

# Zlinx™ Standard Wireless I/O

## Peer-to-Peer and Modbus I/O

Models ZZ24D-NA-SR, ZZ24D-NB-SR, ZZ9D-NA-LR, ZZ9D-NB-LR

**B+B SMARTWORX**

Powered by

**ADVANTECH**

[www.advantech-bb.com](http://www.advantech-bb.com)



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

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

### 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 or Long range.

**Active Repeaters** - With built-in repeater functionality on 900 MHz (long-range -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-bit / 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 models), 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 DOs in peer-to-peer mode.

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

### ORDERING INFORMATION - BASE MODULES

MODEL NUMBER	DESCRIPTION
<b>ZZ24D-XX-SR Base Modules *</b>	
ZZ24D-NA-SR	2.4 GHz, 2 AI, 2 AO, 2 DI, 2 DO Sourcing, Short Range
ZZ24D-NB-SR	2.4 GHz, 4 DI, 4 DO Sourcing, Short Range
<b>ZZ9D-XX-LR Base Modules *</b>	
ZZ9D-NA-LR	900 MHz, 2 AI, 2 AO, 2 DI, 2 DO Sourcing, Long Range
ZZ9D-NB-LR	900 MHz, 4 DI, 4 DO Sourcing, Long Range

#### World-wide.

Check with your local distributor for availability and options.

\* Check wireless regulations/standards in your geographic area.

### ORDERING INFORMATION - EXPANSION MODULES -- optional, sold separately

MODEL NUMBER	DESCRIPTION
<b>Expansion Modules</b>	
ZZ-8DI-DC	8 Digital Inputs, 10-48VDC
ZZ-8DO-R	8 Relay Outputs
ZZ-4AI	4 Analog Inputs

### ACCESSORIES

- optional, sold separately

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

All product specifications are subject to change without notice.

ZlinxStandardWirelessIO\_1818ds

**B+B SMARTWORX**

Powered by

**ADVANTECH**

orders@advantech-bb.com  
eSales@advantech-bb.com

Headquarters: 707 Dayton Rd, PO Box 1040 Ottawa, IL 61350 USA (815)433-5100 or (800)346-3119/Toll Free Fax (815)433-5104  
European Office: Westlink Commercial Pk, Oranmore Co. Galway Ireland +353 91 792444 Fax +353 91 792445

# Zlinx™ Standard Wireless I/O

## Peer-to-Peer and Modbus I/O

Models ZZ24D-NA-SR, ZZ24D-NB-SR, ZZ9D-NA-LR, ZZ9D-NB-LR

ZZ24D-NB-SR



### SPECIFICATIONS

#### BASE MODULE RADIO PROPERTIES

Base Module No.	Frequency	Software Selectable RF Power Options	Factory RF Power Setting	AES Encryption	Over-the-Bir Data Rate
ZZ24D-Nx-SR	2.4 GHz	10mW, 16mW, 25mW, 40mW, 63mW	63 mW	128-bit	250 Kbps
ZZ9D-Nx-LR	900 MHz *	1mW, 10mW, 100mW, 500mW, 1000mW	1000 mW	256-bit	9.6 or 115.2 Kbps

Note: Models ZZ9D-NA-LR and ZZ9D-NB-LR have software selectable OTA data rates.

Base Module No.	Range with Supplied Antenna (indoor/outdoor) maximum	Range with High Gain Antenna (outdoor) maximum
ZZ24D-Nx-SR	91 m (300 ft) / 1.6 km (1 mi)	n/a
ZZ9D-Nx-LR	914 m (3000 ft) / 23 km (14 mi)	64 km (40 mi)

\*Note: 900 MHz units are not sold in Europe.

#### LATENCY

Base Module No.	Modbus		Peer-to-Peer	
	Digital	Analog	Digital	Analog
ZZ24D-Nx-SR	8 mS	15 mS	20 mS	25 mS
ZZ9D-Nx-LR	9 mS	104 mS	55 mS	52 mS

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

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

#### I/O POINTS

Model No. (base/expansion)	Digital Inputs	Digital Outputs	Analog Inputs	Analog Outputs
ZZxD-NA-xx (base unit)	2 (Pull-up Resistors)	2 (Sourcing)	2 (mA, V)	2 (V, mA, Sinking)
ZZxD-NB-xx (base unit)	4 (Pull-up Resistors)	4 (Sourcing)	-	-
ZZ-4AI (expansion module)	-	-	4 (mA, V)	-
ZZ-8DI-DC (expansion module)	8 (Pull-up Resistors)	-	-	-
ZZ-8DO-R (expansion module)	-	8 (Relay)	-	-

#### SOFTWARE PROGRAMMING KITS – REQUIRED TO PROGRAM YOUR SYSTEM

Model Number (accessory)	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.advantech-bb.com](http://www.advantech-bb.com)

DIGITAL INPUTS	
Voltage Range	0 to 48 VDC
Low Voltage (0)	0.8 V, maximum
High Voltage (1)	4.0 V, minimum
Pull Up Current	38 micro-Amps
Frequency Input	2 DI inputs per module. Software selectable as frequency counters, 0 to 5 KHz range.
DIGITAL OUTPUTS	
Voltage Range	10 to 40 VDC (Sourcing) 0 to 48 VDC (Sinking) 40 mA per output
RELAY OUTPUTS	
Number of Relays	8
Type	C -normally open & normally closed
Output Connection	3.5mm removable terminal block (2 per output)
Common Connection	3.5mm removable terminal block
Ratings	250VAC @ 8A, 30VDC@5A (maximum per bank of 4 as grouped on the label)

