![Tekon - Wireless Sensors Technology logo]

-40°C 80°C
* 868MHz version

IP67 PROTECTION

WIRELESS TRANSMITTER DUOS DI+TEMP

REF.: PA160411210 / PA160412510

IoT ready

Tekon Wireless Transmitter DUOS DI+Temp is the perfect temperature wireless solution for monitoring applications, automation and centralization of temperature measurements throughout the production substances, distribution and storage of refrigerated foods, frozen and deep-frozen, HVAC and other industry processes.

Equipped with a smart dual probe transmitter, it allows the user to monitor not only the air temperature but also the product temperature, thanks to the second enclosed probe.

Dimensions: 162 x 88.5 x 25 mm

Weight: 100 g

Material: ABS UL94HB

Protection Index: IP67

KEY FEATURES

−40 °C TO 125°C
TEMPERATURE MEASUREMENT SENSOR RANGE*

DIGITAL INPUT EVENT TRIGGER COMMUNICATION

AGRIFOOD INDUSTRY COMPATIBILITY
COMPATIBLE WITH AGRIFOOD INDUSTRY STANDARDS

DUAL TEMPERATURE PROBE
INTERNAL AND EXTERNAL PROBE

WIRELESS LINK STRENGTH (RSSI)
AUTO DISCOVERY OF THE BEST WIRELESS LINK

LOW POWER AND LONG BATTERY LIFE
MEASURING AND TRANSMITTING BATTERY VOLTAGE

WATER RESISTANT
IP67 PROTECTION

* The temperature measurement sensor range is related with the external temperature probes.

PA160411210.DS.ENG.V01.4.2018

TECHNICAL SPECIFICATIONS

RADIO SPECIFICATIONS	868MHZ	2.4GHZ
Range[1]	Up to 4 Km LoS, 868MHz, 27 dBm (500mW)	Up to 2 Km LoS, 2.4GHz, 10dBm (10mW)
Minimum Separation Distance	3 m, 868MHz, 27 dBm (500mW)	0m, 2.4Ghz, 10dBm (10mW)
Radio Transmit Power	0 to 27 dBm[2]	-10 to 17dBm[2]
Radio Receiver Sensitivity	-97 to -110 dBm[2]	-91 to -108dBm[2]
Frequency Band	868.050 to 869.575 MHz[2]	2400.75 to 2482.75 Mhz[2]
Radio Channels	16, 868MHz	83, 2.4GHz
Radio Transmission Rate	1.2 to 76.8 kbit/s[2]	
Modulation	GFSK	
Encryption method	AES 128 (Advanced Encryption Standard)	

WIRELESS NETWORK	
Maximum Devices	55
Maximum Hops	13
Communication Period	1 to 43200 seconds (configurable)

TEMPERATURE MEASUREMENT – EXTERNAL PROBE	
Range	-40 to 125ºC
Resolution	0.1 ºC
Accuracy	Typical: ± 0.25 ºC / Maximum: ± 0.5 ºC
Sensor Type	I2C digital sensor
Response Time	1 second
Connector	M8 female socket, 4 poles

TEMPERATURE MEASUREMENT INTERNAL PROBE	868MHZ	2.4GHZ
Range	-40 to 80ºC	-20 to 80ºC
Resolution	0.1 ºC	
Accuracy	Typical: ± 0.25 ºC / Maximum: ± 0.5 ºC	
Sensor Type	I2C digital sensor	
Response Time	1 second	

DIGITAL INPUT - ELECTRICAL AND TIME FEATURES	
Contact Type	Dry contact
Standby State	Open / OFF
Current consumption	DI ON: 28uA / DI OFF: 0uA
Communication Time after DI activation	< 1.1 seconds
DI Debounce Time	60ms
Edge Trigger	Open Close
DI Event Buffer	8

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[1] Range depends on the environment and line of sight. Always verify your wireless network's range by performing a Site Survey.
[2] Dependent on radio channel selection.

