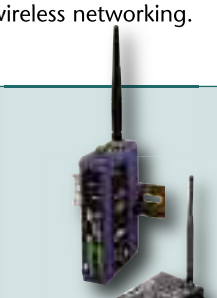
Stepping up to wireless?

We'll help you pick the wireless option you can trust!

In the past, it has not always been possible, practical, or cost effective to run network cables to every device, sensor, or roving unit on the factory floor. Today's wireless technologies eliminate those physical and cost barriers, opening a new world of remote communication solutions. Reliable, on-demand communication with control and monitoring down to an individual embedded machine-level sensor is now possible with wireless networking.

As wireless network equipment emerges, interest and demand in using wireless in industrial environments has surged. Yet, understanding the technical aspects of various wireless technologies and standards is essential in choosing suitable equipment for your application. Selecting the right equipment will lead to a successfully installed, well-designed, reliable and efficient communication system. Call B&B Electronics today for a wireless system consultation.



Wireless Modbus Radio Modems *(page 63)*
Zlinx Modbus radio modems provide fast, reliable, secure, and cost-effective transmission of critical data to remote sites. Easy to install and transparent to use.

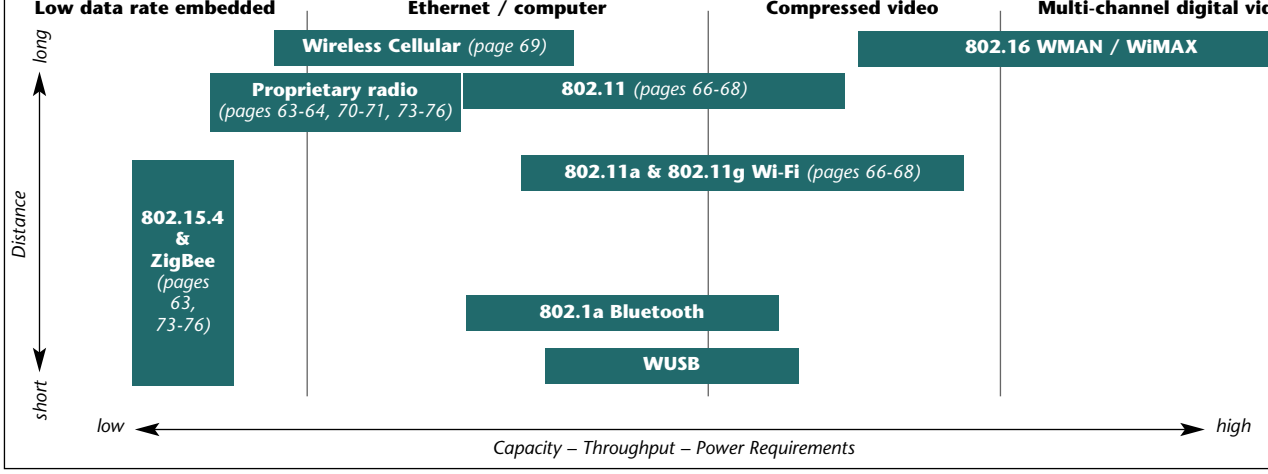
Wireless Proprietary Radio Modems *(page 64)*
Industrial grade, wireless radio modems transmit serial data up to 40 miles without costly cabling. These robust radio modems provide long-range data connections. No site license required!

Wireless 802.11B & G *(pages 66-68)*
Wirelessly connect your legacy serial devices via your LAN with VlinxTM of wireless Ethernet serial servers. Combine wireless data networking with proven asynchronous connectivity when running cable is not an option.

Cellular Data Modems *(page 69)*
Transmit Ethernet and serial data via cellular technology. Wireless cellular networks allow remote devices to communicate easily and economically to a central office through standard TCP/UDP communications.

Antenna Options - for longer ranges, special applications *(pages 70-71)*
B&B Electronics has solutions for long-range, point-to-point, or multipoint systems. These are high quality accessories are built to handle your rugged application needs.

Which B&B Electronics wireless solution is right for your needs?



Industrial Grade Radio Modems

Easy to install and maintain, long ranges

Designed & Manufactured by B&B electronics MANUFACTURING COMPANY | MODBUS | WIDE TEMP | UL | CLASS1DIV2

(ZP9D-115RM-LR)

ZP9D-115RM-LR

Features

- DIN rail mount - saves panel or cabinet space
- Constant signal strength feedback - during installation and troubleshooting later
- Rugged circuitry, wide temperature - for indoor and outside applications
- Handles most industrial control power configurations and power supplies
- RS-232, 422, 485 serial communications

Now Available! Starter Kits, Including:
Power Supplies • Programming Cables • Programming Software

Model No.	Description	Price
RM-LR-KIT	Radio Modem LR (Long Range) Starter Kit	$748.00
RM-SR-KIT	Radio Modem SR (Short Range) Starter Kit	398.00

Specifications

- Modbus compatible - no additional converters needed
- Heavy duty DIN mount industrial grade case and components
- Frequency: ISM band, 902 to 928 MHz or 2.400 to 2.4385 GHz
- Modulation: FSK- Frequency Shift Keying
- Signal strength indicator aids trouble shooting
- 3dBi for 900 MHz; 2.1 dBi for 2.4 GHz RPSMA male dipole, antenna included
- Wide temperature range -40° to 85°C
- Versatile power: 10 to 48 VDC or 24 VAC
- 256-bit encryption (Model ZP9D-115RM-LR)
- Class 1 Div 2 (Model ZP9D-115RM-LR)

Need to get a digital signal across a highway or river? Or just to the other end of your big warehouse? Zlinx radio modems can do the job faster, easier, and less expensively than stringing cable. Easy plug-and-play set-up saves installation and maintenance time. These compact and rugged units are compatible with Modbus and Profibus so no additional converters are required.

