

Wireless Meshed Multi I/O and Gateway WI-I/O-9-U2



Weidmuller's WI-I/O-9-U2 combines multi I/O and/or gateway functionality with the reliability of secure, scalable mesh distance communications. The WI-I/O-9-U2 IP-based addressing provides mesh/self-healing of network communications, multihop repeating and remote over the air re-configuration and diagnostics. The WI-I/O-9-U2 is further complemented by its ease of commissioning and integration into existing plant infrastructure.

Features:

- 902-928MHz, FHSS, IP based, wireless mesh technology to 115kbps
- Self-healing, repeatable, secure communications to 128bit AES
- User friendly operation with self discovery of radio path and expansion I/O
- Remote over the air re-configuration, firmware upgrade and fault analysis
- Scalable, simple to complex, and point to multipoint network design
- Block Mapping and Block Messaging technology for ease of system integration
- I/O and/or gateway functionality via feature key upgrade
- System wide view, localized I/O referencing, and printing/exporting of configuration

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General Specifications

- **Frequency:** 902-928MHz Frequency Shift Keying (FSK); Frequency Hopping Spread Spectrum
Channels/Hop Sets: 50 x 250kHz; 2 frequency channels.
- **Power:** transmit power 1 W, approved to FCC Part 15.247, RSS210
- **Sensitivity:** -109dBm; FER = 12%
- **Max. Range (line-of-sight):** USA/Canada/Mexico - 4W ERP, 20+ miles
- **Data Rate:** 19,200bps baud: 28,800, 57,600, 115,200 kbps)
- **Antenna Connector:** SMA female coaxial
- **Temperature:** -40 to 60°C / -40 to 140°F
- **Humidity:** 0-99% RH
- **Regulatory Approvals:** EMC FCC Part 15, AS3548,

89/336/EEC, EN 301 489

- **Certifications:** CSA Class I, Division 2 hazardous areas (USA/Canada)
- **Housing:** IP40, High Density Thermoplastic
5.91" x 7.09" x 1.38" (180 x 150 x 35mm) with DIN-rail mounting
- **Removable terminals:** up to 2.5 mm² (12 AWG) wires
- **LED indication:** Power, RF, RS232, RS485, D I/O (P I/O), A I/O

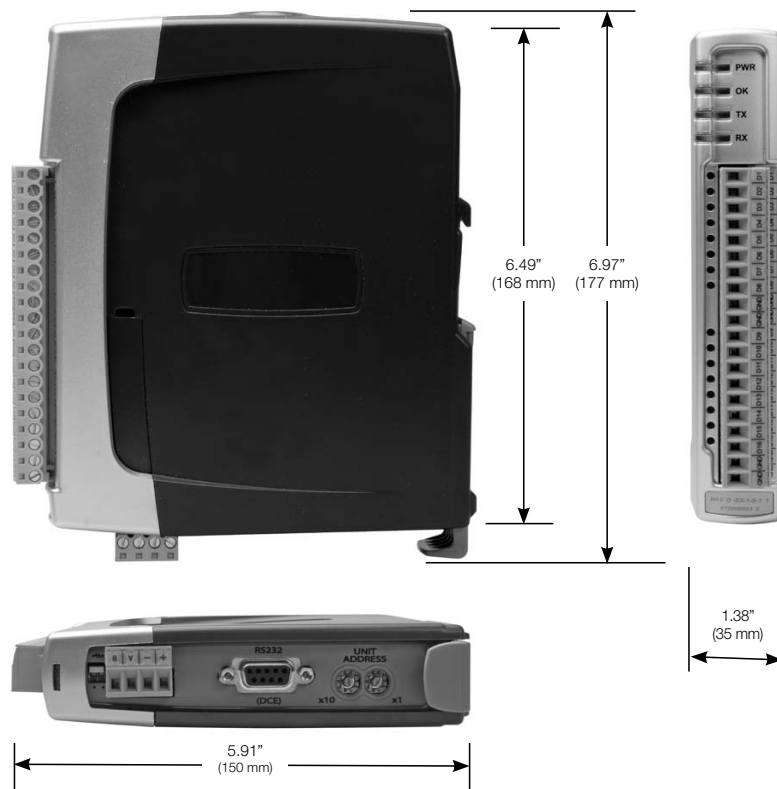
Security and Configuration

Data encryption: 64bit; 128bit AES

Password: https accessibility

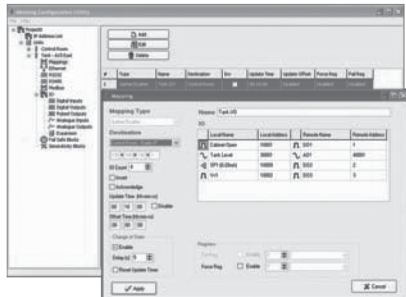
User Configuration: Web page; software configuration

