



**Reliable Ultrasonic Sensors**



for Long-Range  
Sensing of Difficult Targets

**TURCK**  
*works*

# TURCK Ultrasonics beat photoelectrics in

## A versatile solution

Tough sensing applications are no match for TURCK's ultrasonic sensors. Our versatile line of sensors includes 30mm threaded metal barrels and plastic housings in two rectangular housing styles. Narrow or wide sensing angles, analog or discrete outputs, multiple sensor head positioning and enhanced sensing features combine to make TURCK's line of ultrasonic sensors the solution to your tough sensing applications.



## Transparent Targets

Ultrasonic sensors are your best choice for transparent targets. They can detect a sheet of transparent plastic film as easily as a wooden pallet.



## Dusty environments

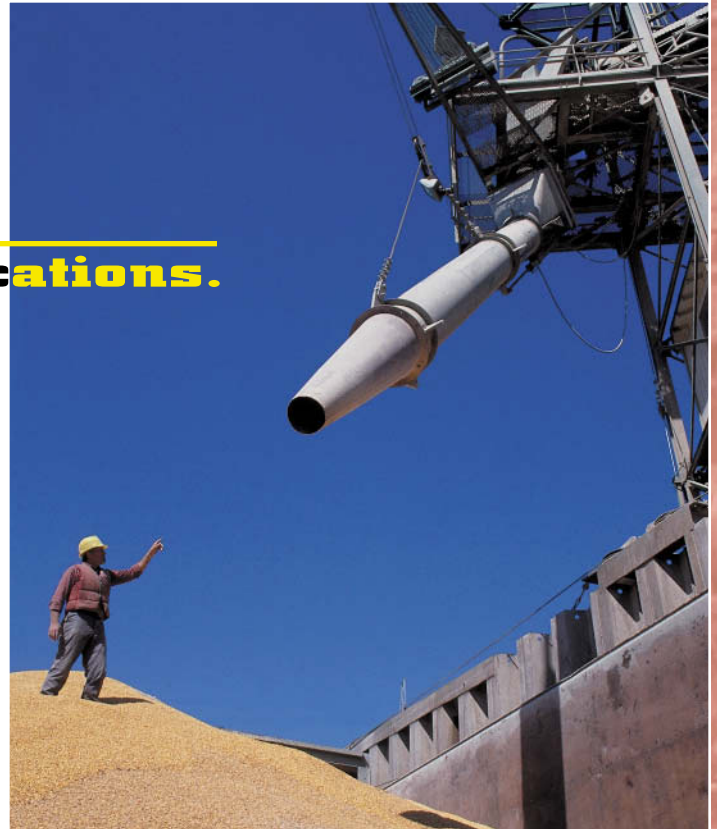
TURCK's M- and Q-style ultrasonic sensors don't need the clean environment needed by photoelectric sensors. The sealed epoxy resin piezoelectric transducer operates well in many dusty applications.



## difficult sensing applications.

### Sense sloped or uneven targets

Many applications, such as dry level detection, involve sloped or uneven materials. This is no problem for TURCK's CP40-style ultrasonic sensor. This sensor features a 60° sonic cone angle. The wide cone angle allows for a target inclination of up to 15°.



### Control drive speed with analog output

TURCK's M18, Q30 and CP40 styles feature analog current or voltage outputs directly proportional to the target distance. Use the analog output for web processing applications such as loop tension and roll diameter of carpet, paper, textile or plastic.

### Mount in difficult sensing environments

The TURCK M-style sensors have sealed, PBT-enclosed transducers that are rated IEC IP 65. Combine this with the wide -25° to 70°C (-13° to 158°F) temperature range, and you have a rugged sensor ready for your next demanding application.





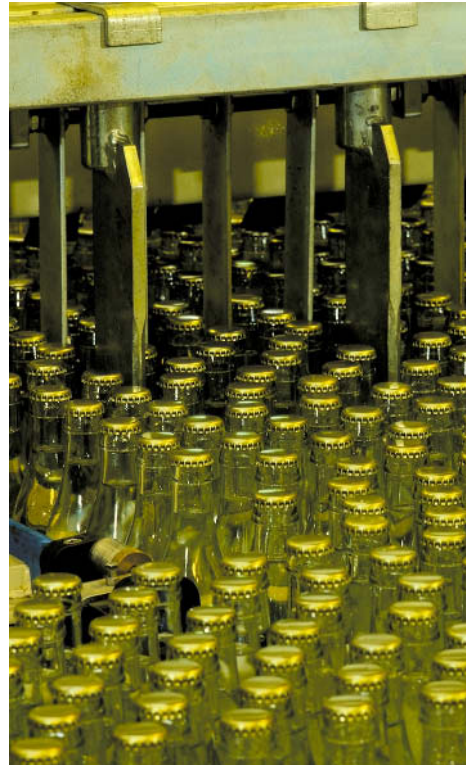
# Ultrasonics by TURCK have enhanced sensing features.

## Patented noise suppression circuitry

TURCK's ultrasonic sensors are not influenced by glass or metal "clinks" or the hiss of pressurized air due to their patented noise suppression circuitry.

## Background and foreground suppression

All TURCK ultrasonic sensors are equipped with a potentiometer for adjusting the far limit of the sensing window; most versions also feature a second potentiometer to adjust the near limit. This allows suppression of targets in the background and foreground.

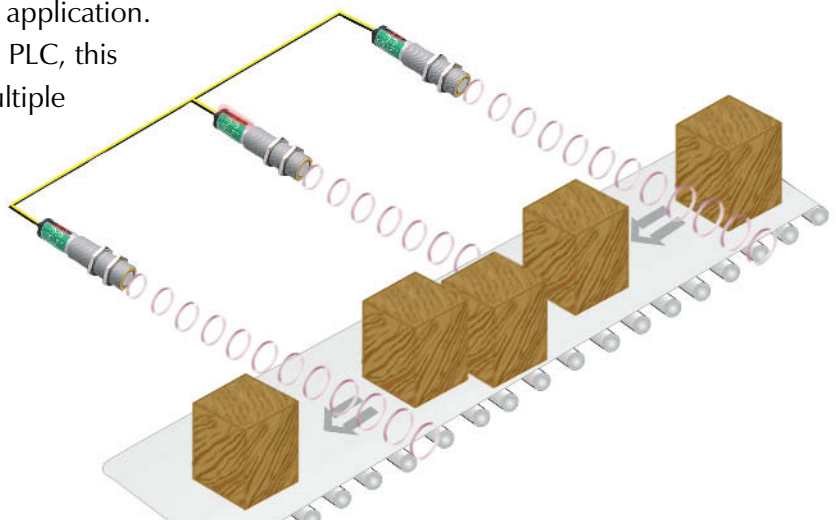


## LED Indications

All TURCK ultrasonic sensors have LEDs that indicate output status. CP40 styles also have an LED that indicates target presence in sonic cone.

## Synchronization

The RUC...M30 and RU...Q30 style sensors have a synchronization feature that allows them to emit sonic pulses simultaneously when the synchronization lines are connected. In most cases this will prevent mutual interference caused by multiple sensors in an application. When controlled by a PLC, this feature also allows multiple sensors to be triggered sequentially.



