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.
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°C to 70°C (-13°F to 158°F) temperature range, and you have a rugged sensor ready for your next demanding application.
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
- 4-Wire PNP ........................................ 11
- 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

**Appendix**

- Brackets ........................................... 25
- Index .............................................. 26
**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 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. $T_u = +20^\circ$C ($68^\circ$F) using a standard target, vertically aligned, with reflective surface (metal, 1 mm thick).

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).

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).

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).

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).
## Mounting Considerations

<table>
<thead>
<tr>
<th>Sensor Type</th>
<th>e (cm)</th>
<th>f (cm)</th>
<th>g (cm)</th>
<th>h (cm)</th>
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<tbody>
<tr>
<td>RU 30-M18-</td>
<td>≥120</td>
<td>≥15</td>
<td>≥6</td>
<td>≥3</td>
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<tr>
<td>RU100-M18-</td>
<td>≥400</td>
<td>≥60</td>
<td>≥30</td>
<td>≥15</td>
</tr>
<tr>
<td>RU 30-M30-</td>
<td>≥120</td>
<td>≥15</td>
<td>≥6</td>
<td>≥3</td>
</tr>
<tr>
<td>RU100-M30-</td>
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<td>≥15</td>
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<tr>
<td>RU600-M3065-</td>
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</tr>
<tr>
<td>RU100-Q30</td>
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<td>≥60</td>
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<td>≥15</td>
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<td>≥120</td>
<td>≥60</td>
</tr>
</tbody>
</table>

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

---

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# TURCK

## Ultrasonic Sensors

### M Barrel

**Barrel, Metal with Quick Disconnect**

_Straight Connector_

- 3-Wire DC
- 20-30 VDC, Short-Circuit and Overload Protection
- Normally Open, PNP (Sourcing)

### Sensor Selection

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Rated Operating Distance (cm)</th>
<th>Barrel Diameter (mm)</th>
<th>Drawing #</th>
<th>Synchronisation</th>
<th>Repeat</th>
<th>Accuracy (± mm)</th>
<th>Switching Frequency (Hz)</th>
<th>Switching Hysteresis (mm)</th>
<th>Max. Approach Speed (m/s)</th>
<th>ID Number</th>
<th>Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>RU 30-M30-AP8X-H1141</td>
<td>6 - 30</td>
<td>30</td>
<td>1</td>
<td>A</td>
<td>0.45</td>
<td>8</td>
<td>1</td>
<td>4</td>
<td>10</td>
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</tr>
<tr>
<td>RU600-M3065-AP8X-H1141</td>
<td>60 - 600</td>
<td>30</td>
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<td>A</td>
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<td>6</td>
<td>18</td>
<td>10</td>
<td>18304 00</td>
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</tr>
</tbody>
</table>

**Mating Cordsets**

- RK 4T-2 (2 meter)
- For other styles consult "Cordsets" catalog.

### Material

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

---

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- www.stevenengineering.com
Specifications

Sonic Cone Angle ......................... 6°
Standard Target ......................... RU 30: 1 x 1 cm²; RU100: 2 x 2 cm²
                                         RU600: 10 x 10 cm²
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

Dimensions

Wiring Diagram

A PNP

BN +
BK LOAD
Bu -

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### Material

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

### Sensor Selection

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Rated Operating Distance (cm)</th>
<th>Barrel Diam. (mm)</th>
<th>Drawing #</th>
<th>Mating Diagram</th>
<th>Synchronization</th>
<th>Repeat</th>
<th>Accurancy, ± (mm)</th>
<th>Switching Frequency (Hz)</th>
<th>Switching Hysteresis (cm)</th>
<th>Max. Approach Speed (m/s)</th>
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<td>•</td>
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<td>30</td>
<td>4</td>
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<td>•</td>
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</table>

For other styles consult "Cordsets" catalog.
Specifications

Sonic Cone Angle ......................... 6°
Standard Target ......................... RU(C)30: 1 x 1 cm²
........................................ RUC100/RUC130: 2 x 2 cm²
........................................ RUC300: 5 x 5 cm²
........................................ RUC600: 10 x 10 cm²
Allowable Angle of Target Inclination .. ≤3°
Max. Overtravel Speed ................. RU(C)30: 0.5 - 1.5 m/s
........................................ RUC100/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
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; RUC100/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

Dimensions

Wiring Diagram

A  PNP with Synch

* Affected by target distance and potentiometer settings

<table>
<thead>
<tr>
<th>Component</th>
<th>Value</th>
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<td>A PNP with Synch</td>
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<td>Pin 1</td>
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<td>Pin 3</td>
<td>-</td>
</tr>
<tr>
<td>Pin 4</td>
<td>LOAD</td>
</tr>
</tbody>
</table>