Despite their low prices, these are not wimpy consumer or office products. Select the power level you need to punch through whatever distance and interference situations you encounter. Zlinx radio modems are built to handle the heat, cold, and environments of industrial operations.

Model No	Frequency	Radio Power	RF Data Rate	Range: indoor/outdoor	Price
ZP24D-250RM-SR	2.4 GHz	100 mW	250 Kbps	up to 300 ft/up to 1 mi	$178.00
ZP24D-192RM-MR	2.4 GHz	50 mW	19.2 Kbps	up to 600 ft/up to 3 mi	278.00
ZP24D-96RM-MR	2.4 GHz	50 mW	9600 bps	up to 600 ft/up to 3 mi	278.00
ZP9D-192RM-MR	900 MHz	100 mW	19.2 Kbps	up to 1500 ft/up to 7 mi	318.00
ZP9D-96RM-MR	900 MHz	100 mW	9600 bps	up to 1500 ft/up to 7 mi	318.00
ZP9D-115RM-LR	900 MHz	1 mW to 1W (selectable)	115 Kbps	up to 3000 ft/ up to 14 mi	358.00

Higher distances available with high gain antenna. (See page 71)

Accessories & Power Supply

Model No.	Description	Price
ZP24D-ANT1	Zlinx Radio Modem - Spare Antenna, 2.4 GHz	$15.00
ZP24D-DIN1	Zlinx Radio Modem - Spare DIN Mount Clip, Spring	2.00
ZP24D-TB1	Zlinx Radio Modem - Spare Terminal Block Kit, Dip Switch Cover	9.00
ZP9D-ANT1	Zlinx Radio Modem - Spare Antenna, 900 MHz	15.00
ZP9D-DIN1	Zlinx Radio Modem - Spare DIN Mount Clip, Spring	2.00
ZP9D-TB1	Zlinx Radio Modem - Spare Terminal Block Kit, Dip Switch Cover	9.00
MDR-60-24	24VDC, 2.5A DIN Rail Power Supply, Slimline	69.00

Free Zlinx software for network configuration, Modbus addressing, and alarms

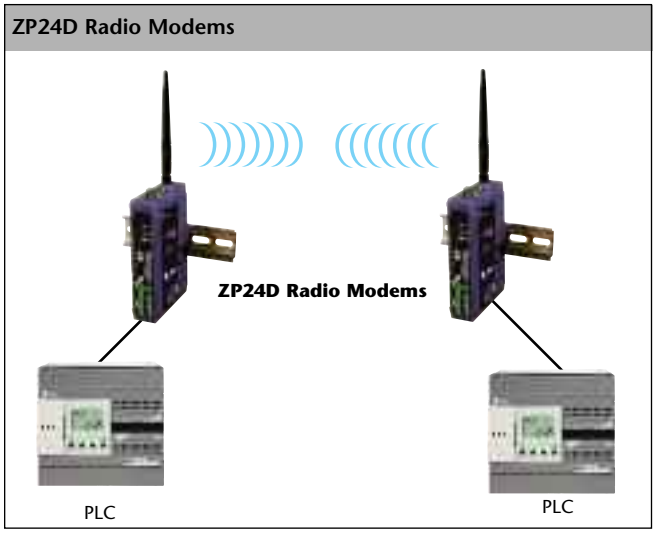
Features

- New, simplified programming
- Basic screen and an advanced screen
- Auto search function if radio settings are forgotten
- Easy field firmware updates

Easy-to-program system! Zlinx radio modems and Zlinx Modbus I/O use the same software manager suite.

Configuration software is free (download from B&B Electronics website.) Or a CD can be purchased – absolutely no registration fees or worries about installing it on any computer you have.

ZP24D Radio Modems



Wireless Proprietary RF Radio Modems

Range and reliability puts these modems in front of their competition

Features and Benefits

Operation Modes: Peer-to-Peer, Point to Multi-Point, Point-to-Point, Multi-drop Transparent Network, Modbus
Configuration: AT Command Line, Windows Software
Spread Spectrum: FHSS (Frequency Hopping Spread Spectrum)
Frequency: SM Band, 902 to 928MHz or 2.400 to 2.4385 GHz
Modulation: FSK (Frequency Shift Keying)
Antenna: Reverse Polarity SMA 2.1 dB 1/2 Wave Dipole (included except for XT09-4EI-RA and EXB09-I)
Interface: RS-232/422/485 unless specified as USB or Ethernet
Mounting: Panel mountable
Power Supply: Included

MODBUS

MaxStream

Applications

- SCADA
- Instrumentation
- Waste water plants
- Oil and gas fields
- Homeland security
- Remote monitoring
- Building automation
- Automated teller machines
- Point-of-sale terminals
- Keyless/remote access

Overview

Some data communications applications defy cabling. Whether you're facing long distances, impossible cable routing, or frequent re-location of devices, the simplicity, functionality, and reliability of these wireless modems is your answer. These radio modems are easy to install and transparent to use.

Need to reach up to 40 miles? 900MHz RF modems provide outstanding range at a low cost. RS-232/422/485 compatible. Available in an anodized aluminum case or weatherproof NEMA case.

These modems feature market-leading receiver sensitivity down to -110dBm (market average is -93 dBm). The FCC restricts the power of all radio modems' output, so it is receiver sensitivity that governs how well a radio modem system works. This range and reliability, at lower prices, sets these modems apart from their competition.

Packed Radios – Outdoor distance are specified using high gain antenna.