SUPPLY VOLTAGE

3x3.6 AA lithium batteries (PN EVE ER14505M)[3]

3 years of estimated battery life[4]

External power supply with 12 VDC $\pm$ 5%

Peak current draw of 500 mA

Supply voltage measurement accuracy $\pm$ 1 V DC

LOW BATTERY	Tint > 25ºC	-25 < Tint < 25	Tint < -25
Voltage Threshold [VDC]	8,5	(Tint / 50) + 8	7,5

CRITICAL BATTERY	Tint > 25ºC	-25 < Tint < 25	Tint < -25
Voltage Threshold [VDC]	8	(Tint / 50) + 7,5	7

INTERFACE

2 blue LED for wireless network address identification and general operation status

1 red LED and 1 green LED for wireless network operation status

1 magnetic reed switch for system reboot

1 M8 female socket with 5 poles for device configuration through host computer

OPERATING ENVIRONMENT	868MHZ	2.4GHZ
	−40 ℃ to 80 ℃	−20 ℃ to 80 ℃
	95% maximum relative humidity (non-condensing)	

HOUSING	
Dimensions	162 x 88.5 x 25 mm
Weight	100 g
Material	ABS UL94HB
Protection Index	IP67

FACTORY DEFAULT CONFIGURATION	868MHZ	2.4GHZ
Frequency (MHz)	869.525	2403.75
Radio Transmit Power	27 dBm	10dBm
Radio Transmission Rate	76.8 kbit/s	
Wireless Channel	13	4
Transmitter ID	55	
Communication Period	10 seconds	
Configuration time window at startup	10 seconds	
Wireless Network ID	16777217	

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[3] Batteries not included.

[4] Considering a communication period of 10 minutes, and maximum transmit power (27dBm) at 25 ºC, with PN EVE ER14505M batteries and Digital Input OFF.
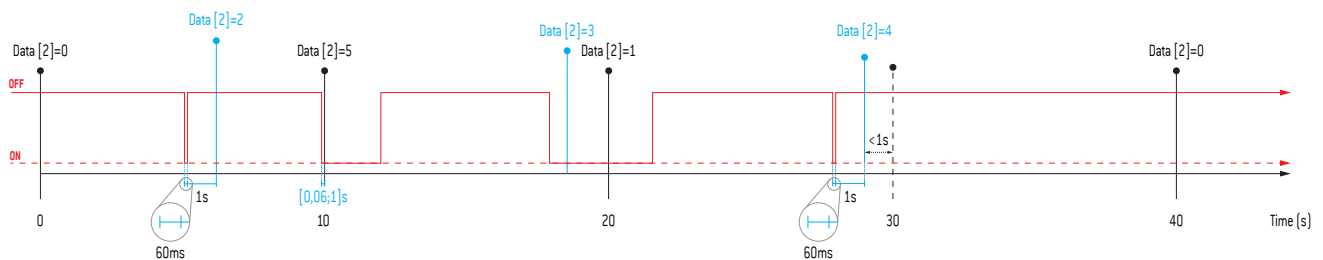
TEKONELECTRONICS.COM

CALIBRATION SETTINGS

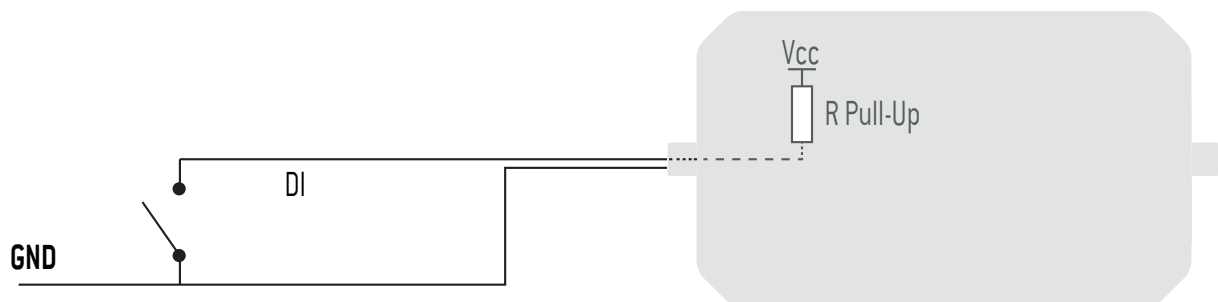| Linear Calibration (y=mx+b)	m	b
External Temperature	1 (default)	0 (default)
Internal Temperature	1 (default)	0 (default)
Software configurable values		

