F12-EP-V15	UB800-F12-EP-V15
Sensing range	20 ... 250 mm	●	
	30 ... 800 mm		●
Transducer frequency	approx. 400 kHz	●	
	approx. 310 kHz		●
Switching frequency	20 Hz	●	
	6 Hz		●
Approvals and Certificates			
UL approval	cULus Listed, General Purpose	●	●
CSA approval	cCSAus Listed, General Purpose	●	●
Dimensions			
Length L [mm]		43	
Width W [mm]		15	
Height H [mm]		49	
Connector area l_c [mm]		16	

Properties

- 250 mm and 800 mm sensing range versions
- DC, switching output
- Miniature F12 housing
- Connector version

Your Benefit

- Simple pushbutton configuration
- Selectable wide/narrow beam width
- Universal sinking-sourcing output
- Rugged metal housing



Accessories

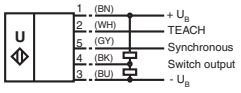
This and more accessories can be found in chapter 3.5 from page 673
See pages from 972 ... for cordsets See pages 1068 ... for mounting aids

OMH-K01	dove tail mounting clamp
OMH-K02	dove tail mounting clamp
OMH-K03	dove tail mounting clamp
OMH-01	Mounting aid for round steel ø 12 mm or sheet 1.5 mm ... 3 mm
OMH-06	Mounting aid for round steel ø 12 mm or sheet 1.5 mm ... 3 mm
OMH-MLV12-HWG	Mounting bracket for series MLV12 sensors
OMH-MLV12-HWK	Mounting bracket for series MLV12 sensors
V15-G-2M-PVC	Cable socket, M12, 5-pin, PVC cable
V15-W-2M-PUR	Cable socket, M12, 5-pin, PUR cable

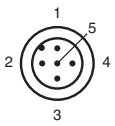
Electrical Connection

UB250-F12-EP-V15
UB800-F12-EP-V15

Standard symbol/Connections:
(version EP, pnp/npn)



Core colours in accordance with EN 60947-5-2.



Wire colors in accordance with EN 60947-5-2

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

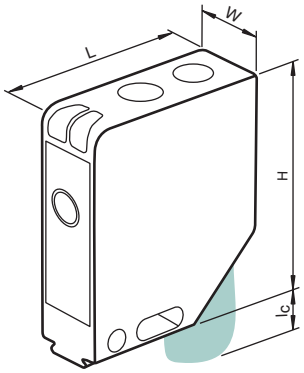
Date of issue 04/08/2015

Properties

- Up to 800 mm sensing range versions
- DC, analog output
- Miniature F12 housing
- Connector version

Your Benefit

- Simple pushbutton configuration
- Selectable wide/narrow beam width
- Universal sinking-sourcing output
- Rugged metal housing



Technical Data

*For detailed data and product description refer to the data sheets at **www.pepperl-fuchs.com***

General Data	
No-load supply current	≤ 30 mA
Input type	1 program input
Synchronization	1 synchronous connection, bi-directional
Ambient temperature	-15 ... 70 °C (5 ... 158 °F)
Material	
Housing	Frame: nickel plated, die cast zinc, Laterals: glass-fiber reinforced plastic PC
Transducer	epoxy resin/hollow glass sphere mixture; foam polyurethane, cover PBT
Protection degree	IP54
Connection type	Device connector M12 x 1 , 5-pin

Model Number		UB250-F12-I-V15	UB250-F12-U-V15	UB800-F12-I-V15	UB800-F12-U-V15
Sensing range	20 ... 250 mm	●	●		
	30 ... 800 mm			●	●
Transducer frequency	approx. 400 kHz	●	●		
	approx. 310 kHz			●	●
Operating voltage	10 ... 30 V DC	●		●	
	12 ... 30 V DC		●		●
Output type	1 analog output 0 ... 10 V		●		●
	1 analog output 4 ... 20 mA	●		●	
Approvals and Certificates					
UL approval	cULus Listed, General Purpose	●	●	●	●
CSA approval	cCSAus Listed, General Purpose	●	●	●	●

Dimensions	
Length L [mm]	43
Width W [mm]	15
Height H [mm]	49
Connector area l_c [mm]	16

Accessories

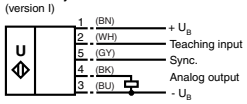
This and more accessories can be found in chapter 3.5 from page 673
See pages from 972 ... for cordsets See pages 1068 ... for mounting aids

OMH-K01	dove tail mounting clamp
OMH-K02	dove tail mounting clamp
OMH-K03	dove tail mounting clamp
OMH-01	Mounting aid for round steel ø 12 mm or sheet 1.5 mm ... 3 mm
OMH-06	Mounting aid for round steel ø 12 mm or sheet 1.5 mm ... 3 mm
OMH-MLV12-HWG	Mounting bracket for series MLV12 sensors
OMH-MLV12-HWK	Mounting bracket for series MLV12 sensors
V15-G-2M-PVC	Cable socket, M12, 5-pin, PVC cable
V15-W-2M-PUR	Cable socket, M12, 5-pin, PUR cable

Electrical Connection

UB250-F12-I-V15
UB800-F12-I-V15

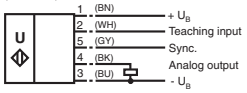
Standard symbol/Connections:
(version I)



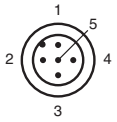
Core colours in accordance with EN 60947-5-2.

UB250-F12-U-V15
UB800-F12-U-V15

Standard symbol/Connections:
(version U)



Core colours in accordance with EN 60947-5-2.



Wire colors in accordance with EN 60947-5-2

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

Date of issue: 04/08/2015

Consider the General Notes on the Information in the Pepperl+Fuchs Product Catalogs
Copyright Pepperl+Fuchs
Pepperl+Fuchs Group www.pepperl-fuchs.com
USA: +1 330 486 0001 fa-info@us.pepperl-fuchs.com
Germany: +49 621 776-4411 fa-info@de.pepperl-fuchs.com
Singapore: +65 6779 9091 fa-info@sg.pepperl-fuchs.com
PEPPERL+FUCHS SENSING YOUR NEEDS

Technical Data

For detailed data and product description refer to the data sheets at ***www.pepperl-fuchs.com***

General Data	
Operating voltage	10 ... 30 V DC
No-load supply current	≤ 50 mA
Interface type	Serial interface (programming adapter required) 9600 BPS, no parity, 8 data bits, 1 stop bit
Rated operational current	200 mA , short-circuit/overload protected
Input type	1 program input
Input/output type	1 synchronization connection, bidirectional
Ambient temperature	-25 ... 70 °C (-13 ... 158 °F)
Material	
Housing	PA-GF35
Transducer	epoxy resin/hollow glass sphere mixture; polyurethane foam
Protection degree	IP67
Connection type	Device connector M12 x 1 , 5-pin

Model Number		UC500-L2-E4-V15	UC500-L2-E5-V15	UC2000-L2-E4-V15	UC2000-L2-E5-V15	UC4000-L2-E4-V15	UC4000-L2-E5-V15
Sensing range	35 ... 500 mm	●	●				
	60 ... 2000 mm			●	●		
	200 ... 4000 mm					●	●
Transducer frequency	approx. 380 kHz	●	●				
	approx. 175 kHz			●	●		
	approx. 85 kHz					●	●
Output type	1 switch output E4, NPN, NO/NC, programmable	●		●		●	
	1 switch output E5, PNP NO/NC, programmable		●		●		●
Switching frequency	≤ 14 Hz	●	●				
	≤ 5 Hz			●	●		
	≤ 2.8 Hz					●	●
Approvals and Certificates							
UL approval	cULus Listed, General Purpose	●	●	●	●	●	●
CSA approval	cCSAus Listed, General Purpose	●	●	●	●	●	●

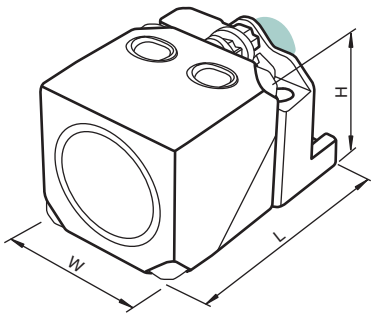
Dimensions	
Length L [mm]	67
Width W [mm]	40
Height H [mm]	40

Properties

- **Up to 4000 mm sensing range versions**
- **DC, switching output**
- **Compact *VariKont*-L housing**
- **Connector version**

Your Benefit

- **High-visibility corner LEDs**
- **Pushbutton and PACTware configurable**
- **5-way, quick pivot sensing face**



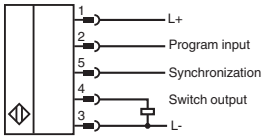
Accessories

This and more accessories can be found in chapter 3.5 from page 673
See pages from 972 ... for cordsets
See pages 1068 ... for mounting aids

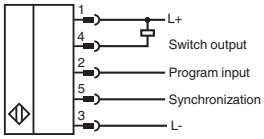
PACTware 3.6	
PACTware 4.X	
Ultraschall-Sensoren DTM	DTM devices for communication with cube style and UMC... sensors
UC-PROG1	Programming adapter
V15-G-2M-PVC	Cable socket, M12, 5-pin, PVC cable
V15-W-2M-PUR	Cable socket, M12, 5-pin, PUR cable
UB-PROG2	Programming unit
Microsoft .NET	

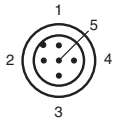
Electrical Connection

UC500-L2-E5-V15
UC2000-L2-E5-V15
UC4000-L2-E5-V15



UC2000-L2-E4-V15
UC500-L2-E4-V15
UC4000-L2-E4-V15





Wire colors in accordance with EN 60947-5-2

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

Date of issue 04/08/2015

Technical Data

*For detailed data and product description refer to the data sheets at **www.pepperl-fuchs.com***

General Data	
Operating voltage	10 ... 30 V DC
No-load supply current	≤ 50 mA
Interface type	Serial interface (programming adapter required) 9600 BPS, no parity, 8 data bits, 1 stop bit
Rated operational current	200 mA , short-circuit/overload protected
Input/output type	1 synchronization connection, bidirectional
Ambient temperature	-25 ... 70 °C (-13 ... 158 °F)
Material	
Housing	PA-GF35
Transducer	epoxy resin/hollow glass sphere mixture; polyurethane foam
Protection degree	IP67
Connection type	Device connector M12 x 1 , 5-pin

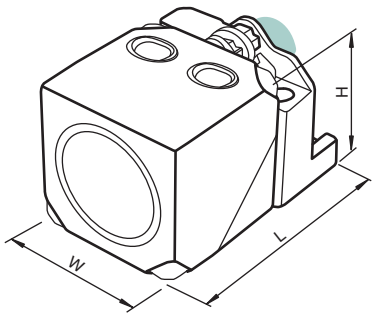
Model Number	green = preferred type	UC500-L2-E6-V15	UC500-L2-E7-V15	UC2000-L2-E6-V15	UC2000-L2-E7-V15	UC4000-L2-E6-V15	UC4000-L2-E7-V15
Sensing range	35 ... 500 mm	●	●				
	60 ... 2000 mm			●	●		
	200 ... 4000 mm					●	●
Transducer frequency	approx. 380 kHz	●	●				
	approx. 175 kHz			●	●		
	approx. 85 kHz					●	●
Output type	2 switch outputs NPN, NO/NC, programmable		●		●		●
	2 switch outputs PNP, NO/NC, programmable	●		●		●	
Switching frequency	≤ 14 Hz	●	●				
	≤ 5 Hz			●	●		
	≤ 2.8 Hz					●	●
Approvals and Certificates							
UL approval	cULus Listed, General Purpose	●	●	●	●	●	●
CSA approval	cCSAus Listed, General Purpose	●	●	●	●	●	●
Dimensions							
Length L [mm]				67			
Width W [mm]				40			
Height H [mm]				40			

Properties

- **Up to 4000 mm sensing range versions**
- **DC, 2 switching outputs**
- **Compact *VariKont*-L housing**
- **Connector version**

Your Benefit

- **High-visibility corner LEDs**
- **Pushbutton and PACTware configurable**
- **5-way, quick pivot sensing face**



Accessories

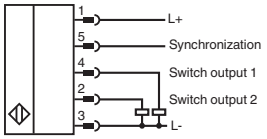
This and more accessories can be found in chapter 3.5 from page 673
See pages from 972 ... for cordsets **See pages 1068 ... for mounting aids**

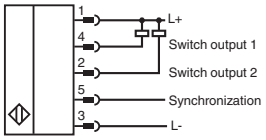
PACTware 3.6	
PACTware 4.X	
Ultraschall-Sensoren DTM	DTM devices for communication with cube style and UMC... sensors
UC-PROG1	Programming adapter
V15-G-2M-PVC	Cable socket, M12, 5-pin, PVC cable
V15-W-2M-PUR	Cable socket, M12, 5-pin, PUR cable
Microsoft .NET	

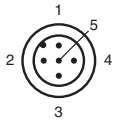
Electrical Connection

UC2000-L2-E6-V15
UC500-L2-E6-V15
UC4000-L2-E6-V15

UC500-L2-E7-V15
UC4000-L2-E7-V15
UC2000-L2-E7-V15







Wire colors in accordance with EN 60947-5-2

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

Date of issue: 04/08/2015

Consider the General Notes on the Information in the Pepperl+Fuchs Product Catalogs
Copyright Pepperl+Fuchs

Pepperl+Fuchs Group
www.pepperl-fuchs.com
USA: +1 330 486 0001
fa-info@us.pepperl-fuchs.com
Germany: +49 621 776-4411
fa-info@de.pepperl-fuchs.com
Singapore: +65 6779 9091
fa-info@sg.pepperl-fuchs.com

PEPPERL+FUCHS
SENSING YOUR NEEDS

Technical Data

For detailed data and product description refer to the data sheets at ***www.pepperl-fuchs.com***

General Data	
No-load supply current	≤ 50 mA
Interface type	Serial interface (programming adapter required) 9600 BPS, no parity, 8 data bits, 1 stop bit
Deviation of the characteristic curve	≤ 0.2 % of full-scale value
Input type	1 program input
Input/output type	1 synchronization connection, bidirectional
Ambient temperature	-25 ... 70 °C (-13 ... 158 °F)
Material	
Housing	PA-GF35
Transducer	epoxy resin/hollow glass sphere mixture; polyurethane foam
Protection degree	IP67
Connection type	Device connector M12 x 1 , 5-pin

Model Number	green = preferred type	UC500-L2-I-V15	UC2000-L2-I-V15	UC4000-L2-I-V15	UC500-L2-U-V15	UC2000-L2-U-V15	UC4000-L2-U-V15
Sensing range	35 ... 500 mm	●			●		
	60 ... 2000 mm		●			●	
	200 ... 4000 mm			●			●
Transducer frequency	approx. 380 kHz	●			●		
	approx. 175 kHz		●			●	
	approx. 85 kHz			●			●
Operating voltage	10 ... 30 V DC	●	●	●			
	12 ... 30 V DC				●	●	●
Output type	1 analog output 4 ... 20 mA	●	●	●			
	1 analog output 0 ... 10 V				●	●	●
Resolution	Evaluation range [mm]/3200, but ≥ 0.05 mm	●					
	Evaluation range [mm]/3200, but ≥ 0.4 mm		●	●			
	evaluation range [mm]/4000, but ≥ 0.05 mm				●		
	evaluation range [mm]/4000, but ≥ 0.4 mm					●	●
Approvals and Certificates							
UL approval	cULus Listed, General Purpose	●	●	●	●	●	●
CSA approval	cCSAus Listed, General Purpose	●	●	●	●	●	●

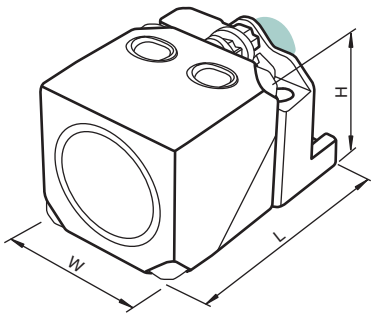
Dimensions	
Length L [mm]	67
Width W [mm]	40
Height H [mm]	40