# Selection Guide



## Barrel Style

3-Wire PNP .....	9
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Dual-Output PNP .....	13
4-Wire Linear Analog .....	23



## Rectangular Style

4-Wire PNP .....	15
4-Wire Linear Analog (voltage) .....	19



## Limit Switch Style

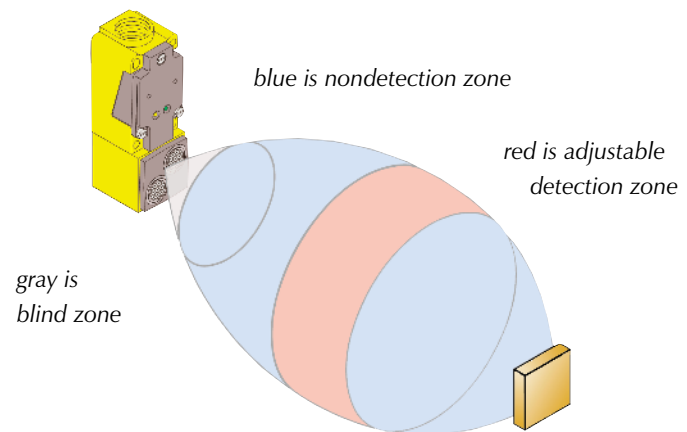
3-Wire PNP .....	17
4-Wire Linear Analog (current & voltage) .....	21

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## Principle of Operation

The sensor emits an ultrasonic pulse that reflects back from any object entering the sonic cone. Because sound has a constant velocity at a given temperature and humidity, the time taken for this echo to return to the sensor is directly proportional to the distance of the object. The sensor's output status is dependent on the comparison of this time with the setting of the detection zone.



## Medium

TURCK ultrasonic transducers are calibrated for use in air. The sensors can also be used in other gaseous media with a corresponding change in sensing range.

## Targets

Solid, fluid, granular and powdery targets can be detected by TURCK ultrasonic sensors.

The **variations** of an "ideal" target should not exceed 0.15 mm (.006 in). Larger surface variations allow for larger alignment variations but may reduce sensing range.

Target **temperature** affects the sensing range in that hot surfaces reflect sonic waves less than cold ones.

The ultrasonic reflectivity of **liquid surfaces** is the same as that of solid, flat objects. Correct alignment should be observed.

Textiles, foams, wool, etc. absorb sonic waves, thereby reducing the sensing range.

## Air pressure

Normal atmospheric pressure changes of  $\pm 5\%$  (at a fixed reference point) can cause a  $\pm 6\%$  deviation in sensing range.

## Air temperature and humidity

Both air temperature and humidity influence the sonic pulse duration. An air temperature increase of 20°C (68°F) results in a +3.5% change in sensing distance for M18, M30 or Q30 styles and +8% for CP40s.

An increase in humidity results in an increased sound speed (max. 2%) compared with dry air.

## Air streams

Air streams affect the echo propagation time, but the effects of air flow speeds of up to 10 m/s are negligible. The use of ultrasonic sensors is not recommended in turbulent areas such as above glowing metal because the sonic waves become distorted, making the echos difficult to evaluate.

## Dewing

Normal concentrations of rain or snow falling in front of the sensor do not affect sensor operation.

CP40 transducers are not protected against wetting. All other ultrasonic sensors are not damaged by water, but correct functionality may be impaired when wet. Therefore, the transducers should not be subjected to direct wetting during use.

## Sensor styles

**M18, M30 & Q30:** these sensor styles have one transducer that functions both as emitter and receiver, which results in a larger blind zone. They have a narrow sonic cone (6°) and are especially suited for detection of small objects in a small area at a long distance.

**CP40** - these sensor styles have two transducers - one emitter and one receiver, which results in a smaller blind zone. They have a wide sonic cone (60°). The wide cone angle allows for a greater angle of inclination for the target. CP40 style sensors are especially suited for detecting objects in a large area.

## ESD protection

In high-static applications such as web processing, electrostatic discharge (ESD) can cause sensors to malfunction. The CP40 style sensors have recently been redesigned to withstand up to 8000 volts air discharge without the use of an external grounding screen.

## Simultaneous operation of several sensors

When several ultrasonic sensors are used, mutual interference of the sonic cones may arise. To eliminate this problem, some of the sensors have synchronization and multiplexing features. For those sensors without these features, maintaining a minimum distance between sensors will also solve this problem.

## Synchronization

Synchronization of ultrasonic sensors causes the sensors to emit their sonic pulses simultaneously. Using RUC...M30, RU...Q30 or RU...M18 sensors, up to six sensors may be synchronized by tying their X1 lines.



## Multiplexing

Multiplexing the sensors causes them to emit their pulses at pre-defined intervals, independent of one another. This eliminates the possibility of mutual interference and of sensors seeing targets that are actually in front of other sensors. The more sensors that are operated alternately, the lower the switching frequency.

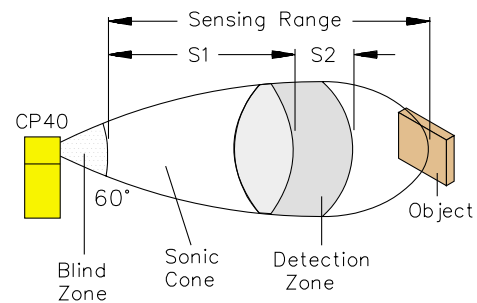
The X1 line of sensors RUC...M30, RU...Q30 and RU...M18 can be used as an enable input for multiplexing purposes. An X1 input of +24 V enables the sensor while an X1 input of 0 V disables it. Multiplexing via the X1 line instead of by powering down the sensors has the advantage that only the response time has to be considered and not the time delay before availability.

## Range adjustments

M30 and CP40 style sensors have two potentiometers to enable both foreground and background suppression. Q30 and discrete M18 style sensors have one potentiometer to enable background suppression only.

Analog M18 sensors have a fixed range.

Sensing ranges given are at nominal conditions, i.e.  $T_u = +20^{\circ}\text{C}$  ( $68^{\circ}\text{F}$ ) using a standard target, vertically aligned, with reflective surface (metal, 1 mm thick).

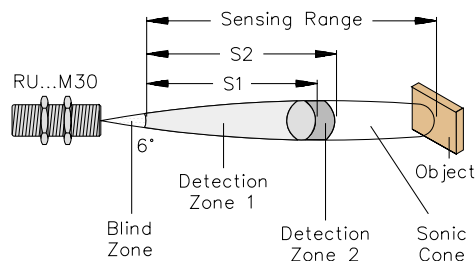


**Figure 2**

## Sensors with two switch points

**RUC...2AP8X** - the potentiometers on these sensors set the far limits of each detection zone. Potentiometer S1 sets the far limit of Zone 1, which begins at the end of the blind zone.

Potentiometer S2 sets the far limit of Zone 2, which begins at the far limit of Zone 1 (Figure 1).

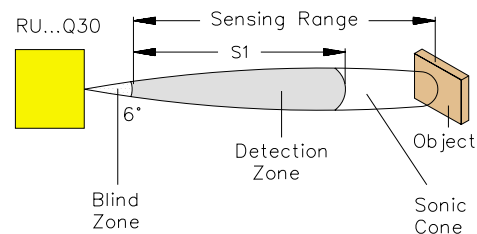


**Figure 1**

## Sensors with one switch point

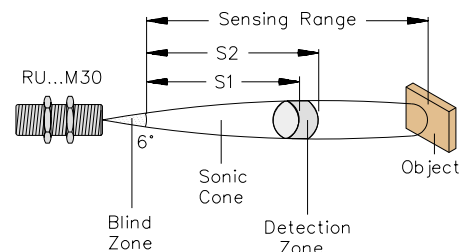
**CP40** - potentiometer S1 sets the near limit while potentiometer S2 sets the depth of the detection zone. This allows both foreground and background suppression. Changes to S1 will cause the far limit to follow (Figure 2).

**Q30 and discrete M18** - one potentiometer sets the far limit of the detection zone. The near limit is not adjustable, and is determined by the blind zone. This allows for background suppression only (Figure 3).



