



SureCross™ DX80 EZ-LIGHT™ Node with Integrated Battery

Node with an integrated battery for the EZ-LIGHT family



Features

The SureCross™ DX80 is a radio frequency network system built around a Gateway and one or more Nodes.

- Wireless industrial I/O device specifically designed to work with Banner's low-power EZ-LIGHT devices
- Lithium primary battery integrated into the DX80 base
- Frequency Hopping Spread Spectrum (FHSS) technology and Time Division Multiple Access (TDMA) control architecture combine to ensure reliable data delivery within the unlicensed Industrial, Scientific, and Medical (ISM) bands
- Transceivers provide two-way communication between the Gateway and Node, including fully acknowledged data transmission
- Lost RF links are detected and relevant outputs set to user-defined conditions
- Internal or external antenna

For additional information and a complete list of accessories, please refer to Banner Engineering's website, www.bannerengineering.com/surecross.

Models

Model	FlexPower™	Frequency	Antenna	I/O
DX80N9X1S1K3	3.6 to 5.5V dc low power option	900 MHz ISM Band	External	Discrete Inputs: One Sinking or Sourcing (Selectable) Discrete Outputs: Three NMOS Sinking
DX80N9X1W1K3			Internal	
DX80N2X1S1K3		2.4 GHz ISM Band	External	
DX80N2X1W1K3			Internal	

⚠ WARNING . . . Not To Be Used for Personnel Protection

Never use these products as sensing devices for personnel protection. Doing so could lead to serious injury or death.

These devices do NOT include the self-checking redundant circuitry necessary to allow their use in personnel safety applications. A device failure or malfunction can cause either an energized or de-energized output condition. Consult your current Banner Safety Products catalog for safety products that meet OSHA, ANSI, and IEC standards for personnel protection.



SureCross™ DX80 Integrated Battery Node for EZ-LIGHT™

Hookup Diagrams

Modbus Register Block

I/O Point*	Gateway Modbus Holding Register	Node Modbus Register	DX80 Device I/O (EZ-LIGHT K50LFGRY1Q)	DX80 Device I/O (EZ-LIGHT K50FGYPB1Q)
1	1	1 + (Node# • 16)		Push Button
2	2	2 + (Node# • 16)		
3	3	3 + (Node# • 16)		
4	4	4 + (Node# • 16)		
5	5	5 + (Node# • 16)		
6	6	6 + (Node# • 16)		
7	7	7 + (Node# • 16)	Reserved	
8	8	8 + (Node# • 16)	Device Message	
9	9	9 + (Node# • 16)	Red Flashing Light	Green Flashing Light
10	10	10 + (Node# • 16)	Yellow Flashing Light	
11	11	11 + (Node# • 16)	Green Flashing Light	
12	12	12 + (Node# • 16)		
13	13	13 + (Node# • 16)		
14	14	14 + (Node# • 16)		
15	15	15 + (Node# • 16)	Control Message	
16	16	16 + (Node# • 16)	Reserved	

* These are the I/O points as displayed on the device LCD.

8-pin M12 Euro Hookup

Wire Color	Function
1 White	No function (K50LF, without push button) NPN Input (K50F, with push button)
2 Brown	3.6 to 5.5V dc
3 Green	NPN Output actuates the flashing green light
4 Yellow	NPN Output actuates the flashing amber light
5 Gray	Serial communications
6 Pink	NPN Output actuates the flashing red light (K50LF, without push button) NPN Output actuates the flashing green light (K50F, with push button)
7 Blue	dc common (GND)
8 Red	-



For additional information, including installation and setup, weatherproofing, device menu maps, troubleshooting, and a list of accessories, please refer to the DX80 Wireless Network product manual, Banner p/n 132607.

