

Wireless Data Modems—Introduction

| | 6720005054 WI-MOD-E-G | 6720005057 WI-MOD-E-A | 1242110000 IE-WL-AP-BR-CL-ABG-US | 6720005015 WI-MOD-945-E | 6720005051 WI-MOD-9-E |
|---|----------------------------------|----------------------------------|---|------------------------------------|----------------------------------|
| Frequency | 2.412 - 2.472GHz | 5.18 - 5.825GHz ¹ | 2.4Ghz / 5.8Ghz | 902-928MHz ¹ | 902 - 928MHz ¹ |
| Modulation | 802.11b/g + OFDM | 802.11a + OFDM | 802.11 a/b/g | 802.11 g + OFDM | 802.11-FHSS |
| TX Power | 15 - 400mW ² | 15 - 400mW ² | 15-100mW | 15 - 1000mW | 100mW - 1W ² |
| Data Rate | 108Mbps | 108Mbps | 54Mbps | 54Mbps | 200Kbps |
| WDS (AP-AP) | Yes | Yes | Yes | Yes | No |
| Self Heal (Spanning Tree) | Yes | Yes | Yes | Yes | Yes |
| Serial Client/ Server/ Multicast | Yes | Yes | Yes | Yes | Yes |
| Encryption Security Level (Maximum level highlighted) | WPA2 /802.11i | WPA2 /802.11i | WPA / WPA2/802.1X | WPA2/802.11i | 128 bit AES Encryption |
| MAC / IP Filtering | Yes | Yes | Yes | Yes | Yes |
| Network Function | AP /Client Bridge /Router | AP /Client Bridge /Router | AP/Client/Bridge | AP /Client Bridge /Router | AP /Client Bridge /Router |
| Online Diagnostics | Yes | Yes | Yes | Yes | Yes |
| Online Configuration | Yes | Yes | Yes | Yes | Yes |

¹Frequency availability - country regulatory dependant.

²Configurable TX Power option available - country regulations apply.