**Figure 3**

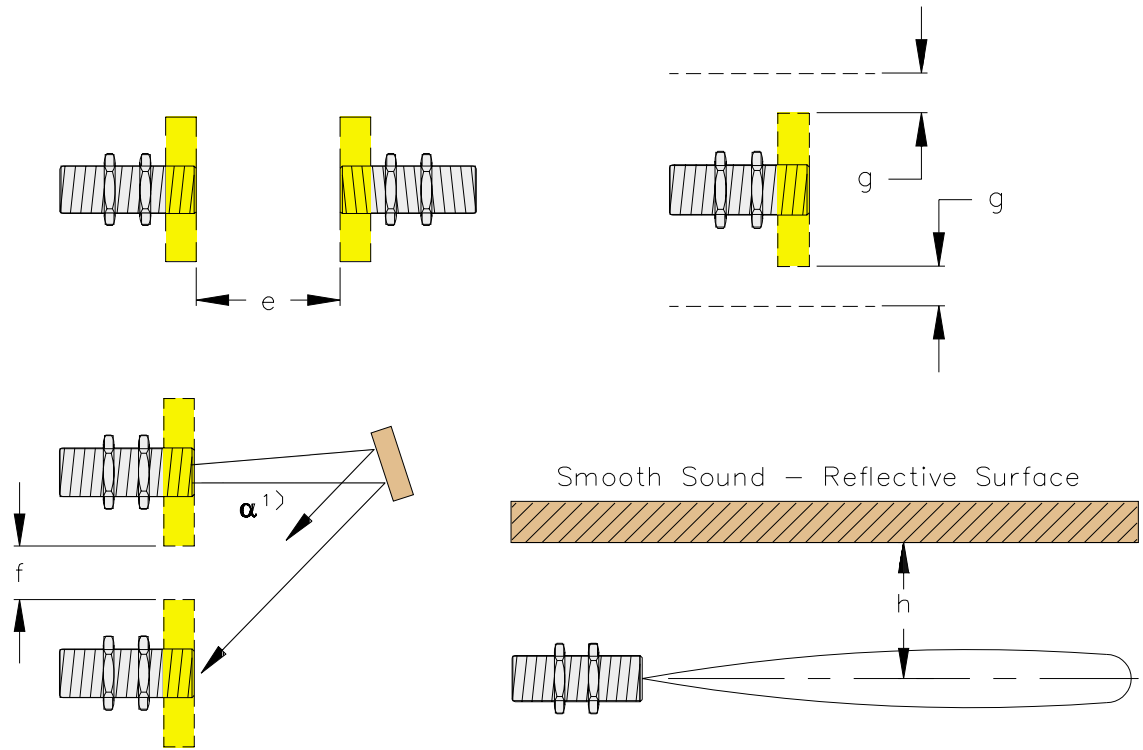
**M30** - potentiometers S1 and S2 set the near and far limits of the detection zone. This allows for foreground and background suppression. The pots are independent of each other (Figure 4).



**Figure 4**



## Mounting Considerations




Sensor Type	e (cm)	f (cm)	g (cm)	h (cm)
RU 30-M18- RU100-M18-	$\geq 120$ $\geq 400$	$\geq 15$ $\geq 60$	$\geq 6$ $\geq 30$	$\geq 3$ $\geq 15$
RU 30-M30- RU100-M30- RU600-M3065-	$\geq 120$ $\geq 400$ $\geq 2500$	$\geq 15$ $\geq 60$ $\geq 250$	$\geq 6$ $\geq 30$ $\geq 80$	$\geq 3$ $\geq 15$ $\geq 40$
RUC 30-M30- RUC130-M30- RUC300-M3047- RUC600-M3065-	$\geq 120$ $\geq 400$ $\geq 1200$ $\geq 2500$	$\geq 15$ $\geq 60$ $\geq 150$ $\geq 250$	$\geq 6$ $\geq 30$ $\geq 60$ $\geq 80$	$\geq 3$ $\geq 15$ $\geq 30$ $\geq 40$
RU 30-Q30 RU100-Q30	$\geq 120$ $\geq 400$	$\geq 15$ $\geq 60$	$\geq 6$ $\geq 30$	$\geq 3$ $\geq 15$
RU100-CP40-AP6X2 RU100-CP40-LIUX	$\geq 600$ $\geq 600$	$\geq 100$ $\geq 100$	$\geq 120$ $\geq 120$	$\geq 60$ $\geq 60$

<sup>1)</sup> The greater the angle  $\alpha$ , the larger the distance  $f$ . The minimum  $f$  values in the table refer to  $\alpha = 0^\circ$ .


**M Barrel**



**Barrel, Metal with Quick Disconnect  
 Straight Connector**

3-Wire DC  **eurofast**<sup>®</sup>  
 20-30 VDC, Short-Circuit and Overload Protection  
 Normally Open, PNP (Sourcing)

**Sensor Selection**

Part Number	Rated Operating Distance (cm)	Barrel Diam. (mm)	Drawing #	Wiring Diagram	Synchronization	Repeat Accuracy	Accuracy (± mm)	Switching Frequency (Hz)	Switching Hysteresis (cm)	Max. Approach Speed (m/s)	ID Number	Connection
RU 30-M30-AP8X-H1141	6 - 30	30	1	A		0.45	8	1	4	18300 00	 <b>eurofast</b> <b>Mating Cordsets</b> RK 4T-2 (2 meter) For other styles consult "Cordsets" catalog.	
RU100-M30-AP8X-H1141	20 - 100	30	1	A		2	4	1	10	18302 00		
RU600-M3065-AP8X-H1141	60 - 600	30	2	A		9	1	6	18	18304 00		

**Material**

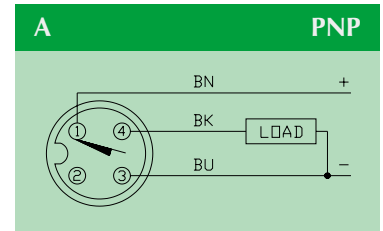
Connector: PBT Plastic  
 Sensing Face: PBT Plastic  
 Barrel: Anodized Aluminum

## Specifications

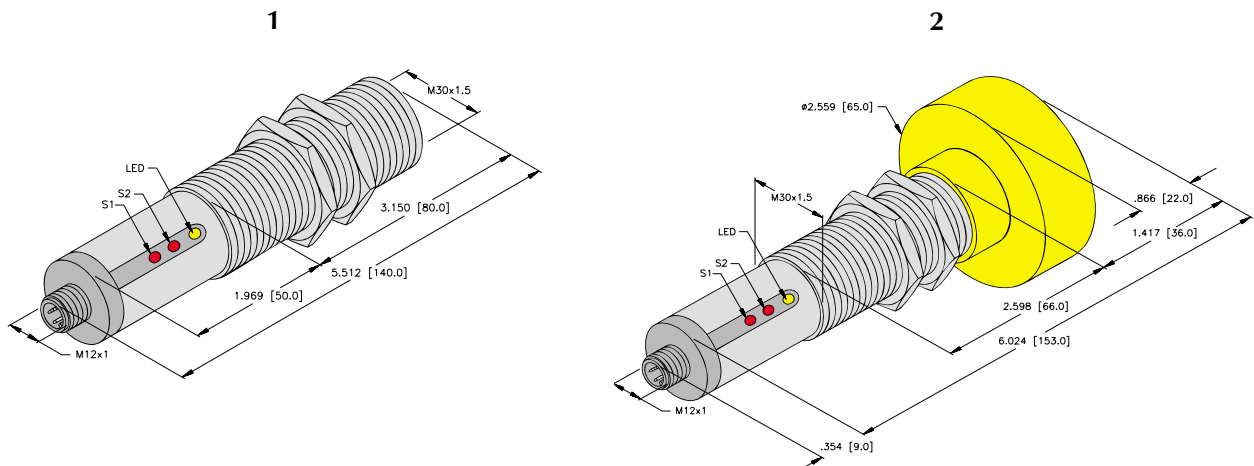
Sonic Cone Angle . . . . .	6°
Standard Target. . . . .	RU 30: 1 x 1 cm <sup>2</sup> ; RU100: 2 x 2 cm <sup>2</sup> RU600: 10 x 10 cm <sup>2</sup>
Allowable Angle of Target Inclination . . . . .	≤3°
Max. Overtravel Speed . . . . .	RU 30: 0.5 - 1.5 m/s RU100: 0.8 - 2.0 m/s RU600: 2.4 - 3.7 m/s
Ripple . . . . .	≤10%
No-Load Current . . . . .	≤50 mA
Continuous Load Current . . . . .	≤300 mA
Voltage Drop . . . . .	≤3.0 V at 300 mA
Reverse Polarity Protection . . . . .	Incorporated
Wire-Break Protection . . . . .	Incorporated
Power-on False Pulse Suppression. . . . .	Incorporated
Time Delay Before Availability * . . . . .	RU 30: ≤116 ms; RU100: ≤132 ms; RU600: ≤460 ms
Response Time . . . . .	RU 30: ≤76 ms; RU100: ≤92 ms; RU600: ≤420 ms
Trigger Current for Overload Protection . . . . .	≥450 mA
Operating Temperature . . . . .	-25°C to +70°C (-13°F to +158°F)
Temperature Drift. . . . .	0.17%/K (air effect)
Enclosure . . . . .	IP 65
Vibration . . . . .	10 - 55 Hz, 1 mm deflection
LED Function . . . . .	Yellow: Output Energized; object detected within sensing window

