

# PLUS TWP-1AI WIRELESS TRANSMITTER



PLUS TWP-1AI Wireless Transmitter System is a solution to easily gather the data needed to identify production issues and implement measures to increase efficiency and prevent future disruptions.

PLUS TWP-1AI Wireless Transmitter was designed to monitor 4..20 mA / 0..10V signals, providing a secure communication, without cable requirements of a complex wired solution.

Conductivity, vibration, humidity, flow, level, pressure and temperature are some examples of industrial process variables, possible to be monitored and controlled.

**Dimensions:** 120 x 90 x 50 mm

**Weight:** 314 g

**Material:** ASA+PC-FR (UL 94 V-0) / Polycarbonate

**Protection Index:** IP65

## KEY FEATURES

**1 CONFIGURABLE ANALOG INPUT**

**1 REMOTE SWITCH OUTPUT**

**UP TO 4 KM COMMUNICATION DISTANCE (LOS)**

**MULTI-HOP MESH NETWORK**

WITH SELF-FORMING, SELF-HEALING AND SELF-OPTIMIZING FEATURES

**OPERATING MODE**

AS END DEVICE / AS REPEATER

**SITE SURVEY FEATURE**

**SIMPLE AND INTUITIVE USB CONFIGURATION**

TEKON CONFIGURATOR SOFTWARE

DS\_PLUS\_TWP-1AI\_E01A

## TECHNICAL SPECIFICATIONS

| RADIO SPECIFICATIONS                    | 868MHZ                                 | 915MHZ                     |
|-----------------------------------------|----------------------------------------|----------------------------|
| Range <sup>1</sup>                      | Up to 4Km LoS                          |                            |
| Frequency Band                          | 868 to 869MHz                          | 902 to 928MHz <sup>4</sup> |
| Radio channels                          | 16                                     | 50 <sup>5</sup>            |
| Radio receiver sensitivity <sup>2</sup> | -97 to -110 dBm                        |                            |
| Power <sup>2</sup>                      | 25 to 27 dBm                           | 8 to 27 dBm                |
| Radio transmission rate <sup>2</sup>    | 19 to 76,8kbit/s                       |                            |
| Encryption method                       | AES 128 (Advanced Encryption Standard) |                            |
| Modulation                              | GFSK                                   |                            |
| Connection                              | SMA                                    |                            |
| Antenna                                 | Articulated dipole antenna             |                            |
| Antenna impedance                       | 50Ω                                    |                            |

## WIRELESS NETWORK

|                      |                                   |
|----------------------|-----------------------------------|
| Maximum devices      | 55                                |
| Maximum hops         | 13                                |
| Communication period | 1 to 43200 seconds (configurable) |

## INTERNAL TEMPERATURE

|             |             |
|-------------|-------------|
| Range       | -30 to 80°C |
| Resolution  | 0,01°C      |
| Accuracy    | ± 0,50°C    |
| Sensor type | NTC         |

| ANALOG INPUT    | CURRENT           | VOLTAGE          |
|-----------------|-------------------|------------------|
| Range           | 0 to 24mA         | 0 to 12V DC      |
| Resolution      | 0,96uA (15bit)    | 0,38mV (15bit)   |
| Accuracy        | <100uA (<0,5% FS) | <5mV (<0,05% FS) |
| Input impedance | 100Ω              | >100kΩ           |

## DIGITAL OUTPUT - REMOTE OUTPUT

|                                        |                                    |
|----------------------------------------|------------------------------------|
| Range                                  | 5 to 24V DC                        |
| Type                                   | Sinking / NPN                      |
| Maximum current protection             | 90mA                               |
| Start state                            | ON / OFF / last state <sup>3</sup> |
| Communication loss state               | ON / OFF / last state <sup>3</sup> |
| Event number activation                | N/A                                |
| Activation period before communication | N/A                                |

