WIRELESS SENSORS TECHNOLOGY

PLUS TWP4AI WIRELESS TRANSMITTER

An easy-to-use system that allows wireless reception and transmission of any process variables that could be transformed into an analogue signal.
PLUS wireless system was designed to monitor 4..20 mA / 0..10V signals, providing a secure communication, without cable requirements of a complex wired solution.

Conductivity, PH, vibration, humidity, flow, level, pressure or 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

UP TO 4 KM COMMUNICATION DISTANCE (LOS)

4 CONFIGURABLE ANALOG INPUTS

3 CONFIGURABLE DIGITAL OUTPUTS

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_TWP4AI_E01E

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TECHNICAL SPECIFICATIONS

RADIO SPECIFICATIONS	868MHZ	915MHZ
Range[1]	Up to 4Km LoS	
Frequency band	868 to 869MHz	902 to 928MHz[4]
Number of channels	16	50[5]
Radio receiver sensitivity[2]	-97 to -110 dBm	-97 to -110 dBm
Transmit power[2]	25 to 27 dBm	8 to 27 dBm
Transmission rate[2]	19 to 76,8kbit/s	
Encryption method	AES 128 (Advanced Encryption Standard)	
Modulation	GFSK	
Antenna connector	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 80ºC
Resolution	0,0625ºC
Accuracy	±1ºC
Sensor type	Digital sensor

POWER SUPPLY	
Supply voltage	5 to 24V DC ± 5% / USB [6]
Maximum current	500mA DC @ 5V DC / 100mA DC @ 24V DC
Reverse Polarity	

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 INPUT - TRIGGER	
Range	0V DC to Supply Voltage
ON detection level	>4.5V
OFF detection level	<2.5V
Type	Sinking / NPN
Impedance	>4k Ω
Input current	4,5mA @ 12V DC / 6mA @ 24V DC
Maximum current protection	10mA
Detection type	State change
Activation detection	Falling Edge / Rising Edge / Both [3]

DIGITAL OUTPUT	COMMUNICATION LOSS	REMOTE OUTPUT	EXTERNAL SUPPLY
Range		5 to 24V DC	
Type		Sinking / NPN	
Maximum current protection		90mA	
Start state	ON / OFF / last state [3]	ON / OFF / last state [3]	N/A
Communication loss state	ON / OFF [3]	ON / OFF / last state [3]	N/A
Event number activation	1 to 10 [3]	N/A	N/A
Activation period before communication	N/A	N/A	0 to 255 seconds [3]

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

MECHANICAL INTERFACE
Push-in spring terminal blocks (internal)
Bucins PG-7
1.5mm2 (0.0591in^2)
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