Dimensions



WI-I/O-9-U2 Meshed Multi I/O and Gateway

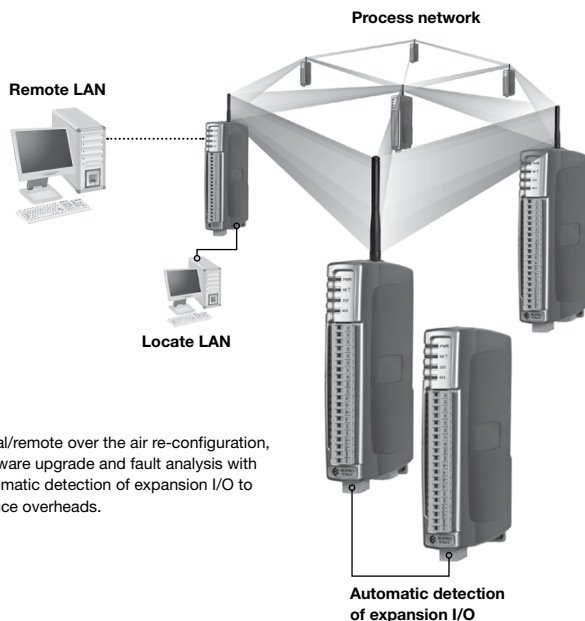
Configuring and commissioning time/effort on the WI-I/O-9-U2 has been designed for ease of customer use and cost savings during commissioning. The configuration utility allows for simple nomination of I/O points origin and destination with automatically detecting and routing the most efficient path to the destination node. This is complemented by periodic interrogation for optimal path verification, quick recovery of network communications and automatic detection of expansion I/O (Weidmuller's WI-I/O-EX-1-S). It also incorporates efficient 'change of state' radio communications and user configurable I/O or register periodic reporting of link status (ie update time). All combine to ensure the user is in charge of network communications.



Configuration is user friendly by nominating and labelling origin and destination points, and IP-based addressing finds the most efficient route.

Remote/local configuration, upgrade and analysis.

Weidmuller's IP-based addressing further aids in cost reduction providing remote analysis and/or upgrade. A user may perform remote or local over the air re-configuration and interrogation of nodes for diagnostics and firmware upgrade. User nominated localized referencing of I/O and system wide network viewing aids in fault analysis and exporting/printing of node configuration is supported.



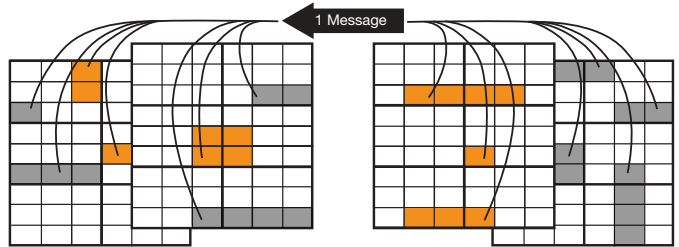
Local/remote over the air re-configuration, firmware upgrade and fault analysis with automatic detection of expansion I/O to reduce overheads.

Quicker, more cost effective commissioning.

Radio network efficiency and commissioning of the WI-I/O-9-U2 into legacy process control/automation networks is aided with block mapping and block messaging technology.

Block mapping technology allows end-users to gather related, non-contiguous data points/registers, into a single radio message structure and scatter these points at receiving devices for ease of integration (eg PLC logic, SCADA tags).

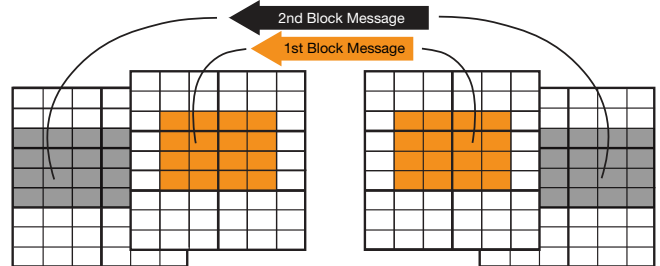
Block Mapping Technology



Block mapping technology enables non-contiguous data to be transferred between network devices reducing re-programming time and associated costs.

