



Model: ZZxD-Nx-xR series

## Wireless Modbus I/O

### Modular and Customizable Wireless Replacement!

#### Introduction

**Wireless Modbus I/O - flexible enough to fit your applications.** Zlinx plug-n-play modular units from B&B Electronics combine traditional Modbus RTU remote analog and discrete I/O with built-in wireless connectivity - reducing cost, simplifying installation and support. Wireless RTU serves as Modbus slave RTU in radio-based SCADA systems, or as a peer-to-peer communication platform.

#### Features

##### DIN Rail Package 3 Ranges Available

Easy installation; conserves panel space (versus panel mount modems).

Short, Medium, Long range. Don't spend more money on longer distance radios if you don't need the distance.

##### Active Repeaters

Place I/O modules where they need to go, by the sensors. With repeater built-in functionality (-MR and -LR models only), you can build up a security path for all your critical communications. Customize it to your application. Just snap on your I/O and you're ready to go.

##### Modular

##### 10-48 VDC Power Input

Rugged input power circuit allows insertion to most control power configurations. Can utilize industrial power supply.

##### Wide Temperature/ Industrial Grade

Meets most indoor or outdoor applications. Rugged circuitry prevents signal degradation versus lower temperature rated wireless devices.

##### Modbus Compatible

Interface using industry standard Modbus protocol. Connect to Wonderware, Labview or other Modbus compatible software. Allows data to be brought directly into most PLC systems.

#### Base Modules

Model No.	Frequency	Radio Power	RF Range (indoor/outdoor with included antenna)	I/O			
				DI	DO	AI	AO
ZZ24D-NA-SR	2.4 GHz	100 mW	Up to 91 m(300ft)/Up to 1.6 km (1 mi)	2	2	2	2
ZZ24D-NB-SR	2.4 GHz	100 mW	Up to 91 m (300 ft) /Up to 1.6 km (1 mi)	4	4	0	0
ZZ24D-NA-MR	2.4 GHz	50 mW	Up to 183 m (600 ft)/Up to 4.8 km (3 mi)	2	2	2	2
ZZ24D-NB-MR	2.4 GHz	50 mW	Up to 183 m (600 ft)/Up to 4.8 km (3 mi)	4	4	0	0
ZZ9D-NA-MR	900 MHz	100 mW	Up to 457 m (1500 ft)/Up to 11.3 km (7 mi)	2	2	2	2
ZZ9D-NB-MR	900 MHz	100 mW	Up to 457 m (1500 ft)/Up to 11.3 km (7 mi)	4	4	0	0
ZZ9D-NA-LR	900 MHz	1W	Up to 914 m (3000 ft)/Up to 22.5 km (14 mi)	2	2	2	2
ZZ9D-NB-LR	900 MHz	1W	Up to 914 m (3000 ft)/Up to 22.5 km (14 mi)	4	4	0	0

#### I/O Expansion Modules

Model No.	Digital Inputs	Digital Outputs	Analog Inputs	Analog Outputs
ZZ-8DI-DC	8			
ZZ-8DO-T		8		
ZZ-4DI4DO-DCT	4	4		
ZZ-4AI			4	
ZZ-4AO				4
ZZ-2AI2AO			2	2
ZZ-8DO-R		8 (relays)		
ZZ-4RTD1			4 (RTD)	



**International Headquarters:** 707 Dayton Road PO Box 1040 Ottawa, IL 61350 USA  
815-433-5100 Fax 433-5104 [www.bb-elec.com](http://www.bb-elec.com) [orders@bb-elec.com](mailto:orders@bb-elec.com) [support@bb-elec.com](mailto:support@bb-elec.com)

**European Headquarters:** Westlink Commercial Park Oranmore Co. Galway Ireland  
+353 91 792444 Fax +353 91 792445 [www.bb-europe.com](http://www.bb-europe.com) [orders@bb-europe.com](mailto:orders@bb-europe.com) [support@bb-europe.com](mailto:support@bb-europe.com)

## Software Options

Model No.	Description
<b>ZZ-PROG1</b>	Programming module with cable
<b>ZZ-PROGKIT</b>	Programming module, cable and software CD