## POWER SUPPLY

|                                     |                                      |
|-------------------------------------|--------------------------------------|
| Supply voltage                      | 5 to 24V DC ± 5% / USB <sup>6</sup>  |
| Maximum current                     | 500mA DC @ 5V DC / 100mA DC @ 24V DC |
| Protection against reverse polarity |                                      |

| INTERFACE     |                                                                               |
|---------------|-------------------------------------------------------------------------------|
| Indication    | Frontal Panel LED                                                             |
| Switches      | External - Site Survey activation<br>Internal - Load Default Factory Settings |
| Configuration | Internal micro USB connector                                                  |

| MECHANICAL INTERFACE                        |
|---------------------------------------------|
| Push-in spring terminal blocks (internal)   |
| Bucins PG-7                                 |
| 1.5mm <sup>2</sup> (0.0591in <sup>2</sup> ) |
| Micro USB internal connector                |

| OPERATING ENVIRONMENT | ENVIRONMENTAL CONDITIONS | STORAGE CONDITIONS      |
|-----------------------|--------------------------|-------------------------|
| Temperature           |                          | -30 to 80°C             |
| Relative humidity     | N/A                      | ≤ 95% (non- condensing) |

| CASING           |                                       |
|------------------|---------------------------------------|
| Dimensions       | 120 x 90 x 50 mm                      |
| Weight           | 314 g                                 |
| Material         | ASA+PC-FR (UL 94 V-0) / Polycarbonate |
| Protection index | IP65                                  |

| FACTORY DEFAULT SETTINGS       | 868MHZ     | 915MHZ     |
|--------------------------------|------------|------------|
| Frequency                      | 869,525MHz | 915,000MHz |
| Radio transmit power           |            | 27dBm      |
| Radio transmission rate        |            | 76,8kbit/s |
| Wireless channel               | 13         | 26         |
| Wireless network ID            |            | 13042017   |
| Communication period           |            | 10 seconds |
| Gateway modbus index           |            | 1          |
| Analog inputs                  |            | OFF        |
| Digital Output - Remote output |            | OFF        |
| Operating mode                 |            | End Device |

| CERTIFICATIONS AND APPROVALS                   |
|------------------------------------------------|
| EN 61326-1 - Class B - Industrial Requirements |
| EN 300 220-2 V3.1.1                            |
| EN 301 489-1 V2.2.1                            |
| EN 301 489-3 V2.1.1                            |
| EN 60950-1:2006                                |
| EN 61326-1:2013                                |
| ETSI EN 301 489-1 V1.9.2                       |

<sup>1</sup> Range depends on the RF propagation environment and Line of Sight (LoS). Always verify your wireless network's range by performing a Site Survey