Frequency	Throughput	Transmit Power	Distance	Special Features	Model No. (0° to 70°C)	Price	Model No. (-40° to 85°C)	Price
900 MHz	115 kbps	1mW to 1 Watt	3000 ft / 40 mi	256-bit encryption	–		XT09-PKI-RA	$299.95
900 MHz	115 kbps	1mW to 1 Watt	3000 ft / 40 mi	NEMA enclosure	–		XT09-4EI-RA	498.95
900 MHz	115 kbps	1mW to 1 Watt	3000 ft / 40 mi	NEMA enclosure	–		XT09-4II-RA	498.95
900 MHz	9600 bps	100 mW	1500 ft / 20 mi	–	X09-009PKC-RA	$249.95	X09-009PKI-RA	264.95
900 MHz	19.2 kbps	100 mW	1500 ft / 20 mi	–	X09-019PKC-RA	249.95	X09-019PKI-RA	264.95
900 MHz	9600 bps	100 mW	1500 ft / 20 mi	USB interface	X09-009PKC-UA	249.95		
900 MHz	9600 bps	100 mW	1500 ft / 20 mi	Ethernet interface	X09-009PKC-EA	349.95		
900 MHz	9600 bps	4 mW	300 ft / 1000 ft	–	XC09-009PKC-RA	99.95	XC09-009PKI-RA	114.95
900 MHz	38.4 kbps	4 mW	300 ft / 1000 ft	–	XC09-038PKC-RA	99.95	XC09-038PKI-RA	114.95
2.4 GHz	9600 bps	50 mW	600 ft / 10 mi	–	X24-009PKC-RA	199.95	X24-009PKI-RA	213.95
2.4 GHz	19.2 kbps	50 mW	600 ft / 10 mi	–	X24-019PKC-RA	199.95	X24-019PKI-RA	213.95
2.4 GHz	9600 bps	50 mW	600 ft / 10 mi	USB interface	X24-009PKC-UA	198.95		
2.4 GHz	9600 bps	50 mW	–	Ethernet interface	X24-009PKC-EA	249.95		

USB and Ethernet options are designed to work with an RS-232/422/485 radio on one end; not to be used as a USB or Ethernet bridge.

Ethernet Bridge Products *(do not have all the common features and benefits of the other Maxstream products)*

- Sold in preconfigured pairs only (point-to point-communications)
- Autocross Ethernet port
- 12 unique channels allows up to 12 pairs of radios in one location
- Direct Sequence Spread Spectrum (DSSS)
- NEMA packaged outdoor product allows panel mounting, indoor model is designed for the desktop

Frequency	Throughput	Transmit Power	Distance Indoor/Outdoor	Special Features	Indoor Model (-40° to 70°C)	Price	Outdoor Model (-40° to 70°C)	Price
900 MHz	935 kbps	125mW	1000ft / 15 miles	128 bit encryption	XEB09-C	$698.95	XEB09-I	$998.95

Zlinx Modular Remote I/O

Send digital and analog I/O signals wirelessly – and securely!

Full Zlinx I/O Product Line
pages 73-76

Features

DIN Rail Package . . . . . Easy installation, conserves panel space (versus panel mount modems).

3 Ranges Available . . . . . 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, you can build up a security path for all your critical communications.

Modular . . . . . Tailor to your specific application needs. Just snap on your I/O and you're ready to go.

10-48 VDC Power Input . . . . . Rugged input power circuit allows insertion to most control power configurations. Can utilize industrial power supplies.

Wide Temp/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 directly LEDs brought into most PLC systems.

Custom-build Options . . . . . Designed and built specifically to your application requirements. Call B&B Electronics today!

Benefits

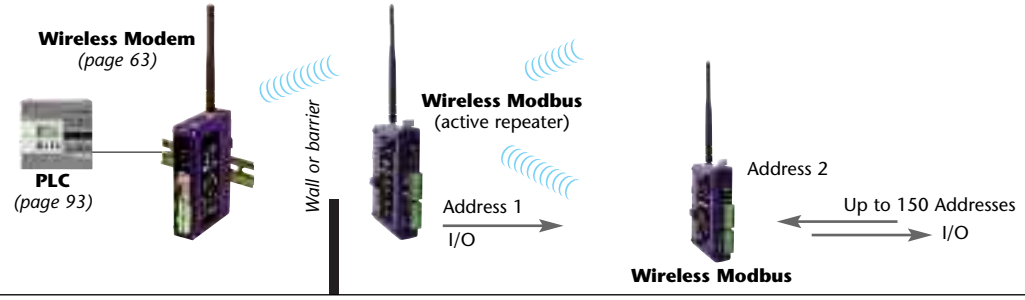
Build your System:

1. **Start by selecting a base module** - that meets your wireless distance and I/O needs.
2. **Snap-on expansion I/O modules** - choose from various DI, DO, AI, AO configurations.
3. **Add a radio modem for Modbus applications** - also available from B&B Electronics.
4. **Finish with free configuration software and accessories.**

Sending digital/analog inputs/outputs over the air! These wireless, plug-n-play modules combine 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.

Zlinx wireless products provide point-to-point communication replacing or eliminating wire. With bi-directional flow control, these modular I/O controllers allow full-duplex transmissions to optimize communication efficiency.

Repeater Mode



B&B Electronics Customer Service

Karla: I can help with all your customer service needs!

Call today to place your order! Our friendly customer services representatives will be happy to help you with your product order, expedited shipping, payment options, and return authorizations.

Call our Customer Service Department at (815) 433-5100 or visit: www.bb-elec.com

Antennas, Cables & Surge Arrestors
page 71

Wireless Ethernet Serial Servers

Wirelessly connect legacy serial devices to your Ethernet LAN with 802.11g/b

Designed & Manufactured by B&B electronics MANUFACTURING COMPANY | 802.11b,g 232/422/485 | Price Reduced!