Properties

- **Up to 4000 mm sensing range versions**
- **DC, analog output**
- **Compact *VariKont*-L housing**
- **Connector version**

Your Benefit

- **High-visibility corner LEDs**
- **Pushbutton and PACTware configurable**
- **5-way, quick pivot sensing face**



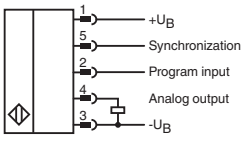
Accessories

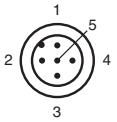
This and more accessories can be found in chapter 3.5 from page 673
See pages from 972 ... for cordsets
See pages 1068 ... for mounting aids

PACTware 3.6	Frame application
PACTware 4.X	Frame application
Ultraschall-Sensoren DTM	DTM devices for communication with cube style and UMC... sensors
UC-PROG1	Programming adapter
V15-G-2M-PVC	Cable socket, M12, 5-pin, PVC cable
V15-W-2M-PUR	Cable socket, M12, 5-pin, PUR cable
UB-PROG2	Programming unit
Microsoft .NET	Software

Electrical Connection

UC500-L2-I-V15
UC2000-L2-I-V15
UC4000-L2-I-V15
UC500-L2-U-V15
UC2000-L2-U-V15
UC4000-L2-U-V15





Wire colors in accordance with EN 60947-5-2

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

Date of issue 04/08/2015

Technical Data

*For detailed data and product description refer to the data sheets at **www.pepperl-fuchs.com***

General Data	
Operating voltage	10 ... 30 V DC , ripple 10 %$_{SS}$
No-load supply current	≤ 55 mA
Rated operational current	200 mA , short-circuit/overload protected
Input type	1 program input,
Synchronization	1 synchronous input
Ambient temperature	-25 ... 70 °C (-13 ... 158 °F)
Material	
Housing	ABS
Transducer	epoxy resin/hollow glass sphere mixture; polyurethane foam
Protection degree	IP65
Connection type	Device connector M12 x 1 , 5-pin

Model Number	green = preferred type	UB500-F54-E4-V15	UB500-F54-E5-V15	UB2000-F54-E4-V15	UB2000-F54-E5-V15
Sensing range	30 ... 500 mm	●	●		
	80 ... 2000 mm			●	●
Transducer frequency	approx. 380 kHz	●	●		
	approx. 175 kHz			●	●
Output type	1 switch output E4, NPN, NO/NC	●		●	
	1 switch output E5, PNP, NO/NC		●		●
Switching frequency	max. 10 Hz	●	●		
	max. 3 Hz			●	●
Approvals and Certificates					
UL approval	cULus Listed, General Purpose	●	●	●	●
CSA approval	cCSAus Listed, General Purpose	●	●	●	●

Dimensions	
Length L [mm]	105
Width W [mm]	32
Height H [mm]	25
Connector area l_C [mm]	15

Properties

- 500 mm and 2000 mm sensing range versions
- DC, switching output
- Surface mount F54 housing
- Connector version

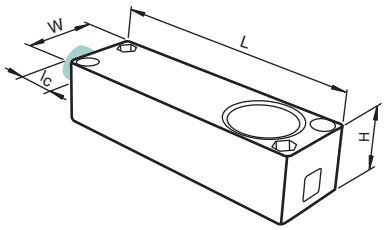
Your Benefit

- Low mounting profile

Accessories

This and more accessories can be found in chapter 3.5 from page 673
See pages from 972 ... for cordsets See pages 1068 ... for mounting aids

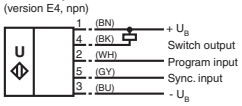
UB-PROG2	Programming unit
V15-G-2M-PVC	Cable socket, M12, 5-pin, PVC cable
V15-W-2M-PUR	Cable socket, M12, 5-pin, PUR cable



Electrical Connection

UB500-F54-E4-V15
UB2000-F54-E4-V15

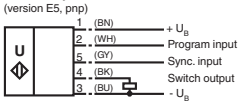
Standard symbol/Connections:
(version E4, npn)



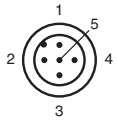
Wire colors in accordance with EN 60947-5-2.

UB500-F54-E5-V15
UB2000-F54-E5-V15

Standard symbol/Connections:
(version E5, pnp)



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



Wire colors in accordance with EN 60947-5-2

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

Date of issue: 04/08/2015

Consider the General Notes on the Information in the Pepperl+Fuchs Product Catalogs
Copyright Pepperl+Fuchs

Pepperl+Fuchs Group www.pepperl-fuchs.com
USA: +1 330 486 0001 fa-info@us.pepperl-fuchs.com
Germany: +49 621 776-4411 fa-info@de.pepperl-fuchs.com
Singapore: +65 6779 9091 fa-info@sg.pepperl-fuchs.com
PEPPERL+FUCHS SENSING YOUR NEEDS

Technical Data

*For detailed data and product description refer to the data sheets at **www.pepperl-fuchs.com***

General Data	
No-load supply current	≤ 55 mA
Deviation of the characteristic curve	± 1 % of full-scale value
Input type	1 program input
Synchronization	1 synchronous input
Ambient temperature	-25 ... 70 °C (-13 ... 158 °F)
Material	
Housing	ABS
Transducer	epoxy resin/hollow glass sphere mixture; polyurethane foam
Protection degree	IP65
Connection type	Device connector M12 x 1 , 5-pin

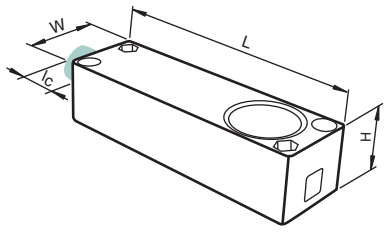
Model Number	green = preferred type	UB500-F54-I-V15	UB500-F54-U-V15	UB2000-F54-I-V15	UB2000-F54-U-V15
Sensing range	30 ... 500 mm	●	●		
	80 ... 2000 mm			●	●
Transducer frequency	approx. 380 kHz	●	●		
	approx. 175 kHz			●	●
Operating voltage	10 ... 30 V DC , ripple 10 %$_{SS}$	●		●	
	15 ... 30 V DC , ripple 10 %$_{SS}$		●		●
Output type	1 analog output 0 ... 10 V		●		●
	1 analog output 4 ... 20 mA	●		●	
Resolution	0.11 mm		●		
	0.13 mm	●			
	0.47 mm				●
	0.5 mm			●	
Approvals and Certificates					
UL approval	cULus Listed, General Purpose	●	●	●	●
CSA approval	cCSAus Listed, General Purpose	●	●	●	●
Dimensions					
Length L [mm]		105			
Width W [mm]		32			
Height H [mm]		25			
Connector area l_c [mm]		15			

Properties

- 500 mm and 2000 mm sensing range versions
- DC, analog output
- Surface mount F54 housing
- Connector version

Your Benefit

- Low mounting profile



Accessories

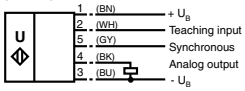
This and more accessories can be found in chapter 3.5 from page 673
See pages from 972 ... for cordsets See pages 1068 ... for mounting aids

UB-PROG2	Programming unit
V15-G-2M-PVC	Cable socket, M12, 5-pin, PVC cable
V15-W-2M-PUR	Cable socket, M12, 5-pin, PUR cable

Electrical Connection

UB500-F54-I-V15
UB2000-F54-I-V15

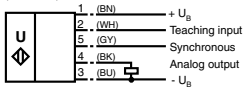
Standard symbol/Connections:
(version I)



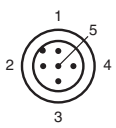
Core colours in accordance with EN 60947-5-2.

UB500-F54-U-V15
UB2000-F54-U-V15

Standard symbol/Connections:
(version U)



Core colours in accordance with EN 60947-5-2.



Wire colors in accordance with EN 60947-5-2

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

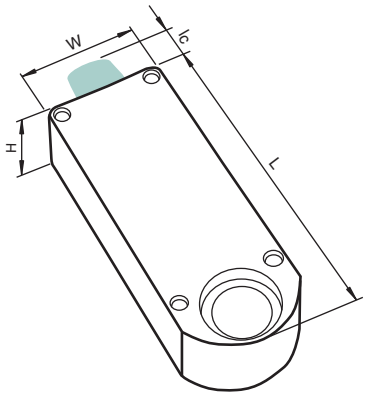
Date of issue 04/08/2015

Properties

- 300 mm and 2000 mm sensing range versions
- DC, relay and analog outputs
- Surface mount F43 housing
- Connector version

Your Benefit

- Low mounting profile
- Minimal unusable area
- Software-configurable parameters



Technical Data

*For detailed data and product description refer to the data sheets at **www.pepperl-fuchs.com***

General Data	
Operating voltage	10 ... 30 V DC, ripple ± 10 %$_{SS}$
Power consumption	≤ 2 W (all relays pulled-in, current output 20 mA) no-load power consumption ≤ 0.7 W
Interface type	RS 232, 9600 bit/s, no parity, 8 data bits, 1 stop bit
Output type	2 relay outputs, 1 analog output 4 ... 20 mA
Contact loading	60 V DC / 1 A (max. 24 W DC), ohmic
Deviation of the characteristic curve	< 0.2 % of full-scale value
Material	
Housing	PBT
Transducer	epoxy resin/hollow glass sphere mixture; polyurethane foam
Protection degree	IP65
Connection type	Device connector M12 x 1 , 8-pin screen connected to pin 8

Model Number		UC300-F43-2KIR2-V17	UC2000-F43-2KIR2-V17
Sensing range	0 ... 300 mm	●	
	80 ... 2000 mm		●
Transducer frequency	approx. 390 kHz	●	
	approx. 175 kHz		●
Resolution	0.2 mm	●	
	0.6 mm		●
Ambient temperature	0 ... 70 °C (32 ... 158 °F)	●	
	-25 ... 70 °C (-13 ... 158 °F)		●
Approvals and Certificates			
UL approval	cULus Listed, General Purpose	●	●
CSA approval	cCSAus Listed, General Purpose	●	●
Dimensions			
Length L [mm]		134	
Width W [mm]		52	
Height H [mm]		30	
Connector area I_c [mm]		15	

Accessories

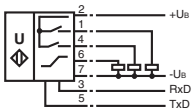
This and more accessories can be found in chapter 3.5 from page 673
See pages from 972 ... for cordsets See pages 1068 ... for mounting aids

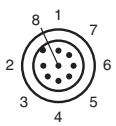
UC-F43-R2	Configuration Interface
ULTRA3000	Software for ultrasonic sensors, comfort line
V17-G-2M-PUR	Cable socket, M12, 8-pin, shielded, PUR cable
V17-G-5M-PUR	Cable socket, M12, 8-pin, shielded, PUR cable

Electrical Connection

UC300-F43-2KIR2-V17
UC2000-F43-2KIR2-V17

Standard symbol/Connection:





Wire colors

1	WH	(white)
2	BN	(brown)
3	GN	(green)
4	YE	(yellow)
5	GY	(gray)
6	PK	(pink)
7	BU	(blue)
8	RD	(red)

Date of issue: 04/08/2015

Consider the General Notes on the Information in the Pepperl+Fuchs Product Catalogs
Copyright Pepperl+Fuchs

Pepperl+Fuchs Group www.pepperl-fuchs.com
USA: +1 330 486 0001 fa-info@us.pepperl-fuchs.com
Germany: +49 621 776-4411 fa-info@de.pepperl-fuchs.com
Singapore: +65 6779 9091 fa-info@sg.pepperl-fuchs.com

PEPPERL+FUCHS SENSING YOUR NEEDS

Technical Data

*For detailed data and product description refer to the data sheets at **www.pepperl-fuchs.com***

General Data	
Operating voltage	10 ... 30 V DC , ripple 10 %$_{SS}$
Rated operational current	200 mA , short-circuit/overload protected
Synchronization	bi-directional
Ambient temperature	-25 ... 70 °C (-13 ... 158 °F)
Material	
Housing	ABS
Transducer	epoxy resin/hollow glass sphere mixture; foam polyurethane, cover PBT
Protection degree	IP54
Connection type	Device connector M12 x 1 , 5-pin

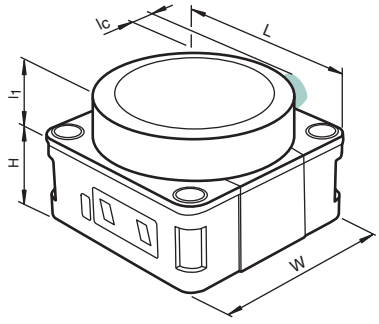
Model Number		UB500-F42-E4-V15	UB500-F42-E5-V15	UB2000-F42-E4-V15	UB2000-F42-E5-V15	UB4000-F42-E4-V15	UB4000-F42-E5-V15	UB6000-F42-E4-V15	UB6000-F42-E5-V15
Sensing range	30 ... 500 mm	●	●						
	60 ... 2000 mm			●	●				
	200 ... 4000 mm					●	●		
	350 ... 6000 mm							●	●
Transducer frequency	approx. 390 kHz	●	●						
	approx. 175 kHz			●	●				
	approx. 85 kHz					●	●		
	approx. 65 kHz							●	●
No-load supply current	≤ 50 mA	●	●	●	●				
	≤ 60 mA					●	●	●	●
Output type	1 switch output E4, NPN, NO/NC, programmable	●		●		●		●	
	1 switch output E5, PNP NO/NC, programmable		●		●		●		●
Switching frequency	≤ 0.6 Hz							●	●
	≤ 1.2 Hz					●	●		
	≤ 2.7 Hz			●	●				
	≤ 8 Hz	●	●						
Approvals and Certificates									
UL approval	cULus Listed, General Purpose	●	●	●	●	●	●	●	●
CSA approval	cCSAus Listed, General Purpose	●	●	●	●	●	●	●	●
Dimensions									
Length L [mm]		80							
Width W [mm]		80							
Height H [mm]		34							
Transducer length l_1 [mm]		0						16	
Connector area l_c [mm]		16							

Properties

- Up to 6000 mm sensing range versions
- DC, switching output
- Surface mount F42 housing, front view
- Connector version

Your Benefit

- Simple pushbutton configuration



Accessories

This and more accessories can be found in chapter 3.5 from page 673
See pages from 972 ... for cordsets
See pages 1068 ... for mounting aids

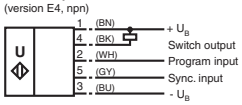
MH 04-3505	Mounting aid for FP sensors
MHW 11	Mounting brackets for sensors
V15-G-2M-PVC	Cable socket, M12, 5-pin, PVC cable
V15-W-2M-PUR	Cable socket, M12, 5-pin, PUR cable

Electrical Connection

UB500-F42-E4-V15
UB2000-F42-E4-V15
UB4000-F42-E4-V15
UB6000-F42-E4-V15

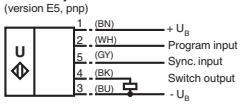
UB500-F42-E5-V15
UB2000-F42-E5-V15
UB4000-F42-E5-V15
UB6000-F42-E5-V15

Standard symbol/Connections:
(version E4, npn)

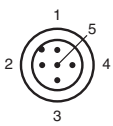


Wire colors in accordance with EN 60947-5-2.

