



more sensors, more solutions

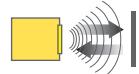
WORLD BEAM® QS18U Series Ultrasonic Sensors

Miniature Ultrasonic Sensors with TEACH-Mode Programming



Features

- Fast, easy-to-use TEACH-Mode programming; no potentiometer adjustments
- Ultra-compact housing
- One discrete output: NPN or PNP, depending on model
- Two bi-colored status LEDs
- Rugged encapsulated version for harsh environments
- Choose 2 meter or 9 meter unterminated cable, 4-pin Euro-style or 4-pin Pico-style QD connectors (either integral or with 150 mm pigtail)
- Wide operating range of -20° to +60° C (-13° to +140° F)
- Temperature compensation
- Configurable for normally open or normally closed operation
- Fast response time (15 milliseconds)



Ultrasonic

Models

Model	Sensing Range	TEACH Options	Cable*	Supply Voltage	Output
QS18UNA	50 mm to 500 mm (2" to 20")	Integral push button or remote TEACH (IP67, NEMA 6P)	4-wire, 2 m (6.5') cable with shield	12-30V dc	NPN
QS18UPA		Remote TEACH (epoxy-encapsulated, IP68, NEMA 6P)			PNP
QS18UNAE		Remote TEACH (epoxy-encapsulated, IP68, NEMA 6P)			NPN
QS18UPAE		Remote TEACH (epoxy-encapsulated, IP68, NEMA 6P)			PNP

*Only standard 2 m (6.5') cable models are listed. For 9 m (30') shielded cable, add suffix "W/30" to the model number (e.g., QS18UNA W/30).

QD models:

- For 4-pin integral Euro-style QD, add suffix "Q8" (e.g., QS18UNAQ8).
- For 4-pin integral Pico-style QD, add suffix "Q7" (e.g., QS18UNAQ7).
- For 4-pin Euro-style 150 mm (6") pigtail QD, add suffix "Q5" (e.g., QS18UNAQ5).
- For 4-pin Pico-style 150 mm (6") pigtail QD, add suffix "Q" (e.g., QS18UNAQ).

A model with a QD connector requires a mating cable (see page 10).



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.

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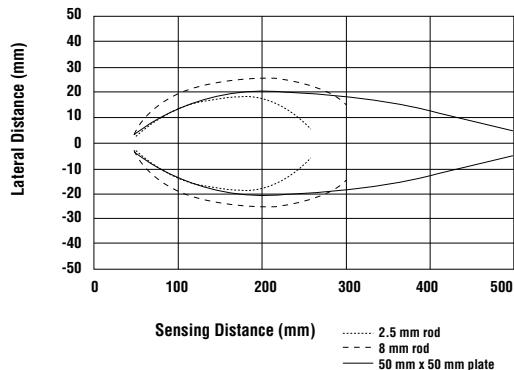
Specifications

Sensing Range	50 to 500 mm (2" to 20")	
Supply Voltage	12 to 30V dc (10% maximum ripple); 25 mA max. (exclusive of load)	
Ultrasonic Frequency	300 kHz, rep. rate 7.5 ms	
Supply Protection Circuitry	Protected against reverse polarity and transient voltages	
Output Configuration	SPST solid-state switch conducts when target is sensed within sensing window; one NPN (current sinking) or one PNP (current sourcing), depending on model.	
Output Protection	Protected against short circuit conditions	
Output Ratings	100 mA maximum OFF-state leakage current: < 10 microamps (sourcing); < 200 microamp (sinking) NPN saturation: < 1.6V @ 100 mA PNP saturation: < 2.0V @ 100 mA	
Output Response Time	15 milliseconds	
Delay at Power-Up	300 milliseconds	
Temperature Effect	Non-encapsulated models: $\pm 0.05\%$ per $^{\circ}\text{C}$ from -20° to $+50^{\circ}$ C, $\pm 0.1\%$ per $^{\circ}\text{C}$ from $+50^{\circ}$ to $+60^{\circ}$ C Encapsulated models: $\pm 0.05\%$ per $^{\circ}\text{C}$ from 0° to $+60^{\circ}$ C, $\pm 0.1\%$ per $^{\circ}\text{C}$ from -20° to 0° C	
Repeatability	0.7 mm	
Minimum Window Size	5 mm	
Hysteresis	1.4 mm	
Adjustments	Sensing window limits: TEACH-Mode programming of near and far window limits may be set using the push button or remotely via TEACH input (see page 3).	
Indicators	Range Indicator (Red/Green) Green — Target is within sensing range Red — Target is outside sensing range OFF — Sensing power is OFF	Teach/Output Indicator (Yellow/Red) Yellow — Target is within taught limits OFF — Target is outside taught window limits Red — Sensor is in TEACH mode
Construction	Housing: ABS Push Button: TPE	Push Button Housing: ABS Lightpipes: Polycarbonate
Operating Conditions	Temperature: -20° to $+60^{\circ}$ C (-4° to $+140^{\circ}$ F) Maximum relative humidity: 100%, non-condensing	
Connections	2 m (6.5') or 9 m (30') 4-conductor PVC jacketed attached cable or 4-pin Euro-style integral QD (Q8), or 4-pin Pico-style integral QD (Q7), or 4-pin Euro-style 150 mm (6") pigtail QD (Q5), or 4-pin Pico-style 150 mm (6") pigtail QD (Q)	
Environmental Rating	Leakproof design, rated NEMA 6P; IEC IP67 or IP68, depending on model (see page 1)	
Vibration and Mechanical Shock	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.	
Temperature Warmup Drift	See Temperature Compensation, page 2	
Application Notes	Objects passing inside the specified near limit may produce a false response.	
Certifications	Approvals are pending	