Benefits

- WiFi performance up to 54 Mbps 802.11g/b connectivity
- Wirelessly connect legacy serial devices to your LAN; Eliminates cable installation cost
- Ease of installation and setup via integrated web server
- Remote device monitoring and diagnostics
- Ideal for applications requiring virtual COM ports, serial tunneling, TCP socket, or UDP socket
- Scalable and field upgradeable to protect investments

General Features

- 2.4 GHz IEEE 802.11g DSSS radio
- 802.11g provides 100% 802.11b compatibility
- Rugged, IP30 enclosure, DIN or panel mount options
- Protocols: TCP, IP, ARP, DHCP, HTTP, UDP, ICMP
- LEDs provide at-a-glance operational status: power, signal strength, LAN-link, data
- Supports TCP server, TCP client, virtual COM
- Status indicators: power, link activity, signal strength
- External antenna, omni-directional included – reverse SMA connector

ES1AWB/ESR901WB Additional Features

- 2.4 GHz IEEE 802.11b DSSS radio, antennas included
- Operating temperature: -30° to 70° C
- Built-in web server, web browser
- Protocols supported: TCP, UDP, DHCP, SNMP, SSL/TLS, TELNET, RLOGIN, RFC22A, LPD, HTTP/HTTPS, SMTP, ILMP, IGMP, ARP
- Security: WEP, WPA, PEAP, 802.11i admin/config password protection
- The ultra compact design of Model ES1AWB fits almost anywhere and is powered by 5 VDC power supply (included).

Specifications

- Wireless transmission rates (Mbps): 54, 11, 5.5, 2, 1
- 12 to 30 VDC, 24 VAC terminal block input
- RF power 15 dBm
- RJ-45 Ethernet configuration port
- Serial data rates: 110 bps to 230.4 kbps
- Operating temperature: 0° to 60° C
- Dimensions:
  ESR90xW: 6.9 x 5.7 x 2.3 in (17.4 x 14.5 x 5.8 cm)
  ES1AWB: 1.5 x 2.1 x 3.4 in (3.8 x 5.4 x 8.5 cm)
- Power:
  ESR90xW-2: 10 – 30 VDC terminal block
  ES1AWB: 5 VDC @ 500 mA (included)

Applications

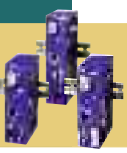
- Retail/Point-of-sale • Building automation • Security

Ethernet Serial Servers transparently connects, configures, and communicates with serial devices over industry leading 802.11g 54Mbps, and 802.11b 11Mbps compatible WiFi wireless connections. For applications where running cable is not an option, these economical devices combine wireless data networking with proven asynchronous connectivity. Available in 1, 2, and 4 port versions with support for RS-232, RS-422, and RS-485 interfaces. The ESR servers have a range of up to 100 meters outdoors and 50 meters indoors. Range can be extended with directional antennas.

Model No.	Description	802.11	Mounting	Price
ESR901W232	Single-port RS-232 DB9	g/b	DIN	**$279.00**
ESR901W485	Single-port RS-422/485 terminal block	g/b	DIN	**279.00**
ESR902W	Dual-port DB9: one RS-232 only; one RS-232/422/485	g/b	DIN	**359.00**
ESR904W	4-port DB9: two RS-232 only, two RS-232/422/485	g/b	DIN	**519.00**
ES1AWB	Wireless single port RS-232 converter	b	Inline	**249.95**
ESR901WB	Industrial wireless single port RS-232/422/485 converter	b	DIN	**279.00**
PMAD10	Panel mount adapter (pair)	—	—	**4.95**
9FTB6	DB9 to 6-position terminal (pair)	—	—	**39.95**
DR-75-24	DIN rail power supply, 24VDC, 6A	—	—	**99.00**

Wireless Ethernet Serial Servers

Antennas, Cables & Surge Arrestors
page 71



Wired Terminal ESR Family
page 10

Wireless Serial Device Servers

Wirelessly enable your serial devices using 802.11a/b/g to serial technology

NPORT W2004

NPORT W2250 PLUS

Features/Benefits – all models

- Wirelessly connect your serial devices with 802.11 technology
- Signal strength LED indicator
- No need to change COM software (includes COM re-director that is transparent to your application)
- DIN mountable with accessory item DRAD35
- Transmission rate: 54 Mbps max. with auto fallback
- Protocols: ICMP, IP, TCP, UDP, DHCP, BootP, Telnet, SNMP, HTTP, SMTP
- Operation modes: TCP server, TCP client, UDP, Real COM, Pair connection
- Utilities: Windows 98, ME, 2000, XP, 2003
- Power: 12 to 48 VDC (power supply included)
- Serial Interface: RS-232/422/485
- Communicates with host computer up to 100 meters away
- Includes power supply

Applications

• Industrial automation • Factory automation • Building automation • Kiosk • Point of sale

Overview
The NPort Wireless Serial Device Servers offer wireless networking capabilities to printers, weighing scales, medical equipment, manufacturing machinery, bar code readers, card readers, point-of-sale equipment and other data collection devices. Each serial port is configured with RS-232/422/485 making it suitable for use with most serial devices.

802.11 wireless connectivity to serial devices
In hard-to-wire situations, the NPort Wireless Serial Device Server is the ideal solution to reduce the number of connection cables. When using Infrastructure Mode or Ad-Hoc Mode, they can communicate with any host computer via an access point or another NPort Wireless Serial Device Server.

Works with existing software, saving you time and money
The NPort Wireless Serial Device Server supports field proven Real COM/TTY drivers for Windows and Linux systems, ensuring that existing PC software will still work when used with the new Wireless LAN infrastructure. TCP server, TCP client and UDP modes are also supported so that IP-based software (e.g. Telnet) can directly access each device by knowing the IP and TCP port number.

