Zlinx

B+B SmartWorx

Powered by ADVANTECH

SIMPLE WIRE REPLACEMENT

Short & Long Range Radios Save Time, Eliminate I/O, Serial Cables and Wires, Do Not Require Costly Licenses

To start, below are some helpful considerations for your project:

- **What is the DISTANCE between your devices?**
  - Distance determines radio frequency and antenna requirements – start with 2.4 GHz radios for shorter distances; 900 MHz radios for longer distances (900 MHz North America only).
  - Wireless signals require unobstructed line-of-sight for optimal reception.
  - Antenna selection can extend the range.
  - Try keeping antenna cable runs as short as possible; the wrong cable can cause signal loss.
  - Factor in a safety margin as signals can be affected by floor noise, weather, humidity and terrain.

- **Is your installation INDOORS or OUTDOORS?**
  - Zlinx standard indoor radios are cost-effective in cabinets, DIN rail mount, panel mount with optional kit.
  - Zlinx Xtreme outdoor radios are IP67 rated.
  - Indoor and outdoor radios with the same signal frequency can be used together.

- **Does your application have any SPECIFICATION considerations?**
  - Oil & gas applications may require Class 1/Division 2 certification.

- **Once you have a wireless product selected, you should ask a few more questions.**
  - Do you have all the accessories to make connections? Antenna cable, spare antenna, terminal block kits, DIN rail clips, panel mount kits, power supply, lightning arrestors, surge protectors, etc.
  - B+B Smartwork also offers starter kits - products bundled with compatible power supplies and cables.
  - When do you need product samples for proof of concept and full production?

Assistance

If you need additional product selection help, contact B+B SmartWorx Technical Support online.

Zlinx® Radio Modems & Wireless I/O

- Simple wire replacement – avoid costly cable installation and fixed run length limitations
- License free, proprietary RF
- Rugged, reliable, industrial grade performance
- Monitor and control at the sensor level
- Indoor and outdoor installations

2.4 GHz Radio - Typical Ranges [1]

Antenna	Indoor	Outdoor			
		Unobstructed	Rural	Suburban	Urban
Supplied	152 m (500 ft)	2.25 km (1.4 mi)	0.91 km (3000 ft)	304 m (1000 ft)	152 m (500 ft)

900 MHz Radio - Typical Ranges [1, 2]

Antenna	Indoor	Outdoor			
		Unobstructed	Rural	Suburban	Urban
Supplied	792.3 m (2600 ft)	12.9 km (8 mi)	6.4 km (4 mi)	2.25 km (1.4 mi)	0.91 km (3000 ft)

Note 1. Range estimates based on ideal conditions.
Note 2. 900 MHz for North America only.

Radio Modems

Zlinx® Standard **Serial Radio Modems**

- **Simple Wire Replacement** – avoid costly cable installation and fixed run length limitations
- Wireless serial-to-serial (RS-232/422/485) connectivity
- Modbus RTU Master to wireless I/O connectivity
- High performance, low latency
- Connect up to 247 devices over a wireless network
- Class 1/Division 2 (long range Model# BB-ZP9D115RMLR-A)
- 2.4 GHz outdoor range, supplied antenna: 1.6km (1mi)
- 2.4 GHz outdoor range, optional high-gain antenna: 16km (10mi)
- 900 MHz outdoor range, supplied antenna: 22.5k (14mi)
- 900 MHz outdoor range, optional high-gain antenna: 64.4km (40mi)

2.4 GHz RADIO MODEM - short range [1]		900 MHz RADIO MODEM - long range [1, 2]
Model Number:	**BB-ZP24D-250RM-SR**	**BB-ZP9D115RMLR-A**
RF Data Rate	250 Kbps	115 Kbps
RF Range [1] with supplied antenna, indoor maximum	91.4 m (300 ft)	0.91 km (3000 ft)

Note 1. Range estimates based on ideal conditions.
Note 2. 900 MHz for North America only.

