Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

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We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



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# 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 |

# 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.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)<br>0 to 48 VDC (Sinking)<br>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<br>(maximum per bank of 4 as grouped on the label) |

### ANALOG INPUTS AND OUTPUTS

| | |
|---|---|
| Ranges | 0 to 10 VDC or 0 to 20 mA<br>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.<br>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)<br>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<br>PT1000  =  -200 to +100 °C<br>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<br>Red = Weak Signal<br>Yellow = Medium Signal<br>Green = Strong Signal |
| RF Data | Green – Blinks with TD or RD<br>Off = No Data |
| Local Bus Data | Green – Blinks with TD or RD<br>Off = No Data |
| Power | Red – On = Power applied<br>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)<br><br>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<br>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 |
| Field Wiring Temperature Rating | 1.7 lb / in<br>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<br>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<br>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:<br>(1) Two-position TB (3.81mm)<br>(1) Four-position TB (3.5mm)<br>(1) Eight-position TB (3.5mm)<br>(1) Cover for local bus |

### AGENCY APPROVALS

| | |
|---|---|
| FCC Part 15 Class A, CE | |
| UL/cUL | File Numbers E245458 (Class 1, Division 2)<br>E222870 (UL508)<br>CISPR (EN55022) Class A<br>**Models that are Class 1/Division 2 listed:**<br>ZZ24D-Nx-SR (2.4GHz, Short Range)<br>ZZ9D-Nx-LR ( 900 MHz, Long Range)<br>ZZ-4AI<br>ZZ-8DI-DC<br>ZZ-8DO-R<br>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 |