

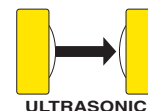
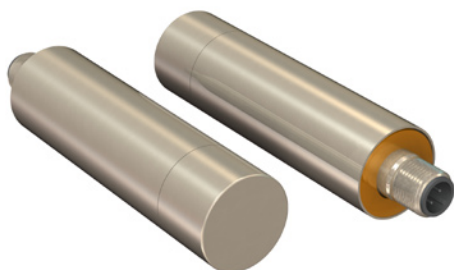


# U-GAGE® M25U Series Sensor

Ultrasonic Opposed Mode Sensor Pairs

## Features

- Smooth, hygienic design for easy cleaning in food processing and other washdown applications; rated IP69K, IEC IP67 (NEMA 6)
- Rugged stainless steel for use in demanding environments
- Dual range/dual speed opposed mode ultrasonic sensors; ideal for sensing clear objects or materials
- Highly immune to ambient sonic and electrical noise
- Optional IP68 rated washdown cordset
- 10 to 30V dc operating voltage



## Models

Model	Range*	Supply Voltage	Output	Response Time
M25UEQ8	Normal Speed: 500 mm (19.7") High Speed: 250 mm (9.8") 140KHz	10 to 30V dc	—	—
M25URBQ8			Bipolar (1 NPN & 1 PNP)	Normal Speed: 4.0 milliseconds High Speed: 3.0 milliseconds

\* M25U receivers may be wired for either of two speeds: Normal or High (see hookup diagrams, page 3). The Normal Speed mode offers a sensing range of 500 mm (19.7"). The Normal Speed mode maximizes sensing energy, as is required in demanding environments. The High Speed mode offers a sensing range of 250 mm (9.8"). The High Speed mode maximizes sensing response, as is needed in high-speed counting applications.

### **WARNING . . . Not To Be Used for Personnel Protection**

Never use these products as sensing devices for personnel protection. Doing so could lead to serious injury or death.

These sensors do NOT include the self-checking redundant circuitry necessary to allow their use in personnel safety applications. A sensor failure or malfunction can cause either an energized or de-energized sensor output condition. Consult your current Banner Safety Products catalog for safety products which meet OSHA, ANSI and IEC standards for personnel protection.



137794

# U-GAGE® M25U Series Sensor

## Object Detection

Minimum Object Width (Typical)				
Speed	Emitter/Receiver Separation (D)	Velocity = 0 mm/sec (0 in/sec)	Velocity = 1.27 m/sec (50 in/sec)	Velocity = 2.5 m/sec (100 in/sec)
Normal	125 mm (4.9")	23 mm (0.90")	28 mm (1.10")	33 mm (1.30")
	250 mm (9.8")	26 mm (1.00")	31 mm (1.22")	36 mm (1.42")
	500 mm (19.7")	38 mm (1.50")	43 mm (1.69")	48 mm (1.89")
High	125 mm (4.9")	18 mm (0.71")	22 mm (0.87")	26 mm (1.00")
	250 mm (9.8")	20 mm (0.79")	24 mm (0.94")	28 mm (1.10")

Minimum Adjacent Object Spacing (Typical)				
Speed	Emitter/Receiver Separation (D)	Velocity = 0 cm/sec (0 in/sec)	Velocity = 1.27 m/sec (50 in/sec)	Velocity = 2.5 m/sec (100 in/sec)
Normal	125 mm (4.9")	0.5 mm (0.02")	1.0 mm (0.04")	1.5 mm (0.06")
	250 mm (9.8")	1.5 mm (0.06")	2.0 mm (0.08")	2.5 mm (0.10")
	500 mm (19.7")	4.0 mm (0.16")	4.5 mm (0.18")	5.0 mm (0.20")
High	125 mm (4.9")	1.0 mm (0.04")	1.5 mm (0.06")	3.0 mm (0.12")
	250 mm (9.8")	3.0 mm (0.12")	4.0 mm (0.16")	5.0 mm (0.20")

