

Sure Cross® Wireless Q45 Sensor - Dual Namur



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 Dual Namur model supports two Namur inputs.

Although this model supports two inputs, the default Gateway I/O mapping configuration of the Banner Q45 wireless system supports one input. To map the second input on the Q45, use the Gateway's DIP switches to map the I/O. See the Gateway's datasheet for details.

Available Models

- DX80N2Q45RD2



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

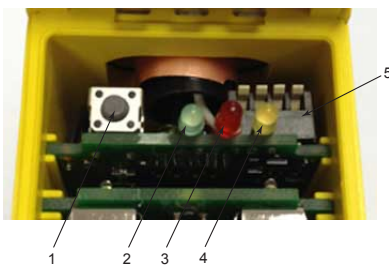
While in storage mode, the Wireless Q45 Sensor's radio does not operate. All Wireless Q45 Sensors ship from the factory in storage mode to conserve the battery. To wake the device, press and hold the button for five seconds. To put any Wireless Q45 Sensor into storage mode, press and hold the button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

Test Mode

The Wireless Q45 Sensor enters and remains in test mode for 15 minutes after the button is pushed, after the Wireless Q45 Sensor exits binding mode, or after the Q45 is powered up (battery replaced).

During test mode, the Q45's amber LED lights up when input 1 is active. After 15 minutes, the Wireless Q45 Sensor automatically exits test mode and begins normal operation. After the device begins normal operation, the amber sensor state LED is inactive. To exit test mode earlier, click the button five times.

Button, LEDs, and DIP Switches



- 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 Alignment or Test Mode: the amber LED indicates sensor function (optical sensor models) or when input 1 is active (dual dry contact model). The amber LED is not used during normal operation.
- 5 DIP Switches



DIP Switches

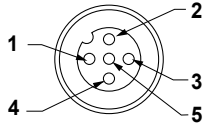
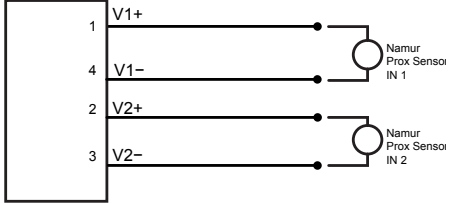
After making any changes to any DIP switch position, reboot the Wireless Q45 Sensor by triple-clicking the button, waiting a second, then double-clicking the button. You may also reboot the device by removing the battery pack, then re-installing it.

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	OFF *			
5.5 V sensor voltage		OFF *		
8.2 V sensor voltage		ON		
Reserved			OFF *	OFF *

This model is designed to work with NAMUR two position valve sensors. It has been tested with Turck's Ni4-DSV35RC-2Y1X2 and Ni4-DS20-2Y1X2-H1140 sensors. The sensor is sampled every two seconds. Use cable MQDEC-406SS (male to female cable) to connect the Namur sensors to the Wireless Q45 Sensor.

Wiring

5-pin M12/Euro-style Female Connection	Pin	Wire Color	Wireless Q45 Sensor	Wiring for Namur Sensors
	1	Brown	V ₁ +	
	2	White	V ₂ +	
	3	Blue	V ₂ -	
	4	Black	V ₁ -	
	5	Gray	-	

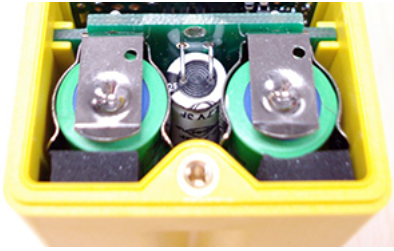
Modbus Register Table

I/O #	Modbus Holding Register (4xxxx)		I/O Type	I/O Range Values		Holding Register Representation (Dec.)	
	Gateway	Any Node		Min.	Max.	Min.	Max.
1	1	1 + (Node# × 16)	Namur IN 1	0	1	0	1
2	2	2 + (Node# × 16)	Namur IN 2	0	1	0	1
		...					
7	7	7 + (Node# × 16)	Reserved				
8	8	8 + (Node# × 16)	Device Message				
		...					
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. 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.

Specifications

Radio	Typical Battery Life
Range: 2.4 GHz, 65 mW (Internal antenna): Up to 1000 m (3280 ft) with line of sight ¹	Up to 2 years, typical
Transmit Power: 2.4 GHz: 65 mW EIRP	Inputs
Minimum Separation Distance	Two NAMUR
2.4 GHz, 65 mW: 0.3 m (1 ft)	Default Sample Rate
2.4 GHz Compliance	2 seconds
FCC ID UE300DX80-2400 - This device complies with FCC Part 15, Subpart C, 15.247	Report Rate
ETSI EN 300 328 V1.8.1 (2012-06)	On Change of State
IC: 7044A-DX8024	Warm-up Time
Spread Spectrum Technology	5 milliseconds
FHSS (Frequency Hopping Spread Spectrum)	

¹ Radio range significantly decreases without line of sight. Always verify your wireless network's range by running a site survey.

Indicators

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

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.

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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