\* Affected by target distance and potentiometer settings

## Wiring Diagram




## Dimensions




**M Barrel**



**Barrel, Metal with Quick Disconnect  
 Straight Connector**

4-Wire DC  **eurofast**<sup>®</sup>  
 20-30 VDC, Short-Circuit and Overload Protection  
 Normally Open, PNP (Sourcing) with Synchronization

**Sensor Selection**

Part Number	Rated Operating Distance (cm)	Barrel Diam. (mm)	Drawing #	Wiring Diagram	Synchronization	Repeat Accuracy (± mm)	Switching Frequency (Hz)	Switching Hysteresis (cm)	Max. Approach Speed (m/s)	ID Number	Connection
RU 30-M18-AP8X-H1141 RU100-M18-AP8X-H1141	5 - 30 15 - 100	18 18	1 1	A A	• •	0.5 2	8 4	1 1	4 8	18100 00 18102 00	 <b>eurofast</b> <b>Mating Cordsets</b> RK 4.4T-2 (2 meter) For other styles consult "Cordsets" catalog.
RUC 30-M30-AP8X-H1141 RUC130-M30-AP8X-H1141	6 - 30 20 - 130	30 30	2 2	A A	• •	0.5 2	8 4	1 1	4 10	18400 00 18402 00	
RUC300-M3047-AP8X-H1141	40 - 300	30	3	A	•	5	2	2	16	18404 00	
RUC600-M3065-AP8X-H1141	60 - 600	30	4	A	•	9	1	6	18	18406 00	

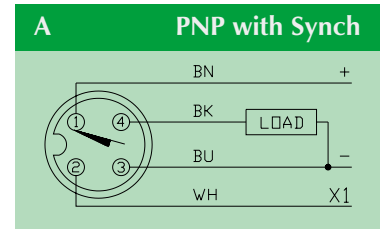
**Material**

Connector: PBT Plastic  
 Sensing Face: PBT Plastic  
 Barrel: M18: Nickel Plated Brass  
 M30(..): Anodized Aluminum

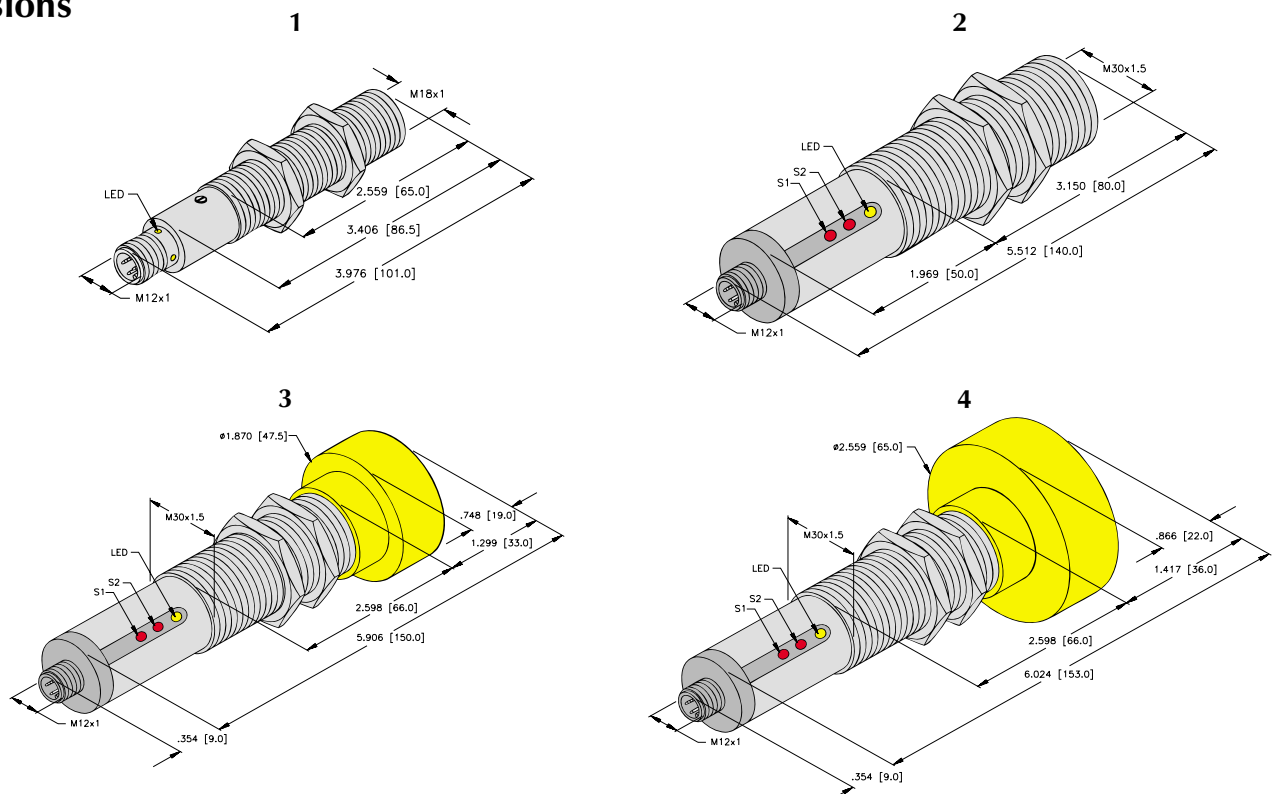
## Specifications

Sonic Cone Angle . . . . .	6°	
Standard Target. . . . .	RU(C)30: 1 x 1 cm <sup>2</sup>	
	RU100/RUC130: 2 x 2 cm <sup>2</sup>	
	RUC300: 5 x 5 cm <sup>2</sup>	
	RUC600: 10 x 10 cm <sup>2</sup>	
Allowable Angle of Target Inclination . . . . .	≤3°	
Max. Overtravel Speed . . . . .	RU(C)30: 0.5 - 1.5 m/s	
	RU100/RUC130: 0.8 - 2.0 m/s	
	RUC300: 3 - 5 m/s; RUC600: 2.4 - 3.7 m/s	
Ripple . . . . .	≤10%	
No-Load Current . . . . .	≤50 mA	
Continuous Load Current . . . . .	M18: ≤150 mA; M30(..): ≤300 mA	* Affected by target distance and potentiometer settings
Voltage Drop . . . . .	≤3.0 V	
Reverse Polarity Protection . . . . .	Incorporated	
Wire-Break Protection . . . . .	Incorporated	
Power-on Effect Suppression. . . . .	per IEC 947-5-2	
Time Delay Before Availability * . . . . .	RU(C)30: ≤144/120 ms; RU100/RUC130: ≤184/140 ms; RUC300: ≤260 ms; RUC600: ≤460 ms	
Response Time . . . . .	RUC 30: ≤80 ms; RUC130: ≤100 ms; RUC300: ≤220 ms; RUC600: ≤420 ms	
Trigger Current for Overload Protection . . . . .	M18: ≥200 mA; M30(..): ≥450 mA	
Operating Temperature . . . . .	-25°C to +70°C (-13°F to +158°F)	
Temperature Drift. . . . .	M18: ±2.5% of full scale; M30(..): 0.17%/K (air effect)	
Enclosure . . . . .	IP 65	
LED Function . . . . .	Yellow: Output Energized; object detected within sensing window	

