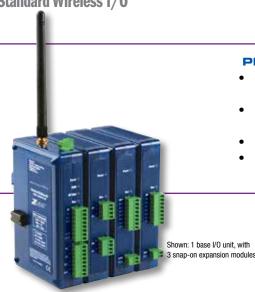# B+B SMARTWORX.

Peer-to-Peer and Modbus I/O

Zlinx Standard Wireless I/O

PRODUCT FEATURES

- Modular, Customizable Wire Replacement
- Flexible configuration for multiple types of analog/digital I/Os
- Software Selectable RF Transmit Power
- Software Selectable Over-the-air Data Rate

- Modbus ASCII /RTU Compatible
- 900 MHz and 2.4 GHz Versions
- Wide Operating Temperature
- Active Repeater Functionality
- 10 to 40 VDC & 24 VAC Input Power
- AES Encryption

Shown: 1 base I/O unit, with 3 snap-on expansion modules

Zlinx™ Wireless Modbus I/O - flexible enough to fit your applications.
These plug-n-play units combine traditional Modbus RTU remote analog and discrete I/O with built-in wireless connectivity. Wireless RTU serves as Modbus slave RTU in radio-based SCADA systems, or as a peer-to-peer communication platform.

Two Ranges Available - Short, Long range.

Active Repeaters - With built-in repeater functionality on 900 MHz -LR models, you can ensure vital signals get through.

Modular - Just snap on your I/O and you are ready to communicate.

Wide Temperature - Meets most indoor or outdoor applications.

Rugged circuitry - prevents signal degradation.

128 / 256 Bit AES Encryption - Secures data.

Selectable RF Transmit Power - Allows you to optimize the transmitter power for your application.

Selectable Over-the-air Data Rate - Allows you to decrease the OTA Data Rate (on -LR and -LR-AU versions), effectively increasing the radio transmitter's range.

Exception Reporting - In Modbus mode, allows the reporting of possible problems with connected devices.

Fail Safe - Allows you to set I/O to a safe state in the event of a communications failure.

Calibration - Calculates correction factors to make I/O values better match your sensor.

Communications Failure Alarm - Allows the first DO to be configured as a COM failure alarm indicator.

Invert Output - You can invert the logic of all DO's in peer-to-peer mode.

Monitor - Use the Zlinx™ Manager Software to monitor your I/O.

ORDERING INFORMATION

MODEL NUMBER	DESCRIPTION
ZZ8D-XX-LR Base Modules *	
ZZ8D-NA-LR	868MHz, 2 AI, 2 AO, 2 DI, 2 DO Sourcing, Long Range
ZZ8D-NB-LR	868MHz, 4 DI, 4 DO Sourcing, Long Range
ZZ8D-NC-LR	868MHz, 2 AI, 2 AO, 2 DI, 2 DO Sinking, Long Range
ZZ8D-ND-LR	868MHz, 4 DI, 4 DO Sinking, Long Range
ZZ9D-XX-LR Base Modules *	
ZZ9D-NA-LR	900MHz, 2 AI, 2 AO, 2 DI, 2 DO Sourcing, Long Range
ZZ9D-NA-LR-AU	900MHz, 2 AI, 2 AO, 2 DI, 2 DO Sourcing, Long Range
ZZ9D-NB-LR	900MHz, 4 DI, 4 DO Sourcing, Long Range
ZZ9D-NB-LR-AU	900MHz, 4 DI, 4 DO Sourcing, Long Range
ZZ9D-NC-LR	900MHz, 2 AI, 2 AO, 2 DI, 2 DO Sinking, Long Range
ZZ9D-NC-LR-AU	900MHz, 2 AI, 2 AO, 2 DI, 2 DO Sinking, Long Range
ZZ9D-ND-LR	900MHz, 4 DI, 4 DO Sinking, Long Range
ZZ9D-ND-LR-AU	900MHz, 4 DI, 4 DO Sinking, Long Range
ZZ24D-XX-SR Base Modules*	
ZZ24D-NA-SR	2.4GHz, 2 AI, 2 AO, 2 DI, 2 DO Sourcing, Short Range
ZZ24D-NB-SR	2.4GHz, 4 DI, 4 DO Sourcing, Short Range
ZZ24D-NC-SR	2.4GHz, 2 AI, 2 AO, 2 DI, 2 DO Sinking, Short Range
ZZ24D-ND-SR	2.4GHz, 4 DI, 4 DO Sinking, Short Range

World-wide.
Check with your local distributor for availability and options.
* Check wireless regulations/standards in your geographic area.