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Device Configuration

Device Settings	Switches							
	1	2	3	4	5	6	7	8
Rotary Switch Address Mode	OFF*							
DX80 Extended Address Mode	ON							
Factory Default Configuration		OFF*						
Enable DIP Switch Configuration		ON						
Disable External Configuration			OFF*					
Allow External Configuration			ON					
LED Current Level (Brightness) 1				OFF*	OFF*			
LED Current Level (Brightness) 2				OFF	ON			
LED Current Level (Brightness) 3				ON	OFF			
LED Current Level (Brightness) 4				ON	ON			
Reserved						OFF*	OFF*	OFF*
1/16 LED Duty Cycle						OFF	OFF	ON
1/8 LED Duty Cycle						OFF	ON	OFF
3/16 LED Duty Cycle						OFF	ON	ON
1/4 LED Duty Cycle						ON	OFF	OFF
3/8 LED Duty Cycle						ON	OFF	ON
1/2 LED Duty Cycle						ON	ON	OFF
Continuous						ON	ON	ON

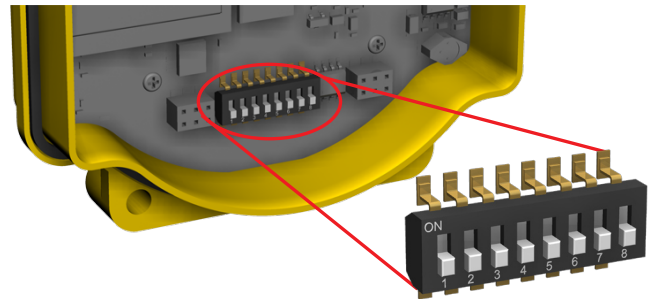
* Default configuration

Address Mode

In Rotary Switch address mode, the left rotary dial establishes the network ID and the right rotary dial sets the device ID. The wireless network is restricted to a maximum of 16 devices.

Extended addressing mode allows for specific Node to Gateway binding and allows network expansion for more than 16 devices in a wireless network. For most users, this switch is OFF.

For more information on extended address mode, refer to the SureCross™ Wireless I/O Network product manual.



Configuration

The factory default configurations are outlined in the device data sheet. Turning DIP switch 2 to the ON position enables the DIP switches 3 through 8. Use DIP switch 3 to enable or disable configuration from external sources, including host systems and special Gateways.

LED Current Level

Selecting the current levels 1 through 4 control the brightness of the K50 light. Level 1 is the dimmest setting, typically used for indoor applications or to extend battery life. Level 4 is the brightest setting, typically used for outdoor applications.

Duty Cycle

The duty cycle settings refer to how long the light is on during each second duty cycle. For example, selecting 1/16 LED Duty Cycle turns the K50 EZ-LIGHT ON for 1/16th of each second and OFF for the remaining 15/16th of each second.

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Specifications

Many of the DX80 parameters are configurable. The values in the tables represent factory defaults unless otherwise noted.

Radio	900 MHz	2.4 GHz
Range, with standard 2 dB antenna*	300 meters (1000 ft)	300 meters (1000 ft)
Frequency	902 to 928 MHz ISM band	2.4 to 2.4835 GHz ISM Band
Transmit Power	21 dBm Conducted	18 dBm Conducted, ≤ 20 dBm EIRP
Spread Spectrum Technology	FHSS (Frequency Hopping Spread Spectrum)	FHSS (Frequency Hopping Spread Spectrum)
Link Timeout	Defined by Gateway	Defined by Gateway



* The range depends on the environment and line of sight.