## Wiring Diagram




## Dimensions




**M Barrel**



**Barrel, Metal with Quick Disconnect  
 Straight Connector**

5-Wire DC  **eurofast**<sup>®</sup>  
 20-30 VDC, Short-Circuit and Overload Protection  
 Normally Open, Dual Output PNP with Synchronization

**Sensor Selection**

Part Number	Rated Operating Distance (cm)	Barrel Diam. (mm)	Drawing #	Wiring Diagram	Synchronization	Repeat Accuracy (± mm)	Switching Frequency (Hz)	Switching Hysteresis (cm)	Max. Approach Speed (m/s)	ID Number	Connection
RUC 30-M30-2AP8X-H1151	6 - 30	30	1	A	•	0.45	8	1	4	18400 20	 <b>eurofast</b> <b>Mating Cordsets</b> RK 4.5T-2 (2 meter) For other styles consult "Cordsets" catalog.
RUC130-M30-2AP8X-H1151	20 - 130	30	1	A	•	2	4	1	10	18402 20	
RUC300-M3047-2AP8X-H1151	40 - 300	30	2	A	•	5	2	2	16	18404 20	
RUC600-M3065-2AP8X-H1151	60 - 600	30	3	A	•	9	1	6	18	18406 20	

**Material**

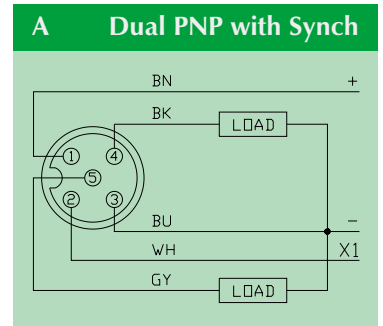
Connector: PBT Plastic  
 Sensing Face: PBT Plastic  
 Barrel: Anodized Aluminum

## Specifications

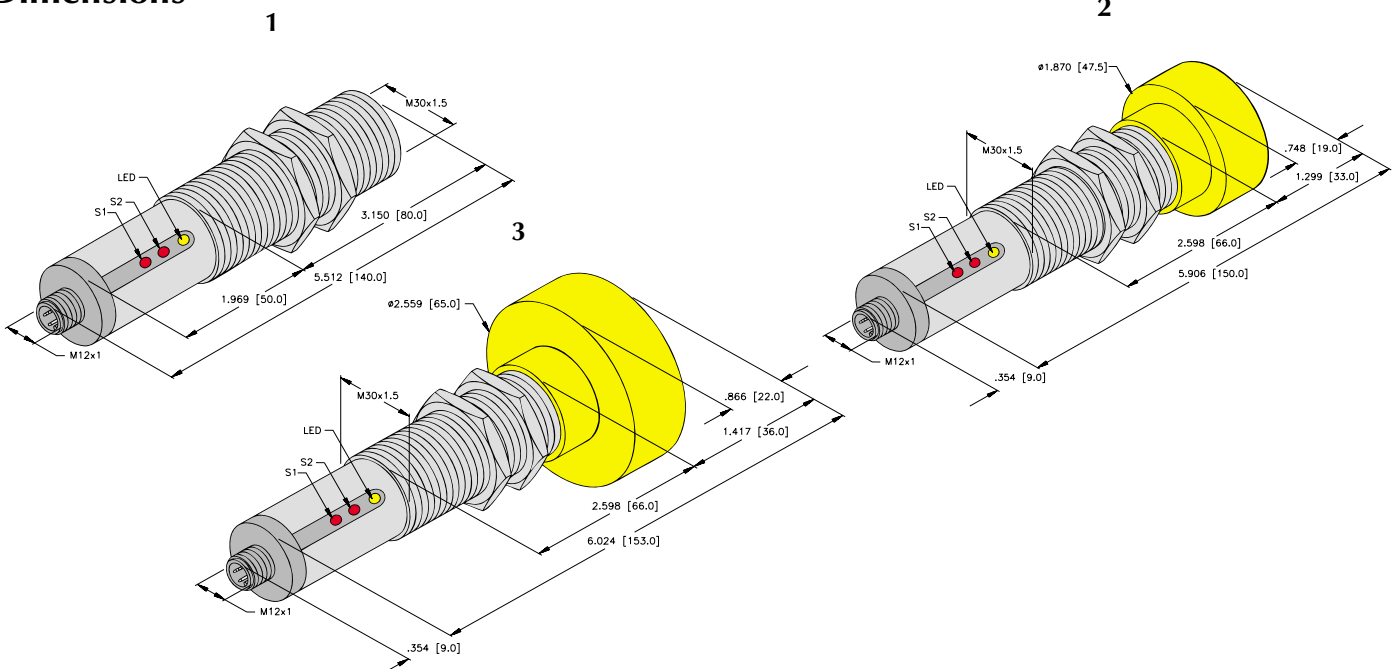
Sonic Cone Angle . . . . .	6°
Standard Target. . . . .	RUC 30: 1 x 1 cm <sup>2</sup> RUC130: 2 x 2 cm <sup>2</sup> RUC300: 5 x 5 cm <sup>2</sup> RUC600: 10 x 10 cm <sup>2</sup>
Allowable Angle of Target Inclination . . . . .	≤3°
Max. Overtravel Speed . . . . .	RUC 30: 0.5 - 1.5 m/s RUC130: 0.8 - 2.0 m/s RUC300: 3 - 5 m/s RUC600: 2.4 - 3.7 m/s
Ripple . . . . .	≤10%
No-Load Current . . . . .	≤50 mA
Continuous Load Current . . . . .	≤300 mA
Voltage Drop . . . . .	≤3.0 V at 300 mA
Reverse Polarity Protection . . . . .	Incorporated
Wire-Break Protection . . . . .	Incorporated
Power-on False Pulse Suppression. . . . .	Incorporated
Time Delay Before Availability * . . . . .	RUC 30: ≤120 ms; RUC130: ≤140 ms; RUC300: ≤260 ms; RUC600: ≤460 ms
Response Time . . . . .	RUC 30: ≤80 ms; RUC130: ≤100 ms; RUC300: ≤220 ms; RUC600: ≤420 ms
Trigger Current for Overload Protection . . . . .	≥450 mA
Operating Temperature . . . . .	-25°C to +70°C (-13°F to +158°F)
Temperature Drift. . . . .	0.17%/K (air effect)
Enclosure . . . . .	IP 65
Vibration . . . . .	10 - 55 Hz, 1 mm deflection
LED Function . . . . .	Yellow: Output Energized; object detected within sensing window

\* Affected by target distance and potentiometer settings

## Wiring Diagram



## Dimensions




# TURCK Ultrasonic Sensors


**Q30**



**Rectangular Sensors, Plastic**  
*Plastic Housing with Quick Disconnect*

4-Wire DC  **eurofast**<sup>®</sup>  
18-35 VDC, Short-Circuit and Overload Protection  
Normally Open, PNP (Sourcing) with Synchronization

## Sensor Selection

Part Number	Rated Operating Distance (cm)	Diameter (mm)	Drawing #	Wiring Diagram	Synchronization	Repeat Accuracy (± mm)	Switching Frequency (Hz)	Switching Hysteresis (cm)	Max. Approach Speed (m/s)	ID Number	Connection
RU 30-Q30-AP8X-H1141	6 - 30	30	1	A	•	0.45	8	0.5	4	18200 00	 <b>eurofast</b> <b>Mating Cordsets</b> RK 4.4T-2 (2 meter) For other styles consult "Cordsets" catalog.
RU100-Q30-AP8X-H1141	20 - 100	30	1	A	•	1.5	5	1	8	18202 00	

