

Sure Cross® Wireless Q45 Sensor - Button/ Light



Datasheet

Sure Cross® Wireless Q45 Sensors combine the best of Banner's flexible Q45 sensor family with its reliable, field-proven, Sure Cross wireless architecture to solve new classes of applications limited only by the user's imagination. Containing a variety of sensor models, a radio, and internal battery supply, this product line is truly plug and play.



The Wireless Q45 Sensor with Button and Light as a wireless node with independently controlled push button input and a two-color LED indicator light. The push button can be configured with DIP switches for either toggle or momentary operation; the red and green LED indicator lights outputs can be configured for solid or flashing operation.

Available Models

- DX80N2Q45BL-RG



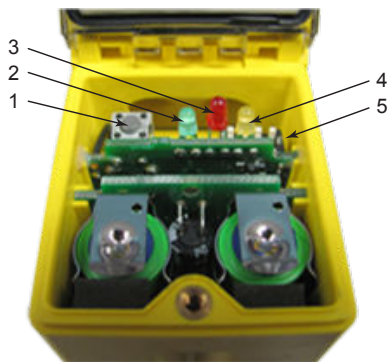
WARNING: Not To Be Used for Personnel Protection

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.

Storage Mode for the Wireless Q45 Sensors

While in storage mode, the Wireless Q45 Sensor's radio does not operate. All Wireless Q45 Sensors ship from the factory in storage mode to conserve the battery. To wake the device, press and hold the button for five seconds. To put any Wireless Q45 Sensor into storage mode, press and hold the button for five seconds. The Wireless Q45 Sensor is in storage mode when the LEDs stop blinking.

Button, LEDs, and DIP Switches (Button with Light Model)



- 1 Button
- 2 Green LED (flashing) indicates a good radio link with the Gateway.
- 3 Red LED (flashing) indicates a radio link error with the Gateway.
- 4 Amber LED indicates when input 1 is active. The LED is active at power up and disabled after 15 minutes to conserve power. To enable the LED for another 15 minutes, press button once. To disable the LED, press the button 5 times.
- 5 DIP Switches

DIP Switch Settings

After making any changes to any DIP switch position, reboot the Wireless Q45 Sensor by triple-clicking the button, waiting a second, then double-clicking the button. You may also reboot the device by removing the battery pack, then re-installing it.

As shown in the image above, the DIP switches are in the OFF position. To turn a DIP switch on, push the switch toward the battery pack. DIP switches one through four are numbered from left to right as shown above.



Description	DIP Switches			
	1	2	3	4
Reserved (keep in OFF position)	OFF *			
Button mode: toggle		OFF *		
Button mode: momentary		ON		
Reserved (keep in OFF position)			OFF *	
Light mode: flash (recommended to conserve the battery) ¹				OFF *
Light mode: solid				ON

* Default position (as shown above)

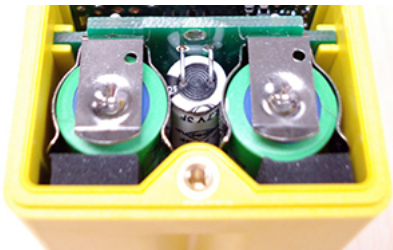
Modbus Register Table

I/O #	Modbus Holding Register		I/O Type	I/O Range		Holding Register Representation	
	Gateway	Any Node		Min. Value	Max. Value	Min. (Dec.)	Max. (Dec.)
1	1	1 + (Node# × 16)	Discrete IN 1	0	1	0	1
2	2	2 + (Node# × 16)	NOT Discrete IN 1	0	1	0	1
		...					
7	7	7 + (Node# × 16)	Reserved				
8	8	8 + (Node# × 16)	Device Message				
9	9	9 + (Node# × 16)	Discrete OUT 1 (red light)	0	1	0	1
10	10	10 + (Node# × 16)	Discrete OUT 2 (green light)	0	1	0	1
15	15	15 + (Node# × 16)	Control Message				
16	16	16 + (Node# × 16)	Reserved				

Replacing the Batteries

To replace the lithium "AA" cell battery, follow these steps.

As with all batteries, these are a fire, explosion, and severe burn hazard. Do not burn or expose them to high temperatures. Do not recharge, crush, disassemble, or expose the contents to water. Properly dispose of used batteries according to local regulations by taking it to a hazardous waste collection site, an e-waste disposal center, or other facility qualified to accept lithium batteries.



1. Lift the plastic cover.
2. Slide the board containing the batteries out of the Q45 housing.
3. Remove the discharged batteries and replace with new batteries. Use two 3.6 V AA lithium batteries, such as Xeno's XL-60F or equivalent.
4. Verify the battery's positive and negative terminals align to the positive and negative terminals of the battery holder mounted within the case. Caution: There is a risk of explosion if the battery is replaced incorrectly.
5. Slide the board containing the new batteries back into the Q45 housing.

Replacement battery model number: BWA-BATT-006. For pricing and availability, contact Banner Engineering.

Bind the Q45s to the Gateway and Assign the Node Address

Before beginning the binding procedure, apply power to all the devices.

¹ The light consumes most of the sensor's power. If the light remains off most of the time, the batteries will last much longer.

1. Enter binding mode on the Gateway.
 - For single-button models, triple-click the button.
 - For two-button models, triple-click button 2.

