



# U-GAGE™ S18U Series Sensors with Analog Output

18 mm Ultrasonic Sensors with TEACH-mode programming

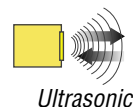
## Features

- Fast, easy-to-use TEACH-Mode programming; no potentiometer adjustments
- Short dead zone
- Scalable output automatically distributes the output signal over the width of the programmed sensing window
- Two bi-colored status LEDs
- Rugged encapsulated design for harsh environments
- Choose 2 meter or 9 meter unterminated cable, or 5-pin Euro-style QD connector
- Wide operating range of -20° to +60°C (-4° to +140°F)
- Choose either straight or right-angle housing
- Temperature compensation
- Selectable response times of 2.5 or 30 ms
- Select analog models with either 0-10V dc or 4-20 mA output



Right-Angle Housing

Straight Housing




## Models

Model Number	Sensing Range	Cable*	Supply Voltage	Output	Housing Configuration
S18UUA	30 to 300 mm (1.2" to 11.8")	5-wire, 2 m (6.5') cable	10 to 30V dc	0 to 10V dc	Straight
S18UUAQ		5-pin Euro style QD			
S18UIA		5-wire, 2 m (6.5') cable		4 to 20 mA	
S18UIAQ		5-pin Euro style QD			
S18UUAR		5-wire, 2 m (6.5') cable		0 to 10V dc	Right-Angle
S18UUARQ		5-pin Euro style QD			
S18UIAR		5-wire, 2 m (6.5') cable		4 to 20 mA	
S18UIARQ		5-pin Euro style QD			

\* 9 m cables are available by adding suffix "W/30" to the model number of any cabled sensor (e.g., S18UUA W/30).  
A model with a QD connector requires a mating cable; see page 10.

# U-GAGE™ S18U Series Sensor — Analog Output

## Specifications

<b>Sensing Range</b>	30 to 300 mm (1.2" to 11.8")	
<b>Supply Voltage</b>	10 to 30V dc (10% maximum ripple); 65 mA max. (exclusive of load), 40 mA typical @ 25V input	
<b>Ultrasonic Frequency</b>	300 kHz, rep. rate 2.5 ms	
<b>Supply Protection Circuitry</b>	Protected against reverse polarity and transient voltages	
<b>Output Configuration</b>	<b>Analog Output:</b> 0 to 10V dc or 4 to 20 mA, depending on model	
<b>Output Protection</b>	Protected against short circuit conditions	
<b>Output Ratings</b>	<p><b>Analog Voltage Output:</b> 2.5 k<math>\Omega</math> minimum load resistance 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 k<math>\Omega</math> max @ 24V input Max load resistance = (Vcc-4)/0.02 ohms</p> <p><b>For current output (4-20 mA) models,</b> ideal results are achieved when the total load resistance <math>R = [(V_{in} - 3)/0.020]\Omega</math>. Example, at <math>V_{in} = 24V</math> dc, <math>R \approx 1\text{ k}\Omega</math> (1 watt). A worst-case shift of 1% of sensing distance is caused by operating the sensor at <math>V_{in} = 30V</math> dc and <math>R = 0\ \Omega</math>.</p>	
<b>Output Response Time (for a 95% step change)</b>	<p><b>2.5 milliseconds:</b> Black wire at 5-30V dc</p> <p><b>30 milliseconds:</b> Black wire at 0-2V dc (or open)</p> <p>Consult factory for other response speed options</p>	
<b>Delay at Power-Up</b>	300 milliseconds	
<b>Temperature Effect</b>	0.02% of distance/ °C	
<b>Linearity*</b>	<b>2.5 ms response:</b> $\pm 1$ mm	<b>30 ms response:</b> $\pm 0.5$ mm
<b>Resolution*</b>	<b>2.5 ms response:</b> 1 mm	<b>30 ms response:</b> 0.5 mm
<b>Minimum Window Size</b>	5 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 via TEACH input (see page 3).	
<b>Indicators</b>	<b>Range Indicator (Red/Green)</b>	<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>
	<b>Teach/Output Indicator (Yellow/Red)</b>	<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 k $\Omega$	
<b>Construction</b>	<b>Threaded Barrel:</b> Thermoplastic polyester <b>Push Button:</b> Santoprene	<b>Push Button Housing:</b> ABS/PC <b>Lightpipes:</b> Acrylic
<b>Operating Conditions</b>	<b>Temperature:</b> -20° to +60° C (-4° to +140° F) <b>Maximum relative humidity:</b> 100%	
<b>Connections</b>	2 m (6.5') or 9 m (30') shielded 5-conductor (with drain) PVC jacketed attached cable or 5-pin Euro-style quick-disconnect (see page 10 for quick-disconnect cable options)	
<b>Environmental Rating</b>	Leakproof design is rated IEC IP67; NEMA 6P	
<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 ms duration, half sine wave.	
<b>Temperature Warmup Drift</b>	Less than 1.7% of sensing distance upon power-up (see Temperature Compensation, page 2)	
<b>Application Notes</b>	Objects passing inside the specified near limit may produce a false response.	
<b>Certifications</b>		