## Specifications

Operating Systems Supported:	Windows ME/98/2000/XP
Dimensions:	1.15 x 3.65 x 5 in (2.92 x 9.27 x 12.7 cm)
Expansion Feature:	1 base module and up to 6 expansion modules
<b>Radio Properties</b>	
Short Range (SR) Option:	Up to 300 ft indoors / 1 mile outdoors (LOS)
Medium Range (MR) Option:	Up to 1500 ft indoors / 7 miles outdoors (LOS)
Long Range (LR) Option:	Up to 3000 ft indoors / 14 miles outdoors (LOS)
Antennas:	For 2.4 GHz models: 4.25 inch omni-directional rubber duck antenna. PN: ZZ24D-ANT1 For 900 MHz models: 6.5 inch omni-directional rubber duck antenna. PN: ZZ9D-ANT1 (RPSMA connector for db gain antennas)
<b>LED Indicators</b>	
Receive Signal Strength Indicator:	Tri-color LED (Off = no signal, Red = weak, Yellow = OK, Green = Strong)
RF Data Indicator:	Green LED (blinks with TD or RD data traffic, Off = no data traffic)
Local Bus Data Indicator:	Green LED (blinks with TD or RD data traffic, Off = no data traffic)
Power Indicator:	Red LED
I/O Connectors:	Removable screw terminal (2, 4 or 8 position) block, 3.5 mm spacing
<b>Digital Inputs</b>	
Voltage Range:	0 to 48 VDC
Low Voltage (0):	0.8 V maximum
High Voltage (1):	4.0 V minimum
Pull up/down current:	38 uA
Frequency Input:	Two DI inputs per module software selectable as Frequency Counters, 0 to 5 kHz range
<b>Digital Outputs</b>	
Voltage Range:	10 to 45 VDC (for sourcing outputs), 0 to 48 VDC (for sinking outputs)
Open Source:	40 mA per output
<b>Analog Inputs/Outputs</b>	
Ranges:	0 to 10 VDC or 0 to 20 mA
Resolution:	12 bit
Input Accuracy:	0.2 % full scale reading typical
Output Accuracy:	0.27 % full scale reading typical
AI Load Resistance:	100 Mega Ohms when configured for voltage input 250 Ohms when configured for current input
AO Max Output Current:	1 mA when configured for voltage output
AO Max Load:	450 Ohms when configured for current output
Input Protection:	Overvoltage to 2x max input voltage
Power Supply Voltage Requirements:	<b>Sourcing modules:</b> 10 VDC to 46 VDC, 24 VAC $\pm$ 10% <b>Sinking modules:</b> 10 VDC to 48 VDC, 24 VAC $\pm$ 10%
Power Supply:	Not included
Base Module Power Connector:	Removable screw terminal (2) block, 3.5 mm spacing
<b>Relay Outputs</b>	
Number of relays:	8
Type:	C (normally open and normally closed)
Output Connection:	3.5mm removable terminal block (2 per output)
Common connection:	3.5mm removable terminal block (1 per bank of 4 output)
Ratings:	250VAC @ 8A, 30VDC @ 5A (maximum per bank of 4 as grouped on the label)
<b>RTD Inputs</b>	
Number of RTD:	4
Wire configuration:	2, 3, and 4 wire
Type:	PT100*, PT1000*, Cu10** *Optimized for temperature coefficient of 385 **Optimized for temperature coefficient of 427
Input Connection:	3.5mm removable terminal block (4 per output)
Temperature range:	PT100 = -200 to 650°C PT1000 = -200 to 100°C Cu10 = -100 to 260°C
Resolution:	0.1°C across -40 to 85°C
Accuracy @ 25°C:	$\pm$ 0.5°C typical
Accuracy -40 to 85°C:	$\pm$ 2.0°C maximum



**International Headquarters:** 707 Dayton Road PO Box 1040 Ottawa, IL 61350 USA  
815-433-5100 Fax 433-5104 [www.bb-elec.com](http://www.bb-elec.com) [orders@bb-elec.com](mailto:orders@bb-elec.com) [support@bb-elec.com](mailto:support@bb-elec.com)

**European Headquarters:** Westlink Commercial Park Oranmore Co. Galway Ireland  
+353 91 792444 Fax +353 91 792445 [www.bb-europe.com](http://www.bb-europe.com) [orders@bb-europe.com](mailto:orders@bb-europe.com) [support@bb-europe.com](mailto:support@bb-europe.com)