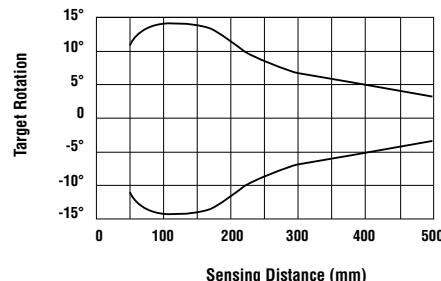
WORLD BEAM® QS18U Series Ultrasonic Sensors

Sensor Response Curves

QS18U Effective Beam Pattern (Typical)

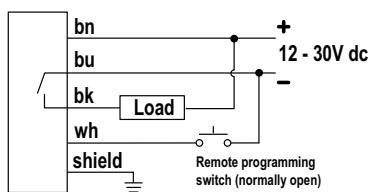


QS18U Maximum Target Rotation Angle

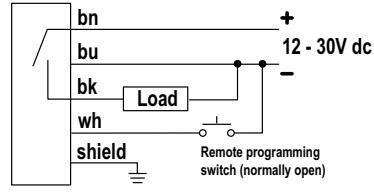


Hookups

NPN (Sinking) Output Models



PNP (Sourcing) Output Models

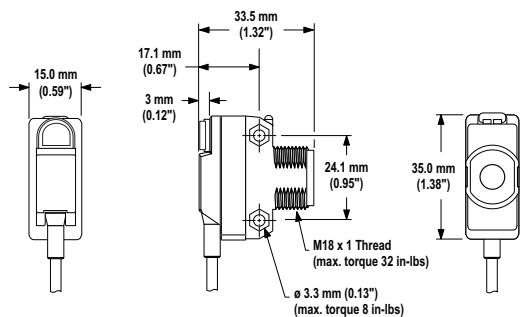


Cable and QD hookups are functionally identical.

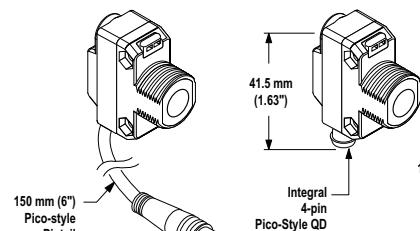
It is recommended that the shield wire be connected to earth ground. Shielded cordsets are recommended for all QD models.

Dimensions

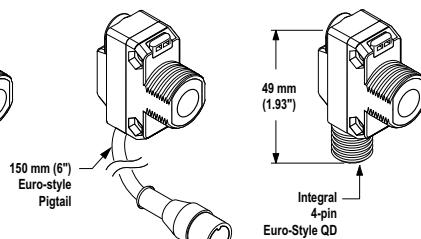
Cabled Models



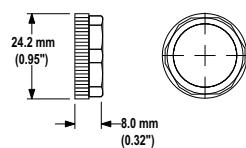
Pico-Style QD Models



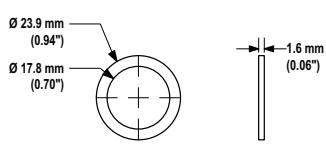
Euro-Style QD Models



Locknut (Included with All Models)



Washer (Included with All Models)



M3 Hardware Packet Contents:

- 2 - M3 x 0.5 x 20 mm SS Screw
- 2 - M3 x 0.5 SS Hex Nut
- 2 - M3 SS Washer