

Wireless I/O 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



Features


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

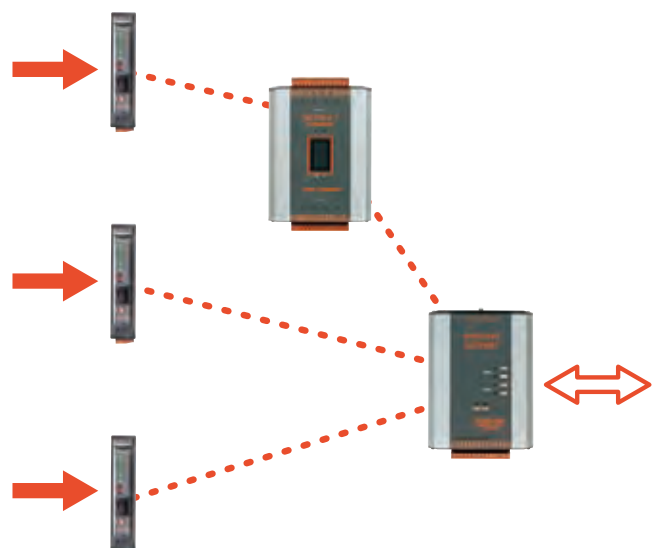
- Peer-to-peer communications. Exception reporting. Reliable self-checking messages. Highly secure data encryption.
- Multi-hop repeater functions - up to 5 intermediate units can be configured in any input-output link
- Factory configured as a matched Transmitter/Receiver pair or user-configurable with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

Transmitter unit

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




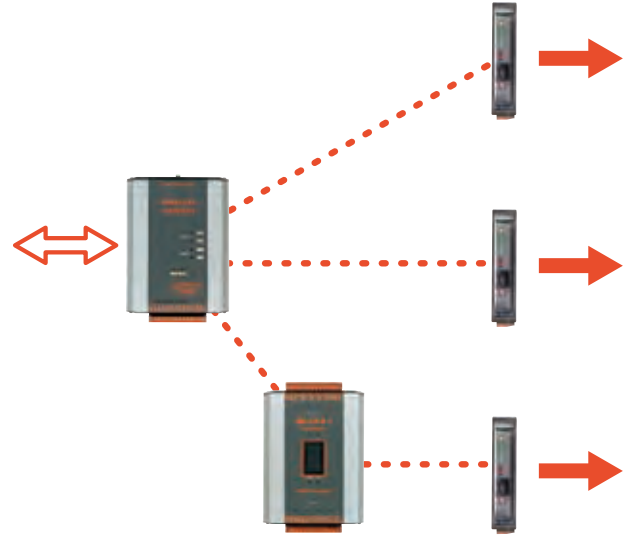
- Transmits to Receiver unit as a matched pair where the input signals are re-created as output signals, or can transmit to a Multi-I/O or Gateway unit
- Class 1 Div 2 hazardous areas approval 
- Up to 3000 wireless units per network
- External inputs plus internally calculated values - analog setpoint 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



Wireless I/O Unidirectional Transmitter/Receiver Units – Introduction

Receiver unit

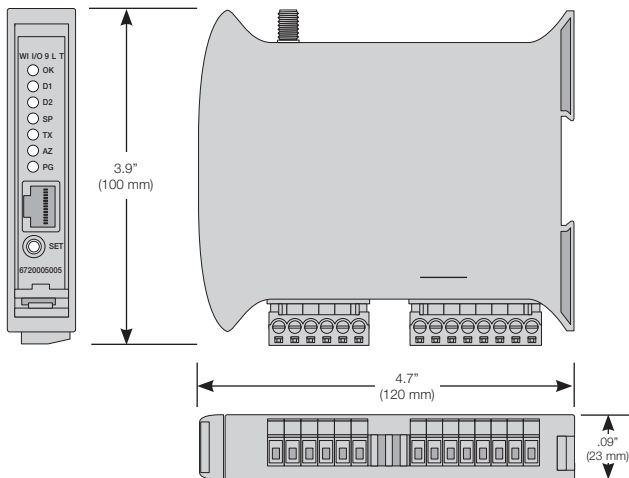
- Output-only receiver unit - three digital contact outputs and one analog output
- Receives radio commands from Transmitter unit as a matched pair where the input signals are re-created as output signals, or can receive commands from a Multi-I/O or Gateway unit
- Class 1 Div 2 hazardous areas approval 
- 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
WI-I/O 9-L-P2	900 MHz Wireless Transmitter/ Receiver Pair with two WI-ANT-DPL-0-8 Dipole Antennas