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### M Barrel

Barrel, Metal with Quick Disconnect

**Straight Connector**

5-Wire DC

20-30 VDC, Short-Circuit and Overload Protection

Normally Open, Dual Output PNP with Synchronization

---

#### Sensor Selection

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Rated Operating Distance (cm)</th>
<th>Barrel Diam. (mm)</th>
<th>Drawing #</th>
<th>Mating Diagram</th>
<th>Synchronization</th>
<th>Repeat</th>
<th>Switching (± mm)</th>
<th>Switching Frequency (Hz)</th>
<th>Switching Hysteresis (cm)</th>
<th>Max. Approach Speed (m/s)</th>
<th>ID Number</th>
<th>Connection</th>
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<tbody>
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</tbody>
</table>

**Mating Cordsets**

RK 4.5T-2 (2 meter)

For other styles consult “Cordsets” catalog.

---

#### Material

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

---

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Specifications

Sonic Cone Angle ................. 6°
Standard Target ................. RUC 30: 1 x 1 cm²
                                   RUC130: 2 x 2 cm²
                                   RUC300: 5 x 5 cm²
                                   RUC600: 10 x 10 cm²
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  ........ Incorporator
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

Dimensions

1

2

3

Wiring Diagram

A Dual PNP with Synch

<table>
<thead>
<tr>
<th>B</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>LOAD</td>
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<tr>
<td>U</td>
<td>LOAD</td>
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<tr>
<td>G</td>
<td>Y</td>
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</table>

14
## Sensor Selection

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Rated Operating Distance (cm)</th>
<th>Diameter (mm)</th>
<th>Drawing #</th>
<th>Mating Diagram</th>
<th>Synchronization</th>
<th>Repeat</th>
<th>Switching Frequency (Hz)</th>
<th>Switching Hysteresis (cm)</th>
<th>Max. Approach Speed (m/s)</th>
<th>ID Number</th>
<th>Connection</th>
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<tbody>
<tr>
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<td>RU100-Q30-AP8X-H1141</td>
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**Mating Cordsets**
RK 4.4T-2 (2 meter)
For other styles consult "Cordsets" catalog.

## Material

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<thead>
<tr>
<th>Connector:</th>
<th>PBT Plastic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensing Face:</td>
<td>PBT Plastic</td>
</tr>
<tr>
<td>Barrel:</td>
<td>Crastin, SK 645FR</td>
</tr>
</tbody>
</table>
Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>RU 30</th>
<th>RU 100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sonic Cone Angle</td>
<td>6°</td>
<td></td>
</tr>
<tr>
<td>Standard Target</td>
<td>1 x 1 cm²</td>
<td>2 x 2 cm²</td>
</tr>
<tr>
<td>Allowable Angle of Target Inclination</td>
<td>≤3°</td>
<td></td>
</tr>
<tr>
<td>Max. Overtravel Speed</td>
<td>0.5 - 1.5 m/s</td>
<td>0.6 - 1.5 m/s</td>
</tr>
<tr>
<td>Ripple</td>
<td>≤10%</td>
<td></td>
</tr>
<tr>
<td>No-Load Current</td>
<td>≤35 mA</td>
<td></td>
</tr>
<tr>
<td>Continuous Load Current</td>
<td>≤100 mA</td>
<td></td>
</tr>
<tr>
<td>Voltage Drop</td>
<td>≤2.0 V at 100 mA</td>
<td></td>
</tr>
<tr>
<td>Reverse Polarity Protection</td>
<td>Incorporated</td>
<td></td>
</tr>
<tr>
<td>Wire-Break Protection</td>
<td>Incorporated</td>
<td></td>
</tr>
<tr>
<td>Power-on False Pulse Suppression</td>
<td>Incorporated</td>
<td></td>
</tr>
<tr>
<td>Time Delay Before Availability</td>
<td>RU 30: 77 ms</td>
<td>RU100: 97 ms</td>
</tr>
<tr>
<td>Response Time</td>
<td>RU 30: 70 ms</td>
<td>RU100: 90 ms</td>
</tr>
<tr>
<td>Trigger Current for Overload Protection</td>
<td>≥300 mA</td>
<td></td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>0°C to +55°C (32°F to +131°F)</td>
<td></td>
</tr>
<tr>
<td>Temperature Drift</td>
<td>0.17%/K (air effect)</td>
<td></td>
</tr>
<tr>
<td>Enclosure</td>
<td>IP 65</td>
<td></td>
</tr>
<tr>
<td>Vibration</td>
<td>10 - 55 Hz, 1 mm deflection</td>
<td></td>
</tr>
<tr>
<td>LED Function</td>
<td>Yellow: Output Energized; object detected within sensing window</td>
<td></td>
</tr>
</tbody>
</table>