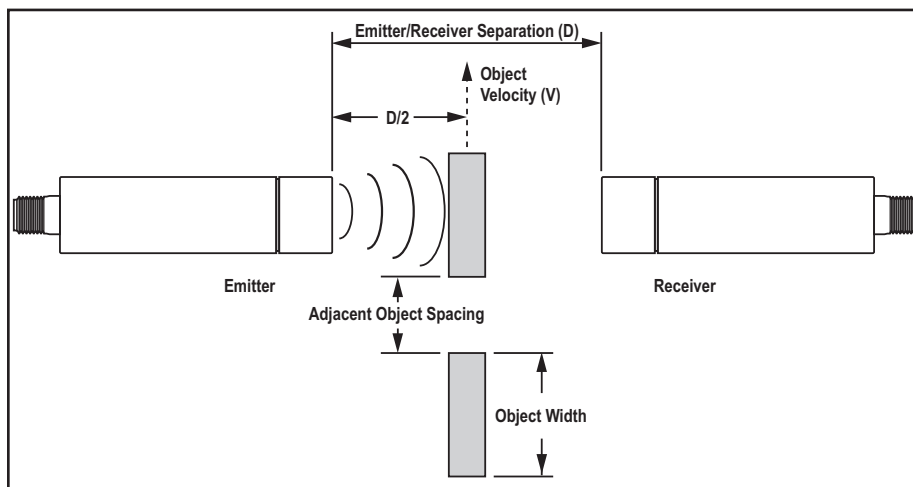


Figure 1. Object width and spacing

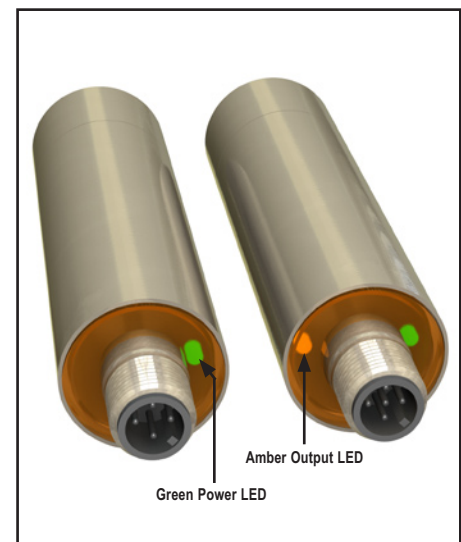


Figure 2. Features

## Dimensions

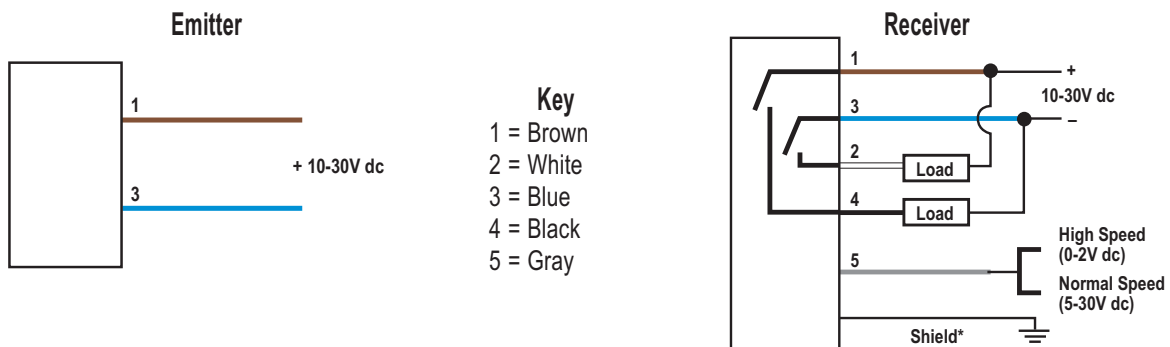


# U-GAGE® M25U Series Sensor

## Specifications

<b>Sensing Range</b>	<b>Normal Speed:</b> 500 mm (19.7") <b>High Speed:</b> 250 mm (9.8") 140KHz
<b>Supply Voltage and Current</b>	Emitter: 10 to 30V dc (10% max. ripple) at less than 85 mA Receiver: 10 to 30V dc (10% max. ripple) at less than 38 mA (exclusive of load)
<b>Supply Protection Circuitry</b>	Protected against reverse polarity and transient voltages
<b>Receiver Output Configuration</b>	Bipolar (1 NPN & 1 PNP) solid-state output; Normally Closed (output is activated when an object blocks the sensing beam)
<b>Output Rating</b>	100 mA (each output) with short circuit protection; see Note 1 <b>OFF-state leakage current:</b> NPN: < 200 µA sinking    PNP: < 10 µA sourcing <b>ON-state saturation voltage:</b> NPN: < 1.6V @ 100 mA    PNP: < 3.0V @ 100 mA
<b>Output Protection Circuitry</b>	Protected against short circuit conditions
<b>Output Response Time</b>	<b>Normal Speed:</b> 4.0 milliseconds <b>High Speed:</b> 3.0 milliseconds
<b>Repeatability</b>	1 millisecond
<b>Delay at Power-up</b>	< 250 milliseconds
<b>Delay for Switching Between Normal and High Speed</b>	20 milliseconds
<b>Indicators</b>	<b>Green Power LED:</b> indicates Power ON <b>Amber Output LED:</b> indicates output activated
<b>Construction</b>	<b>Housing:</b> 316 Stainless Steel <b>LED window:</b> Polysulphone
<b>Connections</b>	<b>Emitter:</b> 4-pin Euro-Style QD <b>Receiver:</b> 5-pin Euro-Style QD
<b>Environmental Rating</b>	Leakproof design, rated IEC IP67 (NEMA 6), IP69K
<b>Operating Conditions</b>	<b>Temperature:</b> -20° to +70°C (-4° to +158° F) <b>Max. Relative Humidity:</b> 95% at 50°C non-condensing
<b>Vibration and Mechanical Shock</b>	All models meet Mil. Std. 202F requirements method 201A (vibration: 10 to 60 Hz max. amplitude 0.06", max. acceleration 10G). Also meets IEC 947-5-2; 30G 11 ms duration.
<b>Certifications</b>	CE pending