Easy-to-use remote management and configuration tools
These NPort Wireless Serial Device Servers provide a Windows utility that automatically searches and locates the Wireless Serial Device Server over the Ethernet network. An easy-to-use Wizard in the web console guides you through the entire installation within minutes.

Model No.	Description	Connector	802.11	Ports	Price
NPORT W2150 PLUS	RS-232/422/485 serial server	(1) DB9m	a/b/g	1	**$348.95**
NPORT W2250 PLUS	RS-232/422/485 serial server	(2) DB9m	a/b/g	2	**398.95**
NPORT W2004-US	RS-232/422/485 serial server	(4) RJ45	b/g	**4**	**798.95**
Optional Accessories					
DRAD35	DIN rail adapter clips (set of two)				**4.95**
CBL-RJ45M9-150	RJ45 to DB9 male 150cm cable	**for NPORT W2004-US**			**14.95**
CBL-RJ45F9-150	RJ45 to DB9 female 150cm cable	**for NPORT W2004-US**			**14.95**
CBL-RJ45M25-150	RJ45 to DB25 male 150cm cable	**for NPORT W2004-US**			**14.95**
CBL-RJ45F25-150	RJ45 to DB25 female 150cm cable	**for NPORT W2004-US**			**14.95**

Secure Wireless Serial Device Server

Wirelessly transmit sensitive/business critical data with network security

Features/Benefits

- Compact enclosure design with integrated mounting tabs
- Fully switch-selectable RS-232/422/485 high-speed serial interface
- Flexible 9-30VDC power input
- Wireless 802.11b network interface – data rates up to 11 Mbps
- Industry's first secure wireless device server solution supporting enterprise-class WPA2/802.11i security
- Easy-to-use Digi plug-and-play firmware offers complete serial-to-network connectivity and unique product customization flexibility
- Strong SSL/TLS encryption with NIST-certified AES encryption for security sensitive environments
- Patented RealPort technology for COM/TTY port redirection and control

DC-WSP-01-S

The introduction of wireless technology into fully networked electronic devices creates a new dimension of issues. The significant benefits of wireless technology often come with potential risk, and choosing the right product can provide you with peace-of-mind. The Digi Connect Wi-Sp is the industry's first wireless device server to provide wireless security with WPA2 compliant authentication and 802.11i standards.

Model No.	Description	Price
DC-WSP-01-S	Digi Connect Wi-SP w/power supply and dipole antenna	**$336.95**

Industrial Ethernet Wireless AP Bridge/AP Client

Access all your resources wirelessly with access points

Features	Benefits
Industrial IP30 or IP67/68 Enclosures	Ensures reliability in harsh industrial or outdoor applications
Power-over-Ethernet Compatible	A power supply is not required if your network features PoE
Web Based Management	Easy to remotely configure
64/128-bit WEP and WPA	Ensures your data remains secure

MOXA® POE WIRELESS

Advanced Security Capability
- 64/128-bit WEP (Wired Equivalent Privacy)
- Enable/disable SSID Broadcasts
- MAC-address based access control
- IEE802.1x / RADIUS
- WPA (Wi-Fi Protected Access)

Useful Utilities and Remote Configuration
- Firmware upgrade from TFTP or HTTP
- Configuration backup and reset
- Web-based Management
- Supports SNMP and UPnP

Tired of the hassle of finding a place to plug into your Ethernet system? Are you ready for the convenience of sending your Ethernet packets over the air instead of through a wire? Now you can access your network resources without having to plug in or dock into your LAN. B&B Electronics has carefully selected the AWK-1100 and AWK-1200-AP/AC to enable industrial users to access their network resources wirelessly.

The **AWK-1100-US** can be configured as an Access Point Bridge or Client. A rugged, IP30, DIN rail mountable case and dual power inputs make this product a perfect fit for industrial applications. Class 1 Div 2 is also a favorite feature for the oil and gas industry. Each unit includes two 2dBi antennas.

The **AWK-1200** series is sold either as a Bridge or as a Client. These products have superior weather resistance with the IP67 and IP68 case ratings and are mountable to a mast or panel mountable (both mounting options are included with each radio). A PoE connection is required to power these Access Points. The Access Point Bridge AWK-1200-AP-US includes two 5dBi antennas while the Access Point Client AWK-1200-AC-US includes one internal 9dBi antenna.

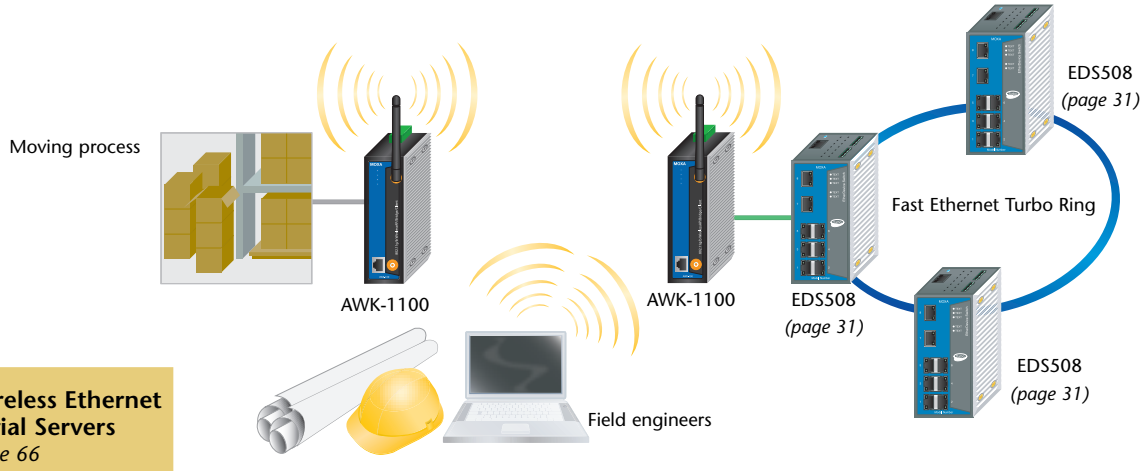
Bridge vs Client Modes
Bridge Mode allows one-to-many while Client Mode allows one-to-one. Networks are typically set up with an Access Point Bridge at the main, hard-wired Ethernet connection and the peripheral Access Points will be set up as Clients. In this particular case, the Clients are set up in Infrastructure Mode. Another way to use Clients is in Ad-hoc Mode, which allows two Clients to communicate one-to-one.