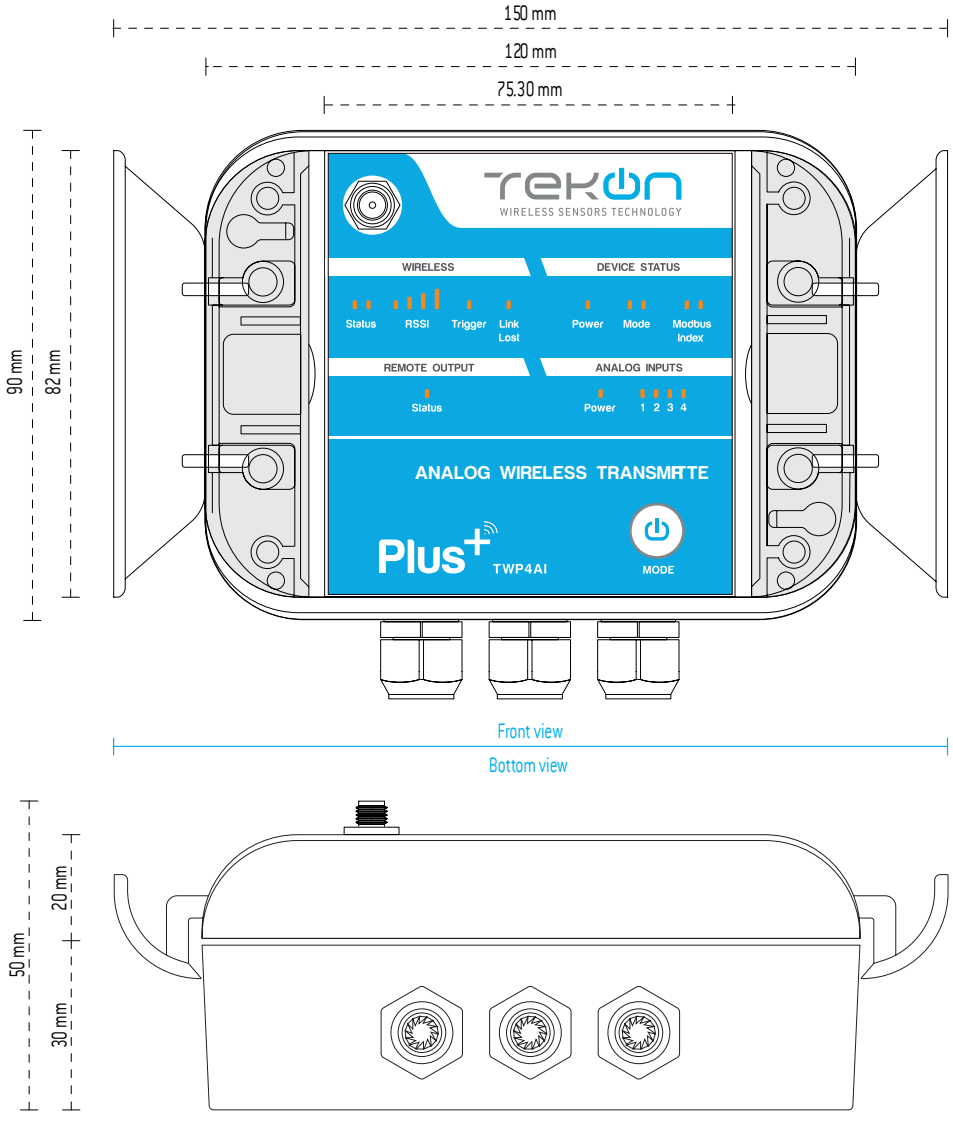
FACTORY DEFAULT SETTINGS	868MHZ	915MHZ
Frequency	869,525MHz	915,000MHz
Radio transmit power	27dBm	
Radio transmission rate	76,8kbit/s	
Wireless channel	13	26
Wireless network ID	13042017	
Communication period	10 seconds	
Reconnection period	30 minutes	
Gateway modbus index	1	
Analog inputs	Inactive	
Digital input - Trigger	Inactive	
Digital output - Communication loss	OFF	
Digital output - Remote output	OFF	
Digital output - External supply	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 60950-1:206
EN 61326-1:2013
ETSI EN 301 489-1 V1.9.2

[1] Range depends on the RF propagation environment and Line of Sight (LoS). Always verify your wireless network's range by performing a Site Survey.
[2] Dependent on radio channel selection
[3] Configurable
[4] In some countries, the frequency band admitted is not so extended as the default range.
[5] The radio frequencies admitted in Australia are available from channel 26 to channel 50.
[6] It is recommended to use a power supply with short-circuit current protection or equipped with a fuse.