Block mapping technology is complemented by block messaging technology allowing end users to select continuous, related, I/O and registers for forwarding to receiving devices in a single message. Both block mapping and block messaging combine with highly efficient 'change of state', dense capacity radio messaging capabilities in providing scalable system design for ever growing application needs.

Block Messaging Technology



Block messaging communicates continuous blocks of data improving the efficiency of radio band use and even more scalable network design.

Cost effective, distance IP based mesh networks.

The WI-I/O-9-U2 combines distance, 900MHz, IP mesh communications with ease of configuration, local/remote over the air re-configurability, firmware upgrade and diagnoses of nodes in the network.

Featuring Weidmuller's IP-based addressing technology with its innovations in network communications efficiency, the WI-I/O-9-U2 provides for scalable network design for process control and automation base applications.



WI-I/O-9-U2



Technical data

Inputs

Digital:
opto-isolated (5kV) inputs suitable for voltage free contacts or NPN transistor

Analog:
"floating" differential inputs, common mode voltage 27V, 24VDC for powering external loops provided, digital filtering 1 sec.

Pulse: (configurable Digital Inputs)

Outputs

Digital

Analog:
current sink to common, max loop voltage 27V, max loop resistance 1000 ohms

Pulse:
FET 30VDC 200mA max 10kHz

Power Supply

Battery supply

Normal supply

Battery charging circuit

Average Current Draw

Transmit Current Draw

Internal monitoring

Notes

Connections

RS232/RS485

RS232 connection

RS485 connection

Ethernet Port

USB Port

General Data

Frequency

Transmit Power

Transmission

Modulation

Receive Sensitivity

Channel Spacing

Data Rate

Range (LoS)

Operating Temperature

Humidity

EMC Standards

Approvals

Mounting

LED indication

Antenna connector

Dimensions mm (in)

Up to 8 DI (Configurable),
On-state Voltage <2.1V Wetting, Current 5mA

4 AI (2 differential: 2 single ended)
resolution 14bits; accuracy 0.1%
Current Range - 0-24mA
Voltage Range: AI 1,2: 0-25V, AI 3,4: 0-5V

4 PI
DI 1,2: Max. Pulse rate 50kHz, Pulse width min 10us
DI 3,4: Max. Pulse rate 1kHz, Pulse width min 0.2ms

Up to 8 DO (Configurable)
FET (30V DC @ 200mA max.)
On-state Voltage - DO Max: 30 V DC
Wetting Current - DO Max: 200mA

2 AO 0-24mA;
resolution 13bits; accuracy 0.1%

4 PO
DO 1, 2 Max. Pulse rate 50kHz, Pulse width min. 10µs
DO 3, 4 Max. Pulse rate 1kHz, Pulse width min 0.2ms

12-15V DC

15-30V DC, over-voltage and reverse power protected
included for 1.2-12 Ahr sealed battery

220mA @ 12V DC (Idle), 110mA @ 24V DC (Idle)

500mA @ 12V DC (1W), 250mA @ 24V DC (1W)

power fail and battery voltage

An internal DC/DC converter provides 24V DC 150mA for analog loop supply.

serial port 9600 baud, 8 bits, no parity, 1 stop bit

EIA-562 (RJ45 connector)

max cable distance 2000 m terminal connections

10/100 BaseT; RJ45 - IEEE 802.3

USB-B connector for configuration

902-982MHz

1mW (+0dBm) to 1W (+30dBm)

Frequency Hopping Spread Spectrum (FHSS)

Frequency Shift Keying (FSK)

-109dBm @ 19.2Kbps (3% FER)

50 x 250 KHz


19.2-115.2 Kbps "Auto Mode" selects fastest rate possible relative to RSSI

32Km (20 mi.) @ 1W

-40 to 60°C (-40 to 140°F)

0-99%RH

EN 300 683; FCC Part 15; AS 3548; 89/336/EEC

Class 1 Div 2 , CE, IEC60950, IECex

DIN-rail mounting

Power, RF, RS232, RS485, D I/O (P I/O), A I/O

1 x SMA female coaxial

180 x 150 x 35 (5.91 x 7.09 x 1.38)

Ordering Data

Wireless Mesh I/O 8 DI/O, 4AI, 2AO, 1-4 PI/O

Modbus TCP/RTU Gateway (software Add-on)

TCP Adaptor (Type T Thermocouple Add-on)

Notes

Type

WI-I/O-9-U2

WI-I/O 9-U2-GTWY

WI-I/O 9-U2 TC

Part No.

6720005011

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6720005013

For detailed information on Expansion Modules, Antennas and Accessories, see LIT0705NA 10/2011