Standard symbol/Connections:
(version E5, pnp)



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



Wire colors in accordance with EN 60947-5-2

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

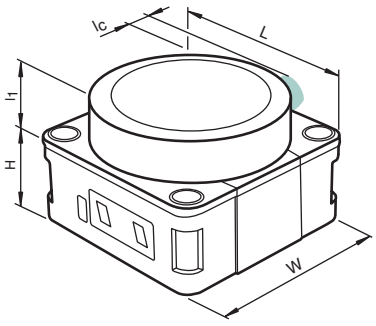
Date of issue 04/08/2015

Properties

- Up to 6000 mm sensing range versions
- DC, 2 switching outputs
- Surface mount F42 housing, front view
- Connector version

Your Benefit

- Simple pushbutton configuration



Technical Data

*For detailed data and product description refer to the data sheets at **www.pepperl-fuchs.com***

General Data	
Operating voltage	10 ... 30 V DC , ripple 10 %$_{SS}$
Rated operational current	200 mA , short-circuit/overload protected
Synchronization	bi-directional
Ambient temperature	-25 ... 70 °C (-13 ... 158 °F)
Material	
Housing	ABS
Transducer	epoxy resin/hollow glass sphere mixture; foam polyurethane, cover PBT
Protection degree	IP54
Connection type	Device connector M12 x 1 , 5-pin

Model Number		UB500-F42-E6-V15	UB500-F42-E7-V15	UB2000-F42-E6-V15	UB2000-F42-E7-V15	UB4000-F42-E6-V15	UB4000-F42-E7-V15	UB6000-F42-E6-V15	UB6000-F42-E7-V15
	green = preferred type								
Sensing range	30 ... 500 mm	●	●						
	60 ... 2000 mm			●	●				
	200 ... 4000 mm					●	●		
	350 ... 6000 mm							●	●
Transducer frequency	approx. 390 kHz	●	●						
	approx. 175 kHz			●	●				
	approx. 85 kHz					●	●		
	approx. 65 kHz							●	●
No-load supply current	≤ 50 mA	●	●	●	●				
	≤ 60 mA					●	●	●	●
Output type	2 switch outputs NPN, normally open/ close selectable		●		●		●		●
	2 switch outputs PNP, NO/NC selectable	●		●		●		●	
Switching frequency	≤ 0.6 Hz							●	●
	≤ 1.2 Hz					●	●		
	≤ 2.7 Hz			●	●				
	≤ 8 Hz	●	●						
Approvals and Certificates									
UL approval	cULus Listed, General Purpose	●	●	●	●	●	●	●	●
CSA approval	cCSAus Listed, General Purpose	●	●	●	●	●	●	●	●

Dimensions									
Length L [mm]		80							
Width W [mm]		80							
Height H [mm]		34							
Transducer length l_1 [mm]		0						16	
Connector area l_c [mm]		16							

Accessories

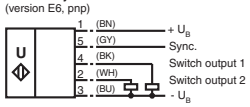
This and more accessories can be found in chapter 3.5 from page 673
See pages from 972 ... for cordsets See pages 1068 ... for mounting aids

MH 04-3505	Mounting aid for FP sensors
MHW 11	Mounting brackets for sensors
V15-G-2M-PVC	Cable socket, M12, 5-pin, PVC cable
V15-W-2M-PUR	Cable socket, M12, 5-pin, PUR cable

Electrical Connection

UB500-F42-E6-V15
UB2000-F42-E6-V15
UB4000-F42-E6-V15
UB6000-F42-E6-V15

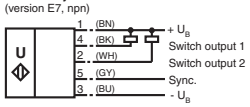
Standard symbol/Connections:
(version E6, pnp)



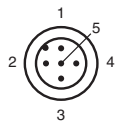
Core colours in accordance with EN 60947-5-2.

UB500-F42-E7-V15
UB2000-F42-E7-V15
UB4000-F42-E7-V15
UB6000-F42-E7-V15

Standard symbol/Connections:
(version E7, npn)



Core colours in accordance with EN 60947-5-2.



Wire colors in accordance with EN 60947-5-2

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

Date of issue: 04/08/2015

Consider the General Notes on the Information in the Pepperl+Fuchs Product Catalogs
Copyright Pepperl+Fuchs

Pepperl+Fuchs Group www.pepperl-fuchs.com
USA: +1 330 486 0001 fa-info@us.pepperl-fuchs.com
Germany: +49 621 776-4411 fa-info@de.pepperl-fuchs.com
Singapore: +65 6779 9091 fa-info@sg.pepperl-fuchs.com
PEPPERL+FUCHS SENSING YOUR NEEDS

Technical Data

*For detailed data and product description refer to the data sheets at **www.pepperl-fuchs.com***

General Data	
Deviation of the characteristic curve	± 1 % of full-scale value
Synchronization	bi-directional
Ambient temperature	-25 ... 70 °C (-13 ... 158 °F)
Material	
Housing	ABS
Transducer	epoxy resin/hollow glass sphere mixture; foam polyurethane, cover PBT
Protection degree	IP54
Connection type	Device connector M12 x 1 , 5-pin

Model Number	green = preferred type	UB500-F42-I-V15	UB500-F42-U-V15	UB2000-F42-I-V15	UB2000-F42-U-V15	UB4000-F42-I-V15	UB4000-F42-U-V15	UB6000-F42-I-V15	UB6000-F42-U-V15
Sensing range	30 ... 500 mm	●	●						
	60 ... 2000 mm			●	●				
	200 ... 4000 mm					●	●		
	350 ... 6000 mm							●	●
Transducer frequency	approx. 390 kHz	●	●						
	approx. 175 kHz			●	●				
	approx. 85 kHz					●	●		
	approx. 65 kHz							●	●
Operating voltage	10 ... 30 V DC , ripple 10 %$_{SS}$	●		●		●		●	
	17 ... 30 V DC , ripple 10 %$_{SS}$		●		●		●		●
No-load supply current	≤ 50 mA	●	●	●	●				
	≤ 60 mA					●	●	●	●
Output type	1 analog output 0 ... 10 V		●		●		●		●
	1 analog output 4 ... 20 mA	●		●		●		●	
Resolution	0.2 mm at max. sensing range	●	●						
	0.7 mm			●	●	●	●	●	●
Approvals and Certificates									
UL approval	cULus Listed, General Purpose	●	●	●	●	●	●	●	●
CSA approval	cCSAus Listed, General Purpose	●	●	●	●	●	●	●	●

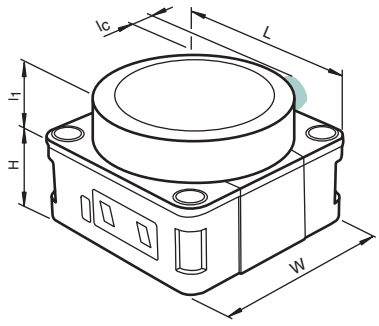
Dimensions		
Length L [mm]	80	
Width W [mm]	80	
Height H [mm]	34	
Transducer length l_1 [mm]	0	16
Connector area l_c [mm]	16	

Properties

- Up to 6000 mm sensing range versions
- DC, analog output
- Surface mount F42 housing, front view
- Connector version

Your Benefit

- Simple pushbutton configuration



Accessories

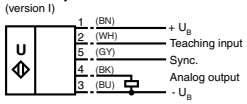
This and more accessories can be found in chapter 3.5 from page 673
See pages from 972 ... for cordsets See pages 1068 ... for mounting aids

MH 04-3505	Mounting aid for FP sensors
MHW 11	Mounting brackets for sensors
DA5-IU-2K-V	Process control and indication equipment
V15-G-2M-PVC	Cable socket, M12, 5-pin, PVC cable
V15-W-2M-PUR	Cable socket, M12, 5-pin, PUR cable

Electrical Connection

UB500-F42-I-V15
UB2000-F42-I-V15
UB4000-F42-I-V15
UB6000-F42-I-V15

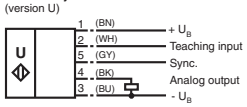
Standard symbol/Connections:
(version I)



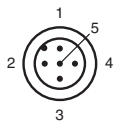
Core colours in accordance with EN 60947-5-2.

UB500-F42-U-V15
UB2000-F42-U-V15
UB4000-F42-U-V15
UB6000-F42-U-V15

Standard symbol/Connections:
(version U)



Core colours in accordance with EN 60947-5-2.



Wire colors in accordance with EN 60947-5-2

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

Date of issue 04/08/2015

Technical Data

*For detailed data and product description refer to the data sheets at **www.pepperl-fuchs.com***

General Data	
Operating voltage	20 ... V DC ... 253 V AC
No-load supply current	≤ 60 mA
Output type	1 relay output
Rated operational current	3 A
Ambient temperature	-25 ... 70 °C (-13 ... 158 °F)
Material	
Housing	PBT
Transducer	epoxy resin/hollow glass sphere mixture; foam polyurethane, cover PBT
Protection degree	IP65
Connection	5-pin V95 connector (7/8"-16 UN 2A)

Model Number		UB400-F42-UK-V95	UB1500-F42-UK-V95	UB3000-F42-UK-V95	UB5000-F42-UK-V95
Sensing range	40 ... 400 mm	●			
	70 ... 1500 mm		●		
	200 ... 3000 mm			●	
	350 ... 5000 mm				●
Transducer frequency	approx. 390 kHz	●			
	approx. 175 kHz		●		
	approx. 85 kHz			●	
	approx. 65 kHz				●
Switching frequency	≤ 0.6 Hz				●
	≤ 1.5 Hz			●	
	≤ 3 Hz		●		
	≤ 8 Hz	●			

Dimensions				
Length L [mm]	80			
Width W [mm]	80			
Height H [mm]	34			
Transducer length l_1 [mm]	0			16
Connector area l_c [mm]	16			

Properties

- **Up to 5000 mm sensing range versions**
- **AC/DC, relay output**
- **Surface mount F42 housing, front view**
- **Connector version**

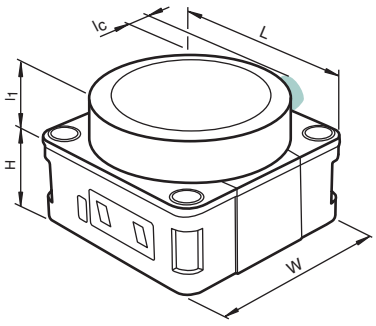
Your Benefit

- **Simple pushbutton configuration**

Accessories

This and more accessories can be found in chapter 3.5 from page 673
See pages from 972 ... for cordsets **See pages 1068 ... for mounting aids**

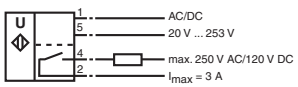
V95-G	Female connector, 7/8" - 16 UN, 5-pin, field attachable
V95-W-5M-PVC	Female connector, 7/8", 5-pin, PVC cable
V95-W	Field attachable female cordset
V95-W-2M-PVC	Female connector, 7/8", 5-pin, PVC cable
MH 04-3505	Mounting aid for FP sensors
MHW 11	Mounting brackets for sensors

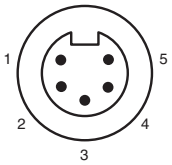


Electrical Connection

UB400-F42-UK-V95
UB1500-F42-UK-V95
UB3000-F42-UK-V95
UB5000-F42-UK-V95

Standard symbol/Connections:
(version UK)





Wire colors

1	WH	(white)
2	RD	(red)
3	GN	(green)
4	OR	(orange)
5	BK	(black)

Date of issue: 04/08/2015

Consider the General Notes on the Information in the Pepperl+Fuchs Product Catalogs
Copyright Pepperl+Fuchs
Pepperl+Fuchs Group www.pepperl-fuchs.com
USA: +1 330 486 0001 fa-info@us.pepperl-fuchs.com
Germany: +49 621 776-4411 fa-info@de.pepperl-fuchs.com
Singapore: +65 6779 9091 fa-info@sg.pepperl-fuchs.com
PEPPERL+FUCHS SENSING YOUR NEEDS

Technical Data

*For detailed data and product description refer to the data sheets at **www.pepperl-fuchs.com***

General Data	
Operating voltage	10 ... 30 V DC , ripple 10 %$_{SS}$
No-load supply current	≤ 50 mA
Rated operational current	200 mA , short-circuit/overload protected
Synchronization	bi-directional
Ambient temperature	-25 ... 70 °C (-13 ... 158 °F)
Material	
Housing	ABS
Transducer	epoxy resin/hollow glass sphere mixture; foam polyurethane, cover PBT
Protection degree	IP54
Connection type	Device connector M12 x 1 , 5-pin

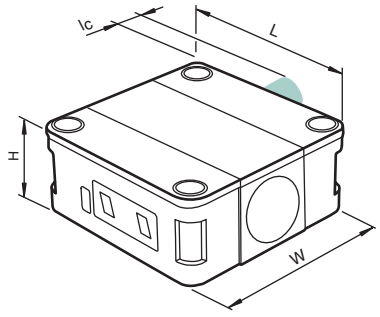
Model Number		UB500-F42S-E4-V15	UB500-F42S-E5-V15	UB500-F42S-E6-V15	UB500-F42S-E7-V15	UB2000-F42S-E4-V15	UB2000-F42S-E5-V15	UB2000-F42S-E6-V15	UB2000-F42S-E7-V15
Sensing range	30 ... 500 mm	●	●	●	●				
	60 ... 2000 mm					●	●	●	●
Transducer frequency	approx. 390 kHz	●	●	●	●				
	approx. 175 kHz					●	●	●	●
Output type	1 switch output E4, NPN, NO/NC, programmable	●				●			
	1 switch output E5, PNP NO/NC, programmable		●				●		
	2 switch outputs NPN, normally open/close selectable				●				●
	2 switch outputs PNP, NO/NC selectable			●				●	
Switching frequency	≤ 2.7 Hz					●	●	●	●
	≤ 8 Hz	●	●	●	●				
Approvals and Certificates									
UL approval	cULus Listed, General Purpose	●	●	●	●	●	●	●	●
CSA approval	cCSAus Listed, General Purpose	●	●	●	●	●	●	●	●
Dimensions									
Length L [mm]		80							
Width W [mm]		80							
Height H [mm]		34							
Transducer length l_1 [mm]		0							
Connector area l_c [mm]		16							

Properties

- 500 mm and 2000 mm sensing range versions
- DC, 1 and 2 switching outputs versions
- Surface mount F42 housing, side view
- Connector version

Your Benefit

- Simple pushbutton configuration



Accessories

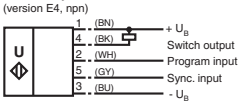
This and more accessories can be found in chapter 3.5 from page 673
See pages from 972 ... for cordsets
See pages 1068 ... for mounting aids

MH 04-3505	Mounting aid for FP sensors
MHW 11	Mounting brackets for sensors
V15-G-2M-PVC	Cable socket, M12, 5-pin, PVC cable
V15-W-2M-PUR	Cable socket, M12, 5-pin, PUR cable

Electrical Connection

UB500-F42S-E4-V15
UB2000-F42S-E4-V15

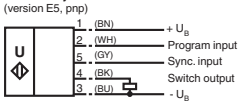
Standard symbol/Connections:
(version E4, npn)



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

UB500-F42S-E5-V15
UB2000-F42S-E5-V15

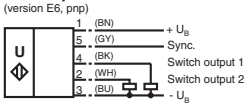
Standard symbol/Connections:
(version E5, pnp)



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

UB500-F42S-E6-V15
UB2000-F42S-E6-V15

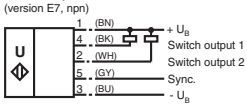
Standard symbol/Connections:
(version E6, pnp)



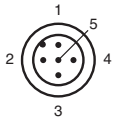
Core colours in accordance with EN 60947-5-2.

UB500-F42S-E7-V15
UB2000-F42S-E7-V15

Standard symbol/Connections:
(version E7, npn)



Core colours in accordance with EN 60947-5-2.