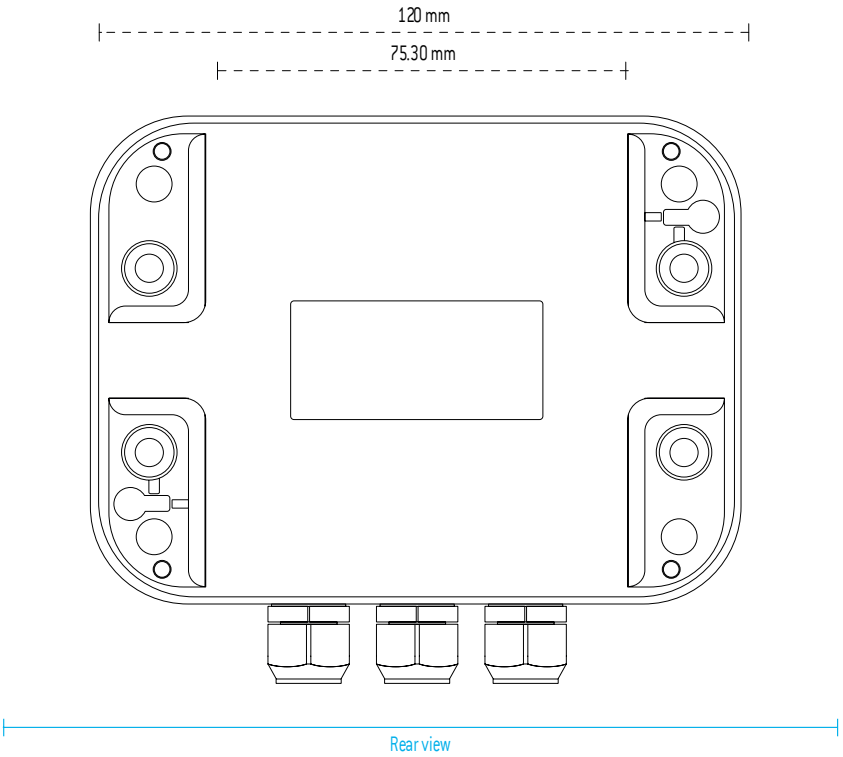
TECHNICAL DRAWINGS

DIMENSIONAL DRAWINGS AND INTERFACE DESIGN

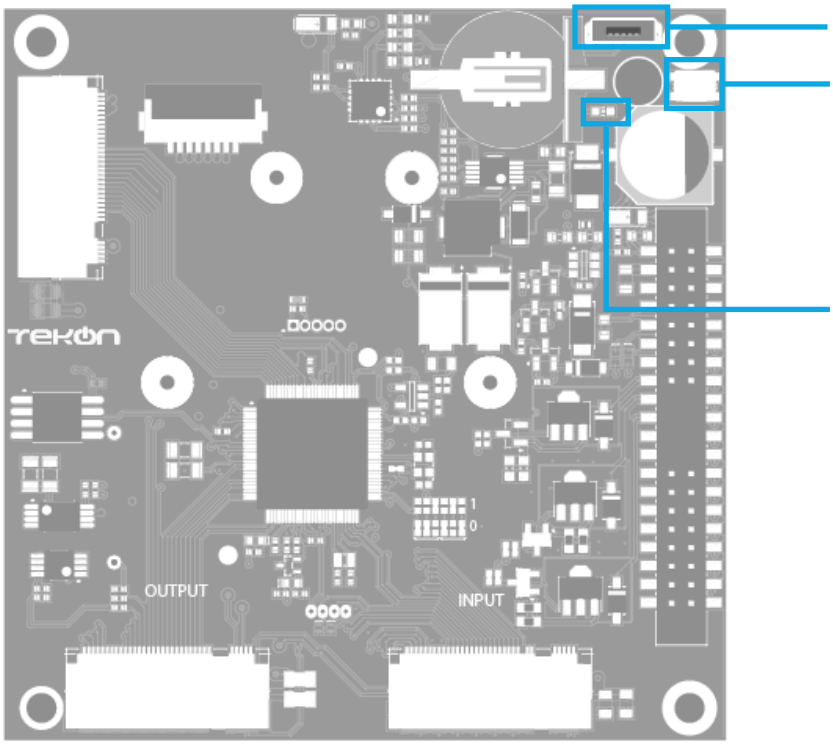


TECHNICAL DRAWINGS