Ethernet and Serial Data



Technical Data

| Radio Transceiver | WI-MOD-9-E Serial and Ethernet 900MHz (FHSS) | WI-MOD-945-E Serial and Ethernet 900MHz (DSSS) |
|---|--|---|
| Transmission | Frequency Hopping Spread Spectrum Transceiver | Direct Sequence Spread Spectrum (DSSS) |
| Frequency - USA/Canada | 902 - 928 MHz | 902 - 928MHz |
| Transmit Power | 0.1 - 1W (20 - 30 dBm) configurable | 250mW (+24dBm) to 1W (+30dBm) |
| Modulation | Frequency Shift Keying | 802.11g Orthogonal Frequency Data Modulation (OFDM) |
| Receiver Sensitivity | -108 dBm @ 10-6 BER | -95dBm @ 0.25Mbps - 71dBm @ 54Mbps (8% FER) |
| Channel Spacing | 16 x 50 | 9 x 1.25MHz; 9 x 2.5MHz; 4 x 5MHz; 4 x 10MHz; 2 x 20MHz |
| RF Data Transmission Rate | 19.2, 57.6, 115.2Kb/s or auto rate selection | 1 - 54Mbps "Auto Mode" Selects Fastest Rate Possible Relative to RSSI |
| Expected line-of-sight range, depending on local conditions | up to 60 miles / 100 km line-of-sight using high gain antennas (*up to 4W ERP permitted in USA/Canada) Range may be extended using repeater features | 6+ miles @ 630mW/30Kcm (18 mi.) @ 1W (*up to 4W ERP permitted in USA/Canada) Range may be extended using repeater features |
| Range may be extended by: | up to five intermediate repeaters in controlled mode unlimited repeaters in transparent mode | Ability to construct complex networks using multiple repeaters and roaming features |
| Ethernet/Serial Port | | |
| Ethernet | 10/100baseT; Auto MDX Bridge/router functions work with all Ethernet protocols | 10/100 BaseT RJ45, IEEE 802.3 compliant. Bridge/router functions work with all Ethernet protocols |
| Embedded Protocols: | TCP/IP, UDP, ARP, PPP, ICMP, HTTP, FTP, TFTP, TELNET | TCP/IP, UDP, ARP, PPP, ICMP, HTTP, FTP, TFTP, TELNET, SNMP, RADIUS/802.1X, DHCP, OFDM |
| Serial | | |
| RS232 V.24 DCE | DB9 Female DCE; RTS/CTS/DTR/DCD (Hardware Signals Provided) | DB9 Female DCE; RTS/CTS/DTR/DCD |
| RS485 | 2-Pin Terminal Block (Configurable Termination) Serial server, PPP, Modbus to Modbus TCP conversion | 2-Pin Terminal Block - Non-Isolated Serial server, PPP, Modbus to Modbus TCP conversion |
| Serial Settings | | |
| Data Rate (Bps) | 7/8 Data Bits; Stop/Start/Parity (Configurable) 1.2 to 115.2 Kb/s | 7/8 Data Bits; Stop/Start/Parity (Configurable) 1200, 2400, 4800, 9600, 14400, 19200, 38400, 57600, 76800, 115200, 230400 |
| Protocols/Configuration | | |
| System Address | ESSID: 1 - 31 Character Text String | ESSID: 1 - 31 Character Text String |
| Protocols supported | TCP/IP, UDP, ARP, Radius/802.1x, DHCP, DNS, PPP, ICMP, HTTP, FTP, TFTP, TELNET, MODBUS-RTU and MODBUS-TCP | TCP/IP, UDP, ARP, Radius/802.1x, DHCP, DNS, PPP, ICMP, HTTP, FTP, TFTP, TELNET, MODBUS-RTU and MODBUS-TCP |
| Network/Configurable Parameters | Configurable as Access Point or Client, Bridge or Router Point-to-point, Point-to-multipoint, user configurable addressing Repeater functionality MAC Filtering - whitelist or blacklist | Access Point/Client/Bridge/Router/VLAN Point-to-Point, Point-to-Multi-point Wireless Distribution System (AP - AP Repeater) Modbus TCP/RTU Gateway Serial Client/Server/Multicast Simultaneous RS232/485 Connection Embedded Modbus Master/Slave for I/O Transfer |
| User Configuration | Remote Access - Over-the-Air Network Access - Ethernet | User Configurable Parameters via HTTPS Embedded Web Server Network Access - Ethernet |
| Security | 128 bit AES encryption | Data Encryption - 802.11i with CCMP 128-bit AES Support for 802.1x Radius Server Secure HTTP Protocol |
| Bandwidth Protection | MAC Address - Whitelist/Blacklist IP Filtering - Whitelist/Blacklist | MAC Address - Whitelist/Blacklist IP Filtering - Whitelist/Blacklist ARP/GARP Filtering - Whitelist/Blacklist |
| General Data | | |
| Antenna connection | Single Female SMA 50Ω | 2 x Female SMA Standard Polarity 50Ω Supports signal diversity or high-gain antenna |
| Operating Temperature | -40 to 60°C (-40 to 140°F) | -40 to +60°C; -40 to +140°F |
| Humidity | 99% non-condensing | 0 - 99% RH Non-condensing |
| Power Supply | 9 to 30 VDC; Under/Over Voltage Protection | 9 to 30 VDC; Under/Over Voltage Protection |
| Current consumption Idle: | 280mA (12V), 150mA (24V) | 270mA @ 12 VDC; 140mA @ 24 VDC |
| Transmit: | (1W) 500mA (12V), 300mA (24V) | 500mA @ 12V (+30dBm), 250mA @ 24V (+30dBm) |
| EMC | FCC CFR47 Part 15; EN 301 489-3; EN 301 489-5 | FCC Part 15; EN 301 489 - 17; AS/NZS CISPR22 |
| RF (Radio) | FCC 15.247, RS210 | EN 300 328; FCC Part 15; RSS 210 |
| Approvals | CSA Class 1 Division 2, AS/NZS 60950, IEC 60950 | CSA Class I, Division 2; ATEX; IECEx NA IIC; IEC 60950 (RoHS Compliant); cULus Listed (pending on 1W) |
| Mounting | DIN-rail mounting | DIN-rail mounting |
| Dimensions (LxWxH) mm | 114 x 168 x 30mm (4.5" x 6.7" x 1.2") | 114 x 168 x 30mm (4.5" x 6.7" x 1.2") |
| Weight | < 0.4 kg / 0.8 lb | 0.5kg (1.1lb). |
| Housing | Powder-Coated Aluminium | Powder-Coated Aluminium |
| Mounting | DIN-Rail | DIN-Rail |
| Terminal Blocks | Removable; Max conductor 12 AWG (2.5mm ²) | Removable; Max Conductor 12 AWG (2.5 mm ²) |
| LED indication | Power/OK; RX; TX/Link; RS232; LAN; RS485; Digital I/O Serial Activity, Digital I/O, LAN 10/100Mbit Link | Power/OK; RX; TX/Link; RS232; LAN; RS485; Digital I/O Serial Activity, Digital I/O, LAN 10/100Mbit Link |
| Reported Diagnostics | Diagnostics available through web pages | RSSI Measurements (dBm) Connectivity Information/ Statistics System Log File |
| Input/Output Configurable DI/DO/AI | Input Voltage-Free Contact Output FET 30 VDC 500mA | Input Voltage-Free Contact Output FET 30 VDC 500mA |

Ordering Data

| Type | Part No. | Type | RF Power | Part No. |
|------------|-----------|----------------|----------|-----------|
| WI-MOD-9-E | 672005051 | WI-MOD-945-E | 630mW | 672005015 |
| | | WI-MOD-945-E-H | 1W | 672005016 |