

BANNER[®]

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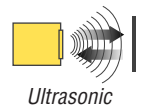
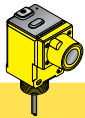
U-GAGE™ Q45U Long-Range Ultrasonic Sensors

Piezoelectric Proximity Mode Sensors with Push Button Programming of Sensing Window Limits – Bipolar Discrete Outputs

- Analog models also available
- Models with other ranges also available

Features

- Ultrasonic proximity detection from 0.25 to 3.0 m (9.8" to 118")
- Push button TEACH mode programming of sensing window limits
- Digital filtering for exceptional immunity to electrical and acoustic "noise"
- 12 to 24V dc operation
- Bipolar outputs: one NPN (sinking) and one PNP (sourcing)
- ON/OFF presence detection or HIGH/LOW level control are switch-selectable
- Wide operating temperature range of -25° to +70°C; models available with temperature compensation
- Rugged design for use in demanding sensing environments; rated IEC IP67, NEMA 6P
- Choose models with integral 2 m (6.5') or 9 m (30') cable, or with Mini-style or Euro-style quick-disconnect fitting
- External enable/disable feature for remote gating control



Q45U Series Long-Range Proximity Mode Sensor Models

Models	Temperature Compensation*	Range	Cable**	Supply Voltage	Output Type	Response Time
Q45UBB63BC	Yes	250 mm - 3.0 m (9.8" - 118")	2 m (6.5')	12-24V dc	Bipolar NPN/PNP	Programmable for 40, 80, 320, or 1280 milliseconds
Q45UBB63BCQ			5-Pin Mini QD			
Q45UBB63BCQ6			5-Pin Euro QD			

*Models with Temperature Compensation:

An increase in air temperature shifts both sensing window limits closer to the sensor. Conversely, a decrease in air temperature shifts both limits further away from the sensor. The shift is approximately 3.5% of the limit distance for a 20°C change in temperature.

Temperature compensated models maintain the position of both sensing window limits to within 1% of each limit distance over the range of from 0° to +50°C, and to within 2.5% over the full operating range of from -25° to +70°C.

**NOTES:

- 9 m (30') cables are available by adding suffix "W/30" to the model number of any cabled sensor (e.g., **Q45UBB63BC W/30**)
- A model with a QD connector requires an optional mating cable, see page 8.

Q45U Long-Range Ultrasonic Sensors with Bipolar Discrete Outputs

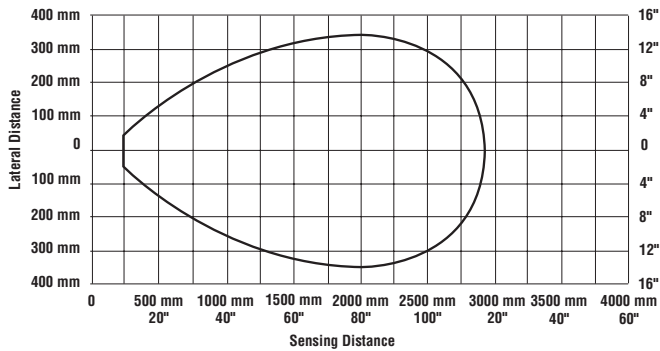
Q45U Series Long-Range Sensor Specifications