DIMENSIONAL DRAWINGS AND INTERFACE DESIGN



WIRING DIAGRAM



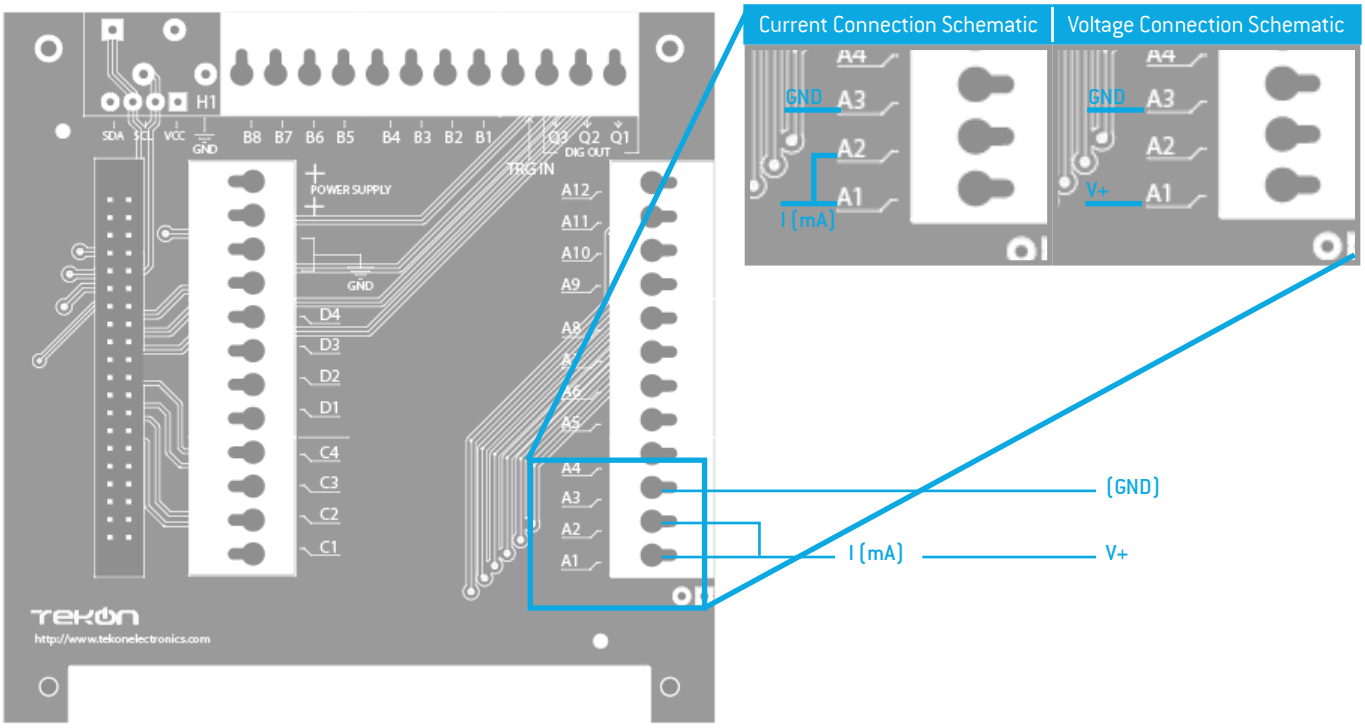
USB Configuration Port
Allows Tekon device Configuration

Load factory setting button (2 methods)

