The P2P-I Wireless Input Node is part of the Define Instruments Twin Link point-to-point system. It offers an ideal starting point for wireless transmission of a range of digital and analogue input signals.

- **2x Isolated Universal Inputs** Thermocouple, RTD, mA, V, mV, potentiometer, digital pulse and AC current sensors
- **4x digital inputs, 2x digital outputs, and 2x relays** Flexible IO enables a range of setpoint functions
- **Transmit up to 1.5km (0.9mi) Line Of Sight**
- **Simple USB setup using Define ToolBox**
  
  Free download from defineinstruments.com/toolbox

### Specifications

#### General
- **Power supply** 9–36V DC, 2.5VA max
- **Isolation** 1500V AC between power supply and input channels
- **Simple software programming using Define ToolBox** Bridge Key required, sold separately
- **2x Isolated universal input channels** (Full input specifications below)

#### Transmission
- **RF data rate** 250Kb/s
- **RF frequency range** 2405-2475MHz
- **RF receiver sensitivity** -110dBm
- **RF transmission power** +20dBm (Optional low power setting [+10dBm] selectable in software)
- **Transmission range** Up to 1.5km (0.9mi) LOS with supplied antenna (WG-3DBI). All nodes must be set to full power [+20dBm] for max range.
- **Number of RF channels** 15
- **Up to 17 wireless nodes per mesh**
  Twin Link (P2P-I & P2P-O) plus up to 15x Repeaters (P2P-R)
- **Spreading method** Direct sequence
- **Modulation** O-QPSK

#### Relay Outputs
- **2x Relay outputs** Form A relays (5A 250V AC / 5A 30V DC)
- **Isolation to sensor and user input commons** 2300Vrms for 1min.
  Working voltage 250V AC
- **Life expectancy** 100K cycles min at full load rating

#### Digital IO's
- **4x Digital inputs** Max rate 1Hz. Selectable sink/source. Suitable for clean contacts, NPN, PNP and voltage inputs (low input <1.4V DC, high input 1.4–30V DC)
- **2x Digital outputs** Open drain (1A, 30V DC max)

#### Construction
- **35mm DIN rail mount casing** IP20 rated. Install in a protective enclosure. Installation Category II; Pollution Degree 2; Flame resistant
- **Dimensions (H x W x D)**
  101 x 23 x 120mm (3.98 x 0.91 x 4.72")
  With included antenna:
  150 x 23 x 146mm (5.91 x 0.91 x 5.75")

#### Environmental conditions
- **Operating temp** -20 to 55°C (-4 to 131°F)
- **Storage temp** -20 to 65°C (-4 to 149°F)
- **Operating humidity** 0–85% non-condensing
- **Altitude** 2000m (6561ft)

#### Thermocouple input
- **Thermocouple types & ranges**
  - J -200 to 1000°C (-328 to 1832°F)
  - K -200 to 1260°C (-328 to 2300°F)
  - B 400 to 1800°C (752 to 3272°F)
  - E -200 to 700°C (-328 to 1292°F)
  - N -200 to 1300°C (-328 to 2372°F)
  - R 0 to 1700°C (32 to 3092°F)
  - S 0 to 1700°C (32 to 3092°F)
  - T -200 to 400°C (-328 to 752°F)
- **Input impedance** >500KΩ min
- **TC lead resistance** 1000Ω max
- **Cold junction comp.** -10 to 60°C
- **CJC drift** <0.02°C/C typical for all inputs
- **Sensor open** Upscale
- **Accuracy** 0.1% of FSO±1°C typical
**RTD input**

3-wire RTD Pt100 (DIN 43760:1980) or Pt1000 (3-wire RTD standard)

Calibrated ranges: -200 to 300°C (-328 to 572°F), 0.01°C res; -200 to 800°C (-328 to 1472°F), 0.1°C res

Sensor current: 0.6mA continuous

Lead resistance: 10Ω/lead max recommended

Sensor fail: Upscale

Accuracy: 0–300°C = ±0.1°C, 0–800°C = ±0.3°C

Ambient drift: 0.003°C/C typical

**Current input**

Range: 0/4–20mA

Input resistance: 45Ω

Max over-range: Protected by PTC to 24V DC

Linearity and repeatability: 0.1% FSO max

Accuracy: 0.1% FSO max

Channel separation: 0.001% max

Ambient drift: <5ppm/°C of FS input

Response: 100ms

**Digital pulse**

Frequency range: 0–2500Hz

Sensors: Open collector (NPN, PNP)

Frequency resolution: 0.1Hz

Software modes: General frequency, Flow rate, or RPM

Accuracy: ±0.5%

Potentiometer input

Potentiometer input: 3-wire

Potentiometer resistance: Low range (<2kΩ) or High range (>2kΩ)

**Excitation voltage** Variable

Field prog. zero: 0–90% of span

Field prog. span: 0.1–100%

Linearity and repeatability: ≤±0.05% FSO typical

Response time: 100ms

Temperature drift: <50ppm/°C

**AC current sensor input**

Sensor type: Current transformer (Define Instruments ACCS-420/010)

Amperage range: Header selectable 100/150/200A; Overload 175/300/400A respectively (continuous)

Output: (Representing 0–100% of full scale input range)