* Affected by target distance and potentiometer setting

Dimensions

![Dimensions Diagram]
**TURCK Ultrasonic Sensors**

**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**

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

**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 cm²
  - Distance ≤180 cm: 20 x 20 cm²
- **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

Dimensions

[Diagram of dimensions]
## TURCK Ultrasonic Sensors

### Q30

#### Rectangular Sensors, Plastic

*Plastic Housing with Quick Disconnect*

- **4-Wire DC**
- **eurolink®**
- **18-35 VDC**, Short-Circuit and Overload Protection
- Linear Analog Voltage Output with Synchronization

### Sensor Selection

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Rated Operating Distance (cm)</th>
<th>Housing Diameter (mm)</th>
<th>Drawing #</th>
<th>Wiring Diagram</th>
<th>Synchronization</th>
<th>Repeat Accuracy (± mm)</th>
<th>Repeat Time (ms)</th>
<th>Max. Approach Speed (m/s)</th>
<th>ID Number</th>
<th>Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>RU 30-Q30-LUX-H1141</td>
<td>6 - 30</td>
<td>30</td>
<td>1</td>
<td>A</td>
<td>0.5</td>
<td>80</td>
<td>80</td>
<td>4</td>
<td>18200 05</td>
<td>eurofast</td>
</tr>
<tr>
<td>RU100-Q30-LUX-H1141</td>
<td>20 - 100</td>
<td>30</td>
<td>1</td>
<td>A</td>
<td>1.5</td>
<td>80</td>
<td>80</td>
<td>8</td>
<td>18202 05</td>
<td>eurofast</td>
</tr>
</tbody>
</table>

#### Mating Cordsets

- **RK 4.4T-2 (2 meter)**
- For other styles consult "Cordsets" catalog.

### Material

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

---

*Courtesy of Steven Engineering, Inc.*

230 Ryan Way, South San Francisco, CA, 94080-6370
Main Office: (650) 588-9200
Outside Local Area: (800) 258-9200
www.stevenengineering.com
**Specifications**

- **Sonic Cone Angle**: 6°
- **Standard Target**: RU 30: 1 x 1 cm²
  - RU100: 2 x 2 cm²
- **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

**Dimensions**

**Response Curve**

**Wiring Diagram**

A Voltage with Synch.
## TURCK
### Ultrasonic Sensors

#### CP40

<table>
<thead>
<tr>
<th>Limit Switch Style Sensor, Plastic Housing</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Combiprox</strong></td>
</tr>
<tr>
<td>4-Wire DC</td>
</tr>
<tr>
<td>15-30 VDC, Short-Circuit and Overload Protection</td>
</tr>
<tr>
<td>Linear Analog Current and Voltage Output</td>
</tr>
</tbody>
</table>

### Sensor Selection

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Rated Operating Distance (cm)</th>
<th>Housing Diameter (mm)</th>
<th>Drawing #</th>
<th>Wiring Diagram</th>
<th>Synchronization</th>
<th>Repeat Accuracy (± mm)</th>
<th>Response Time (ms)</th>
<th>Max. Approach Speed (m/s)</th>
<th>ID Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>RU100-CP40-LIUX</td>
<td>5 - 180</td>
<td>40</td>
<td>A</td>
<td></td>
<td>5</td>
<td>150</td>
<td>1.2</td>
<td>15348 00</td>
<td></td>
</tr>
</tbody>
</table>

### Material

<table>
<thead>
<tr>
<th>Housing:</th>
<th>PBT-GF30-VO</th>
</tr>
</thead>
</table>
### Specifications