Model	Function	Input Power	Temperature	Enclosure	Antenna	Other Features	Price
AWK-1100-US	AP Bridge/Client	Dual 12-45VDC or PoE	0 to 60°C	DIN Mount / IP30	(2) 2 dBi external (RPSMA)	Class 1 Div 2	**$648.95**
AWK-1200-AP-US	AP Bridge	PoE	-20 to 70°C	Outdoor / IP67	(2) 5 dBi external (N-type)	WPA2 *NEW!*	**1248.95**
AWK-1200-AC-US	AP Client	PoE	-20 to 70°C	Outdoor / IP68	(1) 9 dBi internal	*NEW!*	**748.95**

Accessories & Power Supply

Model No.	Description	Price
EDS-WK	Panel Mount Kit for AWK-1100-US	**$11.95**
MDR-40-24	24VDC, 1.7A DIN Rail Power Supply, Slimline	**59.00**

Application



Wireless Ethernet Serial Servers
page 66

Wireless Cellular Gateway/Router/VPN

Transmit Ethernet and serial data with cellular technology

DC-WAN-GE10A

Benefits

- Ethernet and serial over cellular network
- RS-232/422/485 support
- LEDs for Ethernet, power on, cellular link/activity, signal strength
- Easy-to-use web interface and set-up wizard
- Security: SSL, SSH v.2, FIPS 197, HTTPS
- Router/Firewall features: NAT, port forwarding, VPN pass-through, access control lists (IP filtering)
- Extended temperature range (-30˚ to 60˚ C CDMA) (-30˚ to 70˚ C GSM)
- Includes power supply, 0˚ to 60˚ C (excluded Connect WAN IA)
- Optional -35˚ to 70˚ C power supply
- Includes dipole antenna
- "SureLink" always-on maintains wireless connections
- RealPort - COM redirection software

Connect WAN VPN – all above benefits plus:

- Integrated IPSec VPN (AES, DES, 3DES)
- IKE/ISAKMP

Connect WAN IA – all WAN VPN benefits plus:

- DIN rail mounting bracket included
- Class 1 Division 2
- Modbus support
- 9 to 30 VDC power input via terminal blocks GSM models

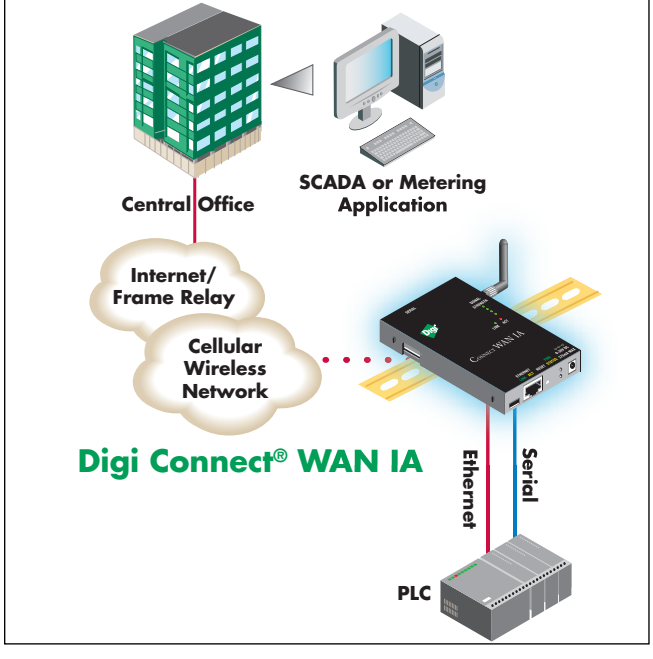
GSM models

- Quad band 1900/850 and 1800/900 MHz
- EDGE class 10, GPRS class 12
- Throughput up to 240 Kbps, 100-130 Kbps typical
- Certified networks: Cingular, Rogers Wireless, Midwest Wireless

CDMA models

- 800 MHz cellular, 1900 MHz PCS
- 1 x RTT
- Throughput up to 153 Kbps, 60-80 Kbps typical
- Certified networks: Sprint, Verizon, Centennial Wireless, Alltel Wireless

Application



Three Easy Steps to Successful Cellular Data Communications

1. Understand your application
2. Select the hardware that best suits your needs
3. Activate the hardware with a cellular data plan

Overview

The Connect WAN family of commercial-grade wireless WAN cellular routers, gateways and VPN appliances provide secure high-speed wireless connectivity to remote sites and devices. These cellular products selected by B&B Electronics can be used for reliable primary wireless network connectivity to equipment at remote locations, as well as for a backup to existing land-line communications. Ideal where wired networks (e.g., leased line/frame relay, ISDN, DSL) are not feasible.

Optional Connectware Manager software management suite provides easy setup, configuration, and maintenance of large installations. Users can upgrade firmware, or change settings on thousands of devices with only a few clicks. It makes troubleshooting simple by identifying rogue devices, or network issues. A five-user license per site is included with the Connect WAN products. Contact B&B Electronics for larger license requirements.