ACCS-420 = 4–20mA DC loop powered

ACCS-010 = 0–10V DC

Power supply

ACCS-420 = Loop powered, 15–36V DC

ACCS-010 = Self powered

Accuracy: 1% of full scale

Response time: 250ms (10–90%)

Isolation voltage: 2000V

Frequency: 50–60Hz

**Voltage input**

Ranges: ±200mV, –200mV to 1V, 0–10V, 0–18V

Input impedance: >500KΩ (all ranges)

Maximum over-voltage: 24V DC

Accuracy: 0.1% FSO max

Linearity and repeatability: 0.05% FSO max

Channel separation: 0.001% max

Ambient drift: 0.003%/°C

**Compliances**

FCC ID: 2ACTT-1409 47 Code of Federal Regulations; Part 15 - Radio Frequency Devices; Subpart C - Intentional Radiators, including Section 15.247 - Operation in the band 2400–2483.5MHz

AS/ANS 4268:2012 Radio equipment and systems - Short range devices - Limits and methods of measurement

ETSI EN 300 440-2, V1.4.1, 2010 Electromagnetic compatibility and Radio spectrum matters (ERM); Short Range Devices (SRD); Radio equipment to be used in the 1GHz to 40GHz frequency range; Part 2: Harmonised EN under article 3.23 of the R&TTE Directive

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**P2P Product Codes**

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<tr>
<th>P2P-TWIN-LINK</th>
<th>Point-to-Point paired I/O units</th>
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<tr>
<td>P2P-R</td>
<td>Point-to-Point Repeater Node</td>
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<tr>
<td>P2P-I*</td>
<td>Point-to-Point Universal Input Node</td>
</tr>
<tr>
<td>P2P-O*</td>
<td>Point-to-Point Output Node</td>
</tr>
</tbody>
</table>

* Not sold separately unless for replacement

**Accessories (Sold Separately)**

FCC approved 3DBi monopole antenna included with all P2P units. All other accessories are not FCC approved.

<table>
<thead>
<tr>
<th>WG-8DBI</th>
<th>3DBi Monopole antenna (Range= 2.7km [1.7mi] LOS)</th>
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<tr>
<td>WG-AEC</td>
<td>Antenna extension cable 30cm</td>
</tr>
<tr>
<td>WG-PSU</td>
<td>Power adaptor for 9–36V DC supply</td>
</tr>
<tr>
<td>BRIDGE-KEY</td>
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Easy USB setup in minutes! Visit defineinstruments.com/toolbox
The P2P-O Wireless Output Node is part of the Define Instruments Twin Link point-to-point system. It receives wireless transmissions from the paired Input Node (P2P-I), and provides dual 4-20mA retransmission.

- **2x 4-20mA Analogue Outputs**
  For simple interface to PLC’s and SCADA systems
- **4x digital inputs, 2x digital outputs, and 2x relays**
  Configure your IOs for mimicking, alarms, and sophisticated remote control of other equipment
- **Transmit up to 1.5km (0.9mi) Line Of Sight**
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### Specifications

#### General
- **Power supply** 9–36V DC, 2.5VA max
- **Isolation** 1500V AC between power supply and output channels
- **Simple software programming using Define ToolBox**
  Connect to the P2P-I Input Node (Bridge Key required, sold separately)

#### Transmission
- **RF data rate** 250Kb/s
- **RF frequency range** 2405-2475MHz
- **RF receiver sensitivity** -110dBm
- **RF transmission power** +20dBm
  (Optional low power setting [10dBm] selectable in software)
- **Transmission range** Up to 1.5km (0.9mi) LOS with supplied antenna (WG-3DBI). All nodes must be set to full power [+20dBm] for max range.
- **Number of RF channels** 15
  Up to 17 wireless nodes per mesh Twin Link (P2P-I & P2P-O) plus up to 15x Repeaters (P2P-R)
- **Spreading method** Direct sequence
- **Modulation** O-QPSK

#### Analogue Outputs
- **2x Analogue outputs** Isolated 4–20mA or 20–4mA DC
- **Power supply** Loop powered
- **Resolution** 15 bits, 16000 steps
- **Loop drop** 10V max
- **Linearity & repeatability** 0.1% FSO max
- **Accuracy** 0.1% FSO max
- **Ambient drift** 50ppm/°C FSO max
- **Isolation to Digital IO GND** 1400Vrms for 1min. Working voltage 125V DC

#### Relay Outputs
- **2x Relay outputs** Form A relays
  (5A 250V AC / 5A 30V DC)
- **Isolation to sensor and user input commons** 2300Vrms for 1min.
  Working voltage 250V AC
- **Life expectancy** 100K cycles min at full load rating

#### Environmental conditions
- **Operating temp** -20 to 55°C
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- **Spreading method** Direct sequence
- **Modulation** O-QPSK

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- **P2P-I**  Point-to-Point Universal Input Node
- **P2P-O**  Point-to-Point Output Node

* Not sold separately unless for replacement

**Accessories (Sold Separately)**

- **WG-8DBI**  8Dbi Monopole antenna (Range= 2.7km [1.7mi] LOS)
- **WG-AEC**  Antenna extension cable 30cm
- **WG-PSU**  Power adaptor for 9–36V DC supply
- **BRIDGE-KEY**  USB Bridge Key for PC programming

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