

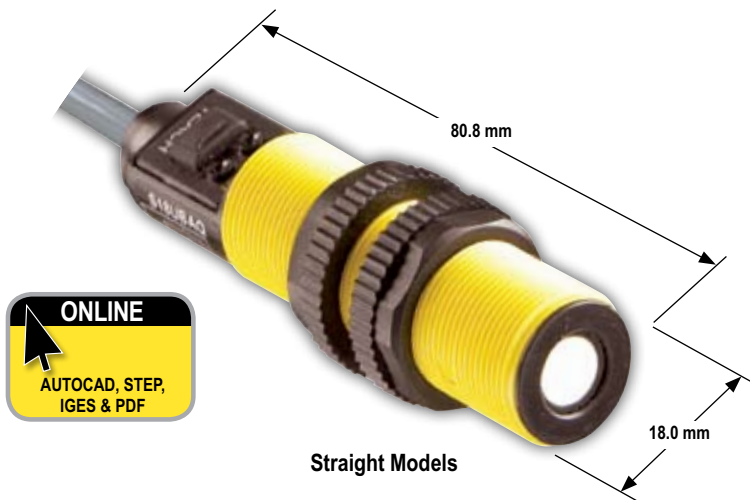
# U-GAGE® S18U

## Compact Barrel-Mount Ultrasonic Sensor

- Senses from 30 to 300 mm
- Available in analog or discrete models
- Features minimal dead zone and eliminates dead zone if used in retrosonic mode
- Ideal for material handling and packaged goods applications, such as bottling or liquid level detection and control for small containers
- Available in straight or right-angle versions with a wide variety of mounting hardware for enhance sensing versatility
- Offers programmable background suppression
- Compensates for temperature for greatest sensing accuracy
- Simplifies setup with push-button and remote TEACH-mode programming
- Shows status during setup and operation, using highly visible LEDs indicators

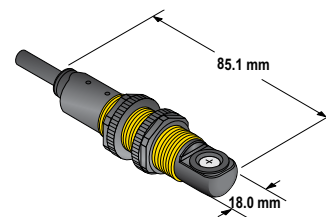


ACCESSORIES  
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Straight Models

Accessory wave guides are available for narrowing sensing beam. (see page 316)



S18U Right-Angle Models

### U-GAGE® S18U, 10-30V dc

| Range       | Connections   | Output          | Housing Configuration | Models   |
|-------------|---------------|-----------------|-----------------------|----------|
| 30 - 300 mm | 2 m           | 0 to 10V dc     | Straight              | S18UUA   |
|             | 5-pin Euro QD |                 |                       | S18UUAQ  |
|             | 2 m           | 4 to 20 mA      |                       | S18UIA   |
|             | 5-pin Euro QD |                 |                       | S18UIAQ  |
| 30 - 300 mm | 2 m           | 0 to 10V dc     | Right-Angle           | S18UUAR  |
|             | 5-pin Euro QD |                 |                       | S18UUARQ |
|             | 2 m           | 4 to 20 mA      |                       | S18UIAR  |
|             | 5-pin Euro QD |                 |                       | S18UIARQ |
| 30 - 300 mm | 2 m           | Bipolar NPN/PNP | Straight              | S18UBA   |
|             | 5-pin Euro QD |                 |                       | S18UBAQ  |
|             | 2 m           |                 | Right-Angle           | S18UBAR  |
|             | 5-pin Euro QD |                 |                       | S18UBARQ |

Connection options: A model with a QD requires a mating cable (see page 316).

For 9 m cable, add suffix W/30 to the 2 m model number (example, S18UUA W/30).