Wireless I/O

Zlinx® Standard **Serial Wireless I/O**

- Avoid costly cable installation and fixed run length limitations
- Base I/O modules with built-in radio (limited I/O combinations)
- Monitor and control analog, digital and RTD temperature inputs and outputs remotely
- Peer-to-peer wire replacement & mirrored I/O mapping
- Wireless connectivity to Modbus RTU master (PLC, SCADA)
- High performance, low latency - down to 15mS
- Supports field calibration for precision applications
- User defined fail-safe output states
- Add up to 6 modular expansion I/O units (optional)
- Modem expandable, modular design (indoor only)
- 2.4 GHz outdoor range, supplied antenna: 1.6km (1mi)
- 2.4 GHz outdoor range, optional high-gain antenna: n/a
- 900 MHz outdoor range, supplied antenna: 23km (14mi)
- 900 MHz outdoor range, optional high-gain antenna: 64.4km (40mi)

2.4 GHz BASE I/O MODULES - short range [1]			900 MHz BASE I/O MODULES - short range [1, 3]	
Model Number:	**BB-ZZ24D-NA-SR**	**BB-ZZ24D-NB-SR**	**BB-ZZ9D-NA-LR-A**	**BB-ZZ9D-NB-LR-A**
Digital Inputs	2	4	2	4
Digital Outputs [2]	2 (PNP)	4 (PNP)	2 (PNP)	4 (PNP)
Analog Inputs	2	-	2	-
Analog Outputs	2	-	2	-
RF Range [1] with supplied antenna, indoor maximum	91.4 m (300 ft)	91.4 m (300 ft)	0.91 km (3000 ft)	0.91 km (3000 ft)

Note 1. Range estimates based on ideal conditions.
Note 2. Sinking Analog Output x- requires external power supply.
Note 3. 900 MHz for North America only.
(USB programming kit Model# BB-ZZPROG1-USB required.)

INDUSTRIAL WIRELESS – IP67, OUTDOORS

Xtreme Radio Modems

Zlinx® Xtreme **Serial Radio Modems**

- **Simple Wire Replacement** – avoid costly cable installation and fixed run length limitations
- Wireless serial-to-serial (RS-232/422/485)
- Modbus RTU master to wireless analog/digital I/Os
- Easy plug & play, push-button configuration
- AES security encryption (2.4 GHz:128-bit) (900 MHz: 256-bit)
- Wide operating temperature
- UL Class 1/Division 2, IP67
- Built-in USB port with free Zlinx Manager software
- Compatible with standard indoor Zlinx products and software
- 2.4 GHz outdoor range, supplied antenna: 1.6km (1mi)
- 2.4 GHz outdoor range, optional high-gain antenna: 22.5km (14mi)
- 900 MHz outdoor range, supplied antenna: 16km (10mi)
- 900 MHz outdoor range, optional high-gain antenna: 64.4km (40mi)

2.4 GHz RADIO MODEM - short range [3]	900 MHz RADIO MODEM - long range [1, 3]
Model Number: **BB-ZXT24-RM**	**BB-ZXT9-RM-A**
Transmit Power [2] 10 W	1 mW to 1 W (software selectable)
RF Data Rate 250 Kbps	115 Kbps
RF Range [3] with supplied antenna, indoor maximum 91.4 m (300 ft)	0.91 km (3000 ft)

Note 1. 900 MHz for North America only.
Note 2. 802.15.4 standard compliance, EIRP (Equivalent Isotropically Radiated Power) is limited to 100 mW for 2.4 GHz; 1W for 900 MHz.
Note 3. Range estimates based on ideal conditions.
USB cable required for configuration - Model# BB-USBAMBM-6F recommended.

Xtreme Wireless I/O

Zlinx® Xtreme **Serial Wireless I/O**

- Avoid costly cable installation and fixed run length limitations
- Connects to analog and digital, temperature inputs and outputs
- Peer-to-peer wire replacement
- Wireless connectivity to Modbus RTU master (PLC, SCADA, etc.)
- Easy plug & play, push-button configuration
- AES security encryption (2.4 GHz:128-bit) (900 MHz: 256-bit)
- Sinking or sourcing digital I/O
- 0-10V, 0-5V, 0-20mA, 4-20mA analog I/Os
- Wide operating temperature
- UL Class 1/Division 2, IP67
- Built-in USB port with free Zlinx Manager software
- Compatible with standard indoor Zlinx products and software
- 2.4 GHz *outdoor* range, *supplied* antenna: 2.4km (1.5mi)
- 2.4 GHz *outdoor* range, *optional* high-gain antenna: 6km (10mi)
- 900 MHz *outdoor* range, *supplied* antenna: 23km (14 mi)
- 900 MHz *outdoor* range, *optional* high-gain antenna: 64.4km (40mi)