Wire colors in accordance with EN 60947-5-2

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

Date of issue 04/08/2015

CE

Properties

- 400 mm and 1500 mm sensing range versions
- AC/DC, relay output
- Surface mount F42 housing, side view
- Connector version

Your Benefit

- Simple pushbutton configuration

Technical Data

*For detailed data and product description refer to the data sheets at **www.pepperl-fuchs.com***

General Data	
Operating voltage	20 ... V DC ... 253 V AC
No-load supply current	≤ 60 mA
Output type	1 relay output
Rated operational current	3 A
Ambient temperature	-25 ... 70 °C (-13 ... 158 °F)
Material	
Housing	PBT
Transducer	epoxy resin/hollow glass sphere mixture; foam polyurethane, cover PBT
Protection degree	IP65
Connection	5-pin V95 connector (7/8"-16 UN 2A)

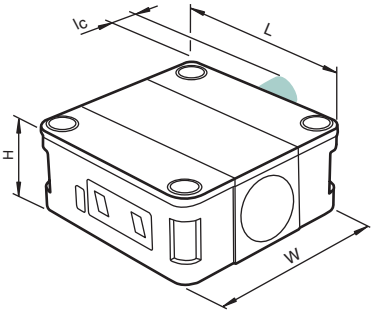
Model Number		UB400-F42S-UK-V95	UB1500-F42S-UK-V95
Sensing range	40 ... 400 mm	●	
	70 ... 1500 mm		●
Transducer frequency	approx. 390 kHz	●	
	approx. 175 kHz		●
Switching frequency	≤ 3 Hz		●
	≤ 8 Hz	●	

Dimensions	
Length L [mm]	80
Width W [mm]	80
Height H [mm]	34
Transducer length l_1 [mm]	0
Connector area l_c [mm]	16

Accessories

This and more accessories can be found in chapter 3.5 from page 673
See pages from 972 ... for cordsets See pages 1068 ... for mounting aids

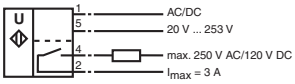
V95-G	Female connector, 7/8" - 16 UN, 5-pin, field attachable
V95-W-5M-PVC	Female connector, 7/8", 5-pin, PVC cable
V95-W	Field attachable female cordset
V95-W-2M-PVC	Female connector, 7/8", 5-pin, PVC cable
MH 04-3505	Mounting aid for FP sensors
MHW 11	Mounting brackets for sensors

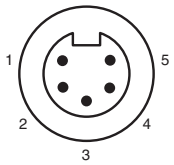


Electrical Connection

UB400-F42S-UK-V95
UB1500-F42S-UK-V95

Normsymbol/Anschluss:
(Version UK)





Wire colors

1	WH	(white)
2	RD	(red)
3	GN	(green)
4	OR	(orange)
5	BK	(black)

Date of issue: 04/08/2015

Consider the General Notes on the Information in the Pepperl+Fuchs Product Catalogs
Copyright Pepperl+Fuchs
Pepperl+Fuchs Group www.pepperl-fuchs.com
USA: +1 330 486 0001 fa-info@us.pepperl-fuchs.com
Germany: +49 621 776-4411 fa-info@de.pepperl-fuchs.com
Singapore: +65 6779 9091 fa-info@sg.pepperl-fuchs.com
PEPPERL+FUCHS SENSING YOUR NEEDS

Technical Data

For detailed data and product description refer to the data sheets at ***www.pepperl-fuchs.com***

General Data	
Deviation of the characteristic curve	± 1 % of full-scale value
Synchronization	bi-directional
Ambient temperature	-25 ... 70 °C (-13 ... 158 °F)
Material	
Housing	ABS
Transducer	epoxy resin/hollow glass sphere mixture; foam polyurethane, cover PBT
Protection degree	IP54
Connection type	Device connector M12 x 1 , 5-pin

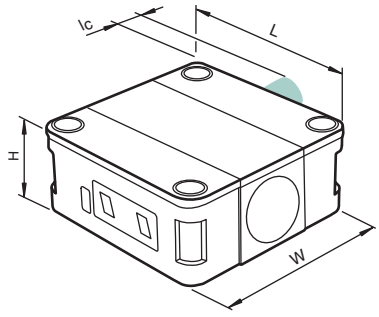
Model Number		UB500-F42S-I-V15	UB500-F42S-U-V15	UB2000-F42S-I-V15	UB2000-F42S-U-V15
Sensing range	30 ... 500 mm	●	●		
	60 ... 2000 mm			●	●
Transducer frequency	approx. 390 kHz	●	●		
	approx. 175 kHz			●	●
Operating voltage	10 ... 30 V DC , ripple 10 %$_{SS}$	●		●	
	17 ... 30 V DC , ripple 10 %$_{SS}$		●		●
No-load supply current	≤ 50 mA	●	●	●	●
Output type	1 analog output 0 ... 10 V		●		●
	1 analog output 4 ... 20 mA	●		●	
Resolution	0.2 mm at max. sensing range		●		
	0.2 mm for max. detection range	●			
	0.7 mm			●	●
Approvals and Certificates					
UL approval	cULus Listed, General Purpose	●	●	●	●
CSA approval	cCSAus Listed, General Purpose	●	●	●	●
Dimensions					
Length L [mm]			80		
Width W [mm]			80		
Height H [mm]			34		
Transducer length l_1 [mm]			0		
Connector area l_c [mm]			16		

Properties

- 500 mm and 2000 mm sensing range versions
- DC, analogg output
- Surface mount F42 housing, side view
- Connector version

Your Benefit

- Simple pushbutton configuration



Accessories

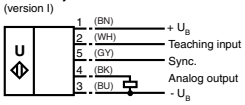
This and more accessories can be found in chapter 3.5 from page 673
See pages from 972 ... for cordsets See pages 1068 ... for mounting aids

MH 04-3505	Mounting aid for FP sensors
MHW 11	Mounting brackets for sensors
DA5-IU-2K-V	Process control and indication equipment
V15-G-2M-PVC	Cable socket, M12, 5-pin, PVC cable
V15-W-2M-PUR	Cable socket, M12, 5-pin, PUR cable

Electrical Connection

UB500-F42S-I-V15
UB2000-F42S-I-V15

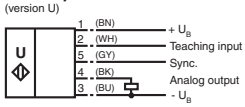
Standard symbol/Connections:
(version I)



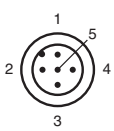
Core colours in accordance with EN 60947-5-2.

UB500-F42S-U-V15
UB2000-F42S-U-V15

Standard symbol/Connections:
(version U)



Core colours in accordance with EN 60947-5-2.



Wire colors in accordance with EN 60947-5-2

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

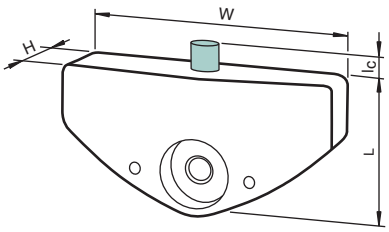
Date of issue 04/08/2015

Properties

- Up to 2500 mm sensing range
- DC, 2 switching outputs and programming interface
- Level measurement optimized F65 housing
- Connector version

Your Benefit

- SONPROG programmable sensing limits and filtering
- Ultra-low 30 mm mounting height
- Gasketed transducer seals the tank/container



Technical Data

*For detailed data and product description refer to the data sheets at **www.pepperl-fuchs.com***

General Data	
Operating voltage	12 ... 30 V (including ripple) In supply voltage interval 12 ... 20 V reduced sensitivity by 20% ... 0%
No-load supply current	≤ 60 mA
Output type	2 switch outputs PNP, NO
Rated operational current	150 mA , short-circuit/overload protected
Input type	1 program input Teach-In of S_{min}
Ambient temperature	-25 ... 70 °C (-13 ... 158 °F)
Material	
Housing	PBT
Transducer	epoxy resin/hollow glass sphere mixture; polyurethane foam
Protection degree	IP65
Connection type	Device connector M12 x 1 , 5-pin

Model Number		UC500-F65-E8R2-V15	UC1500-F65-E8R2-V15	UC2500-F65-E8R2-V15
Sensing range	60 ... 500 mm	●		
	200 ... 1500 mm		●	
	250 ... 2500 mm			●
Transducer frequency	approx. 300 kHz	●		
	approx. 200 kHz		●	
	approx. 120 kHz			●
Approvals and Certificates				
UL approval	cULus Listed, General Purpose	●	●	●
CSA approval	cCSAus Listed, General Purpose	●	●	●

Dimensions	
Length L [mm]	64,4
Width W [mm]	125
Height H [mm]	30
Connector area l_c [mm]	12

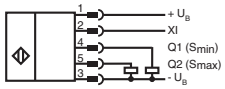
Accessories

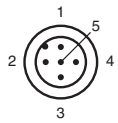
This and more accessories can be found in chapter 3.5 from page 673
See pages from 972 ... for cordsets See pages 1068 ... for mounting aids

V15-G-2M-PUR	Cable socket, M12, 5-pin, PUR cable
V15-G-2M-PVC	Cable socket, M12, 5-pin, PVC cable
V15-W-2M-PUR	Cable socket, M12, 5-pin, PUR cable
V15-W-2M-PVC	Cable socket, M12, 5-pin, PVC cable
3RX4000-PF	PC interface

Electrical Connection

UC500-F65-E8R2-V15
UC1500-F65-E8R2-V15
UC2500-F65-E8R2-V15





Wire colors in accordance with EN 60947-5-2

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

Date of issue: 04/08/2015

Consider the General Notes on the Information in the Pepperl+Fuchs Product Catalogs
Copyright Pepperl+Fuchs

Pepperl+Fuchs Group www.pepperl-fuchs.com
USA: +1 330 486 0001 fa-info@us.pepperl-fuchs.com
Germany: +49 621 776-4411 fa-info@de.pepperl-fuchs.com
Singapore: +65 6779 9091 fa-info@sg.pepperl-fuchs.com
PEPPERL+FUCHS SENSING YOUR NEEDS

Technical Data

*For detailed data and product description refer to the data sheets at **www.pepperl-fuchs.com***

General Data	
Operating voltage	15 ... 30 V (including ripple) In supply voltage interval 15 ... 20 V reduced sensitivity by 20% ... 0%
No-load supply current	≤ 60 mA
Output type	1 switch output PNP, NO
Operating current	≤ 300 mA , short-circuit/overload protected
Linearity error	≤ 1.5 %
Input type	1 Function input
Ambient temperature	-25 ... 70 °C (-13 ... 158 °F)
Material	
Housing	PBT
Transducer	epoxy resin/hollow glass sphere mixture; polyurethane foam
Protection degree	IP65
Connection type	Device connector M12 x 1 , 5-pin

Model Number		UC500-F65-IE2R2-V15	UC500-F65-UE2R2-V15	UC1500-F65-IE2R2-V15	UC1500-F65-UE2R2-V15	UC2500-F65-IE2R2-V15	UC2500-F65-UE2R2-V15
Sensing range	60 ... 500 mm	●	●				
	200 ... 1500 mm			●	●		
	250 ... 2500 mm					●	●
Transducer frequency	approx. 300 kHz	●	●				
	approx. 200 kHz			●	●		
	approx. 120 kHz					●	●
Output type	1 voltage output 0 ... 10 V , rising slope		●		●		●
	1 current output 4 ... 20 mA , rising slope	●		●		●	
Approvals and Certificates							
UL approval	cULus Listed, General Purpose	●	●	●	●	●	●
CSA approval	cCSAus Listed, General Purpose	●	●	●	●	●	●
Dimensions							
Length L [mm]		64,4					
Width W [mm]		125					
Height H [mm]		30					
Connector area l_c [mm]		12					

Properties

- Up to 2500 mm sensing range versions
- DC, analog output, switching output and programming interface
- Level measurement optimized F65 housing
- Connector version

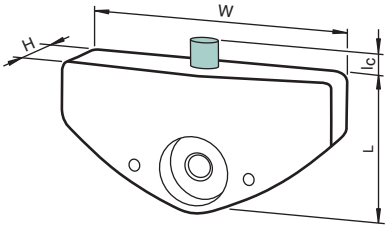
Your Benefit

- SONPROG programmable sensing limits and filtering
- Ultra-low 30 mm mounting height
- Gasketed transducer seals the tank/container

Accessories

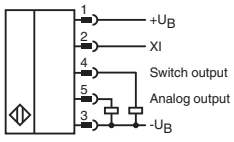
This and more accessories can be found in chapter 3.5 from page 673
See pages from 972 ... for cordsets See pages 1068 ... for mounting aids

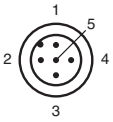
V15-G-2M-PUR	Cable socket, M12, 5-pin, PUR cable
V15-G-2M-PVC	Cable socket, M12, 5-pin, PVC cable
V15-W-2M-PUR	Cable socket, M12, 5-pin, PUR cable
V15-W-2M-PVC	Cable socket, M12, 5-pin, PVC cable
3RX4000-PF	PC interface



Electrical Connection

UC500-F65-IE2R2-V15
UC1500-F65-IE2R2-V15
UC2500-F65-IE2R2-V15
UC500-F65-UE2R2-V15
UC1500-F65-UE2R2-V15
UC2500-F65-UE2R2-V15





Wire colors in accordance with EN 60947-5-2

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

Date of issue 04/08/2015

Technical Data

*For detailed data and product description refer to the data sheets at **www.pepperl-fuchs.com***

General Data	
Operating voltage	12 ... 30 V (including ripple) In supply voltage interval 12 ... 20 V reduced sensitivity by 20% ... 0%
No-load supply current	≤ 60 mA
Output type	1 Frequency output
Rated operational current	300 mA
Input type	1 Function input
Ambient temperature	-25 ... 70 °C (-13 ... 158 °F)
Material	
Housing	PBT
Transducer	epoxy resin/hollow glass sphere mixture; polyurethane foam
Protection degree	IP65
Connection type	Device connector M12 x 1 , 4-pin

Model Number		UC500-F65-FE2R2-V15	UC1500-F65-FE2R2-V15	UC2500-F65-FE2R2-V15
Sensing range	60 ... 500 mm	●		
	200 ... 1500 mm		●	
	250 ... 2500 mm			●
Transducer frequency	approx. 300 kHz	●		
	approx. 200 kHz		●	
	approx. 120 kHz			●
Output frequency	30 ... 250 Hz (300 ... 2500 Hz) , adjustable	●		
	20 ... 150 Hz (200 ... 1500 Hz) , adjustable		●	
	12.5 ... 125 Hz (125 ... 1250 Hz) , adjustable			●
Approvals and Certificates				
UL approval	cULus Listed, General Purpose	●	●	●
CSA approval	cCSAus Listed, General Purpose	●	●	●

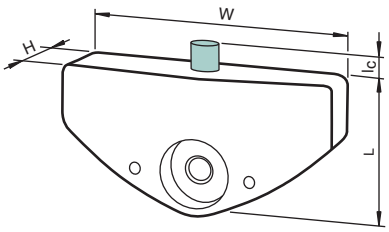
Dimensions	
Length L [mm]	64,4
Width W [mm]	125
Height H [mm]	30
Connector area l_c [mm]	12

Properties

- Up to 2500 mm sensing range versions
- DC, frequency output, switching output and programming interface
- Level measurement optimized F65 housing
- Connector version

Your Benefit

- SONPROG programmable sensing limits and filtering
- Frequency (Hz) output provides continuous feedback to discrete input controllers
- Ultra-low 30 mm mounting height
- Gasketed transducer seals the tank/container



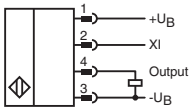
Accessories

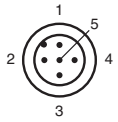
This and more accessories can be found in chapter 3.5 from page 673
See pages from 972 ... for cordsets See pages 1068 ... for mounting aids

V1-G-2M-PUR	Cable socket, M12, 4-pin, PUR cable
V1-G-2M-PVC	Cable socket, M12, 4-pin, PVC cable
V1-W-2M-PUR	Cable socket, M12, 4-pin, PUR cable
V1-W-2M-PVC	Cable socket, M12, 4-pin, PVC cable
3RX4000-PF	PC interface