<sup>2</sup> Dependent on radio channel selection

<sup>3</sup> Configurable

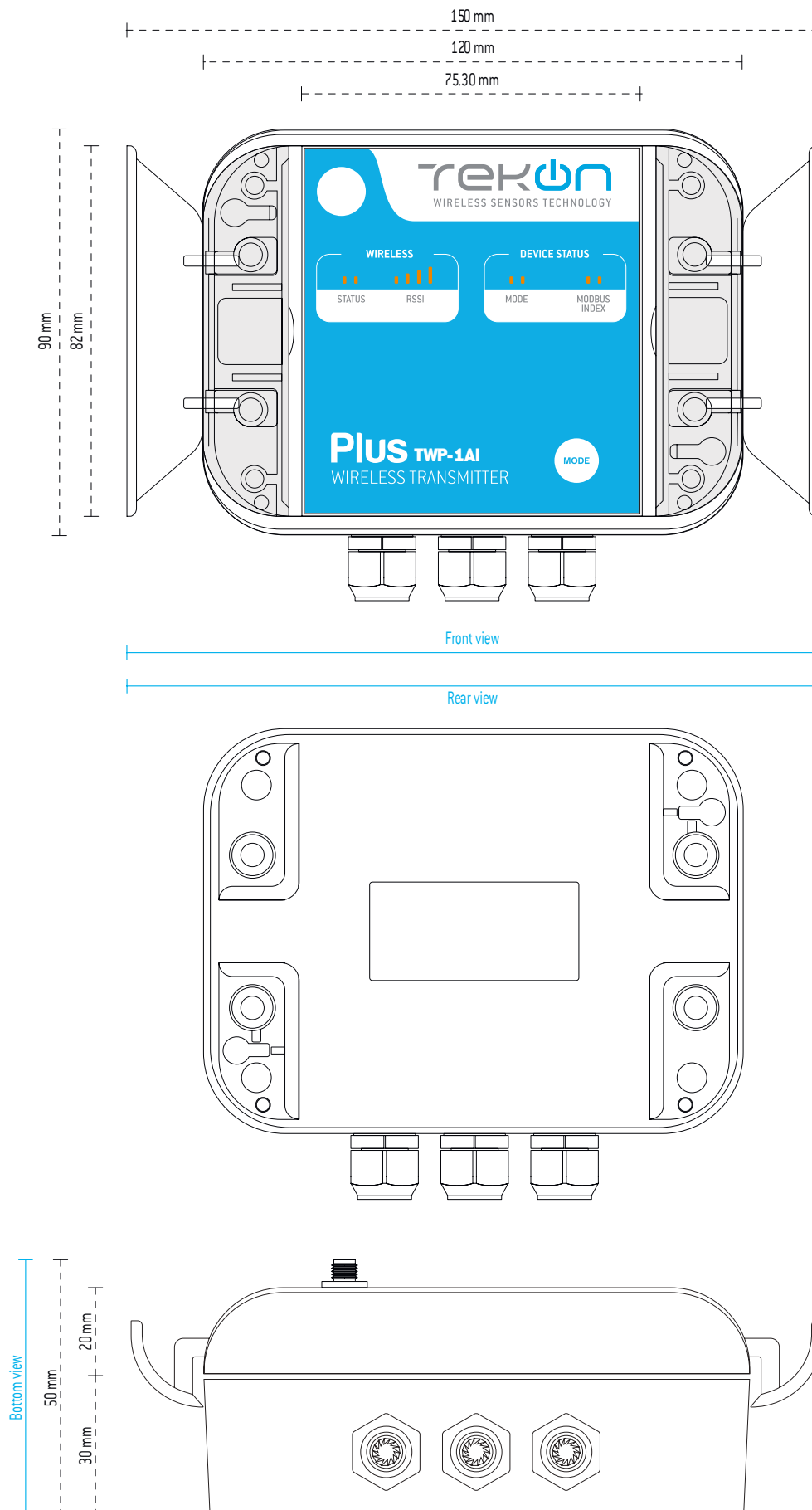
<sup>4</sup> In some countries, the frequency band admitted is not so extended as the default range.