2.4 GHz WIRELESS I/O - short range [1]	900 MHz WIRELESS I/O - long range [1, 3]
Model Number: **BB-ZXT24-IO-222R2**	**BB-ZXT9-IO-222R2-A**
Transmit Power [2] 1 mW to 1 W (software selectable)	10 mW to 63mW (software selectable)
Analog Inputs 2	2
Analog Outputs 2	2
Digital Inputs 2	2
Digital Outputs 2	2
RF Range [1] with *supplied* antenna, *indoor* maximum 91.4 m (300 ft)	0.91 km (3000 ft)

Note 1. Range estimates based on ideal conditions.
Note 2. 802.15.4 standard compliance, EIRP (Equivalent Isotropically Radiated Power) is limited to 1W for 900 MHz; 100 mW for 2.4 GHz.
Note 3. 900 MHz for North America only.
USB cable required for configuration - Model# BB-USBAMBM-6F recommended.

PRODUCT CASE STUDIES

| CUSTOMER SUCCESS STORIES |

WATER LEVEL MONITORING AT NUCLEAR POWER PLANT

CHALLENGE

Water used in the cooling towers at a power plant in Georgia USA is treated with chemicals to prevent corrosion of the steam piping. The water is cycled through a holding pond and environmental safety requires that any excess water be purified before being returned to a nearby river. Plant operators must continually monitor and control the water level in the holding pond and wanted the ability to monitor from a remote location and avoid a costly wire installation.

SOLUTION

An instrument and controls technician at the plant contacted B+B SmartWorx. The solution was a Zlinx® wireless Modbus I/O base module (#BB-ZZ9D-NA-LR) that can transfer 4-20 mA signals from a level sensor that monitors pond depth. The module has two analog inputs and outputs, and two digital inputs and outputs. (In this case, only one of the analog I/Os was required.) The signal is sent to the control station over an RF link where a second Zlinx Modbus I/O module replicates the 4 20 mA signal and passes it to the PLC that controls cooling tower operation.

MOBILE SCHOOL CROSSING SIGNS

CHALLENGE

Safe crossing for school children is a high priority. A manufacturing company provides mobile school crossing signs for schools. The signs flash to get the attention of drivers and display a digital message. The electronic components that run the device are mounted in a panel on the sign which can be accessed outside by school security to change messages. However, manually resetting the sign is time consuming and inconvenient. The company wanted to provide schools with a better option.

SOLUTION

B+B SmartWorx designed a solution that uses one Zlinx® wireless radio modem attached to the controller at the school office and another modem attached to the electronics on the sign outdoors. Whenever the school needs to update the message on the sign, personnel can easily program it using the office controller. For schools with more than one sign, a single controller can connect to all the signs with point-to-multipoint functionality. Enhanced AES encryption prevents unauthorized users from changing the messages. This wireless approach eliminated the extra time and cost of cable and got data communications up and running in no time. The school can now respond to message changes quickly - which means children arrive safely at school.

GROUNDWATER STATUS ALERTS

CHALLENGE

"Water Alert" is the USGS Water Science Center's Public Awareness Program for sensor driven groundwater status alerts. The USGS program needs to communicates status information to the public via the internet in near real time. Wireless communications for the sensors was the only means to make the Water Alert program feasible.

SOLUTION

Utilizing uncompensated pressure transducers to detect water level and water temperature sensors, the USGS deployed its large scale groundwater monitoring system with wireless Zlinx® Xtreme I/O modules to collect and transmit the sensor data.

GRAIN ELEVATOR SYSTEMS

CHALLENGE

A global supplier of material handling and electronic components for grain storage systems provides a microprocessor based hazard monitoring system that checks elevator buckets and conveyors and provides status information such as belt speed and alignment, bearing temperature, pulley alignment and blockage detection. Status information is made available through a 4-wire, RS-485 serial port. One of the supplier's clients in Illinois USA needed to connect the RS-485 port to a system monitoring and maintenance computer in a main office hundreds of yards away. Cabling would required digging, trenching and conduit work.

SOLUTION

B+B SmartWorx solved the problem with a pair of 900 MHz Zlinx® serial radio modems. One was installed at the controller and the other at the main office. Long-range radios were needed because large metal grain bins prevented direct line-of-sight and extreme Illinois winters could cause signal interference or loss. B+B SmartWorx long-range radios overcame the obstacles and established a reliable connection between the remote monitor controller and the main office computer.