## Material

Connector: PBT Plastic  
Sensing Face: PBT Plastic  
Barrel: Crastin, SK 645FR

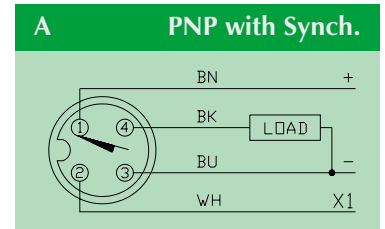


## Specifications

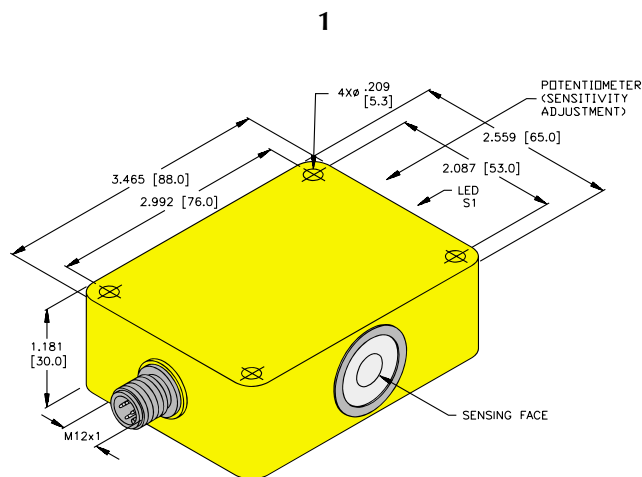
Sonic Cone Angle . . . . .	6°
Standard Target. . . . .	RU 30: 1 x 1 cm <sup>2</sup> RU100: 2 x 2 cm <sup>2</sup>
Allowable Angle of Target Inclination . . . . .	≤3°
Max. Overtravel Speed . . . . .	RU 30: 0.5 - 1.5 m/s RU100: 0.6 - 1.5 m/s
Ripple . . . . .	≤10%
No-Load Current . . . . .	≤35 mA
Continuous Load Current . . . . .	≤100 mA
Voltage Drop . . . . .	≤2.0 V at 100 mA
Reverse Polarity Protection . . . . .	Incorporated
Wire-Break Protection . . . . .	Incorporated
Power-on False Pulse Suppression. . . . .	Incorporated
Time Delay Before Availability * . . . . .	RU 30: 77 ms RU100: 97 ms
Response Time . . . . .	RU 30: 70 ms RU100: 90 ms
Trigger Current for Overload Protection . . . . .	≥300 mA
Operating Temperature . . . . .	0°C to +55°C (32°F to +131°F)
Temperature Drift. . . . .	0.17%/K (air effect)
Enclosure . . . . .	IP 65
Vibration . . . . .	10 - 55 Hz, 1 mm deflection
LED Function . . . . .	Yellow: Output Energized; object detected within sensing window

\* Affected by target distance and potentiometer setting

## Wiring Diagram




## Dimensions



**CP40**



**Limit Switch Style Sensor, Plastic Housing**  
*Combiprox*

3-Wire DC   
 10-30 VDC, Short-Circuit and Overload Protection  
 Normally Open, PNP (Sourcing)

**Sensor Selection**

Part Number	Rated Operating Distance (cm)	Diameter (mm)	Drawing #	Wiring Diagram	Synchronization	Repeat Accuracy (± mm)	Switching Frequency (Hz)	Switching Hysteresis (cm)	Max. Approach Speed (m/s)	ID Number
RU100-CP40-AP6X2	5 - 180	40	1	A		5	3	2	1.2	16102 00

**Material**

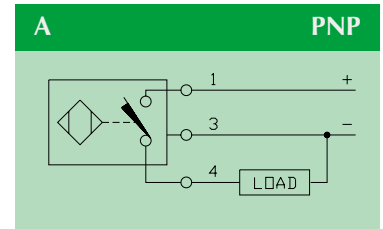
Housing: PBT-GF30-VO

## Specifications

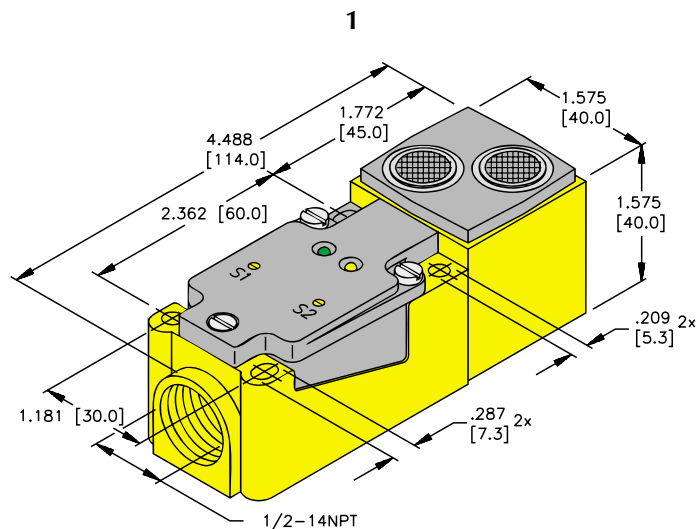
Sonic Cone Angle . . . . .	60°
Adjustable Near Limit . . . . .	5 - 100 cm
Adjustable Depth of Sensing Window . . . . .	10 - 100 cm
Standard Target. . . . .	Distance ≤100 cm: 2 x 2 cm <sup>2</sup> Distance ≤180 cm: 20 x 20 cm <sup>2</sup>
Allowable Angle of Target Inclination . . . . .	≤15°
Max. Overtravel Speed . . . . .	Distance ≤100 cm: 1 m/s Distance ≤180 cm: 2 m/s
Ripple . . . . .	≤10%
No-Load Current . . . . .	≤20 mA
Continuous Load Current . . . . .	≤200 mA
Voltage Drop . . . . .	≤2.5 V at 200 mA
Reverse Polarity Protection . . . . .	Incorporated
Wire-Break Protection . . . . .	Incorporated
Power-on False Pulse Suppression. . . . .	Incorporated
ESD Protection per CE . . . . .	4 kV (8 kV) contact (air) discharge
Time Delay Before Availability * . . . . .	≤430 ms
Response Time . . . . .	≤150 ms
Trigger Current for Overload Protection . . . . .	≥220 mA
Operating Temperature . . . . .	0°C to +70°C (32°F to +158°F)
Temperature Drift. . . . .	0.4%/K (air effect)
Enclosure . . . . .	IP 40
LED Functions . . . . .	Red: Output energized Green: Object within sonic cone

\* Affected by target distance and potentiometer settings

## Wiring Diagram



## Dimensions




**Q30**



**Rectangular Sensors, Plastic**  
*Plastic Housing with Quick Disconnect*

4-Wire DC  **eurofast**<sup>®</sup>  
 18-35 VDC, Short-Circuit and Overload Protection  
 Linear Analog Voltage Output with Synchronization

**Sensor Selection**

Part Number	Rated Operating Distance (cm)	Housing Diameter (mm)	Drawing #	Wiring Diagram	Synchronization	Repeat Accuracy (± mm)	Response Time (ms)	Max. Approach Speed (m/s)	ID Number	Connection
RU 30-Q30-LUX-H1141	6 - 30	30	1	A	•	0.5	80	4	18200 05	 <b>Mating Cordsets</b> RK 4.4T-2 (2 meter) For other styles consult "Cordsets" catalog.
RU100-Q30-LUX-H1141	20 - 100	30	1	A	•	1.5	80	8	18202 05	

**Material**

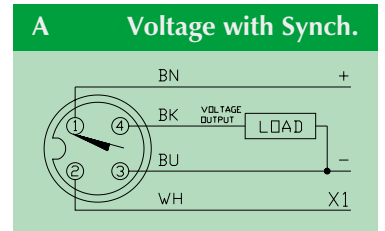
Connector: PBT Plastic  
 Sensing Face: PBT Plastic  
 Barrel: Crastin, SK 645FR

