

Q45U Ultrasonic Sensors with Analog Outputs (Short Range)



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Piezoelectric analog proximity mode sensors with push-button or remote programming of sensing window limits



- Ultrasonic proximity detection from 100 to 1400 mm (4 to 55 inches)
- Push-button TEACH-mode programming of sensing window limits
- Digital filtering for exceptional immunity to electrical and acoustic "noise"
- Selectable 0 to 10V dc voltage sourcing or 4 to 20 mA current sourcing analog outputs
- Selectable output slope: positive or negative with increasing target distance
- Wide operating temperature range of -25 to +70 °C; all models include temperature compensation
- Rugged design for use in demanding sensing environments; rated IEC IP67, NEMA 6P
- Choose models with integral 2 m (6.5 ft) or 9 m (30 ft) cable, or with Mini-style or Euro-style quick-disconnect fitting
- Input for remote TEACH-mode programming of window limits

Models	Temperature Compensation	Cable	Supply Voltage	Output Type	Response Time
Q45ULIU64ACR	Yes	2 m (6.5 ft)	15–24V dc	Selectable 0–10V dc or 4–20 mA sourcing	Adjustable from 40 milliseconds to 1.28 seconds
Q45ULIU64ACRQ		5-Pin Mini-style QD			
Q45ULIU64ACRQ6		5-Pin Euro-style QD			

Standard 2 m (6.5 ft) cable models are listed. To order the 9 m (30 ft) cable model, add suffix "W/30" to the cabled model number. For example, Q45ULIU64ACR W/30. Models with a QD connector require a mating cable.



WARNING: Not To Be Used for Personnel Protection

Never use this device as a sensing device for personnel protection. Doing so could lead to serious injury or death. This device does not include the self-checking redundant circuitry necessary to allow its use in personnel safety applications. A sensor failure or malfunction can cause either an energized or de-energized sensor output condition.

Temperature Compensation

All models listed above feature 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 0 to +50 °C range, and to within 2.5% over the full operating range of from -25 to +70 °C.

Setting the Near and Far Sensing Limits

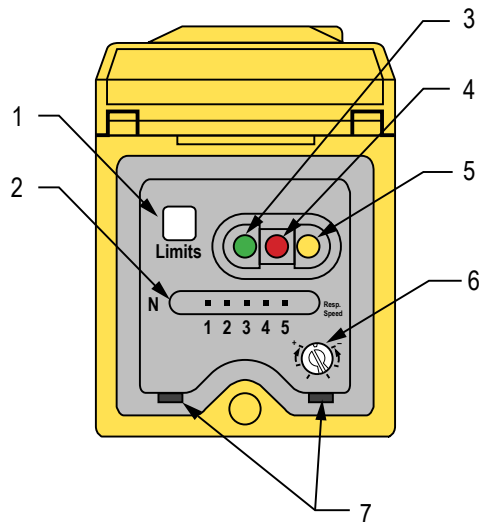
The Q45U features a single push button for programming of sensing window near and far limits. For more information, refer to [Programming the Window Limits](#) on page 4.

Status Indicators

Status indicator LEDs are visible through the transparent, o-ring sealed acrylic top cover. Indicator function in the Run mode is, as follows:

- The green LED is solid when power is applied to the sensor and flashes to indicate a current output fault.
- The red LED is solid when an echo is received and flashes at a rate proportional to echo strength.
- The amber LED is solid when the target is within the operating window limits.

The 5-segment moving dot LED indicator displays the relative position of the target within the programmed sensing window. LED #1 flashes when the target is closer than the near limit. LED #5 flashes when the target is beyond the far limit.



- 1 - Push button for programming sensing window limits
- 2 - 5-segment target position indicator (N = near)
- 3 - Green POWER indicator LED
- 4 - Red SIGNAL indicator LED
- 5 - Amber OUTPUT indicator LED
- 6 - Response adjustment
- 7 - Slots for removing inner cover

Figure 1. Analog Q45U Features

Output Response Settings



Important: Remove power before making any internal adjustments.

Using the two slots shown in [Figure 1](#) on page 2, a small flat-blade screwdriver may be used to lift up and remove the black inner cover to expose the 4-position DIP switch. Use these DIP switches to program the output slope, output mode, loss of echo, and min./max. output value default.

DIP Switch	Function	Settings	
1	Output slope	On = Output value increases with distance Off* = Output value decreases with distance	
2	Output mode	On = Current output enabled Off* = Voltage output enabled	
3	Loss of echo	On = Min - Max Mode Off* = Hold Mode	
4	Min-Max	On* = Default to maximum output value Off = Default to minimum output value	

Figure 2. DIP Switches for Q45U Sensors

* Factory default setting.