Q45UR Series

Remote Transducer Ultrasonic Sensors

- Q45 housing with an available plastic or a stainless steel 18 mm threaded barrel sensing head or an ultra-compact plastic Flat-Pak sensing head
- The Q45UR has sensing ranges up to 250 mm
- Resolution/repeatability +/- 0.2% of sensing distance
- Analog models feature a selectable positive or negative output slope
- Environmental rating is IEC IP65 and NEMA 4
- Push-button and remote TEACH-mode programming with an external switch, computer or controller for added security and convenience

Q45UR Discrete Output, 12-24 V DC

Sensor Range	Controller Connection	Controller Output	Kit Models	Kit Includes: Controller & Sensor		
50 to 250 mm	2 m 5-pin Mini QD 5-pin Euro QD	Bipolar NPN/PNP	Q45UR3BA63CK Q45UR3BA63CQK Q45UR3BA63CQ6K	Q45UR3BA63C Q45UR3BA63CQ Q45UR3BA63CQ6		**M18C2.0** Stainless Steel Barrel
50 to 250 mm	2 m 5-pin Mini QD 5-pin Euro QD	Bipolar NPN/PNP	Q45UR3BA63CKQ Q45UR3BA63CQKQ Q45UR3BA63CQ6KQ	Q45UR3BA63C Q45UR3BA63CQ Q45UR3BA63CQ6		**Q13C2.0** Flat-Pak
50 to 250 mm	2 m 5-pin Mini QD 5-pin Euro QD	Bipolar NPN/PNP	Q45UR3BA63CKS Q45UR3BA63CQKS Q45UR3BA63CQ6KS	Q45UR3BA63C Q45UR3BA63CQ Q45UR3BA63CQ6		**S18C2.0** Molded Barrel

Q45UR Analog Output, 15-24 V DC

Sensor Range	Controller Cable	Controller Output	Kit Models	Kit Includes: Controller & Sensor		
50 to 250 mm	2 m 5-pin Mini QD 5-pin Euro QD	Selectable 0 to 10 V dc or 4 to 20 mA	Q45UR3LIU64CK Q45UR3LIU64CQK Q45UR3LIU64CQ6K	Q45UR3LIU64C Q45UR3LIU64CQ Q45UR3LIU64CQ6		**M18C2.0** Stainless Steel Barrel
50 to 250 mm	2 m 5-pin Mini QD 5-pin Euro QD		Q45UR3LIU64CKQ Q45UR3LIU64CQKQ Q45UR3LIU64CQ6KQ	Q45UR3LIU64C Q45UR3LIU64CQ Q45UR3LIU64CQ6		**Q13C2.0** Flat-Pak
50 to 250 mm	2 m 5-pin Mini QD 5-pin Euro QD		Q45UR3LIU64CKS Q45UR3LIU64CQKS Q45UR3LIU64CQ6KS	Q45UR3LIU64C Q45UR3LIU64CQ Q45UR3LIU64CQ6		**S18C2.0** Molded Barrel

Connection options: A model with a QD requires a mating cordset.

For 9 m cable, add suffix **W/30** to the 2 m model number (example, **Q45UR3BA63CK W/30**).

5-Pin

Euro-Style with Shield
Straight connector models listed; for right-angle, add **RA** to the end of the model number (example, **MQDEC2-506RA**)

MQDEC2-506
2 m (6.5')
MQDEC2-515
5 m (15')
MQDEC2-530
9 m (30')

Additional cordset information is available See page 758

5-Pin

Mini-Style with Shield
Straight connector models only

MBCC2-506
2 m (6.5')
MBCC2-512
4 m (12')
MBCC2-530
9 m (30')

SMB30A

SMB30MM

SMB30SC

Additional bracket information is available See page 722

Q45UR High-Gain Controllers

Version	Model	
Discrete	63060	**Q45UR3BA63CQ6-63060**
Analog	63667	**Q45UR3LIU64CQ6-63667**

NOTE: Special High-Gain controllers are available for small object detection. Contact factory for more information.