## Specifications

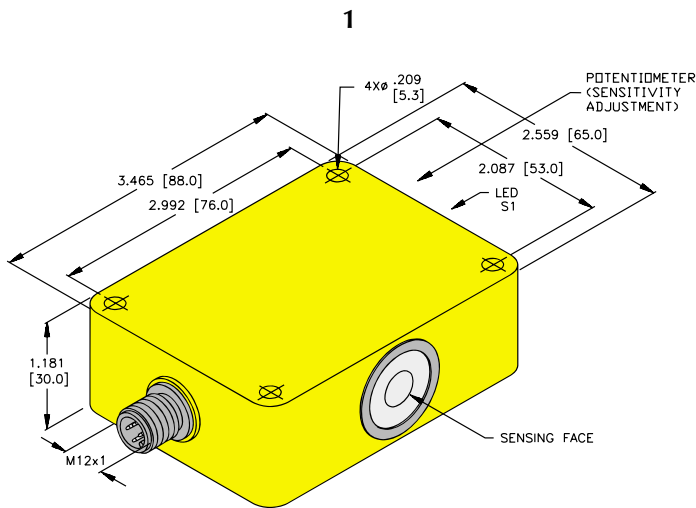
Sonic Cone Angle . . . . .	6°
Standard Target. . . . .	RU 30: 1 x 1 cm <sup>2</sup> RU100: 2 x 2 cm <sup>2</sup>
Allowable Angle of Target Inclination . . . . .	≤3°
Max. Overtravel Speed . . . . .	RU 30: 0.5 - 1.5 m/s RU100: 0.6 - 1.5 m/s
Ripple . . . . .	≤10%
No-Load Current . . . . .	≤35 mA
Current Output. . . . .	0 - 10 V
Load Impedance . . . . .	>1 kΩ
Power-on False Pulse Suppression. . . . .	Incorporated
Time Delay Before Availability * . . . . .	87 ms
Operating Temperature . . . . .	0°C to +55°C (32°F to +131°F)
Temperature Drift. . . . .	0.17%/K
Linearity Tolerance . . . . .	±2% of full scale
Enclosure . . . . .	IP 65
Vibration . . . . .	10 - 55 Hz, 1 mm deflection
LED Functions . . . . .	Yellow: Output energized; object within detection zone

\* Affected by target distance and potentiometer setting

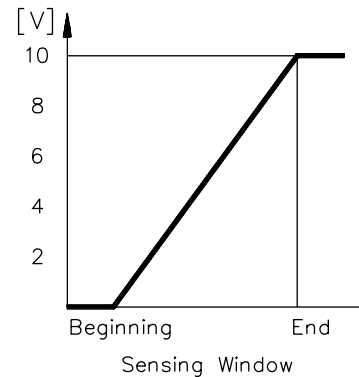
## Wiring Diagram



## Dimensions




## Response Curve



**CP40**



**Limit Switch Style Sensor, Plastic Housing**  
*Combiprox*

4-Wire DC   
 15-30 VDC, Short-Circuit and Overload Protection  
 Linear Analog Current and Voltage Output

**Sensor Selection**

Part Number	Rated Operating Distance (cm)	Housing Diameter (mm)	Drawing #	Wiring Diagram	Synchronization	Repeat Accuracy ( $\pm$ mm)	Response Time (ms)	Max. Approach Speed (m/s)	ID Number
RU100-CP40-LIUX	5 - 180	40	1	A		5	150	1.2	15348 00

**Material**

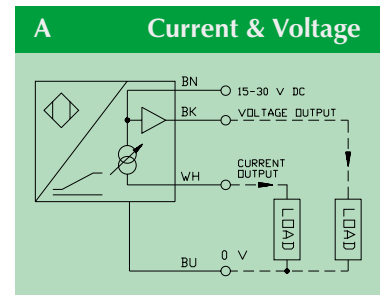
Housing: PBT-GF30-VO

## Specifications

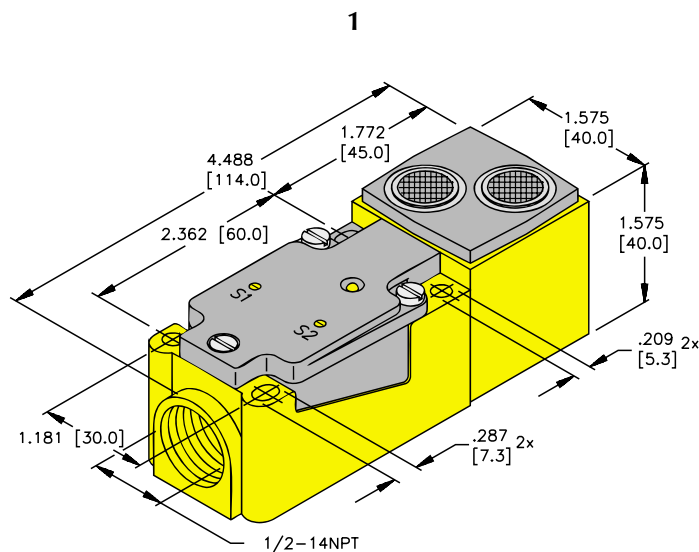
Sonic Cone Angle . . . . .	60°
Standard Target. . . . .	Distance ≤100 cm: 2 x 2 cm <sup>2</sup> Distance ≤180 cm: 20 x 20 cm <sup>2</sup>
Allowable Angle of Target Inclination . . . . .	≤15°
Max. Overtravel Speed . . . . .	Distance ≤100 cm: 1 m/s Distance ≤180 cm: 2 m/s
Ripple . . . . .	≤10%
No-Load Current . . . . .	≤20 mA
Current Output. . . . .	0 - 20 mA
- Load Impedance. . . . .	≤500 Ω
Voltage Output. . . . .	0 - 10 V
- Load Impedance. . . . .	≥4.7 kΩ
Power-on False Pulse Suppression. . . . .	Incorporated
Time Delay Before Availability * . . . . .	≤430 ms
ESD Protection per CE . . . . .	4 kV (8 kV) contact (air) discharge
Operating Temperature . . . . .	0°C to +70°C (32°F to +158°F)
Temperature Drift. . . . .	0.4%/K
Linearity Tolerance . . . . .	±3% of full scale
Enclosure . . . . .	IP 40
LED Functions . . . . .	Red: Power ON Flashing: Object in detection zone

\* Affected by target distance and potentiometer settings

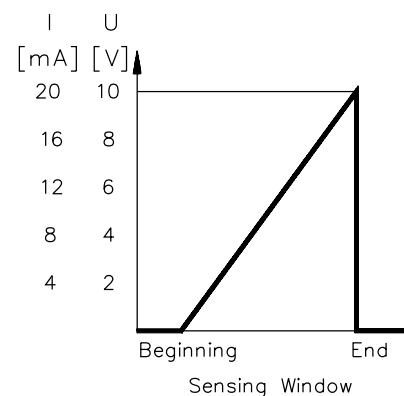
## Wiring Diagram



## Dimensions



## Response Curve




**M18 Barrel**



**Barrel, Metal with Quick Disconnect**  
*Straight Connector*

4-Wire DC  **eurofast**<sup>®</sup>  
 20-30 VDC  
 Linear Analog Current Output with Synchronization

**Sensor Selection**

Part Number	Rated Operating Distance (cm)	Diameter (mm)	Drawing #	Wiring Diagram	Synchronization	Repeat Accuracy (± mm)	Response Time (ms)	Max. Approach Speed (m/s)	ID Number	Connection
RU 30-M18-LIX-H1141	5 - 30	18	1	A	•	0.5	75	4	18100 05	 <b>Mating Cordsets</b> RK 4.4T-2 (2 meter) For other styles consult "Cordsets" catalog.
RU100-M18-LIX-H1141	15 - 100	18	1	A	•	2	105	8	18102 05	

**Material**

Connector: PBT Plastic  
 Sensing Face: PBT Plastic  
 Barrel: Nickel Plated Brass

