Unidirectional Transmitter/ Receiver Units – Introduction

Wireless Input/Output (I/O)

Wireless I/O connects directly to analog, discrete and pulse transducer signals. The signals are transmitted by radio and either re-created as output signals, or output via serial link or field-bus.

Weidmuller Wireless I/O units have the ability to form sophisticated peer-to-peer networks, with event-reporting messaging to optimize wireless density. Weidmuller products are designed for high reliability operation on open license-free radio bands.

WI-I/O 9-L Unidirectional Transmitter/Receiver Units

The Unidirectional Wireless I/O range of products is suitable for connecting to a single sensor or group of sensors and provides an economical solution for remote monitoring systems. The Unidirectional L products can also be used in more complex networks as signal transmitters or receivers.

- Frequency hopping spread spectrum 902-928 MHz 1W license-free USA/Canada/Mexico
- Configurable sub-bands license-free South America, Australia/NZ, Asia, Europe

Applications

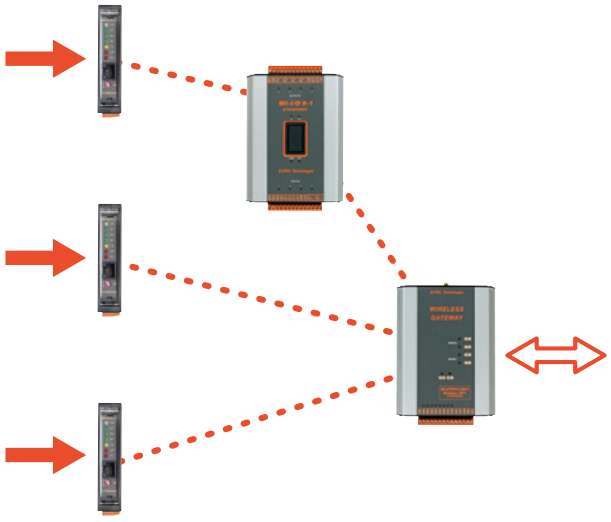
- Wireless connection of flowmeters or energy meters
- Monitoring storage tanks
- Monitoring cathodic protection on pipelines
- Wireless alarms from power reticulation fault relays

- Transmits to Receiver unit as a matched pair where the input signals are re-created as output signals, or can transmit to a Multi-I/O or Gateway unit
- Class 1 Div 2 hazardous areas approval
- Up to 3000 wireless units per network
- External inputs plus internally calculated values - analog setpoint status, pulse count, power supply voltage
- Thermocouple input –100 to +100mV with cold-junction compensation and linearization for J, K or T-type
- Setpoints status generated by comparing analog input to high and low setpoints
- Digital inputs can also be used as pulse count inputs
- Power supply 9 – 30Vdc, measured and available as a transmitted variable
- 24Vdc analog loop supply internally provided
- RS232 Configuration and diagnostics port

Features

Matched transmitter/receiver pair of modules, or individual transmitter and receiver units

- Peer-to-peer communications. Exception reporting. Reliable self-checking messages. Highly secure data encryption.
- Multi-hop repeater functions - up to 5 intermediate units can be configured in any input-output link
- Factory configured as a matched Transmitter/Receiver pair or user-configurable with E-Series Windows configuration program

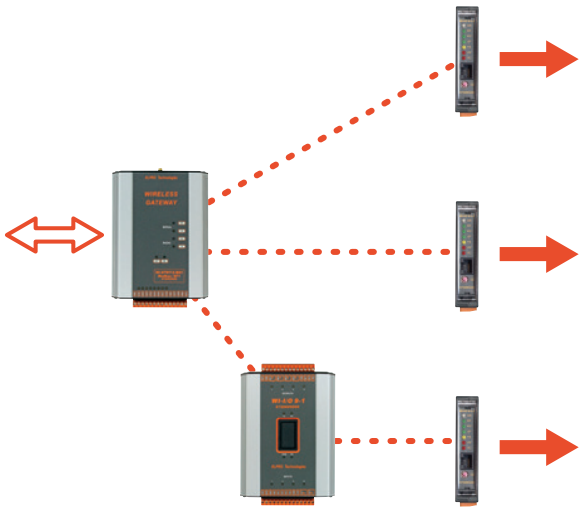


Transmitter unit

- Input-only transmitter unit - two digital/pulse inputs, one analog input and one thermocouple mV input