<sup>5</sup> The radio frequencies admitted in Australia are available from channel 26 to channel 50.

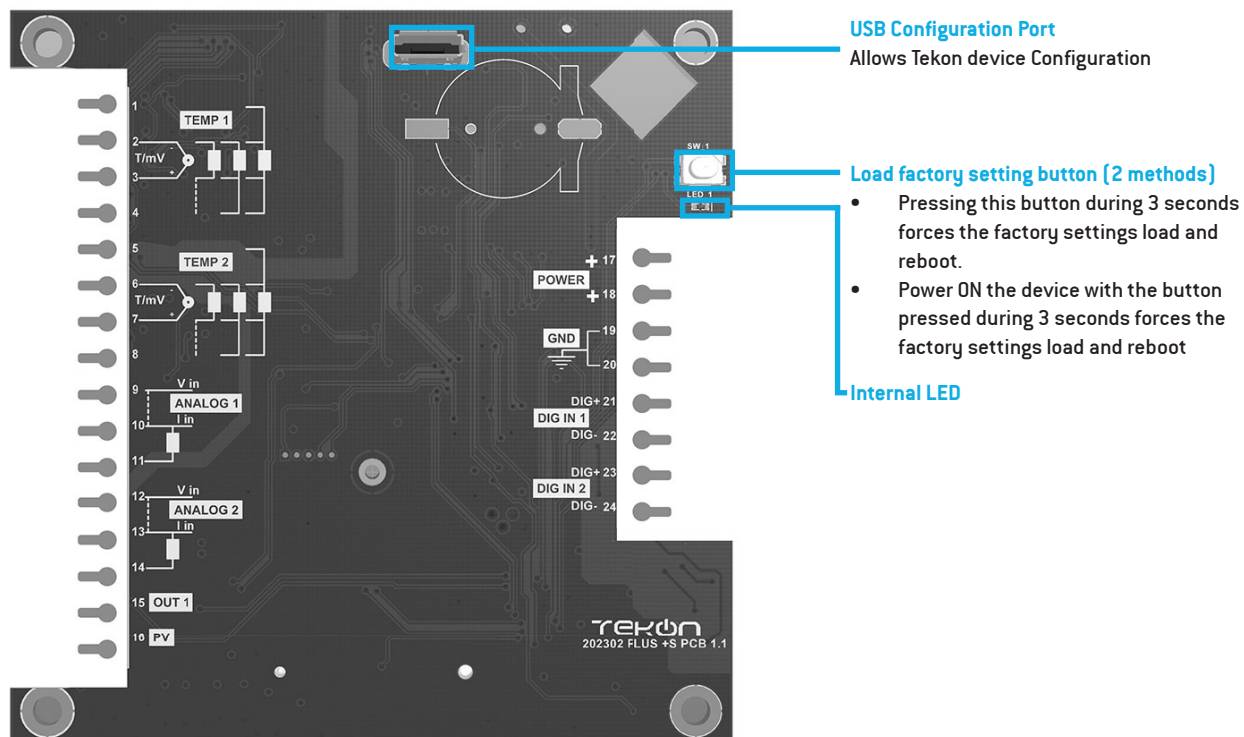
<sup>6</sup> It is recommended to use a power supply with short-circuit current protection or equipped with a fuse.