<b>Notes</b>	1. NPN < 200 µA for load impedance > 3 KΩ; for load current of 100 mA, leakage < 1% of load current 2. When mounting the M25U, care should be taken to acoustically isolate the emitter and receiver to eliminate sound energy coupling between the sensor pair. This is best accomplished with elastomeric materials between the sensor and rigid mounting brackets.

## Hookups



\* It is recommended that the shield wire be connected to either earth ground or DC common.

# U-GAGE® M25U Series Sensor

## Accessories

### Quick-Disconnect Cables

Washdown Models					
Style	Model	Length	Description	Dimensions	Pinout
5-Pin Euro-style Straight	<b>MQDCWD-506</b> <b>MQDCWD-530</b>	2 m (6.5') 9 m (30')	<b>Cable:</b> polypropylene jacket and connector body, stainless steel coupling nut <b>Conductors:</b> 22 AWG gold-plated brass contacts <b>Voltage Rating:</b> 250V ac <b>Temperature:</b> -40° to +105° C <b>Environmental Rating:</b> IP68		 Female 1 = Brown 2 = White 3 = Blue 4 = Black 5 = Gray

Standard Models					
Style	Model	Length	Description	Dimensions	Pinout
5-Pin Euro-style Straight	<b>MQDC1-506</b> <b>MQDC1-515</b> <b>MQDC1-530</b>	2 m (6.5') 5 m (15') 9 m (30')	<b>Cable:</b> PVC jacket, PUR (polyurethane) connector body, nickle-plated brass coupling nut <b>Conductors:</b> 22 or 20 AWG high-flex stranded, gold plated contacts		 Female 1 = Brown 2 = White 3 = Blue 4 = Black 5 = Gray
5-Pin Euro-style Right-Angle	<b>MQDC1-506RA</b> <b>MQDC1-515RA</b> <b>MQDC1-530RA</b>	2 m (6.5') 5 m (15') 9 m (30')	<b>Voltage Rating:</b> 250V ac/300V dc <b>Temperature:</b> -40° to +90° C <b>Environmental Rating:</b> IP67		

### Mounting Brackets

	<ul style="list-style-type: none"> <li>Swivel bracket with 25 mm mounting hole for sensor</li> <li>Stainless steel with rounded edges for cleanliness in demanding environments</li> <li>Non-metallic FDA compliant bushing for acoustically isolating M25U sensors</li> </ul>	<b>SMBM25A</b>
--	--	----------------



**WARRANTY:** Banner Engineering Corp. warrants its products to be free from defects for one year. Banner Engineering Corp. will repair or replace, free of charge, any product of its manufacture found to be defective at the time it is returned to the factory during the warranty period. This warranty does not cover damage or liability for the improper application of Banner products. This warranty is in lieu of any other warranty either expressed or implied.