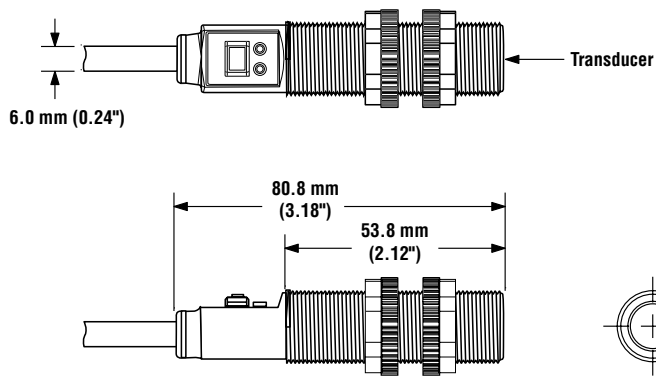
\* Linearity and resolution are specified using a 50 mm x 50 mm (2" x 2") aluminum plate at 22°C under fixed sensing conditions.

# U-GAGE™ S18U Series Sensor — Analog Output

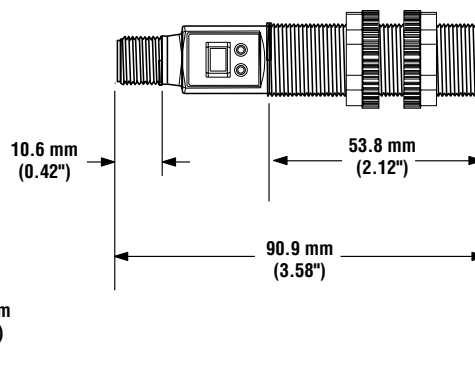
## Dimensions

### Straight Housing

#### Cabled Models

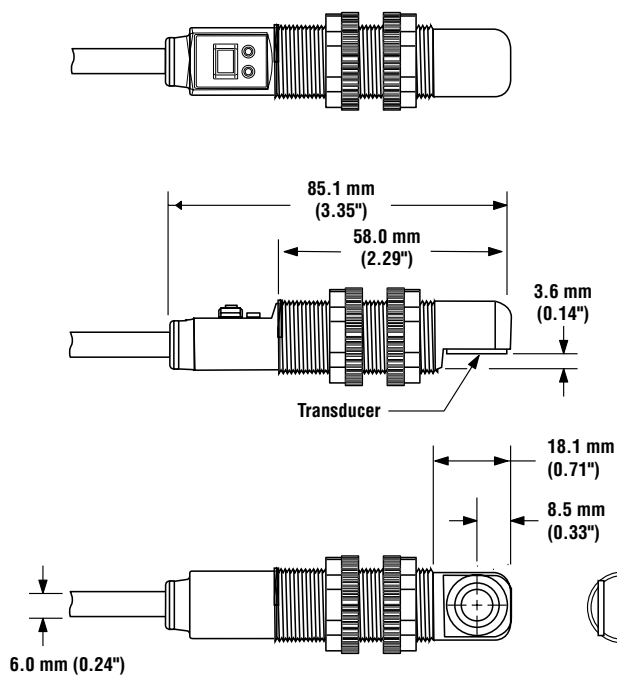


#### QD Models



### Right-Angle Housing

#### Cabled Models



#### QD Models