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sonic Cone Angle</td>
<td>60°</td>
</tr>
<tr>
<td>Standard Target</td>
<td>Distance ≤100 cm: 2 x 2 cm²</td>
</tr>
<tr>
<td></td>
<td>Distance ≤180 cm: 20 x 20 cm²</td>
</tr>
<tr>
<td>Allowable Angle of Target Inclination</td>
<td>≤15°</td>
</tr>
<tr>
<td>Max. Overtravel Speed</td>
<td>Distance ≤100 cm: 1 m/s</td>
</tr>
<tr>
<td></td>
<td>Distance ≤180 cm: 2 m/s</td>
</tr>
<tr>
<td>Ripple</td>
<td>≤10%</td>
</tr>
<tr>
<td>No-Load Current</td>
<td>≤20 mA</td>
</tr>
<tr>
<td>Current Output</td>
<td>0 - 20 mA</td>
</tr>
<tr>
<td>- Load Impedance</td>
<td>≤500 Ω</td>
</tr>
<tr>
<td>Voltage Output</td>
<td>0 - 10 V</td>
</tr>
<tr>
<td>- Load Impedance</td>
<td>≥4.7 kΩ</td>
</tr>
<tr>
<td>Power-on False Pulse Suppression</td>
<td>Incorporated</td>
</tr>
<tr>
<td>Time Delay Before Availability *</td>
<td>≤430 ms</td>
</tr>
<tr>
<td>ESD Protection per CE</td>
<td>4 kV (8 kV) contact (air) discharge</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>0°C to +70°C (32°F to +158°F)</td>
</tr>
<tr>
<td>Temperature Drift</td>
<td>0.4%/K</td>
</tr>
<tr>
<td>Linearity Tolerance</td>
<td>±3% of full scale</td>
</tr>
<tr>
<td>Enclosure</td>
<td>IP 40</td>
</tr>
<tr>
<td>LED Functions</td>
<td>Red: Power ON</td>
</tr>
<tr>
<td></td>
<td>Flashing: Object in detection zone</td>
</tr>
</tbody>
</table>

* Affected by target distance and potentiometer settings

### Dimensions

![Dimensions Diagram](image)

### Response Curve

![Response Curve Graph](image)
M18 Barrel

Barrel, Metal with Quick Disconnect

Straight Connector

4-Wire DC  ☀️ eurofast®
20-30 VDC
Linear Analog Current Output with Synchronization

Sensor Selection

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Rated Operating Distance (cm)</th>
<th>Diameter (mm)</th>
<th>Drawing #</th>
<th>Wiring Diagram</th>
<th>Synchronization</th>
<th>Repeat Accuracy (±mm)</th>
<th>Response Time (ms)</th>
<th>Max. Approach Speed (m/s)</th>
<th>ID Number</th>
<th>Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>RU 30-M18-LIX-H1141</td>
<td>5 - 30</td>
<td>18</td>
<td>1</td>
<td>A</td>
<td>•</td>
<td>0.5</td>
<td>75</td>
<td>4</td>
<td>18100 05</td>
<td>eurofast</td>
</tr>
<tr>
<td>RU100-M18-LIX-H1141</td>
<td>15 - 100</td>
<td>18</td>
<td>1</td>
<td>A</td>
<td>•</td>
<td>2</td>
<td>105</td>
<td>8</td>
<td>18102 05</td>
<td></td>
</tr>
</tbody>
</table>

Mating Cordsets
RK 4.4T-2 (2 meter)
For other styles consult "Cordsets" catalog.

Material

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

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Specifications

- Sonic Cone Angle: 6°
- Standard Target:
  - RU30: 1 x 1 cm²
  - RU100: 2 x 2 cm²
- 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

Dimensions

Response Curve

Wiring Diagram
**Mounting Brackets**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>ID Number</th>
<th>Barrel Diameter</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>MB-18</td>
<td>A3135</td>
<td>18 mm</td>
<td>A: 1.63</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>B: 0.79</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>C: 2.50</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>D: 2.50</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>E: 0.61</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>F: 0.31</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>G: 1.88</td>
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<td></td>
<td></td>
<td></td>
<td>H: 0.75</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>J: 0.06</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>K: 0.35</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>L: 0.87</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>M: 0.45</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>N: 1.04</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>P: 1.15</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>SLOTS: 0.22 x 0.75</td>
</tr>
<tr>
<td>MB-30</td>
<td>A3140</td>
<td>30 mm</td>
<td>A: 2.62</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>B: 0.88</td>
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<td></td>
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<td>C: 0.37</td>
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<td></td>
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<td></td>
<td>D: 3.50</td>
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<td></td>
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<td>E: 1.19</td>
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<td>F: 0.07</td>
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<td>G: 0.63</td>
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<td></td>
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<td>H: 1.14</td>
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<td></td>
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<td></td>
<td>J: 1.18</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>K: 1.54</td>
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<td>L: 2.06</td>
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<td></td>
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<td></td>
<td>M: 0.28</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>N: 1.25</td>
</tr>
</tbody>
</table>

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.

**LSAP-2**

Material: Stainless Steel

For use with limit switch style sensors.
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