Q25 AC Voltage Series Sensor Quick Start Guide

Features

Self-contained, AC-operated sensors

For complete technical information about this product, including installation instructions, application requirements and guidelines, technical specifications, and accessories, go to www.bannerengineering.com and search 121517.



WARNING:
- **Do not use this device for personnel protection**
- Using this device for personnel protection could result in serious injury or death.
- This device does not include the self-checking redundant circuitry necessary to allow its use in personnel safety applications. A device failure or malfunction can cause either an energized (on) or de-energized (off) output condition.

Models

Opposed mode sensors

Model	Output	Range	Connector
Q253E	N/A	20 m (65.6 ft)	2 m (6.5 ft) cable
Q253EQ1	N/A		4-pin 1/2 in-20UNF (1/2-in Dual Key) male quick disconnect (QD)
Q25AW3R	LO		2 m (6.5 ft) cable
Q25RW3R	DO		2 m (6.5 ft) cable

Polarized retroreflective mode sensors

Model	Output	Range	Connector
Q25AW3LP	LO	2 m (6.6 ft)	2 m (6.5 ft) cable
Q25AW3LPQ1	LO		4-pin 1/2 in-20UNF (1/2-in Dual Key) male quick disconnect (QD)
Q25RW3LP	DO		2 m (6.5 ft) cable
Q25RW3LPQ1	DO		4-pin 1/2 in-20UNF (1/2-in Dual Key) male quick disconnect (QD)

Fixed-field mode sensors

Model	Output	Range	Connector
Q25AW3FF25Q1	LO	25 mm (0.9 in) cutoff	4-pin 1/2 in-20UNF (1/2-in Dual Key) male quick disconnect (QD)
Q25AW3FF50	LO	50 mm (1.9 in) cutoff	2 m (6.5 ft) cable
Q25AW3FF50Q1	LO		4-pin 1/2 in-20UNF (1/2-in Dual Key) male quick disconnect (QD)
Q25AW3FF100Q1	LO	100 mm (3.9 in) cutoff	4-pin 1/2 in-20UNF (1/2-in Dual Key) male quick disconnect (QD)
Q25RW3FF100	DO		2 m (6.5 ft) cable
Q25RW3FF100Q1	DO		4-pin 1/2 in-20UNF (1/2-in Dual Key) male quick disconnect (QD)

A model with a QD connector requires a mating cable.

In light operate (LO) mode, the output is ON when the target returns the same or more light to the sensor and OFF when the sensor detects less light than the configured/taught target. In **opposed and retroreflective sensing modes**, light operate is active when the beam is unblocked. In **diffuse, fixed field, and adjustable field sensor modes**, light operate is active when the target is present.

In dark operate (DO) mode, the output is ON when the target returns less light to the sensor than the configured target and OFF when the sensor detects more light than the configured/taught target. In **opposed and retroreflective sensing modes**, dark operate is active when the beam is blocked. In **diffuse, fixed field, and adjustable field sensor modes**, dark operate is active when the target is absent.

Original Instructions
13-May-26

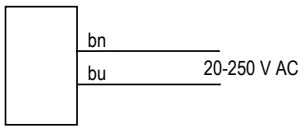
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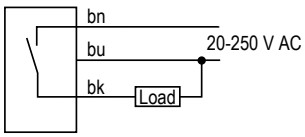
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Wiring Diagrams

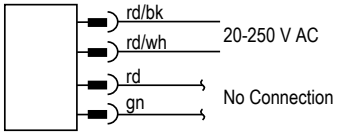
Cabled emitters



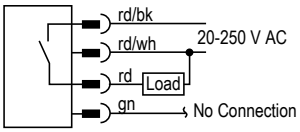
All other cabled models



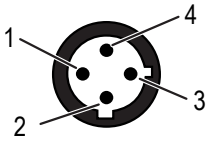
4-pin 1/2 in-20UNF (1/2-in Dual Key) quick disconnect emitters



All other 4-pin 1/2 in-20UNF (1/2-in Dual Key) quick disconnect models



4-pin 1/2 in-20UNF (1/2-in Dual Key) male pinout



Key:

1 - Red/black
2 - Red/white
3 - Red
4 - Green

Specifications

Supply Voltage and Current

20 V to 250 V AC (50 Hz/60 Hz)

Average current: 20 mA

Peak current:

200 mA at 20 V AC
500 mA at 120 V AC
750 mA at 250 V AC

Sensing LED Beam

Opposed mode: Infrared, 950 nm

Polarized retroreflective mode: Visible red, 680 nm

Fixed-field mode: Infrared, 880 nm

Supply Protection Circuitry

Protected against transient voltages

Output Configuration

SPST solid-state AC switch; three-wire connection; light operate or dark operate, depending on model

Light Operate: Output conducts when the sensor sees its own (or the emitter's) modulated light

Dark Operate: Output conducts when the sensor sees dark

Output Response

Time Opposed mode: 16 ms ON, 8 ms OFF

Other models: 16 ms ON and OFF

NOTE: 100 ms delay on power-up; outputs do not conduct during this time

Output Rating

300 mA maximum (continuous)

Fixed-Field models: derate 5 mA/°C above +50° C (+122° F)

Inrush capability: 1 amp for 20 ms, non-repetitive

OFF-state leakage current: < 100 µA

ON-state saturation voltage: 3 V at 300 mA AC; 2 V at 15 mA AC

Output Protection Circuitry

Protected against false pulse on power-up

Repeatability

Opposed mode: 2 ms

Other models: 4 ms

Repeatability and response are independent of signal strength

Indicators

Two LEDs (Green and Amber)

Green ON steady: Power to the sensor is ON

Amber ON steady: The sensor sees light

Amber flashing: Excess gain marginal (1 to 1.5 times) in light condition

Construction

PBT polyester housing; polycarbonate (opposed-mode) or acrylic lens

Environmental Rating

Leakproof design rated NEMA 6P, DIN 40050 (IP69K per ISO 20653)

Connections

2 m (6.5 ft) attached cable or 4-pin 1/2 in-20UNF (1/2-in Dual Key) quick-disconnect fitting, depending on the model ordered

Operating Conditions

Temperature: –40 °C to +70 °C (–40 °F to +158 °F)

Humidity: 90% at +50 °C maximum relative humidity (non-condensing)

Vibration and Mechanical Shock

All models meet MIL-STD-202F, Method 201A (Vibration: 10 Hz to 60 Hz maximum, 0.06 inch (1.52 mm) double amplitude, 10G acceleration) requirements. Method 213B conditions H&I. (Shock: 75G with device operating; 100G for non-operation)

Certifications

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Park Lane, Culliganlaan 2F bus 3
1831 Diegem, BELGIUM

Turck Banner LTD Blenheim House
Blenheim Court
Wickford, Essex SS11 8YT
GREAT BRITAIN

Required Overcurrent Protection

WARNING: Electrical connections must be made by qualified personnel in accordance with local and national electrical codes and regulations.

Overcurrent protection is required to be provided by end product application per the supplied table.

Overcurrent protection may be provided with external fusing or via Current Limiting, Class 2 Power Supply.

Supply wiring leads < 24 AWG shall not be spliced.

For additional product support, go to www.bannerengineering.com.

Supply Wiring (AWG)	Required Overcurrent Protection (A)	Supply Wiring (AWG)	Required Overcurrent Protection (A)
20	5.0	26	1.0
22	3.0	28	0.8
24	2.0	30	0.5

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