ANALOG INPUTS AND OUTPUTS	
Ranges	0 to 10 VDC or 0 to 20 mA All others are passive
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 Output Current, max.	1 mA when configured for voltage output.
AO Load, max.	450 Ohms when configured for current output @ 12V
RTD INPUTS	
Number of RTD	4
Wire Configuration	2, 3, and 4 wire
Type	PT100, PT1000 (optimized for temperature coefficient of 385 °C) Cu10 (optimized for temperature coefficient of 427 °C)
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	0.1C cross at -40 to +80 °C
Accuracy @ 25 °C	(+/-) 0.5 °C typical
Accuracy -40 to +80 °C	(+/-) 2.0 °C maximum

# Zlinx™ Standard Wireless I/O Peer-to-Peer and Modbus I/O

Models ZZ24D-NA-SR, ZZ24D-NB-SR, ZZ9D-NA-LR, ZZ9D-NB-LR

ZZ9D-NA-LR



ZZ9D-NB-LR



## SPECIFICATIONS

RADIO PROPERTIES (2.4 GHZ - SR MODELS)	
Frequency	2.4 GHz
Output Power	100 mW
Receiver Sensitivity	-102 dbm
Antenna	The included antenna is a 4.25 inch omni-directional with RPSMA connector. (Order# ZZ24D-ANT1)
RADIO PROPERTIES (900 MHZ - LR MODELS)	
Frequency	900 MHz
Output Power	1W
Receiver Sensitivity	100 dbm @ 115.2K, 110 dbm @ 9.6K
Antenna:	The included antenna is a 6.5 inch omni-directional with RPSMA connector. (Order# ZZ9D-ANT1)
LED INDICATORS	
Receive Signal Strength	Tri-color – Off = No Signal Red = Weak Signal Yellow = Medium Signal Green = Strong Signal
RF Data	Green – Blinks with TD or RD Off = No Data
Local Bus Data	Green – Blinks with TD or RD Off = No Data
Power	Red – On = Power applied Off = No Power
ENVIRONMENTAL	
Operating Temperature	40 to +80°C (-40 to +176°F)
Ambient Air Temperature	+80 °C (+176 °F), maximum
Storage Temperature	-40 to +85 °C (-40 to +185 °F)
Operating Humidity	0 to 95% Non-condensing
Enclosure	Plastic IP30
Mounting	35mm DIN Rail
Expansion	1 Base Module Supports up to 6 Expansion Modules
Dimensions	2.9 x 9.3 x 12.7 cm (1.2 x 3.7 x 5.0 in)
SOFTWARE	
Supported OS	Windows XP (Home, Pro, SP1, Sp2), Vista, 7, 8, 8.1, 10 (32/64 bit)  A CD is provided with programming kits, Zlinx Manager software, User Manual and Quick Start Guide.
POWER - BASE MODULES	
Source	An external power supply is required (not included)
Voltage	10-40 VDC, 24 VAC Class 2, (2.7A maximum)
Power Connection	Removable Terminal Block, 3.81 mm spacing
WIRING TERMINALS	
Conductors	Copper Wire Only
Wire Range	One Conductor Per Terminal
Tightening Torque	28 to 16 AWG 1.7 lb / in
Field Wiring Temperature Rating	105 °C, minimum (sized for 60 °C ampacity).
Power Consumption	10.0 W
24 GHz -SR Models	9.5 W
900 MHz -LR Models	12.0 W

POWER - EXPANSION MODULES	
Source	Class 2 Power Derived from base modules Voltage and current listed on product label.
Power Consumption	
ZZ-4AI	1.0 W
ZZ-8DI-DC	0.4 W
ZZ-8DO-R	3.2 W
OUTPUTS	
Type	Low Voltage, Limited Energy Communications Protocol
Wire Type	
Conductors	Copper Wire Only
Wire Size	One Conductor Per Terminal 28 to 16 AWG
Tightening Torque	0.2 Nm (Newton-Meters)
REPLACEMENT PARTS	
ZZ24D-ANT1	2.4 GHZ band antenna
ZZ9D-ANT1	900 MHz band Antenna
ZZ-DIN1	Replacement DIN clip and spring for all ZZ products; also comes with spare screws for enclosure
ZZ-TB1	Replacement terminal block kit for ZZ products. Kit includes: (1) Two-position TB (3.81mm) (1) Four-position TB (3.5mm) (1) Eight-position TB (3.5mm) (1) Cover for local bus
AGENCY APPROVALS	
FCC Part 15 Class A, CE	
UL/cUL	File Numbers E245458 (Class 1, Division 2) E222870 (UL508) CISPR (EN55022) Class A <b>Models that are Class 1/Division 2 listed:</b> ZZ24D-Nx-SR (2.4GHz, Short Range) ZZ9D-Nx-LR ( 900 MHz, Long Range) ZZ-4AI ZZ-8DI-DC ZZ-8DO-R ZZ-PROG1-USB
MEANTIME BEFORE FAILURE (MTBF)	
ZZ24D-NA-SR (base unit)	85547 hrs.
ZZ24D-NB-SR (base unit)	137106 hrs.
ZZ9D-NA-LR (base unit)	88195 hrs.
ZZ9D-NB-LR (base unit)	143446 hrs.
ZZ-4AI (expansion module)	136050 hrs.
ZZ-8DO-R (expansion module)	40670 hrs.
ZZ-8DI-DC (expansion module)	1147218 hrs.
ZLINX I/O & ZLINX RADIO MODEM COMPATIBILITY	
<b>Zlinx I/O Base Module</b>	<b>Zlinx Radio Modem</b>
ZZ24D-NA-SR, ZZ24D-NB-SR	ZP24D-250RM-SR
ZZ9D-NA-LR, ZZ9D-NB-LR	ZP9D-115RM-LR