Dimensions



- **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

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

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.

Wireless I/O Unidirectional Transmitter/Receiver Units – Introduction

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 16-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





**WI-I/O 9-L-T
Transmitter**



**WI-I/O 9-L-R
Receiver**



Technical Data

Transmitter Inputs:

Digital:

Pulse:

Analog:
"floating" differential input:
resolution
accuracy
Thermocouple

two inputs, suitable for voltage free contacts / NPN, or voltage input 0-1 VDC on / >3 VDC off
max rate 10 Hz, 50 msec on time.
Pulse counted as 16 bit register.
0-20 mA (4-20mA, 0-10mA)

16 bit
< 0.1 %
Millivolt (-100mV to +100mV), J, K or T type linearization with on-board cold-junction compensation
greater than 1°C

Receiver Outputs

Digital
Analog
resolution
accuracy
Comms-Fail

three relay contact outputs, 260V 1A
0-20mA
12 bit
0.10%

Power Supply

Power consumption @12VDC

Analog loop supply internally generated
Internal monitoring of supply low voltage status
Power consumption increases for pulse inputs > 10Hz.

9-30 VDC
Receiver 100mA, Transmitter 40mA quiescent, during radio transmission (50 msec) 300mA
24VDC 30mA
may be transmitted as an "input" (Transmitter unit only)

Serial Port

RS232 RJ45 female DCE, used for configuration and diagnostics

Technical Data

Receiver Inputs:

Digital
Analog
resolution
accuracy
Comms-Fail

Receiver Outputs

Digital
Analog
resolution
accuracy
Comms-Fail

Power Supply

Power consumption @12VDC

Analog loop supply internally generated
Internal monitoring of supply low voltage status
Power consumption increases for pulse inputs > 10Hz.

Serial Port

RS232 RJ45 female DCE, used for configuration and diagnostics

General Data

Operating Temperature
Humidity
EMC Standards
Mounting
LED indication: Transmitter Unit
LED indication: Receiver Unit
frequency hopping spread spectrum
Transmit power
Maximum line of sight range

-40 to 60°C (-40 to 140°F)
0 - 99% RH
FCC Part 15.247, RS210
DIN-rail mounting
Power/OK, Radio TX , DIN1, DIN2, Analog Setpoint status

-40 to 60°C (-40 to 140°F)
0 - 99% RH
FCC Part 15.247, RS210
DIN-rail mounting

Antenna connector

Dimensions mm (in)

Configuration

Diagnostics

Ordering Data

Accessories: DB9 Female-RJ45 Serial configuration cable

Frequency

902-928MHz, sub-bands available
1W
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.

Frequency

902-928MHz, sub-bands available
1W
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.

Transmission

Each transmission may be configured to be sent 1 to 5 times. SMA female coaxial

Transmission

Each transmission may be configured to be sent 1 to 5 times. SMA female coaxial

Dimensions

100 x 23 x 120 (3.9 x 0.9 x 4.7)

Dimensions

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.

Configuration

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

Diagnostics features - read input values, write output values, radio signal strength, monitor communication messages.