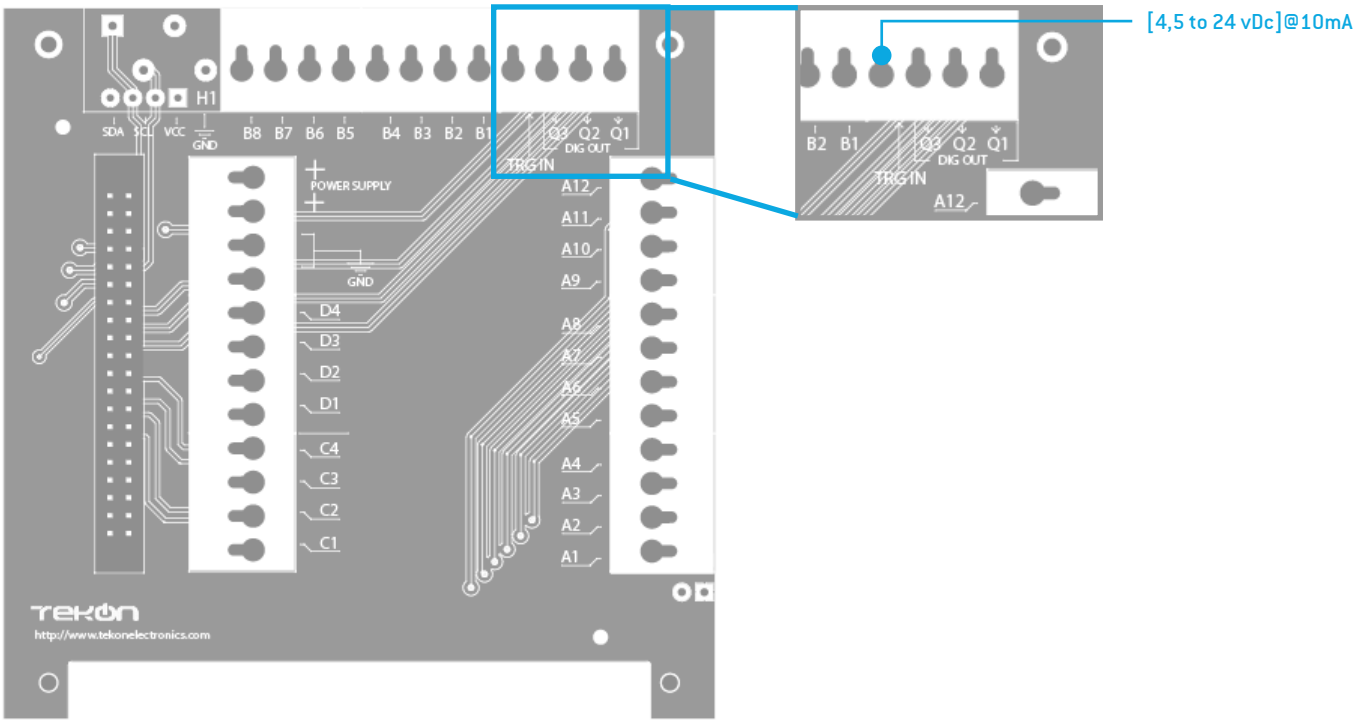
- Pressing this button during 3 seconds forces the factory settings load and reboot.
- Power ON the device with the button pressed during 3 seconds forces the factory settings load and reboot

