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

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
ZZ24D-XX-SR Base Modules *	
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
ZZ9D-XX-LR Base Modules *	
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
Expansion Modules	
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

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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.advanatech-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-Aamps
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

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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 Wire Range Tightening Torque Field Wiring Temperature Rating Power Consumption 24 GHz -SR Models 900 MHz -LR Models	Copper Wire Only One Conductor Per Terminal 28 to 16 AWG 1.7 lb / in 105 °C, minimum (sized for 60 °C ampacity). 10.0 W 9.5 W 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 ZZ-8DI-DC ZZ-8DO-R	 1.0 W 0.4 W 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 **Models that are Class 1/Division 2 listed:** 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

Zlinx I/O Base Module	**Zlinx Radio Modem**
ZZ24D-NA-SR, ZZ24D-NB-SR	ZP24D-250RM-SR
ZZ9D-NA-LR, ZZ9D-NB-LR	ZP9D-115RM-LR