Receiver unit

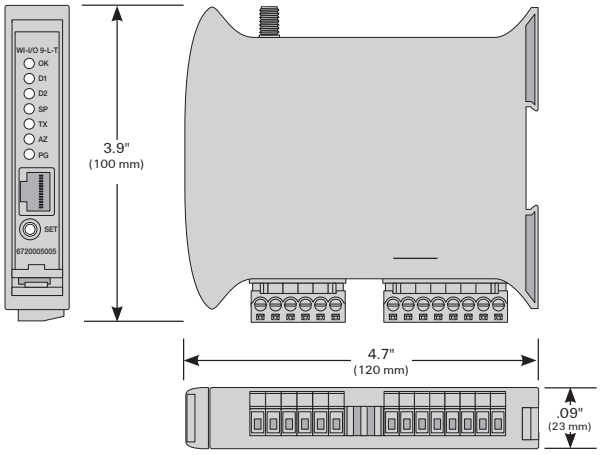
- Output-only receiver unit - three digital contact outputs and one analog output
- Receives radio commands from Transmitter unit as a matched pair where the input signals are re-created as output signals, or can receive commands from a Multi-I/O or Gateway unit
- Class 1 Div 2 hazardous areas approval
- Up to 3000 wireless units per network
- Power supply 9 – 30Vdc; 24Vdc analog loop supply internally provided
- Communications failure indication and configurable output
- Outputs can be configured as retained or reset (fail-safe) on communications failure
- LED indication of radio signal strength
- RS232 Configuration and diagnostics port



Transmitter/Receiver Unit Ordering Information

Unit	Description
WI-I/O 9-L-T	Wireless Transmitter (900 MHz)
WI-I/O 9-L-R	Wireless Receiver (900 MHz)
WI-I/O 9-L-P1	900 MHz Wireless Transmitter/ Receiver Pair with two -2 dB Dipole Antennas
WI-I/O 9-L-P2	900 MHz Wireless Transmitter/ Receiver Pair with two 0 dB Dipole Antennas

Dimensions



General

- **Frequency:** frequency hopping spread spectrum 902-928MHz, sub-bands available, 1W
- **Sensitivity:** line-of-sight range 20 miles (4W ERP - "effective radiated power"), 15km (1W ERP); 3000 ft /1000 m in obstructed industrial environments; radio distances can be increased by up to 5 intermediate transceiver or gateway units
- **Antenna Connector:** SMA connector for antenna or coaxial cable connection
- **Temperature:** -40 to 60°C / -40 to 140°F
- **Humidity:** 0 - 99% RH
- **Regulatory Approvals:** EMC compliant 89/336 EEC, EN 301 489, AS3548, FCC Part 15, Approved to FCC Part 15.247, RS210
- **Housing:** DIN rail thermo-plastic enclosure 100 x 22 x 120 mm / 3.9 x 0.9 x 4.7 inches
- **Transmitter Unit:** Power/OK, radio TX, DIN1, DIN2, analog set-point status
- **Receiver Unit:** Power/OK, radio RX, DO1, DO2, DO3, communications fail LEDs also used to provide radio signal strength indication

Transmitter Inputs

Input Type	Source	Function
Digital	external	status
Pulse Total	external	count
Analog	external	analog
Thermocouple	external	analog
Set Point	internal	status
Supply Voltage	internal	analog

Input values transmitted as per WIB-net (see page 4) protocol - exception-reporting on signal change, and update time. Up to 5 repeater addresses, configurable.

Digital / Pulse Inputs

- Two inputs, suitable for voltage-free contacts / NPN, or voltage input 0-1 VDC on / >3 VDC off pulse input max. rate 10 Hz, 50 msec on time. Pulse counted as 1 6-bit register.

Analog Inputs

- 0-20 mA (4-20mA, 0-10mA)
- "Floating" differential input, resolution 16-bit, accuracy < 0.1 %

Thermocouple Inputs

- Millivolt (-10mV to +100mV), J, K, or T type linearization
  with on-board cold-junction compensation
- Accuracy better than 1°C

Power Supply

- **Normal Supply:** 9 - 30 VDC, power consumption @12VDC - receiver normal 70mA, max. 250mA
- Transmitter normal 70mA, transmitting max. 600mA
- Analog loop supply internally generated, 24VDC 35mA
- Internal monitoring of supply voltage may be transmitted
  as an "input" (transmitter unit only)

Set-point Status

- High and low set-points generate internal digital status- set-point status sets (on) when analog value < low set-point and resets (off) when analog value > high set-point. Status is transmitted as per digital input, set-point values are set via the front panel rotary switch or configuration software.
- Separate set-points for (4-20 mA), thermocouple and supply inputs are configurable

Receiver Outputs

Digital Outputs

- Three relay contact outputs, 260V 1A

Analog Outputs

- 0-20mA, source output, 12-bit resolution, 0.1% accuracy

Communication Failure

- Internal status based on configurable time-out value
- "Comms-fail" status can be configured to a local output