Electrical Connection

UC500-F65-FE2R2-V15
UC1500-F65-FE2R2-V15
UC2500-F65-FE2R2-V15





Wire colors in accordance with EN 60947-5-2

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

Date of issue: 04/08/2015

Consider the General Notes on the Information in the Pepperl+Fuchs Product Catalogs
Copyright Pepperl+Fuchs

Pepperl+Fuchs Group www.pepperl-fuchs.com
USA: +1 330 486 0001 fa-info@us.pepperl-fuchs.com
Germany: +49 621 776-4411 fa-info@de.pepperl-fuchs.com
Singapore: +65 6779 9091 fa-info@sg.pepperl-fuchs.com
PEPPERL+FUCHS SENSING YOUR NEEDS

Technical Data

*For detailed data and product description refer to the data sheets at **www.pepperl-fuchs.com***

General Data	
Sensing range	800 ... 10000 mm
Transducer frequency	approx. 60 kHz
Operating voltage	15 ... 30 V (including ripple) In supply voltage interval 15 ... 20 V reduced sensitivity by 20% ... 0%
No-load supply current	≤ 75 mA
Linearity error	≤ 1.5 %
Input/output type	1 synchronization connection, bidirectional
Ambient temperature	-25 ... 70 °C (-13 ... 158 °F)
Material	
Housing	UP 1225 SF/R8
Transducer	epoxy resin/hollow glass sphere mixture; polyurethane foam
Protection degree	IP65
Connection type	screw terminals , PG 13.5 cable gland

Model Number		UC10000-F260-IE8R2	UC10000-F260-IE9R2	UC10000-F260-UE8R2	UC10000-F260-UE9R2
Output type	2 switch outputs PNP, NC		●		●
	2 switch outputs PNP, NO	●		●	
Operating current	150 mA , short-circuit/overload protected		●		●
	300 mA , short-circuit/overload protected	●		●	
Output type	1 voltage output: 0 ... 10 V rising slope			●	●
	1 current output 4 ... 20 mA rising slope	●	●		
Approvals and Certificates					
UL approval	cULus Listed, General Purpose	●	●	●	●
CSA approval	cCSAus Listed, General Purpose	●	●	●	●
Dimensions					
Length L [mm]			112		
Width W [mm]			160		
Height H [mm]			160		

Properties

- 10 m sensing range
- DC, analog output, switching outputs and programming interface
- Rotatable F260 housing
- Terminal compartment

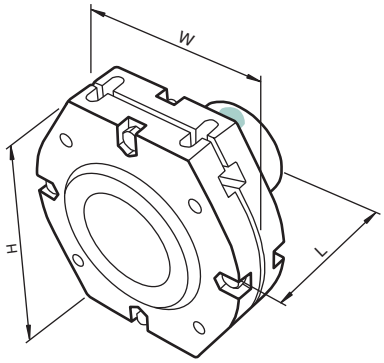
Your Benefit

- SONPROG programmable sensing limits and filtering

Accessories

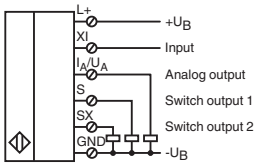
This and more accessories can be found in chapter 3.5 from page 673
See pages from 972 ... for cordsets See pages 1068 ... for mounting aids

DA5-IU-C	Digital display unit
3RX4000-PF	PC interface
V1S-M12-500	Receptacles, M12/M16, 5-pin



Electrical Connection

UC10000-F260-IE9R2
UC10000-F260-UE8R2
UC10000-F260-UE9R2
UC10000-F260-IE8R2



Date of issue 04/08/2015

Technical Data

*For detailed data and product description refer to the data sheets at **www.pepperl-fuchs.com***

Model Number	UBE1000-18GM40-SE2-V1
Sensing range	15 ... 1000 mm
Transducer frequency	approx. 255 kHz
Operating voltage	10 ... 30 V DC , ripple 10 %$_{SS}$
No-load supply current	≤ 20 mA
Output type	PNP, NO
Rated operational current	200 mA , short-circuit/overload protected
Switching frequency	≤ 100 Hz
Input type	1 program input free air path: -U_B ... +1 V, object: +6 V ... +U_B input impedance: > 4,7 kΩ program pulse: ≥ 1 s
LED green	Power on
LED yellow	switching state
LED red	error, object uncertain
Ambient temperature	-25 ... 70 °C (-13 ... 158 °F)
Material	
Housing	brass, nickel-plated
Transducer	epoxy resin/hollow glass sphere mixture; foam polyurethane, cover PBT
Protection degree	IP67
Connection type	Device connector M12 x 1 , 4-pin
Approvals and Certificates	
UL approval	cULus Listed, General Purpose
CSA approval	cCSAus Listed, General Purpose
Dimensions	
Length L [mm]	49.2
Diameter D [mm]	18
Thread length l_t [mm]	24.5
Connector area l_c [mm]	10
LED position	Pos. C

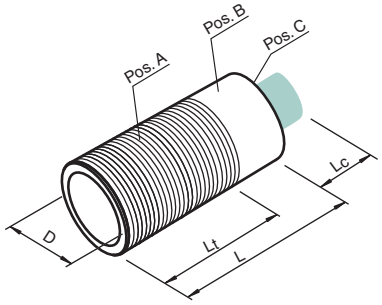
Properties

- Ø18 mm housing
- 1000 mm sensing range
- DC, 3-wire switching output
- Connector version

Accessories

This and more accessories can be found in chapter 3.5 from page 673
See pages from 972 ... for cordsets See pages 1068 ... for mounting aids

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
V1-G-2M-PVC	Cable socket, M12, 4-pin, PVC cable
V1-W-2M-PUR	Cable socket, M12, 4-pin, PUR cable

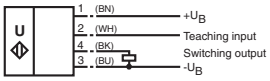


Electrical Connection

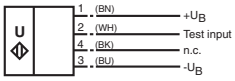
UBE1000-18GM40-SE2-V1

Standard symbol/Connection:
(version E2, pnp)

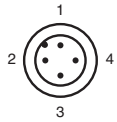
Receiver:



Emitter:



Core colours in accordance with EN 60947-5-2.



Wire colors in accordance with EN 60947-5-2

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

Date of issue: 04/08/2015

Consider the General Notes on the Information in the Pepperl+Fuchs Product Catalogs
Copyright Pepperl+Fuchs

Pepperl+Fuchs Group www.pepperl-fuchs.com
USA: +1 330 486 0001 fa-info@us.pepperl-fuchs.com
Germany: +49 621 776-4411 fa-info@de.pepperl-fuchs.com
Singapore: +65 6779 9091 fa-info@sg.pepperl-fuchs.com
PEPPERL+FUCHS SENSING YOUR NEEDS

Technical Data

*For detailed data and product description refer to the data sheets at **www.pepperl-fuchs.com***

Model Number	UBEC300-18GH40-SE2-V1
Sensing range	100 ... 300 mm
Transducer frequency	approx. 255 kHz
Operating voltage	10 ... 30 V DC , ripple 10 %$_{SS}$
No-load supply current	≤ 20 mA
Output type	PNP, NO
Rated operational current	200 mA , short-circuit/overload protected
Switching frequency	≤ 100 Hz
Input type	1 program input [receiver] switch point 1: -U_B ... +1 V, switch point 2: +6 V ... +U_B 1 test input [emitter] emitter deactivated: +6 V ... +U_B
Ambient temperature	-25 ... 70 °C (-13 ... 158 °F)
Material	
Housing	Stainless steel 1.4435 / AISI 316L O-ring for cover sealing: EPDM
Transducer	PTFE (diaphragm surface)
Protection degree	IP68 / IP69K
Connection type	Device connector M12 x 1 , 4-pin

Approvals and Certificates	
UL approval	cULus Listed, General Purpose
CSA approval	cCSAus Listed, General Purpose

Dimensions	
Length L [mm]	43
Diameter D [mm]	18
Head diameter D_1 [mm]	21
Thread length l_t [mm]	15
Head length l_1 [mm]	13
Connector area l_c [mm]	10

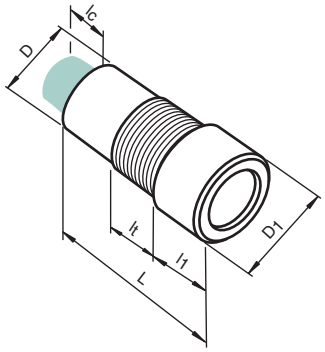
Properties

- Ø18 mm high grade steel housing
- 300 mm sensing range
- DC, 3-wire switching output
- Connector version

Accessories

This and more accessories can be found in chapter 3.5 from page 673
See pages from 972 ... for cordsets See pages 1068 ... for mounting aids

UB-PROG2	Programming unit
V1-GU-BK2M-PVC	Cable socket, M12 Ultra-Lock, 4-pin, PVC cable
V1-WU-BK2M-PVC	Cable socket, M12 Ultra-Lock, 4-pin, PVC cable

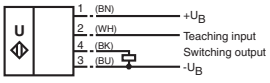


Electrical Connection

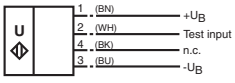
UBEC300-18GH40-SE2-V1

Standard symbol/Connection:
(version E2, pnp)

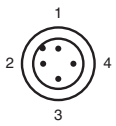
Receiver:



Emitter:



Core colours in accordance with EN 60947-5-2.



Wire colors in accordance with EN 60947-5-2

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

Date of issue 04/08/2015

Properties

- Ø18 mm housing, angled head
- 1000 mm sensing range
- DC, 3-wire switching output
- Connector version

Technical Data

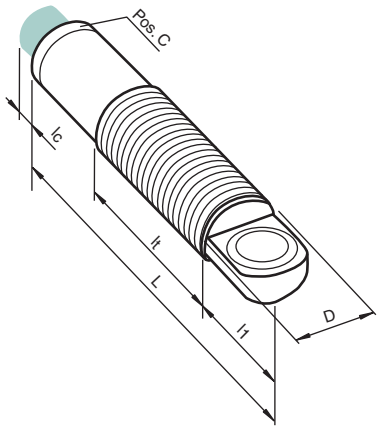
*For detailed data and product description refer to the data sheets at **www.pepperl-fuchs.com***

Model Number	UBE1000-18GM40A-SE2-V1
Sensing range	15 ... 1000 mm
Transducer frequency	approx. 255 kHz
Operating voltage	10 ... 30 V DC , ripple 10 %$_{SS}$
No-load supply current	≤ 20 mA
Output type	PNP, NO
Rated operational current	200 mA , short-circuit/overload protected
Switching frequency	≤ 100 Hz
Input type	1 program input free air path: -U_B ... +1 V, object: +6 V ... +U_B input impedance: > 4,7 kΩ program pulse: ≥ 1 s
LED green	Power on
LED yellow	switching state
LED red	error, object uncertain
Ambient temperature	-25 ... 70 °C (-13 ... 158 °F)
Material	
Housing	brass, nickel-plated
Transducer	epoxy resin/hollow glass sphere mixture; foam polyurethane, cover PBT
Protection degree	IP67
Connection type	Device connector M12 x 1 , 4-pin
Approvals and Certificates	
UL approval	cULus Listed, General Purpose
CSA approval	cCSAus Listed, General Purpose
Dimensions	
Length L [mm]	57.7
Diameter D [mm]	18
Transducer length l_1 [mm]	18.5
Thread length l_t [mm]	24.5
Connector area l_c [mm]	10
LED position	Pos. C

Accessories

This and more accessories can be found in chapter 3.5 from page 673
See pages from 972 ... for cordsets See pages 1068 ... for mounting aids

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
V1-G-2M-PVC	Cable socket, M12, 4-pin, PVC cable
V1-W-2M-PUR	Cable socket, M12, 4-pin, PUR cable

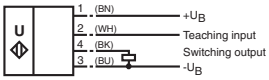


Electrical Connection

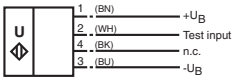
UBE1000-18GM40A-SE2-V1

Standard symbol/Connection:
(version E2, pnp)

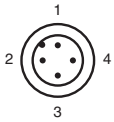
Receiver:



Emitter:



Core colours in accordance with EN 60947-5-2.



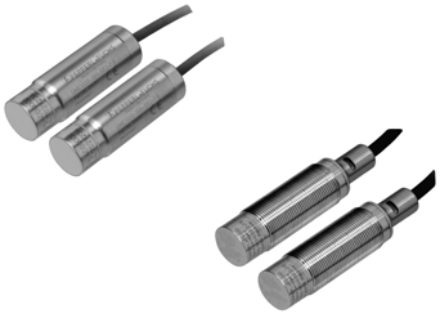
Wire colors in accordance with EN 60947-5-2

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

Date of issue: 04/08/2015

Consider the General Notes on the Information in the Pepperl+Fuchs Product Catalogs
Copyright Pepperl+Fuchs

Pepperl+Fuchs Group www.pepperl-fuchs.com
USA: +1 330 486 0001 fa-info@us.pepperl-fuchs.com
Germany: +49 621 776-4411 fa-info@de.pepperl-fuchs.com
Singapore: +65 6779 9091 fa-info@sg.pepperl-fuchs.com
PEPPERL+FUCHS SENSING YOUR NEEDS



Properties

- Ø18 mm high grade steel housing, hygienic design
- 1000 mm sensing range
- DC, 3-wire switching output
- Cable version

Technical Data

*For detailed data and product description refer to the data sheets at **www.pepperl-fuchs.com***

General Data	
Sensing range	15 ... 1000 mm
Transducer frequency	170 kHz
Operating voltage	10 ... 30 V DC , ripple 10 $\%_{SS}$
No-load supply current	≤ 20 mA
Output type	1 switch output E2, PNP, NO
Rated operational current	200 mA , short-circuit/overload protected
Switching frequency	≤ 100 Hz
Input type	1 program input free air path: $-U_B$ ... +1 V, object: +6 V ... $+U_B$
Ambient temperature	-25 ... 85 °C (-13 ... 185 °F)
Material	
Housing	Stainless steel 1.4435 / AISI 316L
Transducer	Stainless steel 1.4435 / AISI 316L
Protection degree	IP68 / IP69K

Model Number		UME1000-18H-SE2-FA	UME1000-18H-SE2-FB	UME1000-18GH-SE2-FB
LED green	Power on		●	●
LED yellow	Receiver: switching state, uncertain object, Teach-In		●	●
LED red	Transducer: test input		●	●
Connection type	cable PUR , 2 m	●		
	cable PVC , 2 m		●	●

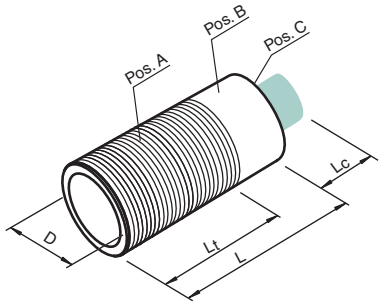
Approvals and Certificates				
UL approval	cULus Listed, General Purpose		●	●
CSA approval	cCSAus Listed, General Purpose		●	●

Dimensions				
Length L [mm]		55	66,7	
Diameter D [mm]			18	
Thread length l_t [mm]			0	32
Connector area l_c [mm]			0	
LED position		-	Pos. C	

Accessories

This and more accessories can be found in chapter 3.5 from page 673
See pages from 972 ... for cordsets See pages 1068 ... for mounting aids

BF 18	Mounting flange, 18 mm
BF 18-F	Mounting flange with dead stop, 18 mm
MH-18H-01-FA	

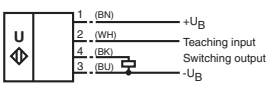


Electrical Connection

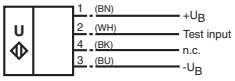
UME1000-18H-SE2-FA
UME1000-18GH-SE2-FB
UME1000-18H-SE2-FB

Standard symbol/Connection:
(version E2, pnp)

Receiver:



Emitter:



Date of issue 04/08/2015

Properties

- Ø30 mm housing
- 4 m sensing range
- DC, 4-wire complementary switching outputs
- Connector version