# U-GAGE® S18U Specifications

|   |   |   |
|---|---|---|
| <b>Effective Beam</b>                                   | See Charts EBPC-1 and EBPC-2 on page 316.   |   |
| <b>Supply Voltage and Current</b>                       | 10 to 30V dc (10% max. ripple); 65 mA max. (exclusive of load), 40 mA typical @ 25V input   |   |
| <b>Ultrasonic Frequency</b>                             | 300 kHz, rep. rate 2.5 milliseconds   |   |
| <b>Supply Protection Circuitry</b>                      | Protected against reverse polarity and transient voltages   |   |
| <b>Output Protection</b>                                | Protected against short circuit conditions  |   |
| <b>Output Ratings</b>                                   | <p><b>Analog:</b></p> <p><b>Analog Voltage Output:</b> 2.5 kΩ min. load resistance<br/>Minimum supply for a full 10V output is 12V dc (for supply voltages between 10 and 12, V out max is at least V supply -2)</p> <p><b>Analog Current Output:</b> 1 kΩ max @ 24V input<br/>Max load resistance = (Vcc-4)/0.02 Ω</p> <p><b>Discrete:</b> 100 mA max.</p> <p><b>OFF-state leakage current:</b> less than 5 μA</p> <p><b>NPN saturation:</b> less than 200 mV @ 10 mA and less than 600 mV @ 100 mA</p> <p><b>PNP saturation:</b> less than 1.2V @ 10 mA and less than 1.6V @ 100 mA</p> |   |
| <b>Output Configuration</b>                             | <p><b>Analog:</b> 0 to 10V dc or 4 to 20 mA, depending on model</p> <p><b>Discrete:</b> <b>Bipolar:</b> One NPN (current sinking) and one PNP (current sourcing) output in each model. Solid-state switch conducts when target is sensed within sensing window.</p>   |   |
| <b>Output Response Time</b>                             | <p><b>Analog:</b> <b>30 milliseconds:</b> Black wire at 0-2V dc (or open)</p> <p><b>2.5 milliseconds:</b> Black wire at 5-30V dc</p>  | <p><b>Discrete:</b> 5 milliseconds</p>                                      |
| <b>Delay at Power-up</b>                                | 300 milliseconds  |   |
| <b>Linearity*</b><br>(Analog output models)             | <p><b>2.5 milliseconds response:</b> ± 1 mm</p> <p><b>30 milliseconds response:</b> ± 0.5 mm</p>  |   |
| <b>Resolution*</b><br>(Analog output models)            | <p><b>2.5 milliseconds response:</b> 1 mm</p> <p><b>30 milliseconds response:</b> 0.5 mm</p>  |   |
| <b>Repeatability</b><br>(Discrete models)               | 0.5 mm  |   |
| <b>Temperature Effect</b>                               | 0.02% of distance/ ° C  |   |
| <b>Temperature Warmup Drift</b>                         | Less than 1.7% of sensing distance upon power-up  |   |
| <b>Minimum Window Size</b>                              | 5 mm  |   |
| <b>Switching Hysteresis</b><br>(Discrete output models) | 0.7 mm  |   |
| <b>Adjustments</b>                                      | <b>Sensing window limits:</b> TEACH-Mode programming of near and far window limits may be set using the push-button or remotely using TEACH input.  |   |
| <b>Indicators</b>                                       | <p><b>Power/Signal Strength (Red/Green)</b></p> <p><b>Green</b>—Target is within sensing range</p> <p><b>Red</b>—Target is outside sensing range</p> <p><b>OFF</b>—Sensing power is OFF</p> <p><b>TEACH/Output Indicator (Yellow/Red)</b></p> <p><b>Yellow</b> —Target is within taught limits</p> <p><b>OFF</b>—Target is outside taught window limits</p> <p><b>Red</b>—Sensor is in TEACH mode</p>   |   |
| <b>Remote TEACH Input</b>                               | <b>Impedance:</b> 12 kΩ   |   |
| <b>Construction</b>                                     | <p><b>Threaded Barrel:</b> Thermoplastic polyester</p> <p><b>Push Button:</b> Santoprene</p>  | <p><b>Push-Button Housing:</b> ABS/PC</p> <p><b>Lightpipes:</b> Acrylic</p> |
| <b>Environmental Rating</b>                             | Leakproof design is rated IEC IP67; NEMA 6P   |   |
| <b>Connections</b>                                      | 2 m or 9 m shielded 5-conductor (with drain) PVC jacketed attached cable, or 5-pin Euro-style quick-disconnect. QD cordsets are ordered separately. See page 316.   |   |
| <b>Operating Conditions</b>                             | <b>Temperature:</b> -20° to +60° C  | <b>Relative humidity:</b> 100%  |


- Photoelectrics Sensors
- Fiber Optic Sensors
- Special Purpose Sensors
- Measurement & Inspection Sensors**
- Vision
- Wireless
- Lighting & Indicators
- Safety Light Screens
- Safety Laser Scanners
- Fiber Optic Safety Systems
- Safety Controllers & Modules
- Safety Two-Hand Control Modules
- Safety Interlock Switches
- Emergency Stop & Stop Control

- LIGHT GAUGING
- ULTRASONIC**
- QT50U
- S18U**
- QS18U
- T30U/T30UX
- M25U
- T18U
- Q45U
- Q45UR
- MEASURING ARRAYS
- RADAR



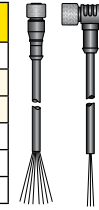
\*Linearity and resolution are specified using a 50 x 50 mm aluminum plate at 22° C under fixed sensing conditions.

**U-GAGE® S18U Specifications (cont'd)**

|                                       |   |                                |
|---------------------------------------|---|--------------------------------|
| <b>Vibration and Mechanical Shock</b> | All models meet Mil. Std. 202F requirements. method 201A (vibration: 10 to 60 Hz max., double amplitude 0.06", maximum acceleration 10G). Also meets IEC 947-5-2 requirements: 30G 11 milliseconds duration, half sine wave |                                |
| <b>Application Notes</b>              | Objects passing inside the specified near limit may produce a false response.   |                                |
| <b>Certifications</b>                 |    |                                |
| <b>Hookup Diagrams</b>                | Analog Models: MI11 (p. 760)  | Discrete Models: MI10 (p. 760) |



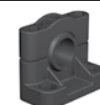
**Cordsets**

| Euro QD (With Shield) |            |              |
|-----------------------|------------|--------------|
| See page 687          |            |              |
| Threaded 5-Pin        |            |              |
| Length                | Straight   | Right-Angle  |
| 2 m                   | MQDEC2-506 | MQDEC2-506RA |
| 5 m                   | MQDEC2-515 | MQDEC2-515RA |
| 9 m                   | MQDEC2-530 | MQDEC2-530RA |




Additional cordset information available. See page 679.

**Brackets**

| S18U  |   |  |
|---|---|--|
|  |  |  |
| pg. 637   | pg. 638   | pg. 638  |
| <b>SMB18A</b>   | <b>SMB18FM</b>  | <b>SMB18SF</b>   |

Additional brackets and information available. See page 620.

**Ultrasonic Wave Guides**

|  | Inside Diameter | Model     |
|---|-----------------|-----------|
|   | 5.0 mm          | UWG18-5.0 |
| 6.4 mm  | UWG18-6.4       |           |

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**Effective Beam Patterns**