GSM models

Model No.	Family	Price
DC-WAN-F501	Connect WAN IA	$697.95
DC-VPN-GE10A	Connect WAN VPN	697.95
DC-WAN-GE10A	Connect WAN	634.95

CDMA models

Model No.	Family	Network	Price
DC-WAN-G510	Connect WAN IA	Sprint	$797.95
DC-VPN-S1XA	Connect WAN VPN	Sprint	797.95
DC-WAN-S1XA	Connect WAN	Sprint	734.95
DC-WAN-D311	Connect WAN VPN	Verizon	797.95
DC-WAN-D111	Connect WAN	Verizon	734.95
DC-WAN-D316	Connect WAN VPN	Alltel	797.95
DC-WAN-D116	Connect WAN	Alltel	734.95

Accessories

Model No.	Description	Price
76000682	DIN mount bracket	$27.95
76000717	Extended temp power supply (-35 to 70 °C)	80.95
MDR-40-24	24VDC, 1.7A DIN Rail Power Supply, Slimline	59.00

Wireless Proprietary RF

R.F. Antenna and Cable Selection

When designing an antenna system there are several items to consider. Factors that affect the performance of the antennas are highlighted below. An RF communications system should be designed such that more than the absolute minimum signal level arrives at the receiver. This will allow some "link margin" in situations where conditions change and the environment degrades the signal.

Radio Output Power. RF power is rated in watts or milli-watts. Typical B&B Electronics Zlinx products are rated in 1mw, 10mw, 100mw, 500mw and 1watt, outputs. As RF power increases so will the current demand on the power supplying your system.

Radio Receive Sensitivity. Receive sensitivity is basically the ability to detect and decode a specific radio frequency. Typically this is measured in dBm - the lower the better. Typical Zlinx products are approximately -114dBm.

Transmit/Receive Distance. Keep in mind that if you have lots of transmit power but poor receive sensitivity, bidirectional communication may be a problem. The type of cable and antenna used will affect the receive sensitivity and RF output power.

Cable Impedance. It's important to select a cable that matches the radio's impedance. A mismatch will cause the radio link to become inefficient or may cause damage to the radio.

Antenna Type. If at all possible your system's antennas should be able to "see" each other. This is not always possible so it's critical to select the proper antenna components to keep signal loss or decrease receive sensitivity. If obstacles are present, you may consider a higher gain antenna.

Cable Type. Selecting the incorrect cable could cause significant signal loss. A rule of thumb is for every 3db of loss, your system will lose one half the output power emitted from the radio. Visit our antenna selection tech paper a helpful selection guide and more information: **www.bb-elec.com/techpapers.**

Obstacles. Obstacles are always a problem. General rule: Try to avoid them. When placing an antenna, keep in mind that trees grow, new buildings are constructed. Plan for future obstructions.

More is Not Better…
Keeping the above in mind, one of the most important components in an antenna system is the transmission cable. The wrong type, wrong impedance, wrong length, etc., and your system could go south quick. When selecting RF coax type cable keep cable runs as short as possible. Long cable runs will cause additional signal loss.

Peer to Peer vs. Peer to Multi-Peer…
When selecting an antenna also keep in mind the type of system architecture. Simple systems, such as peer-to-peer, can be easily designed using Yagi antennas on both ends. A multi-peer system, such as a Modbus master to several slave devices, needs a little more thought. When designing a multi-peer system the master needs to communicate to all the respective slave devices. This is typically accomplished by designing an omni-directional antenna on the master and Yagi antennas pointing at the master antenna.

Antenna Selection…
The same rule applies for the gain of an antenna: for every 3db of gain, you will double the effective radiated power out of the respective antenna. A gain of 8.1db using a 100wm radio is approximately 270mw of output power. (Keep in mind we have not included any cable or connector losses.)

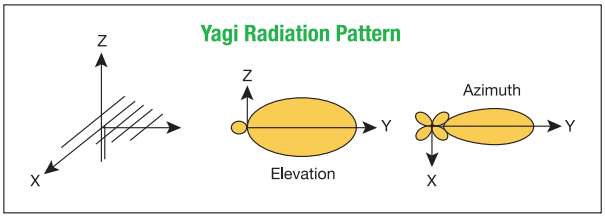
Cable Specifications

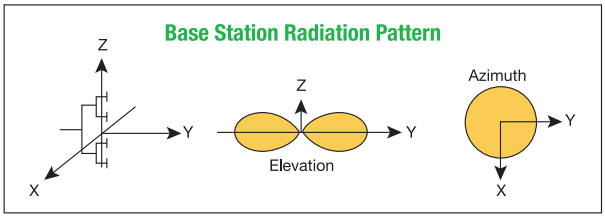
Cable Type	Loss at 900 MHz - per 100 feet	Loss at 2.4 GHz - per 100 feet	Diameter
LMR-195	11.5 dB	19.0 dB	0.195 in.
LMR-400	3.9 dB	6.8 dB	0.405 in.

Antenna Gain Rule-of-Thumb

Frequency and Wattage	300 feet	1000 feet	1 mile	5 miles	10 miles
900 MHz, 100 mW	2.1 dB	2.1 dB	>6 dB	>10 dB	n/a
900 MHz, 1 W	2.1 dB	2.1 dB	>3 dB	>6 dB	>10 dB
2.4 GHz, 50 mW	2.1 dB	>6 dB	>10 dB	n/a	n/a
2.4 GHz, Zigbee	2.1 dB	>6 dB	>10 dB	n/a	n/a

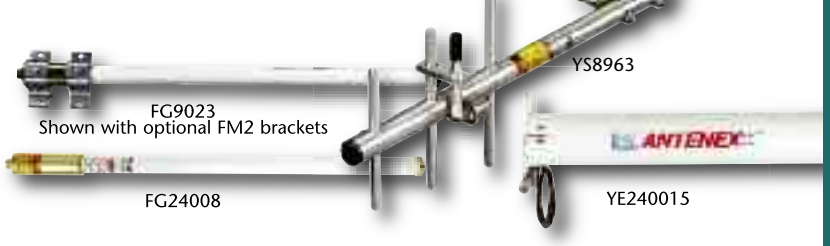
Typical radiation patterns using Yagi and Dipole type antennas.