Technical Data

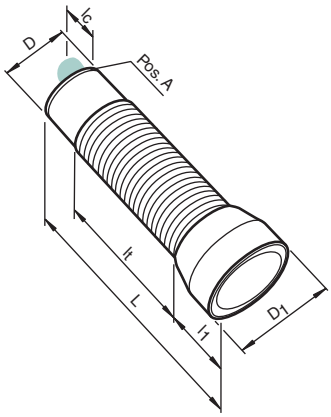
*For detailed data and product description refer to the data sheets at **www.pepperl-fuchs.com***

Model Number	UBE4000-30GM-SA2-V15
Sensing range	0 ... 4000 mm , distance emitter-receiver 500 mm ... 4000 mm
Transducer frequency	85 kHz
Operating voltage	18 ... 30 V DC , ripple 10 %$_{SS}$
No-load supply current	35 mA emitter 25 mA receiver
Output type	2 switch outputs PNP, normally open/closed (complementary)
Rated operational current	200 mA
Switching frequency	≤ 15 Hz
LED green	alignment aid OFF: no ultrasonic signal flashing: uncertain area ON: positive reception
LED yellow	switching state
Ambient temperature	0 ... 60 °C (32 ... 140 °F)
Material	
Housing	nickel plated brass; plastic components: PBT
Protection degree	IP65
Connection type	Device connector M12 x 1 , 5-pin
Approvals and Certificates	
UL approval	cULus Listed, General Purpose
CSA approval	cCSAus Listed, General Purpose
Dimensions	
Length L [mm]	90
Diameter D [mm]	30
Transducer diameter D_1 [mm]	40
Transducer length l_1 [mm]	25
Thread length l_t [mm]	43
Connector area l_c [mm]	10
LED position	Pos. A

Accessories

This and more accessories can be found in chapter 3.5 from page 673
See pages from 972 ... for cordsets See pages 1068 ... for mounting aids

FP100	Remote potentiometer
BF 30	Mounting flange, 30 mm
BF 5-30	Universal mounting bracket for cylindrical sensors with a diameter of 5 ... 30 mm
V1-G-2M-PVC	Cable socket, M12, 4-pin, PVC cable
V1-W-2M-PVC	Cable socket, M12, 4-pin, PVC cable

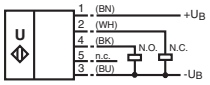


Electrical Connection

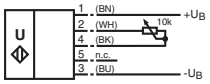
UBE4000-30GM-SA2-V15

Standard symbol/Connection:
(version A2, pnp)

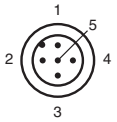
Receiver:



Emitter:



Core colours in accordance with EN 60947-5-2.



Wire colors in accordance with EN 60947-5-2

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

Date of issue: 04/08/2015

Consider the General Notes on the Information in the Pepperl+Fuchs Product Catalogs
Copyright Pepperl+Fuchs

Pepperl+Fuchs Group www.pepperl-fuchs.com
USA: +1 330 486 0001 fa-info@us.pepperl-fuchs.com
Germany: +49 621 776-4411 fa-info@de.pepperl-fuchs.com
Singapore: +65 6779 9091 fa-info@sg.pepperl-fuchs.com

PEPPERL+FUCHS
SENSING YOUR NEEDS

Technical Data

*For detailed data and product description refer to the data sheets at **www.pepperl-fuchs.com***

Model Number	UBE800-F77-SE2-V31
Sensing range	0 ... 800 mm emitter/receiver spacing
Transducer frequency	approx. 300 kHz
Operating voltage	20 ... 30 V DC , ripple 10 %$_{SS}$; 12 ... 20 V DC reduced sensitivity by 80 %
No-load supply current	≤ 20 mA
Output type	1 switch output PNP, NO
Rated operational current	200 mA , short-circuit/overload protected
Switching frequency	100 Hz
Input type	1 program input (receiver)
LED green	Power on (emitter)
LED yellow	switching state (receiver)
Ambient temperature	-25 ... 70 °C (-13 ... 158 °F)
Material	
Housing	Polycarbonate
Transducer	epoxy resin/hollow glass sphere mixture; polyurethane foam
Protection degree	IP67
Connection type	M8 x 1 connector , 4-pin

Approvals and Certificates	
UL approval	cULus Listed, General Purpose
CSA approval	cCSAus Listed, General Purpose

Dimensions	
Length L [mm]	23
Width W [mm]	12
Height H [mm]	31
Connector area l_c [mm]	9

Properties

- Emitter / receiver set
- Miniature F77 housing
- 800 mm sensing range
- DC, 3-wire switching output
- Connector version

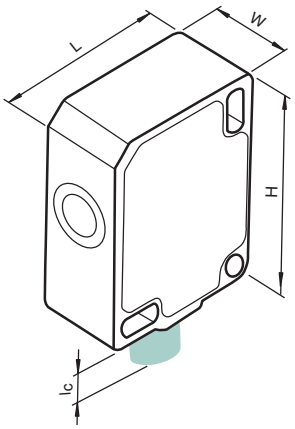
Your Benefit

- Best-in-class immunity to acoustic interference
- Excellent for detection of clear objects
- Fast, 100Hz switching frequency

Accessories

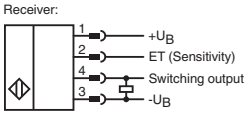
This and more accessories can be found in chapter 3.5 from page 673
See pages from 972 ... for cordsets See pages 1068 ... for mounting aids

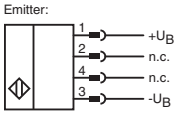
UB-PROG4-V31	Programming unit
OMH-ML7-01	Mounting bracket
V31-GM-2M-PVC	M8, 4-pin socket, PVC cable
V31-WM-2M-PVC	M8, 4-pin socket, PVC cable



Electrical Connection

UBE800-F77-SE2-V31





Wire colors in accordance with EN 60947-5-2

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

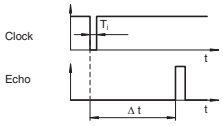
Date of issue 2015-04-08

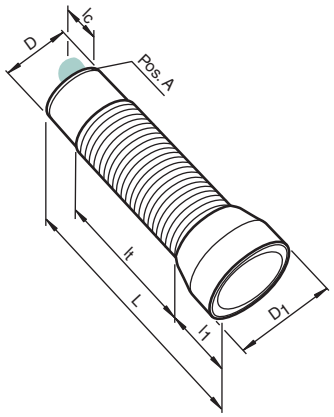
Properties

- Up to 6000 mm sensing range versions
- DC, clock input / echo output
- Requires external controller / amplifier
- Ø30 mm cylindrical housing
- Connector version

Function

The sensing range is determined in the downstream evaluation electronics such as PLC modules or other existing evaluation units.
The object distance in pulse-echo mode is obtained from the echo time Δt. The emission of an ultrasonic pulse starts simultaneously with the falling slope of the clock input signal.





Technical Data

*For detailed data and product description refer to the data sheets at **www.pepperl-fuchs.com***

General Data	
Operating voltage	10 ... 30 V DC , ripple 10 %$_{SS}$
No-load supply current	≤ 30 mA
Input type	1 pulse input for transmitter pulse (clock)
Output type	1 pulse output for echo run time, short-circuit proof open collector PNP with pulldown resistor = 22 kOhm level 0 (no echo): -U_B level 1 (echo detected): ≥ (+U_B-2 V)
Ambient temperature	-25 ... 85 °C (-13 ... 185 °F)
Material	
Housing	nickel plated brass; plastic components: PBT
Transducer	epoxy resin/hollow glass sphere mixture; polyurethane foam
Protection degree	IP67
Connection type	Device connector M12 x 1 , 4-pin

Model Number		UB500-30GM-H3-V1	UB2000-30GM-H3-V1	UB4000-30GM-H3-V1	UB6000-30GM-H3-V1
Sensing range	30 ... 500 mm	●			
	80 ... 2000 mm		●		
	200 ... 4000 mm			●	
	350 ... 6000 mm				●
Transducer frequency	approx. 380 kHz	●			
	approx. 180 kHz		●		
	approx. 85 kHz			●	
	approx. 65 kHz				●
Approvals and Certificates					
UL approval	cULus Listed, General Purpose	●	●	●	●
CSA approval	cCSAus Listed, General Purpose	●	●	●	●

Dimensions					
Length L [mm]		80		95	100
Diameter D [mm]			30		
Transducer diameter D_1 [mm]		30		40	74
Transducer length l_1 [mm]		0		25	32,5
Thread length l_t [mm]		60		49	47,5
Connector area l_c [mm]			10		

Accessories

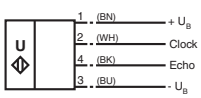
This and more accessories can be found in chapter 3.5 from page 673
See pages from 972 ... for cordsets See pages 1068 ... for mounting aids

BF 30	Mounting flange, 30 mm
BF 30-F	Mounting flange with dead stop, 30 mm
BF 5-30	Universal mounting bracket for cylindrical sensors with a diameter of 5 ... 30 mm
UVW90-M30	Ultrasonic deflector (only UB500... and UB2000...)
UVW90-K30	Ultrasonic deflector (only UB500... and UB2000...)
V1-G-2M-PVC	Cable socket, M12, 4-pin, PVC cable
V1-W-2M-PVC	Cable socket, M12, 4-pin, PVC cable

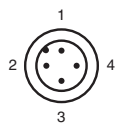
Electrical Connection

UB2000-30GM-H3-V1
UB4000-30GM-H3-V1
UB500-30GM-H3-V1
UB6000-30GM-H3-V1

Standard symbol/Connection:



2 = Emitter pulse input
4 = Echo propagation time output
Core colours in accordance with EN 60947-5-2.



Wire colors in accordance with EN 60947-5-2

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

Date of issue: 2015-04-08

Consider the General Notes on the Information in the Pepperl+Fuchs Product Catalogs
Copyright Pepperl+Fuchs

Pepperl+Fuchs Group www.pepperl-fuchs.com
USA: +1 330 486 0001 fa-info@us.pepperl-fuchs.com
Germany: +49 621 776-4411 fa-info@de.pepperl-fuchs.com
Singapore: +65 6779 9091 fa-info@sg.pepperl-fuchs.com
PEPPERL+FUCHS SENSING YOUR NEEDS

Properties

- Ø18 mm housing
- Wide range double sheet detection
- Very fast response
- DC, 3 switching outputs
- Cable version

Your Benefit

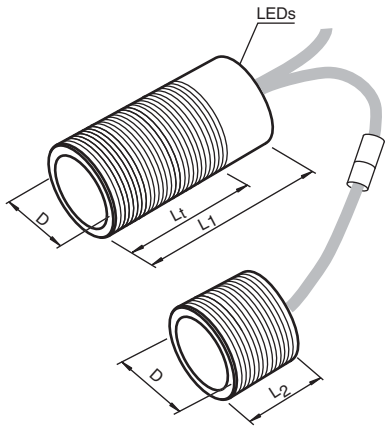
- 400-series is designed for detection of the broadest range of materials (typically paper)
- One sensor identifies zero-, single- and double-sheets

Technical Data

*For detailed data and product description refer to the data sheets at **www.pepperl-fuchs.com***

General Data	
Sensing range	20 ... 60 mm , optimal distance: 45 mm
Transducer frequency	395 kHz
Operating voltage	18 ... 30 V DC , ripple 10 $\%_{SS}$
No-load supply current	< 80 mA
Rated operational current	3 x 100 mA , short-circuit/overload protected
Switch-on delay	approx. 15 ms (shorter response time on request)
Switch-off delay	approx. 15 ms (shorter response time on request)
Pulse extension	min. 120 ms programmable
Input type	Function input
LED green	indication: single sheet detected
LED yellow	Indication: No sheet detected (Air)
LED red	indication: double sheet detected
Ambient temperature	0 ... 60 °C (32 ... 140 °F)
Material	
Housing	nickel plated brass; plastic components: PBT
Transducer	epoxy resin/hollow glass sphere mixture; polyurethane foam
Protection degree	IP67
Connection type	cable PVC , 2 m

Model Number		UDC-18GM-400-3E1	UDC-18GM-400-3E2	UDC-18GM-400-3E3
Output type	3 switch outputs NPN, NC	●		
	3 Switch outputs PNP, NC			●
	3 switch outputs PNP, NO		●	
Approvals and Certificates				
UL approval	cULus Listed, General Purpose, Class 2 Power Source	●	●	●
CSA approval	cCSAus Listed, General Purpose, Class 2 Power Source	●	●	●
Dimensions				
Receiver length L1 [mm]			74	
Emitter length L2 [mm]			22	
Diameter D [mm]			18	
Receiver thread length l_t [mm]			45	



Accessories

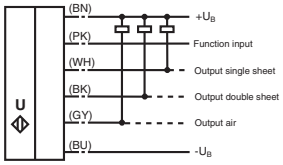
This and more accessories can be found in chapter 3.5 from page 673
See pages from 972 ... for cordsets
See pages 1068 ... for mounting aids

UDB-Cable-2M	Extension cable
MH-UDB01	Mounting bracket for double sheet monitor
UDB-Cable-1M	Extension cable

Electrical Connection

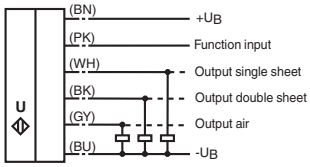
UDC-18GM-400-3E1

Standard symbol/Connection:
Double sheet control



UDC-18GM-400-3E2
UDC-18GM-400-3E3

Standard symbol/Connection:
Double sheet control



Date of issue 2015-04-08

Properties

- Ø18 mm housing with mounting bracket
- Wide range double sheet detection
- Very fast response
- DC, 3 switching outputs
- Cable version

Your Benefit

- 400-series is designed for detection of the broadest range of materials (typically paper)
- One sensor identifies zero-, single- and double-sheets

Technical Data

*For detailed data and product description refer to the data sheets at **www.pepperl-fuchs.com***

General Data	
Sensing range	20 ... 60 mm , optimal distance: 45 mm
Transducer frequency	395 kHz
Operating voltage	18 ... 30 V DC , ripple 10 %$_{SS}$
No-load supply current	< 80 mA
Rated operational current	3 x 100 mA , short-circuit/overload protected
Switch-on delay	approx. 15 ms (shorter response time on request)
Switch-off delay	approx. 15 ms (shorter response time on request)
Pulse extension	min. 120 ms programmable
Input type	Function input
LED green	indication: single sheet detected
LED yellow	Indication: No sheet detected (Air)
LED red	indication: double sheet detected
Ambient temperature	0 ... 60 °C (32 ... 140 °F)
Material	
Housing	nickel plated brass; plastic components: PBT
Transducer	epoxy resin/hollow glass sphere mixture; polyurethane foam
Protection degree	IP67
Connection type	cable PVC , 2 m

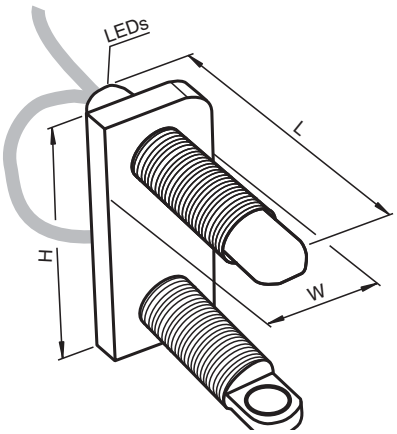
Model Number		UDC-18GMA-400-3E1	UDC-18GMA-400-3E3
Output type	3 switch outputs NPN, NC	●	
	3 switch outputs PNP, NC		●
Approvals and Certificates			
UL approval	cULus Listed, General Purpose, Class 2 Power Source	●	●
CSA approval	cCSAus Listed, General Purpose, Class 2 Power Source	●	●

Dimensions	
Length L [mm]	87
Diameter D [mm]	18
Height H [mm]	86
Width W [mm]	36

Accessories

This and more accessories can be found in chapter 3.5 from page 673
See pages from 972 ... for cordsets See pages 1068 ... for mounting aids