**Power Consumption - Base Modules**

ZZ24D-NA-SR	10W
ZZ24D-NB-SR	10W
ZZ24D-NC-SR	10W
ZZ24D-ND-SR	10W
ZZ24D-NA-MR	9.5W
ZZ24D-NB-MR	9.5W
ZZ24D-NC-MR	9.5W
ZZ24D-ND-MR	9.5W
ZZ9D-NA-MR	9.5W
ZZ9D-NB-MR	9.5W
ZZ9D-NC-MR	9.5W
ZZ9D-ND-MR	9.5W
ZZ9D-NA-LR	13.1W
ZZ9D-NB-LR	13.1W
ZZ9D-NC-LR	13.1W
ZZ9D-ND-LR	13.1W
ZZ9D-NA-LR-AU	13.1W
ZZ9D-NB-LR-AU	13.1W
ZZ9D-NC-LR-AU	13.1W
ZZ9D-ND-LR-AU	13.1W

**Power Consumption - Expansion Modules:**

ZZ-4AI	1.0W
ZZ-4AO	1.1W
ZZ-2AI2AO	1.2W
ZZ-8DI-T	0.4W
ZZ-8DO-T	15.8W
ZZ-8DO-T1	1.1W
ZZ-4DI4DO-DCT	8.1W
ZZ-4DI4DO-DCT1	1.0W
ZZ-8DO-R	3.2W
ZZ-4RTD1	0.4W

**Additional Specifications**

Operating Temperature:	- 40 to 80 °C (- 40 to 176 °F), - 40 to 65 °C (- 40 to 149 °F) for ZZ-8DO-R ONLY
Storage Temperature:	- 40 to 85 °C (- 40 to 185 °F)
Humidity:	10% to 90% R.H. non-condensing
Enclosure Rating:	IP30
Mounting:	DIN rail mount, 35 mm
CD-ROM Disc:	Zlinx I/O Manager; PDF of Zlinx I/O User Manual; PDF of Quick Start guide
Certifications:	FCC: Part 15 Class A CISPR (EN55022) Class A EN61000-6-1 Generic Standards for Residential, Commercial & Light Industrial EN61000-4-2 ESD EN61000-4-3 RFI EN61000-4-4 EFT EN61000-4-5 Surge EN61000-4-6 CI EN61000-4-8 Power Frequency Magnetic EN61000-4-11 Voltage Dips & Interruptions

Accessories and Replacement Parts:	ZZ-DIN1	DIN clip and spring for all ZZ products, 4 spare screws for enclosure
	ZZ-TB1	Removable terminal block for all ZZ modules and shroud cover for local bus
	ZZ24D-ANT1	2.4 GHz band antenna
	ZZ9D-ANT1	900 MHz band antenna
	ZZ-PROGKIT	Programming Module and CD with Zlinx I/O Manager software and hardcopy of Quick Start Guide
	ZZ-PROG1	Programming Module and hardcopy of Quick Start Guide
	195M-SLSW-24	Antenna cable

**Programming Module ZZ-PROG1**

Power Source:	Supplied through local bus connector from powered base module
Power Consumption:	5 VDC @ 40 mA max
LED Indicators:	Power ON: Red LED illuminated steady
Local Bus:	Data present on TD or RD line – Green LED blinks
Serial Connector:	DB-9F 9 pin D-type female connector (configured as DCE)
Interface Lines Supported:	RS-232 - TD, RD, RTS, CTS, DTR, DSR, DCD, GND
Serial Data Rates Supported:	115200 bps
Parity:	None
Data Bits:	8
Stop Bits:	1
Flow control:	None
Cable:	Gray straight-through DB9M to DB9F, 6 foot (included – Part No. 9PAMF6 recommended)
Local Bus Connection:	14 pin dual row 2mm connector
Temperature:	Operating: -40°C to 85°C Storage: -40°C to 85°C
Dimensions	1.15 x 3.65 x 5 in (2.92 x 9.27 x 12.7 cm)
Operating Humidity:	10 to 90% non-condensing



**International Headquarters:** 707 Dayton Road PO Box 1040 Ottawa, IL 61350 USA  
815-433-5100 Fax 433-5104 [www.bb-elec.com](http://www.bb-elec.com) [orders@bb-elec.com](mailto:orders@bb-elec.com) [support@bb-elec.com](mailto:support@bb-elec.com)

**European Headquarters:** Westlink Commercial Park Oranmore Co. Galway Ireland  
+353 91 792444 Fax +353 91 792445 [www.bb-europe.com](http://www.bb-europe.com) [orders@bb-europe.com](mailto:orders@bb-europe.com) [support@bb-europe.com](mailto:support@bb-europe.com)

# Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

[B&B Electronics:](#)

[ZZ24D-NB-SR](#)