Fail-Safe

- On "comms-fail," outputs user-configurable as retained last correct value or reset (fail-safe)

Serial Port

- RS232 RJ45 female DCE, used for configuration and diagnostics

LED Indication

Transmitter Unit

- Power/OK, radio TX, DIN1, DIN2, analog set-point status

Receiver Unit

- Power/OK, radio RX, DO1, DO2, DO3, communications fail
- LEDs also used to provide radio signal strength indication

Configuration and Diagnostics

- Factory configuration transmitter/receiver matched pair, AI to AO, 2DI to 2DO, SP status to DO3 via RS232 - RJ45 cable
- User configuration via serial port. Unidirectional units can be configured to network with multi-I/O and gateway units.
- Diagnostics features: read input values, write output values, radio signal strength, monitor communication messages

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WI-I/O 9-L-T Transmitter

WI-I/O 9-L-R Receiver

Technical Data

Transmitter Inputs:		
Digital:	two inputs, suitable for voltage free contacts / NPN, or voltage input 0-1 VDC on / >3 VDC off	
Pulse:	max rate 10 Hz, 50 msec on time. Pulse counted as 16 bit register.	
Analog:	0-20 mA (4-20mA, 0-10mA)	
"floating" differential input:		
resolution	16 bit	
accuracy	< 0.1 %	
Thermocouple	Millivolt (-100mV to +100mV), J, K or T type linearization with on-board cold-junction compensation	
Accuracy	greater than 1°C	
Receiver Outputs		
Digital		three relay contact outputs, 260V 1A
Analog		0-20mA
resolution		12 bit
accuracy		0.10%
Comms-Fail		Internal status based on configurable time-out value. Comms-fail status can be configured to a local output.
Fail-safe		On "comms-fail", outputs user-configurable as retained (last correct value) or reset (fail-safe)
Power Supply	9-30 VDC	9-30 VDC
Power consumption @12VDC	Receiver 100mA, Transmitter 40mA quiescent, during radio transmission (50 msec) 300mA	Receiver 100mA, Transmitter 40mA quiescent, during radio transmission (50 msec) 300mA
Analog loop supply internally generated	24VDC 30mA	24VDC 30mA
Internal monitoring of supply low voltage status	may be transmitted as an "input" (Transmitter unit only)	
Power consumption increases for pulse inputs > 10Hz.		
Serial Port	RS232 RJ45 female DCE, used for configuration and diagnostics	RS232 RJ45 female DCE, used for configuration and diagnostics
General Data		
Operating Temperature	-40 to 60°C (-40 to 140°F)	-40 to 60°C (-40 to 140°F)
Humidity	0 - 99% RH	0 - 99% RH
EMC Standards	FCC Part 15.247, RS210	FCC Part 15.247, RS210
Mounting	DIN-rail mounting	DIN-rail mounting
LED indication: Transmitter Unit	Power/OK, Radio TX, DIN1, DIN2, Analog Setpoint status	
LED indication: Receiver Unit		Power/OK, Radio RX, DO1, DO2, DO3, Communications Fail.
frequency hopping spread spectrum	902-928MHz, sub-bands available	902-928MHz, sub-bands available
Transmit power	1W	1W
Maximum line of sight range	20 miles (4W ERP), 15km (1W ERP); 3000 ft / 1000 m in obstructed industrial environments. Radio distances can be increased by up to 5 intermediate repeater units. Each transmission may be configured to be sent 1 to 5 times.	20 miles (4W ERP), 15km (1W ERP); 3000 ft / 1000 m in obstructed industrial environments. Radio distances can be increased by up to 5 intermediate repeater units. Each transmission may be configured to be sent 1 to 5 times.
Antenna connector	SMA female coaxial	SMA female coaxial
Dimensions mm (in)	100 x 23 x 120 (3.9 x 0.9 x 4.7)	100 x 23 x 120 (3.9 x 0.9 x 4.7)
Configuration	User configuration via serial port. Unidirectional units can be configured to network with Multi-I/O and Gateway units.	User configuration via serial port. Unidirectional units can be configured to network with Multi-I/O and Gateway units.
Diagnostics	Diagnostics features - read input values, write output values, radio signal strength, monitor communication messages.	Diagnostics features - read input values, write output values, radio signal strength, monitor communication messages.

Ordering Data

	Type	Part No.	Type	Part No.
	WI-I/O 9-L-T	**6720005005**	WI-I/O 9-L-R	**6720005006**
Accessories: DB9 Female-RJ45 Serial configuration cable	WI-CSER-RJ45	**6720005108**	WI-CSER-RJ45	**6720005108**