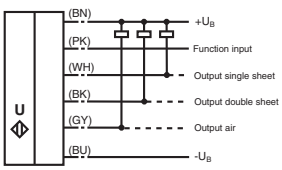
UDB-Cable-2M	Extension cable
UDB-Cable-1M	Extension cable



Electrical Connection

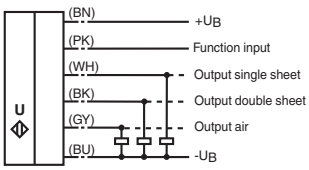
UDC-18GMA-400-3E1

Standard symbol/Connection:
Double sheet control



UDC-18GMA-400-3E3

Standard symbol/Connection:
Double sheet control



Date of issue: 2015-04-08

Consider the General Notes on the Information in the Pepperl+Fuchs Product Catalogs
Copyright Pepperl+Fuchs
Pepperl+Fuchs Group www.pepperl-fuchs.com
USA: +1 330 486 0001 fa-info@us.pepperl-fuchs.com
Germany: +49 621 776-4411 fa-info@de.pepperl-fuchs.com
Singapore: +65 6779 9091 fa-info@sg.pepperl-fuchs.com
PEPPERL+FUCHS SENSING YOUR NEEDS

Technical Data

*For detailed data and product description refer to the data sheets at **www.pepperl-fuchs.com***

General Data	
Sensing range	20 ... 60 mm , optimal distance: 45 mm
Transducer frequency	395 kHz
Operating voltage	18 ... 30 V DC , ripple 10 %$_{SS}$
No-load supply current	< 50 mA
Rated operational current	3 x 100 mA , short-circuit/overload protected
Switch-on delay	approx. 15 ms (shorter response time on request)
Switch-off delay	approx. 15 ms (shorter response time on request)
Pulse extension	min. 120 ms programmable
Input type	Function input
LED green	indication: single sheet detected
LED yellow	Indication: No sheet detected (Air)
LED red	indication: double sheet detected
Ambient temperature	0 ... 60 °C (32 ... 140 °F)
Material	
Housing	nickel plated brass; plastic components: PBT
Transducer	epoxy resin/hollow glass sphere mixture; polyurethane foam
Protection degree	IP67
Connection type	cable PVC , 2 m

Model Number		UDC-18GM50-400-3E1	UDC-18GM50-400-3E2	UDC-18GM50-400-3E0	UDC-18GM50-400-3E3
Output type	3 switch outputs NPN, NC	●			
	3 switch outputs NPN, NO			●	
	3 switch outputs PNP, NC				●
	3 switch outputs PNP, NO		●		
Approvals and Certificates					
UL approval	cULus Listed, General Purpose, Class 2 Power Source	●	●	●	●
CSA approval	cCSAus Listed, General Purpose, Class 2 Power Source	●	●	●	●

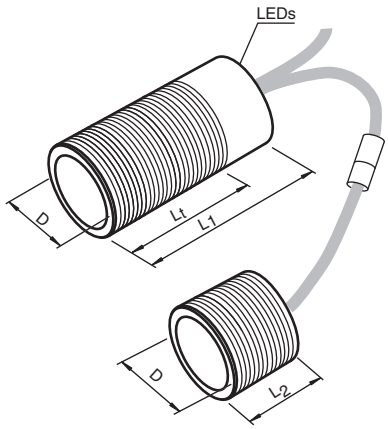
Dimensions	
Receiver length L1 [mm]	53
Emitter length L2 [mm]	22
Diameter D [mm]	18
Receiver thread length l_t [mm]	30

Properties

- Short Ø18 mm housing
- Wide range double sheet detection
- Very fast response
- DC, 3 switching outputs
- Cable version

Your Benefit

- Short-barrel design
- 400-series is designed for detection of the broadest range of materials
- One sensor identifies zero-, single- and double-sheets



Accessories

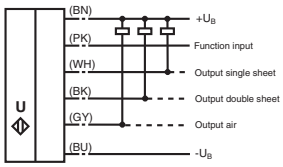
This and more accessories can be found in chapter 3.5 from page 673
See pages from 972 ... for cordsets
See pages 1068 ... for mounting aids

MH-UDB01	Mounting bracket for double sheet monitor
UDB-Cable-2M	Extension cable
UDB-Cable-1M	Extension cable

Electrical Connection

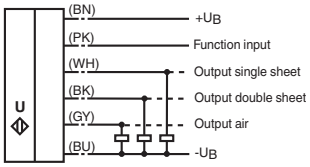
UDC-18GM50-400-3E1
UDC-18GM50-400-3E0

Standard symbol/Connection:
Double sheet control



UDC-18GM50-400-3E2
UDC-18GM50-400-3E3

Standard symbol/Connection:
Double sheet control



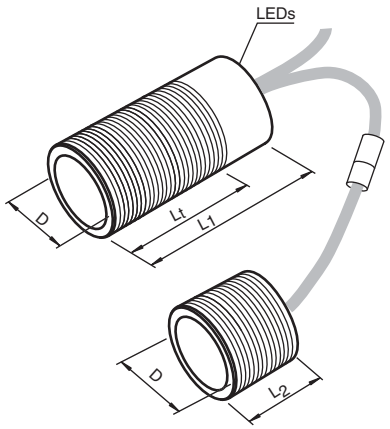
Date of issue 2015-04-08

Properties

- Short Ø18 mm housing
- Wide range double sheet detection
- Very fast response
- DC, 3 switching outputs
- Cable version

Your Benefit

- Short-barrel design
- 255-series is designed for detection of the materials too thick for 400-series monitoring
- One sensor identifies zero-, single- and double-sheets



Technical Data

*For detailed data and product description refer to the data sheets at **www.pepperl-fuchs.com***

General Data	
Sensing range	20 ... 60 mm , optimal distance: 45 mm
Transducer frequency	255 kHz
Operating voltage	18 ... 30 V DC , ripple 10 $\%_{SS}$
No-load supply current	< 50 mA
Rated operational current	3 x 100 mA , short-circuit/overload protected
Switch-on delay	approx. 15 ms (shorter response time on request)
Switch-off delay	approx. 15 ms (shorter response time on request)
Pulse extension	min. 120 ms programmable
Input type	Function input
LED green	indication: single sheet detected
LED yellow	Indication: No sheet detected (Air)
LED red	indication: double sheet detected
Ambient temperature	0 ... 60 °C (32 ... 140 °F)
Material	
Housing	nickel plated brass; plastic components: PBT
Transducer	epoxy resin/hollow glass sphere mixture; polyurethane foam
Protection degree	IP67
Connection type	cable PVC , 2 m

Model Number		UDC-18GM50-255-3E1	UDC-18GM50-255-3E0	UDC-18GM50-255-3E3
Output type	3 switch outputs NPN, NC	●		
	3 switch outputs NPN, NO		●	
	3 switch outputs PNP, NC			●
Approvals and Certificates				
UL approval	cULus Listed, General Purpose, Class 2 Power Source	●	●	●
CSA approval	cCSAus Listed, General Purpose, Class 2 Power Source	●	●	●
Dimensions				
Receiver length L1 [mm]			53	
Emitter length L2 [mm]			22	
Diameter D [mm]			18	
Receiver thread length l_t [mm]			30	

Accessories

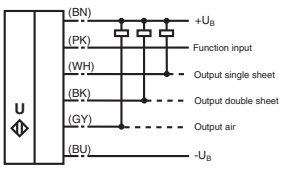
This and more accessories can be found in chapter 3.5 from page 673
See pages from 972 ... for cordsets See pages 1068 ... for mounting aids

UDB-Cable-2M	Extension cable
MH-UDB01	Mounting bracket for double sheet monitor
UDB-Cable-1M	Extension cable

Electrical Connection

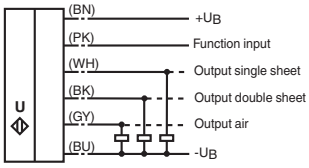
UDC-18GM50-255-3E1
UDC-18GM50-255-3E0

Standard symbol/Connection:
Double sheet control



UDC-18GM50-255-3E3

Standard symbol/Connection:
Double sheet control



Date of issue: 2015-04-08

Consider the General Notes on the Information in the Pepperl+Fuchs Product Catalogs
Copyright Pepperl+Fuchs

Pepperl+Fuchs Group www.pepperl-fuchs.com
USA: +1 330 486 0001 fa-info@us.pepperl-fuchs.com
Germany: +49 621 776-4411 fa-info@de.pepperl-fuchs.com
Singapore: +65 6779 9091 fa-info@sg.pepperl-fuchs.com
PEPPERL+FUCHS SENSING YOUR NEEDS

Technical Data

*For detailed data and product description refer to the data sheets at **www.pepperl-fuchs.com***

General Data	
Sensing range	40 ... 100 mm optimal distance 75 mm
Transducer frequency	255 kHz
Operating voltage	18 ... 30 V DC , ripple 10 $\%_{SS}$
No-load supply current	< 65 mA
Rated operational current	3 x 100 mA , short-circuit/overload protected
Switch-on delay	approx. 70 ms
Switch-off delay	approx. 70 ms
Pulse extension	min. 120 ms programmable
Input type	Function input
LED green	Indicator: single material detected
LED yellow	Indicator: no material detected (air)
LED red	Indicator: double material detected
Ambient temperature	0 ... 60 °C (32 ... 140 °F)
Material	
Housing	nickel plated brass; plastic components: PBT
Transducer	epoxy resin/hollow glass sphere mixture; polyurethane foam
Protection degree	IP67
Connection type	cable PVC , 2 m

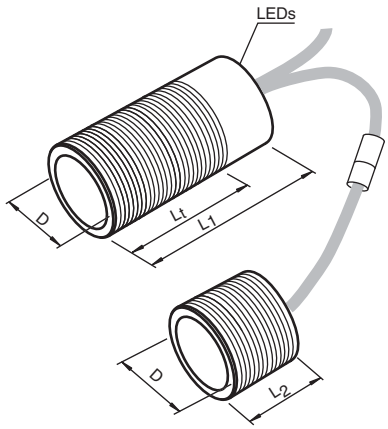
Model Number		UDC-18GM50-255S-3E0	UDC-18GM50-255S-3E1	UDC-18GM50-255S-3E3
Output type	3 switch outputs NPN, NC		●	
	3 switch outputs NPN, NO	●		
	3 switch outputs PNP, NC			●
Approvals and Certificates				
UL approval	cULus Listed, General Purpose, Class 2 Power Source	●	●	●
CSA approval	cCSAus Listed, General Purpose, Class 2 Power Source	●	●	●
Dimensions				
Receiver length L1 [mm]			53	
Emitter length L2 [mm]			40	
Diameter D [mm]			18	
Receiver thread length l_t [mm]			30	

Properties

- Short Ø18 mm housing
- Universal double material detection
- Fast response
- DC, 3 switching outputs
- Cable version

Your Benefit

- Short-barrel design
- 255S-series offers the maimum power possible in the 18 mm diameter housing
- Excellent for plastics (credit card thickness), cardboard and thin metals
- One sensor identifies zero-, single- and double-sheets



Accessories

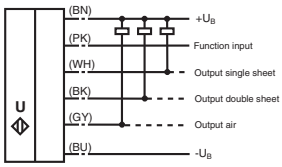
This and more accessories can be found in chapter 3.5 from page 673
See pages from 972 ... for cordsets
See pages 1068 ... for mounting aids

UDB-Cable-2M	Extension cable
MH-UDB01	Mounting bracket for double sheet monitor
UDB-Cable-1M	Extension cable

Electrical Connection

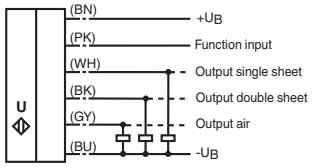
UDC-18GM50-255S-3E0
UDC-18GM50-255S-3E1

Standard symbol/Connection:
Double sheet control



UDC-18GM50-255S-3E3

Standard symbol/Connection:
Double sheet control



Date of issue 2015-04-08

Properties

- Short Ø18 mm housing
- Universal splice detection
- Extraordinary fast response
- DC, 2 switching outputs
- Cable version

Technical Data

*For detailed data and product description refer to the data sheets at **www.pepperl-fuchs.com***

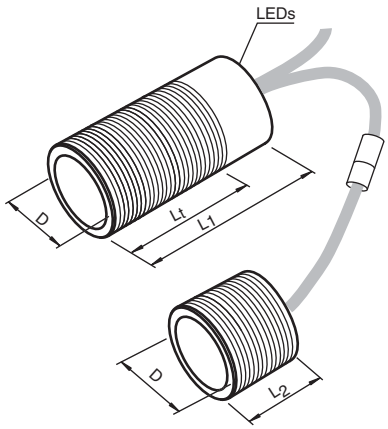
General Data	
Sensing range	20 ... 60 mm , optimal distance: 45 mm
Transducer frequency	255 kHz
Operating voltage	18 ... 30 V DC , ripple 10 %$_{SS}$
No-load supply current	< 60 mA
Rated operational current	2 x 100 mA , short-circuit/overload protected
Switch-on delay	≤ 600 µs
Switch-off delay	≤ 600 µs
Pulse extension	≥ 120 ms programmable
Input type	TEACH-IN input
LED green	Display: readiness
LED yellow	Display: splice detected
LED red	Indication: No sheet detected (Air)
Ambient temperature	0 ... 60 °C (32 ... 140 °F)
Material	
Housing	nickel plated brass; plastic components: PBT
Transducer	epoxy resin/hollow glass sphere mixture; polyurethane foam
Protection degree	IP67
Connection type	cable PVC , 2 m

Model Number		UGB-18GM50-255-2E3	UGB-18GM50-255-2E1
Output type	2 switch outputs NPN, NC		●
	2 switch outputs PNP, NC	●	
Approvals and Certificates			
UL approval	cULus Listed, General Purpose	●	●
CSA approval	cCSAus Listed, General Purpose	●	●
Dimensions			
Receiver length L1 [mm]		53	
Emitter length L2 [mm]		22	
Diameter D [mm]		18	
Receiver thread length l_t [mm]		30	

Accessories

This and more accessories can be found in chapter 3.5 from page 673
See pages from 972 ... for cordsets See pages 1068 ... for mounting aids

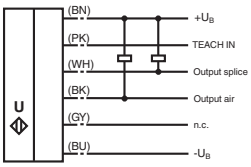
MH-UDB01	Mounting bracket for double sheet monitor



Electrical Connection

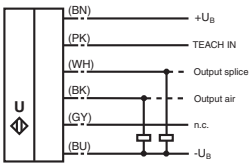
UGB-18GM50-255-2E1

Standard symbol/Connection:
Splice control



UGB-18GM50-255-2E3

Standard symbol/Connection:
Splice control



Date of issue: 2015-04-08

Consider the General Notes on the Information in the Pepperl+Fuchs Product Catalogs
Copyright Pepperl+Fuchs
Pepperl+Fuchs Group www.pepperl-fuchs.com
USA: +1 330 486 0001 fa-info@us.pepperl-fuchs.com
Germany: +49 621 776-4411 fa-info@de.pepperl-fuchs.com
Singapore: +65 6779 9091 fa-info@sg.pepperl-fuchs.com
PEPPERL+FUCHS SENSING YOUR NEEDS

Properties

- Short Ø18 mm housing
- Universal label detection
- Extraordinary fast response
- DC, 2 switching outputs
- Cable version

Technical Data

*For detailed data and product description refer to the data sheets at **www.pepperl-fuchs.com***

