QS18U

Ultrasonic WORLD-BEAM® Sensor

- Features a universal housing with an 18 mm threaded lens or side mounts
- Senses clear or transparent material and color variations, including clear web material, clear or shiny bottles, highly reflective surfaces and liquid or dry bulk materials from inside cramped locations
- Senses within a 50 to 500 mm window with a 15 millisecond response time
- Delivers high accuracy in wet or dirty environments
- Available in encapsulated IP68 models rated for a range of harsh conditions
- Features push-button TEACH for easy programming at the sensor or remotely
- Featuring wide operating range of -20° to +60° C
- Offers retrosonic sensing mode
- Delivers bright LED operating indicators visible from 360°

ACCESSORIES page 319

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Accessory wave guides are available for narrowing sensing beam. (see page 319)

WORLD-BEAM® QS18U, 12-30V dc

Range	Connection	TEACH Options	Models NPN	Models PNP
50 - 500 mm	2 m	Integral push button and remote TEACH (IP67; NEMA 6P)	QS18UNA	QS18UPA
	4-pin Euro QD		QS18UNAQ8	QS18UPAQ8
50 - 500 mm	2 m	Remote TEACH (epoxy-encapsulated, IP68; NEMA 6P)	QS18UNAE†	QS18UPAE†
	4-pin Euro QD		QS18UNAEQ8†	QS18UPAEQ8†

Connection options: A model with a QD requires a mating cordset (see page 319).

For 9 m cable, add suffix **W/30** to the 2 m model number (example, **QS18UNA W/30**).
QD models:
- For 4-pin integral Euro-style QD, add suffix **Q8** (example, **QS18UNAQ8**).
- For 4-pin integral Pico-style QD, add suffix **Q7** (example, **QS18UNAQ7**).
- For 4-pin 150 mm Euro-style pigtail, add suffix **Q5** (example, **QS18UNAQ5**).
- For 4-pin 150 mm Pico-style pigtail, add suffix **Q** (example, **QS18UNAFQ**).

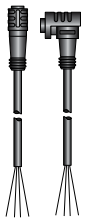
† Models are epoxy-encapsulated, IP68; NEMA 6P with remote TEACH programming

WORLD-BEAM® QS18U Specifications

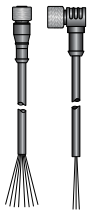
Effective Beam	See Charts EBPC-1 and EBPC-2 on page 319.	
Sensing Range	50 to 500 mm	
Supply Voltage and Current	12 to 30V dc (10% max. ripple); 25 mA max. (exclusive of load)	
Ultrasonic Frequency	300 kHz, rep. rate 7.5 milliseconds	
Supply Protection Circuitry	Protected against reverse polarity and transient voltages	
Output Protection	Protected against short circuit conditions	
Delay at Power-Up	300 milliseconds	
Output Configurations	Solid-state switch conducts when target is sensed within sensing window; one NPN (current sinking) or one PNP (current sourcing), depending on model.	
Temperature Effect	**Non-encapsulated models**: ± 0.05% per ° C from -20° to +50° C, ± 0.1% per ° C from +50° to +60° C **Encapsulated models:** ± 0.05% per ° C from 0° to +60° C, ± 0.1% per ° C from -20° to 0° C	
Repeatability	0.7 mm	
Hysteresis	1.4 mm	
Output Ratings	100 mA max. (see Application Note 1) **OFF-state leakage current:** less than 10 µA (sourcing); less than 200 µA (sinking); See Application Note 2 **NPN ON-state saturation voltage:** less than 1.6V @ 100 mA **PNP ON-state saturation voltage:** less than 2.0V @ 100 mA	
Output Response Time	15 milliseconds	
Minimum Window Size	5 mm	
Adjustments	**Sensing window limits:** TEACH-Mode programming of near and far window limits may be set using the push button or remotely using TEACH input.	
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
Environmental Rating	Leakproof design, rated IEC IP67 or IP68; NEMA 6P, depending on model; UL type 1	
Connections	2 m or 9 m 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 pigtail QD (**Q5**), or 4-pin Pico-style 150 mm pigtail QD (**Q**), depending on model. See page 319.	
Operating Conditions	**Temperature:** -20° to +60° C	**Relative humidity**: 100% (non-condensing)
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 milliseconds duration, half sine wave.	
Temperature Warmup Drift	See data sheet	
Application Notes	1. If supply voltage is > 24V dc, derate maximum output current 5 mA/°C above 50°C. 2. NPN OFF-state leakage current is < 200 µA for load resistances > 3 kΩ or optically isolated loads. For load current of 100 mA, leakage is < 1% of load current. 3. Objects passing inside the specified near limit may produce a false response.	
Certifications	CE	
Hookup Diagrams	MI13 (p. 761)	

Cordsets

Pico QD (With Shield)		
See page 681		
	Snap-On 4-Pin	
Length	Straight	Right-Angle
2 m	PKG4S-2	PKW4ZS-2

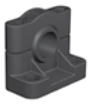


Euro QD (With Shield)		
See page 683		
	Threaded 4-Pin	
Length	Straight	Right-Angle
2 m	MQDEC2-406	MQDEC2-406RA
5 m	MQDEC2-415	MQDEC2-415RA
9 m	MQDEC2-430	MQDEC2-430RA



Additional cordset information available. See page 679.

Brackets

QS18U		
 pg. 637	 pg. 638	 pg. 638
SMB18A	SMB18FA..	SMB18SF

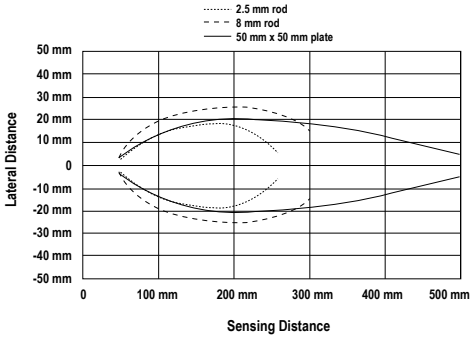
Additional brackets and information available. See page 620.

Ultrasonic Wave Guides

	Inside Diameter	Model
 pg. 709	5.0 mm	UWG18-5.0
	6.4 mm	UWG18-6.4

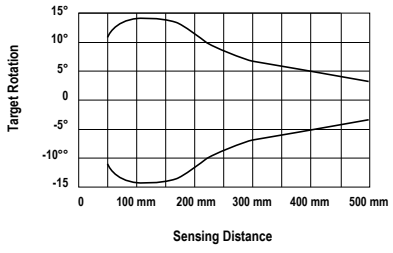
Effective Beam Patterns

QS18U (Typical)



EBPC-1

QS18U Maximum Target Rotation Angle



EBPC-2