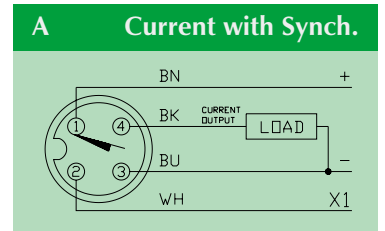


## Specifications

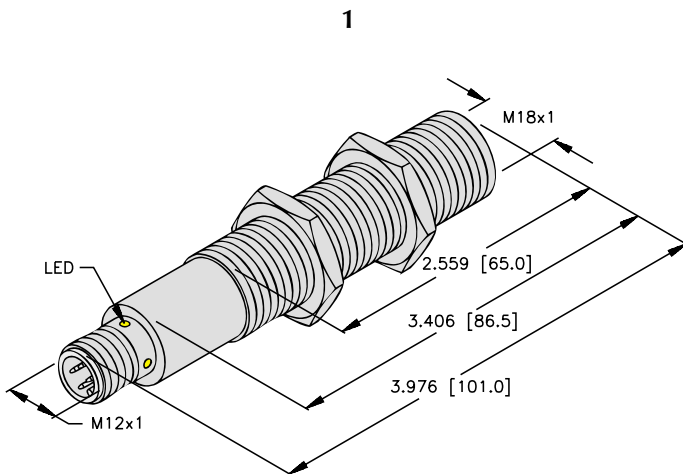
Sonic Cone Angle . . . . .	6°
Standard Target. . . . .	RU30: 1 x 1 cm <sup>2</sup> RU100: 2 x 2 cm <sup>2</sup>
Allowable Angle of Target Inclination . . . . .	≤3°
Max. Overtravel Speed . . . . .	RU30: 0.5 - 1.5 m/s RU100: 0.8 - 2.0 m/s
Ripple . . . . .	≤10%
Current Output. . . . .	4 - 20 mA into <500 Ω
No-Load Current . . . . .	≤50 mA
Power-on Effect Suppression. . . . .	per IEC 947-5-2
Time Delay Before Availability * . . . . .	RU 30: ≤144 ms RU100: ≤184 ms
Response Time . . . . .	RU 30: ≤75 ms RU100: ≤105 ms
Operating Temperature . . . . .	-25°C to +70°C (-13°F to +158°F)
Temperature Drift. . . . .	±2.5% of full scale
Linearity Tolerance . . . . .	±2% of full scale
Enclosure . . . . .	IP 67
LED Function . . . . .	Yellow: Output Energized; object detected within sensing window

\* Affected by target distance

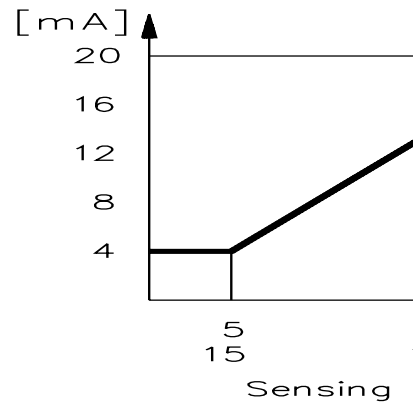
## Wiring Diagram



## Dimensions



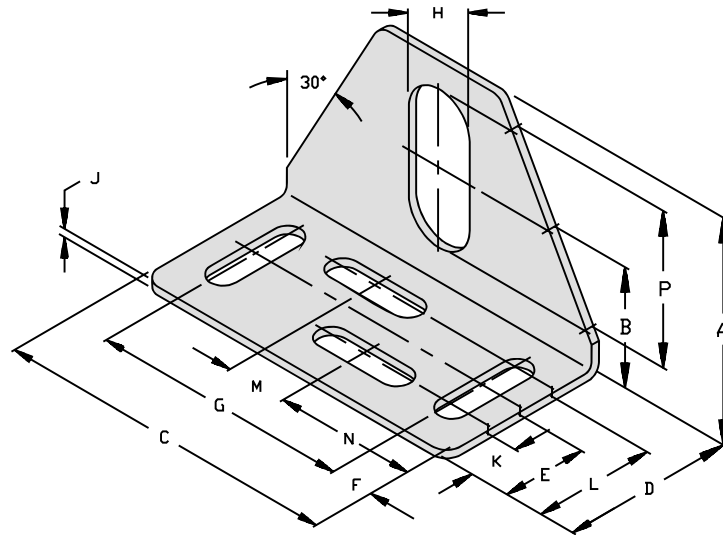
Response Curve



## Mounting Brackets

Part Number	ID Number	Barrel Diameter	Dimensions														SLOTS
			A	B	C	D	E	F	G	H	J	K	L	M	N	P	
MB-18	A3135	18 mm	1.63 41.5	0.79 20.0	2.50 63.5	1.25 31.8	0.61 15.5	0.31 7.9	1.88 47.8	0.75 19.1	0.06 1.5	0.35 9.0	0.87 22.0	0.45 11.5	1.04 26.3	1.15 29.1	0.22 x 0.75 5.6 x 19.0
MB-30	A3140	30 mm	2.62 66.5	1.32 33.5	4.25 108.0	1.75 44.5	0.88 22.4	0.37 9.5	3.50 88.9	1.19 30.2	0.07 1.8	0.63 16.0	1.14 29.0	1.18 30.0	1.54 39.0	2.06 52.2	0.28 x 1.25 7.1 x 31.8

MB-18 Material: 16 Gage Cold Roll Steel  
 MB-30 Material: 14 Gage Cold Roll Steel  
 Finish: Galvanized



For use with 18 and 30 mm barrel sensors.

Part Number	ID Number
LSAP-2	69429 00

Material: Stainless Steel

A technical drawing of the LSAP-2 mounting bracket. The drawing shows a perspective view of the bracket with various dimensions labeled in inches and millimeters. The dimensions are: 3.937 [100.0], 2.756 [70.0], .591 [15.0], .197 [5.0], 1.575 [40.0], 1.181 [30.0], .591 [15.0], 1.181 [30.0], .169 [4.3] 2x, .209 [5.3] 2x, .209 [5.3] 2x, .209 [5.3] 2x, .059 [1.5], .197 [5.0], and .197 [5.0]. The drawing also shows two mounting screws and a post. The text "(2) M4x10 MOUNTING SCREWS AND POST SUPPLIED." is written below the drawing.

For use with limit switch style sensors.

## Part Number Index

LSAP-2 . . . . .	25	RU100-CP40-AP6X2 . . . . .	17	RUC 30-M30-2AP8X-H1151 . . . . .	13
MB-18 . . . . .	25	RU100-CP40-LIUX . . . . .	21	RUC 30-M30-AP8X-H1141 . . . . .	11
MB-30 . . . . .	25	RU100-M18-AP8X-H1141 . . . . .	11	RUC130-M30-2AP8X-H1151 . . . . .	13
RU 30-M18-AP8X-H1141 . . . . .	11	RU100-M18-LIX-H1141 . . . . .	23	RUC130-M30-AP8X-H1141 . . . . .	11
RU 30-M18-LIX-H1141 . . . . .	23	RU100-M30-AP8X-H1141 . . . . .	9	RUC300-M3047-2AP8X-H1151 . . . . .	13
RU 30-M30-AP8X-H1141 . . . . .	9	RU100-Q30-AP8X-H1141 . . . . .	15	RUC300-M3047-AP8X-H1141 . . . . .	11
RU 30-Q30-AP8X-H1141 . . . . .	15	RU100-Q30-LUX-H1141 . . . . .	19	RUC600-M3065-2AP8X-H1151 . . . . .	13
RU 30-Q30-LUX-H1141 . . . . .	19	RU600-M3065-AP8X-H1141 . . . . .	9	RUC600-M3065-AP8X-H1141 . . . . .	11

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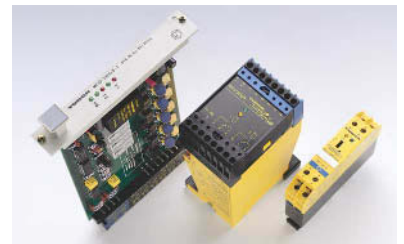
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