On the board modules, the green and red LED flashes. On the housed Gateway models, both LEDs flash red.
2. Assign the Q45 a Node address using the Gateway's rotary dials. Use the left rotary dial for the left digit and the right rotary dial for the right digit. For example, to assign your Q45 to Node 01, set the left dial to 0 and the right dial to 1. Valid Node addresses are 01 through 47.
3. Loosen the clamp plate on the top of the Wireless Q45 Sensor and lift the cover.
4. Enter binding mode on the Wireless Q45 Sensor by triple-clicking the button. For the opposed mode sensor, the button is on the receiver.

The red and green LEDs flash alternately and the sensor searches for a Gateway in binding mode. After the Q45 is bound, the LEDs stay solid momentarily, then they flash together four times. The Q45 exits binding mode.
5. Label the sensor with the Q45's Node address number and place the sticker on the Wireless Q45 Sensor.
6. Repeat steps 2 through 5 for as many Wireless Q45 Sensors as are needed for your network.
7. After binding all Wireless Q45 Sensors, exit binding mode on the Gateway.
 - For single-button models, double-click the button.
 - For two-button models, double-click button 2.

For Gateways with LCDs, after binding your Wireless Q45 Sensors to the Gateway, make note of the binding code displayed under the Gateway's *DVCFG menu, XADR submenu on the LCD. Knowing the binding code prevents having to re-bind all Q45s if your Gateway is ever replaced.

Application Example: Call for Parts

A Wireless Q45 (Button with Light model) can be paired with a B2Q Gateway model to be used as a call for parts hardware solution. The light on the Wireless Q45 Sensor is linked to a light on the B2Q Gateway to indicate when a part is needed. Pushing the button on the Q45 or on the Gateway changes the color of both lights to indicate when the part was picked.

The following parts were used:

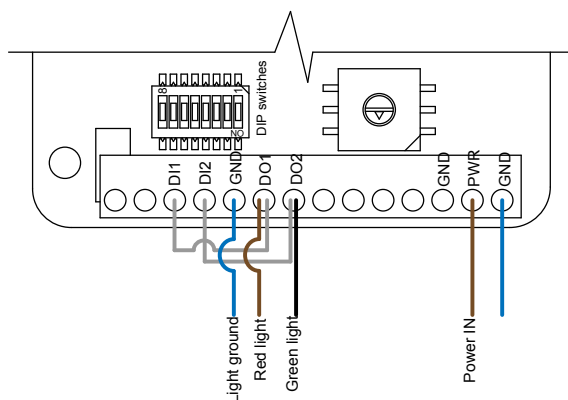
- Gateway DX80G2M6-B2Q
- Wireless Q45 (Button with Light) model DX80N2Q45BL-RG-L bound to the Gateway as Node 01
- Light model TL50GRQ
- Cordset model MQDC-406

On the Gateway

To map the I/O to the Wireless Q45, use the following DIP switch settings: DIP switch 6 is ON, switch 7 is OFF, and switch 8 is OFF. This setting maps the inputs on the Q45 to outputs on the Gateway and maps inputs on the Gateway to outputs on the Q45.

Install two jumper wires: one between DI1 and DO1 and one between DI2 and DO2. This maps the Gateway's outputs to the Gateway's inputs, which are then mapped back to the Wireless Q45 Sensor's output 1 (red light) and output 2 (green light).

Connect the tower light wires to the Gateway:



- Connect the red tower light (brown) wire to the Gateway's DO1 terminal.
- Connect the green tower light (black) wire to the Gateway's DO2 terminal.
- Connect the tower light's ground (blue) wire to the Gateway's GND terminal.

On the Wireless Q45 Sensor

To configure the sensor for this call for parts application, use the default DIP switch settings (all set to the OFF position). Verify the Wireless Q45 is set to be Node 01.

Specifications

The following specifications refer to both the radio and the wireless sensor.

Radio

Range: 2.4 GHz, 65 mW (Internal antenna): Up to 1000 m (3280 ft) with line of sight²

Transmit Power: 2.4 GHz: 65 mW EIRP

Minimum Separation Distance

2.4 GHz, 65 mW: 0.3 m (1 ft)

2.4 GHz Compliance

FCC ID UE300DX80-2400 - This device complies with FCC Part 15,

Subpart C, 15.247

ETSI EN 300 328 V1.8.1 (2012-06)

IC: 7044A-DX8024

Spread Spectrum Technology

FHSS (Frequency Hopping Spread Spectrum)

Adjustments

Multi-turn sensitivity control (allows precise sensitivity setting - turn clockwise to increase gain.

Construction

Molded reinforced thermoplastic polyester housing, oring-sealed transparent Lexan® cover, molded acrylic lenses, and stainless steel hardware. Q45s are designed to withstand 1200 psi washdown.

Indicators

Red and green LEDs (radio function); amber LED indicates when input 1 is active

Typical Battery Life

Up to 2 years, typical

A typical battery life assumes an average of 10 seconds between sensor changes of state and the default 62.5 millisecond sample rate. Battery life is reduced to 1 year with an average of 1 second between changes of state.

Battery life with light continuously flashing: 3 months

Battery life with light continuously solid: 2 weeks

Button Input

Sample Rate: 62.5 milliseconds

Report Rate: On Change of State

ON Condition: Button pressed

OFF Condition: Button not pressed

Default Sensing Interval

62.5 milliseconds

Report Rate

On Change of State

Environmental Rating

NEMA 6P, IEC IP67

Operating Conditions

-40 °C to 70 °C (-40 °F to 158 °F); 90% relative humidity at 50 °C (non-condensing)

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² Radio range significantly decreases without line of sight. Always verify your wireless network's range by running a site survey.