General Data	
Sensing range	20 ... 60 mm , optimal distance: 45 mm
Transducer frequency	255 kHz
Operating voltage	18 ... 30 V DC , ripple 10 $\%_{SS}$
No-load supply current	< 60 mA
Rated operational current	2 x 100 mA , short-circuit/overload protected
Switch-on delay	≤ 600 µs
Switch-off delay	≤ 600 µs
Input type	TEACH-IN input
LED green	Display: readiness
LED yellow	indication: label detected
LED red	Display: error
Ambient temperature	0 ... 60 °C (32 ... 140 °F)
Material	
Housing	nickel plated brass; plastic components: PBT
Transducer	epoxy resin/hollow glass sphere mixture; polyurethane foam
Protection degree	IP67
Connection type	cable PVC , 2 m

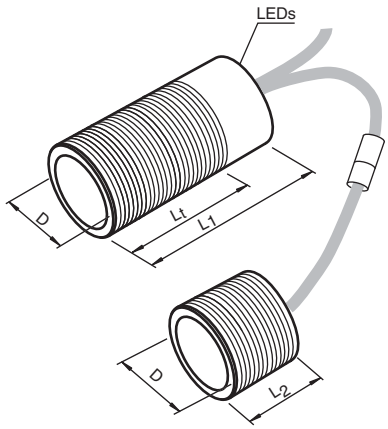
Model Number		ULB-18GM50-255-2E3	ULB-18GM50-255-2E1
Output type	2 switch outputs NPN, NC		●
	2 switch outputs PNP, NC	●	
Approvals and Certificates			
UL approval	C-UL listed: 57M3, IND CONT. EQ., "Powered by Class 2 Power Source"	●	●

Dimensions	
Receiver length L1 [mm]	53
Emitter length L2 [mm]	22
Diameter D [mm]	18
Receiver thread length l_t [mm]	30

Accessories

This and more accessories can be found in chapter 3.5 from page 673
See pages from 972 ... for cordsets See pages 1068 ... for mounting aids

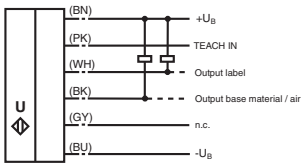
MH-UDB01	Mounting bracket for double sheet monitor



Electrical Connection

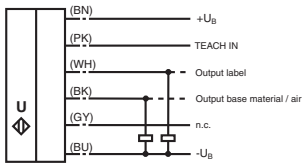
ULB-18GM50-255-2E1

Standard symbol/Connection:
Label monitor



ULB-18GM50-255-2E3

Standard symbol/Connection:
Label monitor



Date of issue 2015-04-08

Properties

- Ø30 mm housing
- Powerful material detection
- Fast response
- DC, 3 switching outputs
- Cable version

Your Benefit

- Short-barrel design
- Maximum possible material burn-through power
- Excellent for thick plastics and cardboard
- One sensor identifies zero-, single- and double-sheets

Technical Data

*For detailed data and product description refer to the data sheets at **www.pepperl-fuchs.com***

Model Number	UDC-30GM-085-3E3
Sensing range	50 ... 150 mm , optimal distance: 80 mm
Transducer frequency	85 kHz
Operating voltage	18 ... 30 V DC , ripple 10 $\%_{SS}$
No-load supply current	< 200 mA
Output type	3 switch outputs PNP, NC
Rated operational current	3 x 100 mA , short-circuit/overload protected
Switch-on delay	approx. 30 ms
Switch-off delay	approx. 30 ms
Pulse extension	min. 120 ms programmable
Input type	Function input
LED green	Display: single-layer material detected
LED yellow	Display: no material (air)
LED red	Display: 2-layer or multi-layer material detected
Ambient temperature	0 ... 50 °C (32 ... 122 °F)
Material	
Housing	nickel plated brass; plastic components: PBT
Transducer	epoxy resin/hollow glass sphere mixture; polyurethane foam
Protection degree	IP65
Connection type	cable PVC , 2 m

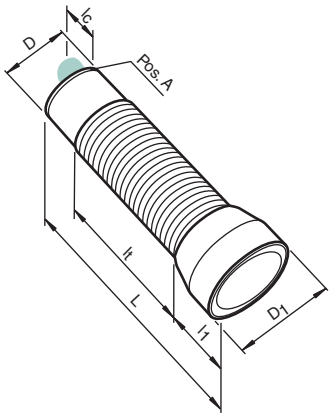
Approvals and Certificates	
UL approval	cULus Listed, General Purpose, Class 2 Power Source
CSA approval	cCSAus Listed, General Purpose, Class 2 Power Source

Dimensions	
Length L [mm]	88 / 52
Diameter D [mm]	30
Transducer diameter D_1 [mm]	40
Transducer length l_1 [mm]	25
Thread length l_t [mm]	41 / 27
Connector area l_c [mm]	0
LED position	Pos. C

Accessories

This and more accessories can be found in chapter 3.5 from page 673
See pages from 972 ... for cordsets See pages 1068 ... for mounting aids

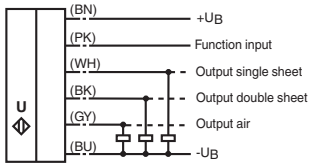
MH-UDB02	Mounting bracket for double sheet metal monitor
UDB-Cable-2M	Extension cable
UDB-Cable-1M	Extension cable



Electrical Connection

UDC-30GM-085-3E3

Standard symbol/Connection:
Double sheet control



Date of issue: 2015-04-08

Consider the General Notes on the Information in the Pepperl+Fuchs Product Catalogs
Copyright Pepperl+Fuchs
Pepperl+Fuchs Group www.pepperl-fuchs.com
USA: +1 330 486 0001 fa-info@us.pepperl-fuchs.com
Germany: +49 621 776-4411 fa-info@de.pepperl-fuchs.com
Singapore: +65 6779 9091 fa-info@sg.pepperl-fuchs.com
PEPPERL+FUCHS SENSING YOUR NEEDS

Technical Data

*For detailed data and product description, see the data sheet at **www.pepperl-fuchs.com***

Model number	MH-UDB01
Material	Stainless steel
Description	Rotatable mounting bracket with angle scale for ultrasonic double sheet control.

Technical Data

*For detailed data and product description, see the data sheet at **www.pepperl-fuchs.com***

Model number	M-105
Material	PTFE
Description	Universal mounting bracket for cylindrical sensors with ø 30 mm and a thread that extends to the front end of the sensor (UB/UC300, -500, and -2000).

- **Secure fastening**
- **Easy installation**
- **Robust design**
- **Resistant to chemicals**

Technical Data

*For detailed data and product description, see the data sheet at **www.pepperl-fuchs.com***

Model number	PA-02
Material	PVC
Description	Mounting flange for all square-shaped sensors in the FP series

- **Secure fastening**
- **Easy installation**
- **Robust design**

Technical Data

*For detailed data and product description, see the data sheet at **www.pepperl-fuchs.com***

Common data	
Material	PA
Description	Plastic nuts with centering ring for vibration-free mounting of cylindrical sensors. These plastic nuts must be used in applications where a sensor is affixed at the front third of the housing, and operated at temperatures < 0 °C.

Model number		M12K-VE	M18K-VE	M30K-VE
For sensor diameter	12 mm	●		
	18 mm		●	
	30 mm			●

Issue date:26.08.2014

Technical Data

- Clamp mounting
- 90° sound deflection for difficult mounting conditions
- Universal mounting position

*For detailed data and product description, see the data sheet at **www.pepperl-fuchs.com***

Common data	
Material	PMMA
Description	Ultrasonic deviation reflector for cylindrical ultrasonic sensors. The ultrasonic deviation reflector has an opening across the entire width at the lower end of the inclined position. Any falling dust particles cannot collect in the ultrasonic deviation reflector. This ensures ongoing operation even in dusty environments.

Model number		UVW90-K18	UVW90-K30
For sensors from the series	-18GM	●	
	-30GM		●

Technical Data

- Suitable for universal mounting
- 90° sound deflection for difficult mounting conditions
- Universal mounting position

*For detailed data and product description, see the data sheet at **www.pepperl-fuchs.com***

Model number	UVW90-M12
Material	Stainless steel
Description	Ultrasonic deviation reflector for cylindrical ultrasonic sensors in the -12GM Series.

Technical Data

- Suitable for universal mounting
- 90° sound deflection for difficult mounting conditions
- Universal mounting position
- Ultrasonic focusing effect
- Increase in detection range (through focus)
  - approx. 40% with UB/UC500 (measurement L = 10 mm)
  - approx. 20% with UB/UC2000 (measurement L = 35 mm +/- 5 mm)

*For detailed data and product description, see the data sheet at **www.pepperl-fuchs.com***

Model number	UVW90-M30
Material	Stainless steel
Description	Focusing ultrasonic deviation reflector for cylindrical ultrasonic sensors in the -30GM series.

Issue date:26.08.2014

Consider the General Notes on the Information in the Pepperl+Fuchs Product Catalogs
Copyright Pepperl+Fuchs

Pepperl+Fuchs Group
www.pepperl-fuchs.com
USA: +1 330 486 0001
fa-info@us.pepperl-fuchs.com
Germany: +49 621 776-4411
fa-info@de.pepperl-fuchs.com
Singapore: +65 6779 9091
fa-info@sg.pepperl-fuchs.com

Technical Data

*For detailed data and product description, see the data sheet at **www.pepperl-fuchs.com***

- **For LUC4T-type ultrasonic sensors**
- **8 mm connector**
- **Swivel-free single-hole mounting**

Model number	UC-30GM-TEMP
Function	External temperature probe
Description	As an alternative to the supplied temperature probe, the UC-30GM-TEMP external temperature probe can be connected to LUC4T-type ultrasonic sensors. The UC-30GM-TEMP temperature probe can be used to detect the ambient temperature of the measurement path, irrespective of the sensor mounting conditions, with a view to minimizing temperature effects to the greatest extent possible.

Technical Data

*For detailed data and product description, see the data sheet at **www.pepperl-fuchs.com***

- **For LUC4T-type ultrasonic fill level sensors**
- **8 mm connector.**
- **Single-hole mounting in thread: G½A (LUC4-Z30-G2V) ½NPT (LUC4-Z30-N2V).**

Common data			
Function	External temperature probe		
Description	As an alternative to the supplied temperature probe, this external temperature probe can be connected to LUC4T-type ultrasonic sensors. The LUC4-Z30 sensor can be used to detect the ambient temperature of the measurement path, in line with the process and irrespective of the mounting conditions of the sensor, with a view to minimizing temperature effects to the greatest extent possible.		
Model number		**LUC4-Z30-G2V**	**LUC4-Z30-N2V**
Thread	G½A	●	
	½NPT		●

Technical Data

*For detailed data and product description, see the data sheet at **www.pepperl-fuchs.com***

Model number	USB-0.8M-PVC ABG-SUBD9
Function	USB/RS232 interface adapter
Description	Interface adapter USB-0.8M-PVC ABG-SUBD9 provides an RS232 interface at a free USB port. It can be connected to a free USB port on the computer either directly or using the 800 mm USB extension cable provided. The available interface cable can then be connected to the 9-pin SUB-D plug in the usual way.

Issue date:26.08.2014

Technical Data

*For detailed data and product description, see the data sheet at **www.pepperl-fuchs.com***

Model number	UC-F43-R2
Function	RS232 interface
Description	The device can be switched between the V17 cable connection box and the V17 plug connection at the sensor for the Teach-in process. The parameterized functions are retained after the programming unit has been removed and/or the operating voltage has been turned off at the sensor.

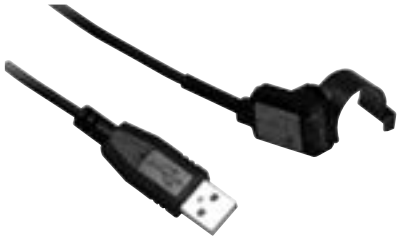
- **For sensors UC300-F43-2KIR2-V17 and UC2000-F43-2KIR2-V17.**
- **Simple intermediate switching in the sensor connection line.**

Technical Data

*For detailed data and product description, see the data sheet at **www.pepperl-fuchs.com***

Model number	UC-30GM-R2
Function	Interface cable
Description	Interface cable UC-30GM-R2 enables type UC...-30GM-..R2-V15 ultrasonic sensors to be parameterized using service program ULTRA 2001. The cable establishes a connection between the PC's internal RS232 interface and the connector of the temperature/programming plug at the sensor.

Technical Data



*For detailed data and product description, see the data sheet at **www.pepperl-fuchs.com***

Model number	UC-18/30GM-IR
Function	Interface cable

Technical Data

*For detailed data and product description, see the data sheet at **www.pepperl-fuchs.com***

Model number	UC-30GM-PROG
Function	Extension cable
Description	Extension cable UC-30GM-PROG enables UC...-30GM-... and LUC-type ultrasonic sensors to be taught in, even at installation locations that are difficult to access. The sensor end of the extension cable is connected to the socket for the temperature plug at the sensor. Sensors can be programmed at the other end of the cable using the temperature plug.

Technical Data

*For detailed data and product description, see the data sheet at **www.pepperl-fuchs.com***

Common data	
Connectors	M8 x 1, male connector, 3-pin and M8 x 1, female connector, 3-pin
Cable material	PUR
Cable color	black
Description	Extension cable for ultrasonic double sheet monitors

Model number		UDB-Cable-1M	UDB-Cable-2M
Cable length	1 m	●	
	2 m		●

Issue date:26.08.2014

Consider the General Notes on the Information in the Pepperl+Fuchs Product Catalogs
Copyright Pepperl+Fuchs
Pepperl+Fuchs Group www.pepperl-fuchs.com
USA: +1 330 486 0001 fa-info@us.pepperl-fuchs.com
Germany: +49 621 776-4411 fa-info@de.pepperl-fuchs.com
Singapore: +65 6779 9091 fa-info@sg.pepperl-fuchs.com
PEPPERL+FUCHS SENSING YOUR NEEDS

Technical Data

*For detailed data and product description, see the data sheet at **www.pepperl-fuchs.com***

Model number	3RX4000-PF
Function	PC interface
Description	Using this PC interface and the corresponding software, you can adapt ultrasonic sensors of a specific series to the requirements of your application. It is also possible to parameterize several sensors identically. The start and end of a sensor's detection range can be stored and copied to other sensors at the press of a button.

Technical Data

*For detailed data and product description, see the data sheet at **www.pepperl-fuchs.com***

Model number	UB-PROG2
Function	Programming unit
Description	The device can be switched between the V15 cable connection box and the V15 plug connection at the sensor for the Teach-in process. The trip points/measurement window and the output function are taught in using sensors A1 and A2 in accordance with the diagram provided. The taught in trip points and functions are retained after the programming unit has been removed and/or the operating voltage has been turned off at the sensor.

- **Simple Teach-in of trip points A1/ A2 or the measurement window.**
- **Easy selection of output function: window operation, NO contact/NC contact function.**
  One trip point, NO contact/NC contact function.
  Monitoring of detection range.

For the following types of ultrasonic sensors:

UB300			
UB400	**-12GM**		
UB500	**-18GM40**	**-E4**	
UB800	**-18GM75**	**-E5**	**-V15**
UB1000	**-30GM**	**-I**	
UB2000	**-F42(S)**	**-U**	
UB4000	**-F54**		
UB6000			

... where the Teach-in input is at pin 2.

Technical Data

*For detailed data and product description, see the data sheet at **www.pepperl-fuchs.com***

Model number	UB-PROG3
Function	Programming unit
Description	The unit can be switched between the V15 cable connection box and the V15 plug connection at the sensor for the Teach-in process. The trip points/measurement window and the output function are taught in using sensors A1 and A2 in accordance with the diagram provided. The taught in trip points and functions are retained after the programming unit has been removed and/or the operating voltage has been turned off at the sensor.

- **Simple Teach-in of trip points A1/ A2 or the measurement window.**
- **Easy selection of output function: window operation, NO contact/NC contact function.**
  One trip point, NO contact/NC contact function.
  Monitoring of detection range.

For the following types of ultrasonic sensors:

UB500	**-18GM75**	**-E01**	**-V15**
UB1000		**-E23**	
		-E6	
		-E7	

... where the Teach-in input is at pin 2.

Issue date:26.08.2014