Ordering Data

Type	Part No.
WI-I/O 9-L-T	6720005005
WI-CSEER-RJ45	6720005108

Ordering Data

Type	Part No.
WI-I/O 9-L-R	6720005006
WI-CSEER-RJ45	6720005108



WI-I/O 9-L-P1
Set - 1 Transmitter, 1 Receiver



WI-I/O 9-L-P2
Set with 2 WI-ANT-DPL-0-8



Technical Data

Transmitter Inputs:

Digital:

Pulse:

Analog:

"floating" differential input:

resolution

accuracy

Thermocouple

Accuracy

Receiver Outputs Digital

Analog

resolution

accuracy

Comms-Fail

Fail-safe

Power Supply

Power consumption @12VDC

Analog loop supply internally generated

Internal monitoring of supply low voltage status

Power consumption increases for pulse inputs > 10Hz.

Serial Port

General Data

Operating Temperature

Humidity

EMC Standards

Mounting

LED indication: Transmitter Unit

LED indication: Receiver Unit

frequency hopping spread spectrum

Transmit power

Maximum line of sight range

Antenna connector

Dimensions mm (in)

Configuration

Diagnostics

Ordering Data

Kit Contents

two inputs, suitable for voltage free contacts / NPN, or voltage input 0-1 VDC on / >3 VDC off
max rate 10 Hz, 50 msec on time. Pulse counted as 16 bit register.
0-20 mA (4-20mA, 0-10mA)

16 bit
< 0.1 %

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

three relay contact outputs, 260V 1A

0-20mA

12 bit

0.10%

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

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

9-30 VDC

Receiver 100mA, Transmitter 40mA quiescent, during radio transmission (50 msec) 300mA

24VDC 30mA

may be transmitted as an "input" (Transmitter unit only)

RS232 RJ45 female DCE, used for configuration and diagnostics

-40 to 60°C (-40 to 140°F)

0 - 99% RH

FCC Part 15.247, RS210

DIN-rail mounting

Power/OK, Radio TX, DIN1, DIN2, Analog Setpoint status

Power/OK, Radio RX, DO1, DO2, DO3, Communications Fail.

902-928MHz, sub-bands available

1W

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.

SMA female coaxial

100 x 23 x 120 (3.9 x 0.9 x 4.7)

Factory configuration transmitter/receiver matched pair, AI to AO, 2DI to 2DO, SP status to DO3. 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.

Type **Part No.**

- WI-I/O 9-L-P1 **6720005007**
- 2 Dipole antennas (6720005086)
 - 2 3ft. antenna connecting cables/brackets
 - 1 configuration cable

two inputs, suitable for voltage free contacts / NPN, or voltage input 0-1 VDC on / >3 VDC off
max rate 10 Hz, 50 msec on time. Pulse counted as 16 bit register.
0-20 mA (4-20mA, 0-10mA)

16 bit
< 0.1 %

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

three relay contact outputs, 260V 1A

0-20mA

12 bit

0.10%

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

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

9-30 VDC

Receiver 100mA, Transmitter 40mA quiescent, during radio transmission (50 msec) 300mA

24VDC 30mA

may be transmitted as an "input" (Transmitter unit only)

RS232 RJ45 female DCE, used for configuration and diagnostics

-40 to 60°C (-40 to 140°F)

0 - 99% RH

FCC Part 15.247, RS210

DIN-rail mounting

Power/OK, Radio TX, DIN1, DIN2, Analog Setpoint status

Power/OK, Radio RX, DO1, DO2, DO3, Communications Fail.

LEDs also used to provide radio signal strength indication

902-928MHz, sub-bands available

1W

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.

SMA female coaxial

100 x 23 x 120 (3.9 x 0.9 x 4.7)

Factory configuration transmitter/receiver matched pair, AI to AO, 2DI to 2DO, SP status to DO3. 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.

Type **Part No.**

- WI-I/O 9-L-P2 **6720005008**
- 2 Dipole antennas (6720005080)
 - 2 15ft. antenna connecting cables/brackets
 - 1 configuration cable