General	
Power	3.6V dc from an internal battery*
Mounting	#10 or M5 (M5 hardware included)
M5 Fasteners Max. Tightening Torque	0.56 N•m (5 in•lbf)
Case Material	Polycarbonate
Weight	
Indicators	Two LED, bi-color
Switches	Two Push Buttons
Display	Six Character LCD
Inputs	
Discrete Inputs	One (Sinking, Sourcing), DIP Switch Selectable
Discrete Input Rating	3 mA max current at 30V dc
Discrete Input Sample Rate	62.5 milliseconds
Discrete Input Report Rate	On Change of State
Discrete Input ON Condition (Sourcing)	Greater than 8V
Discrete Input OFF Condition (Sourcing)	Less than 5V
Discrete Input ON Condition (Sinking)	Less than 0.7V
Discrete Input OFF Condition (Sinking)	Greater than 2V or Open
Outputs	
Discrete Outputs	Three NMOS Sinking
Discrete Output Rating	Less than 10 mA max current at 30V, ON-State Saturation: Less than 0.7V at 20 mA
Discrete Output Update Rate	Up to 1 per second
Discrete Output ON Condition	Less than 0.7V
Discrete Output OFF Condition	Open
Discrete Output State Following Timeout	De-energized (OFF)

* Replacement battery model number: BWA-BATT-001.

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Specifications, continued

Environmental	
Environmental Rating*	IEC IP67; NEMA 6
Operating Temperature**	-40 to +85° C (Electronics); -20 to +80° C (LCD)
Operating Humidity	95% max. relative (non-condensing)
Radiated Immunity	10 V/m, 80-2700 MHz (EN61000-6-2)
Shock and Vibration	IEC 68-2-6 and IEC 68-2-7 Shock: 30g, 11 millisecond half sine wave, 18 shocks Vibration: 0.5 mm p-p, 10 to 60 Hz
Compliance	
900 MHz Models	FCC ID TGUDX80: This device complies with FCC Part 15, Subpart C, 15.247 IC: 7044A-DX8009 
2.4 GHz Models	FCC ID UE300DX80-2400: This device complies with FCC Part 15, Subpart C, 15.247 ETSI/EN: In accordance with EN 300 328: V1.7.1 (2006-05) IC: 7044A-DX8024 

* Please refer to the SureCross™ DX80 Wireless Network product manual, Banner p/n 132607, for installation and waterproofing instructions.

** Operating the devices at the maximum operating conditions for extended periods can shorten the life of the device.

Included with Device	Model	Qty	Item
Mounting Hardware Kit	BWA-HW-001	4	Screw, M5-0.8 x 25mm, SS
		4	Screw, M5-0.8 x 16mm, SS
		4	Hex nut, M5-0.8mm, SS
		4	Bolt, #8-32 x 3/4", SS
PTFE Tape	HWA-HW-003	1	PTFE tape
Antenna*	BWA-902-C, or BWA-202-C	1	Antenna, 902-928 MHz, 2 dBd Omni, Rubber Swivel RSMA Male, or Antenna, 2.4 GHz, 2 dBd Omni, Rubber Swivel RSMA Male
SureCross Literature CD	79685	1	SureCross Literature CD

* Internal antenna devices do not ship with this antenna

It is Banner Engineering's intent to fully comply with all national and regional regulations regarding radio frequency emissions. Customers who want to re-export this product to a country other than that to which it was sold must ensure that the device is approved in the destination country. A list of approved countries appears in the SureCross DX80 Wireless Product Manual, in the Agency Certifications section. Consult with Banner Engineering if the destination country is not on this list.

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Notes

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The manufacturer does not take responsibility for the violation of any warning listed in this document.



CAUTION . . .

Make no modifications to this product.

Any modifications to this product not expressly approved by Banner Engineering could void the user's authority to operate the product. Contact the Factory for more information.

Always use lightning arrestors/surge protection with all remote antenna systems to avoid invalidating the Banner Engineering Corp. warranty. No surge protector can absorb all lightning strikes. Do not touch the SureCross device or any equipment connected to the SureCross device during a thunderstorm.

WARRANTY: Banner Engineering Corp. warrants its products to be free from defects for one year. Banner Engineering Corp. will repair or replace, free of charge, any product of its manufacture found to be defective at the time it is returned to the factory during the warranty period. This warranty does not cover damage or liability for the improper application of Banner products. This warranty is in lieu of any other warranty either expressed or implied.

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