TECHNICAL DRAWINGS

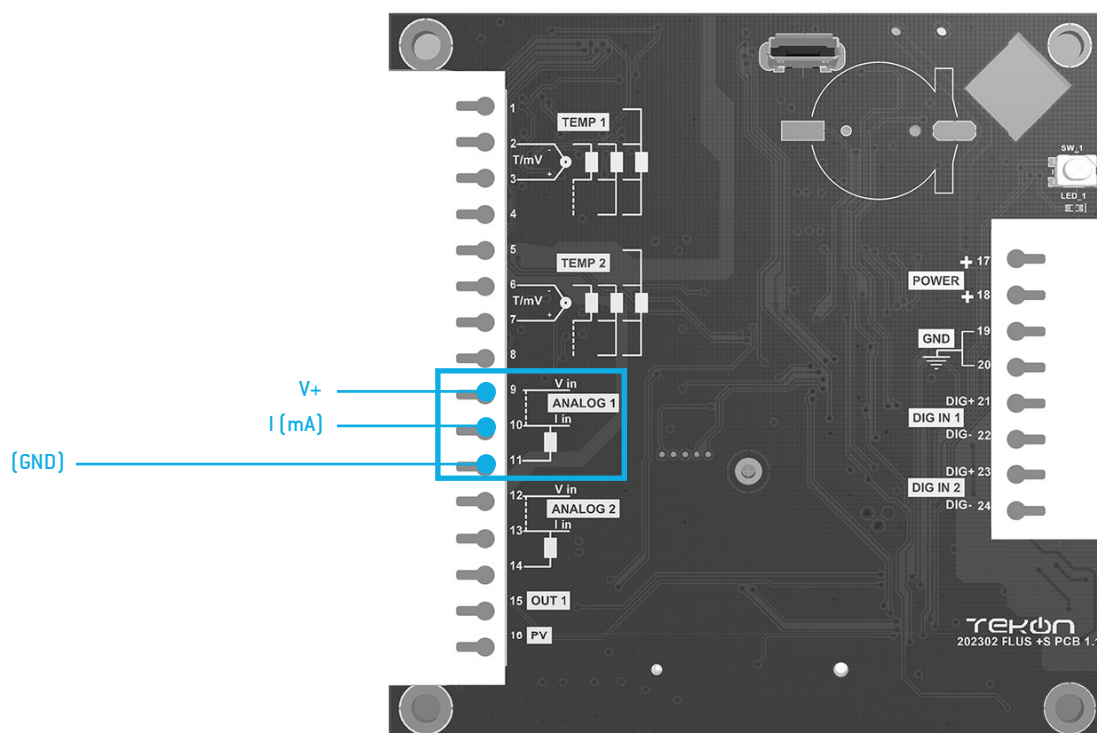
DIMENSIONAL DRAWINGS AND INTERFACE DESIGN



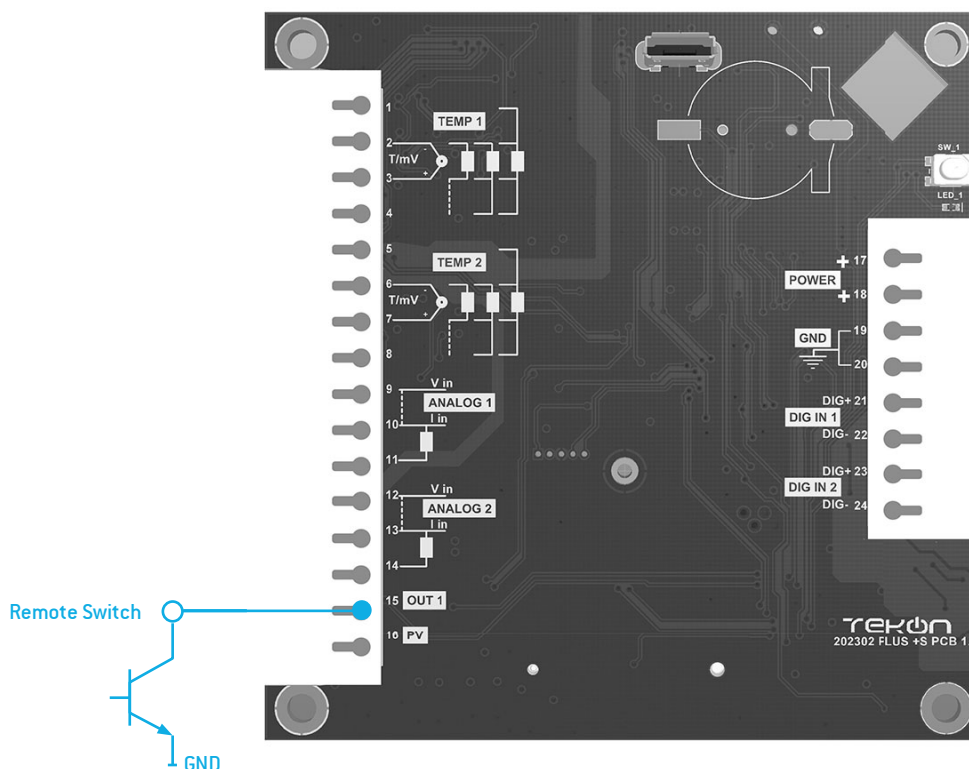
## WIRING DIAGRAM



## Analog Inputs



Digital Output - SINKING - NPN



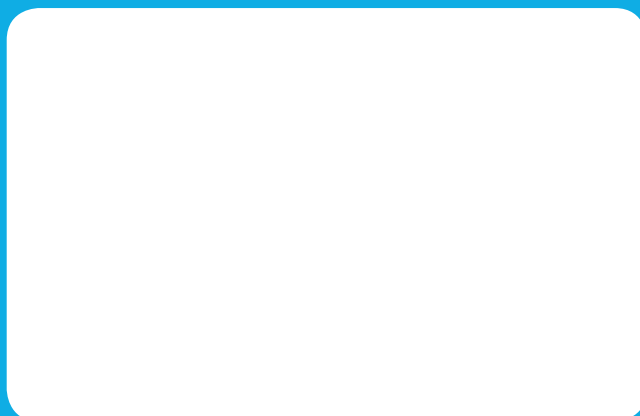
| Transmitter |                      |              |
|-------------|----------------------|--------------|
| PIN         | Functionality        |              |
|             | Current Mode         | Voltage Mode |
| 1           | Not used             |              |
| 2           | Not used             |              |
| 3           | Not used             |              |
| 4           | Not used             |              |
| 5           | Not used             |              |
| 6           | Not used             |              |
| 7           | Not used             |              |
| 8           | Not used             |              |
| 9           | Analog Input 1       | I (mA) V+    |
| 10          |                      | I (mA) NC    |
| 11          |                      | GND GND      |
| 12          | Not used             |              |
| 13          | Not used             |              |
| 14          | Not used             |              |
| 15          | Remote Switch Output |              |
| 16          | Battery Voltage      |              |
| 17          | Power Supply (+)     |              |
| 18          | Power Supply (+)     |              |
| 19          | Power Supply (GND)   |              |
| 20          | Power Supply (GND)   |              |

|    |          |  |
|----|----------|--|
| 21 | Not used |  |
| 22 | Not used |  |
| 23 | Not used |  |
| 24 | Not used |  |

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