MODEL NUMBER	DESCRIPTION
Expansion Modules	
ZZ-8DI-DC	8 Digital Inputs, 10-48VDC
ZZ-8DO-T	8 Digital Outputs Sourcing
ZZ-8DO-T1	8 Digital Outputs Sinking
ZZ-8DO-R	8 Relay Outputs
ZZ-4AI	4 Analog Inputs
ZZ-4AO	4 Passive Source Analog Inputs, Requires Isolated External Power Supply
ZZ-4AO-2	4 Analog Output Sourcing
ZZ-4RTD1	4 RTD Input
ZZ-4DI4DO-DCT	4 Digital Inputs, 10-48VDC, 4 Digital Outputs Sourcing
ZZ-4DI4DO-DCT1	4 Digital Inputs, 10-48VDC, 4 Digital Outputs Sinking
ZZ-2AI2AO	2 Analog Inputs, 2 Analog Outputs

ACCESSORIES

ZZ-PROG1-USB	Zlinx USB Programming Module, Cable, Software CD
ZZ24D-ANT1	2.4 GHz Spare Antenna
ZZ9D-ANT1	900 MHz Spare Antenna
ZZ-DIN 1	Replacement DIN Clip and Spring
ZZ-TB1	Replacement Terminal Block Kit

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SPECIFICATIONS

BASE MODULE RADIO PROPERTIES

Model No.	Frequency	Software Selectable RF Power Options	Factory RF Power Setting	AES Encryption	Over-the-air Data Rate
ZZ24D-Nx-SR	2.4 GHz	10mW, 16mW, 25mW, 40mW, 63mW	63mW	128 Bit	250 Kbps
ZZ9D-Nx-LR	900 MHz *	1mW,10mW, 100mW, 500mW, 1000mW	1000mW	256 Bit	9.6 or 115.2 Kbps
ZZ9D-Nx-LR-AU	900 MHz *	1mW, 10mW, 100mW, 500mW, 1000mW	1000mW	128 Bit	9.6 or 115.2 Kbps
ZZ8D-Nx-LR	868 MHz **	1mW, 23mW, 100mW, 159mW, 316mW	316mW	128 Bit	24 Kbps

Note: ZZ9D-Nx-LR and ZZ9D-Nx-LR-AU have software selectable OTA data rates.

	Range with Supplied Antenna (indoor/outdoor) maximum	Range with High Gain Antenna (outdoor) maximum
ZZ24D-Nx-SR	300 Feet (91 Meters) / 1 Mile (1.6 Kilometers)	N/A
ZZ9D-Nx-LR	3000 Feet (914 Meters) / 14 Miles (23 Kilometers)	40 Miles (64 Kilometers)
ZZ9D-Nx-LR-AU	3000 Feet (914 Meters) / 14 Miles (23 Kilometers)	40 Miles (64 Kilometers)
ZZ8D-Nx-LR	1800 Feet (549 Meters) / 25 Miles (40 Kilometers)	25 Miles (40 Kilometers)

*Note: 900 MHz units are not sold in Europe

**Note: 868 MHz units are not sold in North America

LATENCY

Base Module	Modbus		Peer-to-Peer	
	Digital	*Analog*	*Digital*	*Analog*
ZZ24D-xx-SR	8mS	15mS	20mS	25mS
ZZ9D-xx-LR	9mS	104mS	55mS	52mS

Latency times were measured in a clean RF environment with devices less than 3 feet (1m) apart.

Add 45mS per analog expansion module and 25mS per digital expansion module.

ZZ8D-Nx-LR radios have a 10% maximum duty cycle.

I/O POINTS

Model No.	Digital Inputs	Digital Outputs	Analog Inputs	Analog Outputs
ZZxD-NA-xx (Base)	2 (Pull-up Resistors)	2 (Sourcing)	2 (mA, V)	2 (V, mA, Sinking)
ZZxD-NB-xx (Base)	4 (Pull-up Resistors)	4 (Sourcing)	---	---
ZZxD-NC-xx (Base)	2 (Pull-up Resistors)	2(Sinking)	2 (mA, V)	2 (V, mA, Sinking)
ZZxD-ND-xx (Base)	4 (Pull-up Resistors)	4 (Sinking)	---	---
ZZ-8DI-DC	8 (Pull-up Resistors)	---	---	---
ZZ-8DO-T	---	8 (Sourcing)	---	---
ZZ-8DO-T1	---	8 (Sinking)	---	---
ZZ-4DI4DO-DCT	4 (Pull-up Resistors)	4 (Sourcing)	---	---
ZZ-4DI4DO-DCT1	4 (Pull-up Resistors)	4 (Sinking)	---	---
ZZ-4AI	---	---	4 (mA, V)	---
ZZ-4AO	---	---	---	4 (V, mA, Sinking)
ZZ-4AO-2	---	---	---	4 (V, mA, Sourcing)
ZZ-2AI2AO	---	---	2 (mA, V)	2 (V, mA, Sinking)
ZZ-8DO-R	---	8 (Relay)	---	---
ZZ-4RTD1	---	---	4 (RTD)	---

SOFTWARE PROGRAMMING KITS – REQUIRED TO PROGRAM YOUR SYSTEM

Model Number	Description
ZZ-PROG1-USB	Programming Module (USB Interface), USB cable and Software CD

Note: The Software CD is only available with the programming kit. Software and Firmware can also be downloaded at www.bb-elec.com