Wireless Accessories

Antenna and cabling options for longer range & special applications



Antenna options

Model No.	Frequency	Gain	Style	Connector	Dimensions	Mounting Bracket	Price
FG24008	2.4 GHz	8 dB	Omni (fiber glass)	N female	24 in (60.9 cm) long	FM2	$194.95
YE240015	2.4 GHz	12.5 dB	Yagi	N female	18 in (45.7 cm) long	Included	244.95
FG9023	900 MHz	3 dB	Omni (fiber glass)	N female	25 in (63.4 cm) long	FM2	139.95
FG9026	900 MHz	6 dB	Omni (fiber glass)	N female	65 in (165.1 cm) long	FM2	179.95
YS8963	900 MHz	6 dB	Yagi	N female	16.8 in (42.7 cm) long	Included	69.95
YS8966	900MHz	9dB	Yagi	N female	27.8 in (70.6 cm) long	Included	89.95
YS89612	900MHz	11dB	Yagi	N female	49 in (124.5 cm) long	Included	154.95
FM2	Brackets for Omni-directional antennas, package of two (used for one antenna)						29.95

For long range point-to-point applications, use Yagi antennas. Multi-point applications may require a mixture of Yagi and Omni-directional antennas.

Cables to connect optional antennas

Model No.	Connector 1	Connector 2	Length	Material	Price
195M-SLSW-24	SMA Reverse polarity plug	RPSMA Jack bulkhead	2 ft	LMR195	$29.95
400M-NMSL-24	SMA Reverse polarity plug	N Male	2 ft	LMR400	29.95
400M-NISL-24	SMA Reverse polarity plug	N Bulkhead (female)	2 ft	LMR400	32.95
400M-NMSL-120	SMA Reverse polarity plug	N Male	10 ft	LMR400	49.95
400M-NMSL-240	SMA Reverse polarity plug	N Male	20 ft	LMR400	59.95
400M-NMSL-600	SMA Reverse polarity plug	N Male	50 ft	LMR400	119.95
400M-NMTL-24	TNC Reverse polarity plug	N Male	2 ft	LMR400	29.95
400M-NITL-24	TNC Reverse polarity plug	N Bulkhead (female)	2 ft	LMR400	32.95
400M-NMTL-120	TNC Reverse polarity plug	N Male	10 ft	LMR400	49.95
400M-NMTL-600	TNC Reverse polarity plug	N Male	50 ft	LMR400	119.95
400M-NMNM-120	N Male	N Male	10 ft	LMR400	39.95
400M-NMNM-240	N Male	N Male	20 ft	LMR400	59.95
400M-NMNM-480	N Male	N Male	40 ft	LMR400	99.95
400M-NFNM-120	N Female	N Male	10 ft	LMR400	39.95
400M-NFNM-480	N Female	N Male	40 ft	LMR400	99.95

Lighting Arrestors & MOCAP Silicone Installation Tape

Protect your antenna from weather

LABH350NN LABH2400NN IASFST IASFST10

Features – Lighting Arrestors

- Impedance: 50 Ohms (nom.)
- Connector 1: N female
- Connector 2: N female (bulkhead)

When installed properly in the feedline, a lightning arrestor can prevent antenna damage due to lightning strikes. These units are designed with a rugged housing and high quality plated brass "N" connectors.

Model No.	Power	Max. Voltage	Breakdown Loss	Insertion VSWR	Protection	Configuration	Price
LABH350NN 0 to 1 GHz	1000 W	350 VAC	27 to 500 MHz < 0.1 dB 1000 MHz < 0.25 dB	0 to 150 MHz < 1.1 to 1 150 to 1000 MHz < 1.2 to 1	5000 A	Bulkhead, Pass-through	$78.95
LABH2400NN 0 to 4 GHz	70 W	90 to 130 VAC	0 to 1 GHz < 0.03 dB 1 to 4 GHz < 0.29 dB	0 to 1 GHz < 1.1 to 1 1 to 4 GHz < 1.2 to 1	1 shock = 20 kA 10 shocks = 10 kA	Bulkhead, Pass-through	78.95
LAIL350NN 0 to 1 GHz	1000 W	350 VAC	27 to 500 MHz < 0.1 dB 1000 MHz < 0.25 dB	0 to 150 MHz < 1.1 to 1 150 to 1000 MHz < 1.2 to 1	5000 A	In-line applications	*NEW!* 78.95

Features & Benefits – Silicone Installation Tape

- Save installation time and labor
- Protect valuable equipment
- Material will not crack or melt in temperatures from -51 to 260° C
- Dielectric strength of 400 Volts per mil
- Tensile strength of 600 psi
- Insulates to 8000 Volts

Model No.	Description	Price
IASFST10	MOCAP tape - (6) ten inch strips, 1 inch wide	$5.95
IASFST	MOCAP tape - 36 foot roll, 1 inch wide	29.95

Easy-to-use self-fusing installation tape bonds to itself in seconds forming a permanent air and water tight seal within 24 hours. Adhesive-free formula leaves no sticky residue after removal. Stretches up to 300% allowing it to conform to any shape. Safe replacement for heat shrinkable sleeving. Ideal for termination splicing, wire connections, bundling wires and cables, masking applications and quick emergency repairs.