Proximity Mode Range	<p>Near limit: 250 mm (9.8") min Far limit: 3.0 m (118")</p> <p>Note: The far limit may be extended as far as 3.9 m for good acoustical targets (hard surfaces with area > 100 cm²)</p>
Supply Voltage and Current	12 to 24V dc (10% maximum ripple) at 100 mA, exclusive of load
Supply Protection Circuitry	Protected against reverse polarity and transient voltages
Output Configuration	<p>Bipolar: one current sourcing (PNP) and one current sinking (NPN) open-collector transistor; The following may be selected by a 4-position DIP switch located on top of the sensor, beneath a transparent o-ring sealed acrylic cover (see page 2):</p> <p>Switch 1: Output normally open/normally closed (pump in/pump out) Switch 2: High/Low level control mode or on/off presence sensing mode Switch 3 & 4: Response speed selection (digital filter)</p>
Output Rating	<p>150 mA maximum (each) Off-state leakage current: < 25 microamp at 24V dc On-state saturation voltage: < 1.5V at 10mA; < 2.0V at 150 mA</p>
Output Protection Circuitry	Protected against false pulse on power-up and continuous overload or short-circuit of outputs
Performance Specifications	<p>Repeatability: ±0.1% of measured distance (±0.50 mm min) Minimum Window Width: 25 mm (1.0") Hysteresis: 10 mm (0.4")</p>
Indicators	<p>Three status LEDs:</p> <p>Green ON steady = power to sensor is ON Green flashing = output is overloaded Yellow ON steady = outputs are conducting (RUN mode) programming status (SETUP mode) Red flashing = indicates relative strength of received echo</p> <p>5-segment moving dot LED indicates the position of the target within the sensing window</p>
Construction	Molded PBT thermoplastic polyester housing, o-ring sealed transparent acrylic top cover, and stainless steel hardware. Q45U sensors are designed to withstand 1200 psi washdown. The base of cabled models has a 1/2"-14NPS internal conduit thread
Environmental Rating	Leakproof design is rated IEC IP67; NEMA 6P
Connections	2 m (6.5') or 9 m (30') attached cable, or 5-pin Mini-style or 5-pin Euro-style quick disconnect fitting
Operating Conditions	<p>Temperature: -25° to +70°C (-13° to +158°F) Maximum relative humidity: 100%</p>
Vibration and Mechanical Shock	All models meet Mil. Std. 202F requirements. Method 201A (Vibration: 10 to 60Hz max., double amplitude 0.06", maximum acceleration 10G). Method 213B conditions H & I (Shock: 75G with unit operating; 100G for non-operation) Also meets IEC 947-5-2 requirements: 30G, 11 ms duration, half sine wave.
Hysteresis	<p>ON/OFF mode: 10 mm HIGH/LOW mode: 0 mm</p>
Application Notes	<p>Minimum target size: 50 mm x 50 mm aluminum plate at 3.0 m (118")</p> <p>Enable/Disable: Connect yellow wire to +5 to 24V dc to enable sensor and 0 to +2V dc to disable sensor. When the sensor is disabled, the last output state is held until the sensor is re-enabled. The wire must be held to the appropriate voltage for at least 40 ms for the sensor to enable or disable.</p>

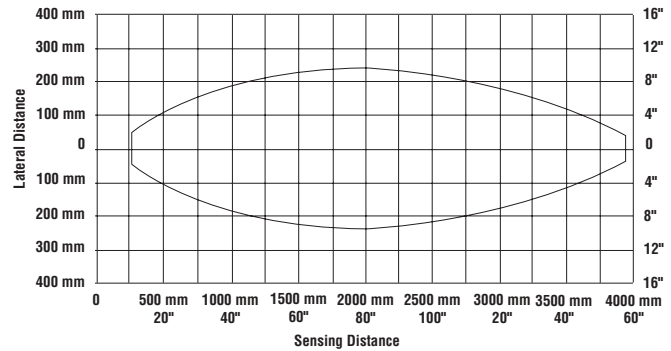
Q45U Long-Range Ultrasonic Sensors with Bipolar Discrete Outputs

Q45U Response Curves

**Q45U Effective Beam
with 2.5 cm Rod Target (Typical)**

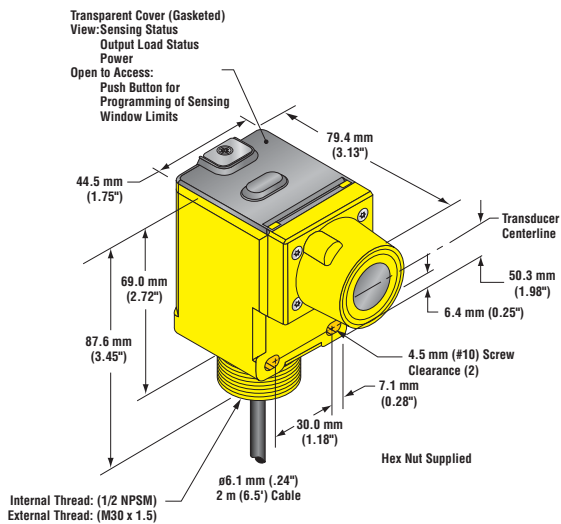


**Q45U Effective Beam
with 100 mm x 100 mm Plate Target (Typical)**

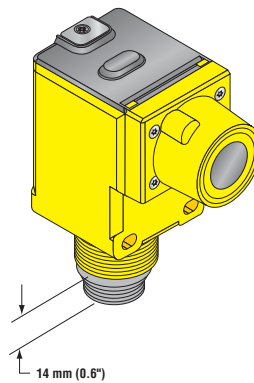


Q45U Series Dimensions

Q45U Sensor with Attached Cable



**Q45U Sensor
with 5-Pin Mini-Style QD
("Q" model suffix)**



**Q45U Sensor
with 5-Pin Euro-Style QD
("Q6" model suffix)**