Q45UR Remote Sensors Specifications

Supply Voltage and Current	**Discrete:** 12 to 24 V dc (10% max. ripple); 100 mA (exclusive of load) **Analog:** 15 to 24 V dc (10% max. ripple); 100 mA (exclusive of load)
Ultrasonic Frequency	400 kHz
Supply Protection Circuitry	Protected against reverse polarity and transient voltages
Output Protection Circuitry	Both outputs are protected against continuous overload and short circuit
Output Rating	**Discrete:** 150 mA max. (each output) **OFF-state leakage current:** less than 25 µA at 24 V dc **ON-state saturation voltage:** less than 1.5 V at 10 mA; **Analog:** **Voltage sourcing:** 0 to 10 V dc, 10 mA max. **Current sourcing:** 4 to 20 mA, 1 to 500 Ω impedance
Output Configuration	**Discrete: Bipolar:** One current sourcing (PNP) and one current sinking (NPN) open collector transistor **Analog:** One voltage sourcing and one current sourcing; one or the other output is enabled by internal programming switch #2
Performance Specifications	**Discrete: Response Speed:** 40 or 160 ms (switch selectable) **Repeatability*:** ±0.2% of measured distance **Temperature stability:** ±0.03% of the window limit positions per °C from 0 to 50 °C, (±0.05% per °C over remainder of operating temperature range) **Sensing window width:** 5 to 200 mm, when independent near and far limits are taught; 1, 2, 3, or 4 mm (switch selectable), when a sensing distance set point is taught **Hysteresis:** 0.5 mm **Ultrasonic beam angle:** ±3.5˚ **Analog: Response Speed:** 10 to 320 ms (2 to 64 cycles) selectable **Resolution*:** 0.2% of sensing distance at 320 ms response, 0.4% of sensing distance a 10 ms response **Linearity*:** 1% of full scale **Temperature stability:** ±0.03% of sensing distance per °C from 0 to 50 °C, (±0.05% per °C over remainder of operating temperature) **Ultrasonic beam angle:** ±3.5° * Repeatability and analog resolution and linearity are specified using a 50 x 50 mm aluminum plate at 22° C under fixed sensing conditions (Analog: using the 4 to 20 mA output @ 15 V dc)
Adjustments	**Discrete:** The following may be selected by a 4-position DIP switch **Switch 1:** Output normally open (output is energized when target is within sensing window limits), or normally closed (output is energized when target is outside sensing window limits) **Switches 2 & 3:** Sensing window size (1, 2, 3 or 4 mm) **Switch 4:** Response speed selection (40 or 160 milliseconds) **Analog:** Push-button TEACH-mode programming of window limits. The following may be selected by a 4-position DIP switch located on top of the controller, beneath a transparent o-ring sealed acrylic cover and beneath the black inner cover. **Switch 1:** Output slope: output value increases or decreases with distance **Switch 2:** Output mode: current output or voltage output **Switches 3 & 4:** Response to loss of echo **Response Speed Adjustment:** Single-turn potentiometer selects six response values from 10 to 320 milliseconds
Indicators	**Discrete: Three status LEDs:** **Green:** Power ON **Yellow:** Output are conducting (Yellow also indicates programming status during setup) **Red:** Relative strength of received echo 5-segment moving dot LED indicates the position of the target within the sensing window **Analog: Three status LEDs:** **Solid Green:** Power ON **Flashing Green:** current output fault (4-20 mA current path to ground is open) **Yellow:** Target is sensed within the window limits (Yellow LED also indicates programming status during setup mode) **Red:** Relative strength of received echo 5-segment moving dot LED indicates the position of the target within the sensing window (See data sheet for detailed information)
Construction	**Controller:** Molded thermoplastic polyester housing, o-ring sealed transparent acrylic top cover, and stainless steel hardware **Sensors: M18C2.0:** Stainless steel M18 threaded barrel housing and jam nuts, polyetherimide front cover, ceramic transducer, polyurethane rear cover **S18C2.0:** Thermoplastic polyester S18 threaded barrel housing and jam nuts, polyetherimide front cover, ceramic transducer, polyurethane rear cover **Q13C2.0:** Molded 30% glass reinforced thermoplastic polyester housing, ceramic transducer, fully epoxy-encapsulated
Environmental Rating	**Controller:** IEC IP67; NEMA 6P **Sensor:** IEC IP65; NEMA 4
Operating Conditions	**Controller and sensor:** -25 to +70 °C **Relative humidity:** 85% (non-condensing)
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 milliseconds duration, half sine wave.
Certifications	CE