Internal LED

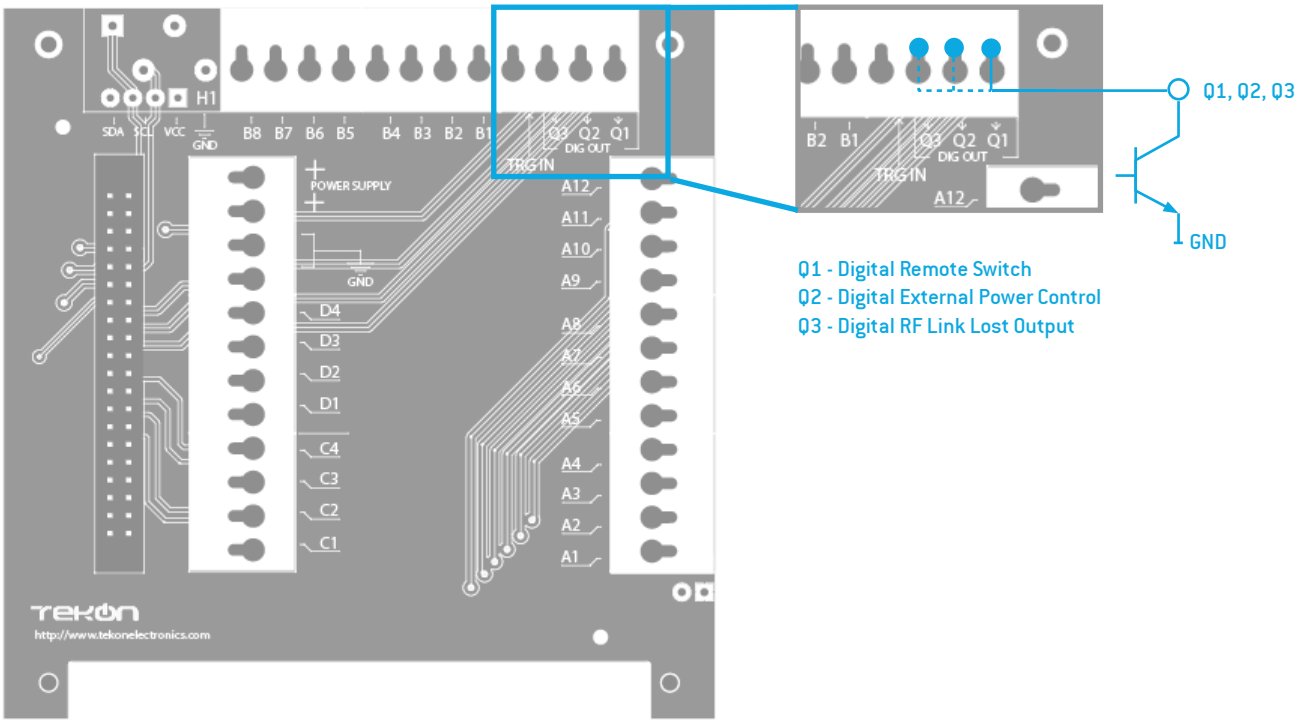
Analog Inputs



Digital Input - NPN - SINKING



Digital Output - SINKING - NPN



	Transmitter		
PIN		Functionality	
		Current Mode	Voltage Mode
A1	Analog Input 1	I (mA)	V+
A2		I (mA)	NC
A3		GND	GND
A4	Analog Input 2	I (mA)	V+
A5		I (mA)	NC
A6		GND	GND
A7	Analog Input 3	I (mA)	V+
A8		I (mA)	NC
A9		GND	GND
A10	Analog Input 4	I (mA)	V+
A11		I (mA)	NC
A12		GND	GND
B1	Not used		
B2	Not used		
B3	Not used		
B4	Not used		
B5	Not used		
B6	Not used		
B7	Not used		
B8	Not used		
TRIG IN	Digital Trigger Input		
Q1	Digital Remote Switch Output		
Q2	Digital External Power Control Output		
Q3	Digital RF Link Lost Output		

RELATED PRODUCTS

PLUS WGW420 WIRELESS GATEWAY 868 MHZ / 915 MHZ

REF.: PA164510210 / PA164510220

- Scalable network up to 55 PLUS transmitters;
- Up to 4 Km communication distance (LoS) with 868 MHz/915 MHz and 128-bit AES encryption;
- Multiple networks with extra gateways and extra long range with several repeaters;
- Multi-hop mesh network with self-forming, self-healing and self-optimizing features;
- Modbus RTU communication protocol via RS-485 interface;
- 8 analog outputs (4..20 mA current loop);
- Simple and intuitive USB configuration via Tekon Configurator (free software);
- DIN rail mounting.

PLUS WRP001 WIRELESS REPEATER 868 MHZ / 915 MHZ

REF.: PA164510310 / PA164510320

- Up to 12 repeaters in series for extra-long range;
- Extra repeaters for network redundancy and robustness;
- Up to 4 Km communication distance (LoS) with 868 MHz/915 MHz and 128-bit AES encryption;
- Multi-hop mesh network with self-forming, self-healing and self-optimizing features;
- Simple and intuitive USB configuration via Tekon Configurator (free software).

REVISION HISTORY

VERSION	
E01B	Addition of 915MHz frequency information in “Radio Specifications” and “Factory Default Settings” tables; Reform “Operating Environment” table; Regroup “Analog Input” information on a single table; Regroup “Digital Output” information on a single table; Revision of “Certifications and approvals“ table; Remove “Led Indication” table to the installation guide;
E01C	Addiction of information about the frequency range used in Australia.
E01D	Revision of “Certifications and Approvals” table.
E01E	Inclusion of Reconnection Period on “Factory Default Settings Table”

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