DIGITAL INPUT

TRANSMITTER DI OPERATION

- **Transmission triggered by C.P.**
  CP - Communication Period = 10 seg
- DI - Digital Input State
- TX-DI - Transmission triggered by DI

DI STATE / AWAKENED BY	Time	DI	DI+Time
OFF	0	2	4
ON	1	3	5
Note: If Communication Period is equal to 1 second, possible values are: 0, 1, 4 and 5.			

CONNECTION DIAGRAM

CERTIFICATIONS AND COMPLIANCE

EN 61326 Electrical equipment for measurement, control and laboratory use. EMC requirements.

IEC 61000-4-2 Radiated, Radio-Frequency, Electromagnetic Field Immunity Test

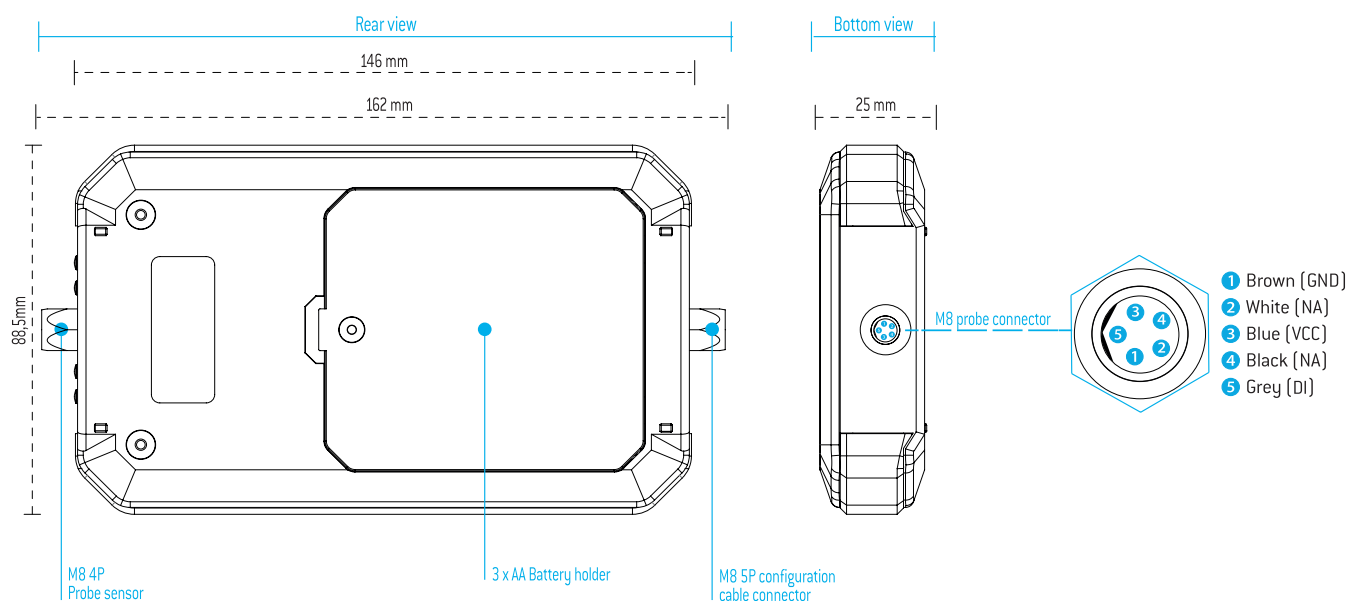IEC 61000-4-3 Electrical fast transient/burst immunity Test

IEC 61000-4-4 Surge Immunity Test

IEC 61000-4-5 Electrostatic discharge immunity test
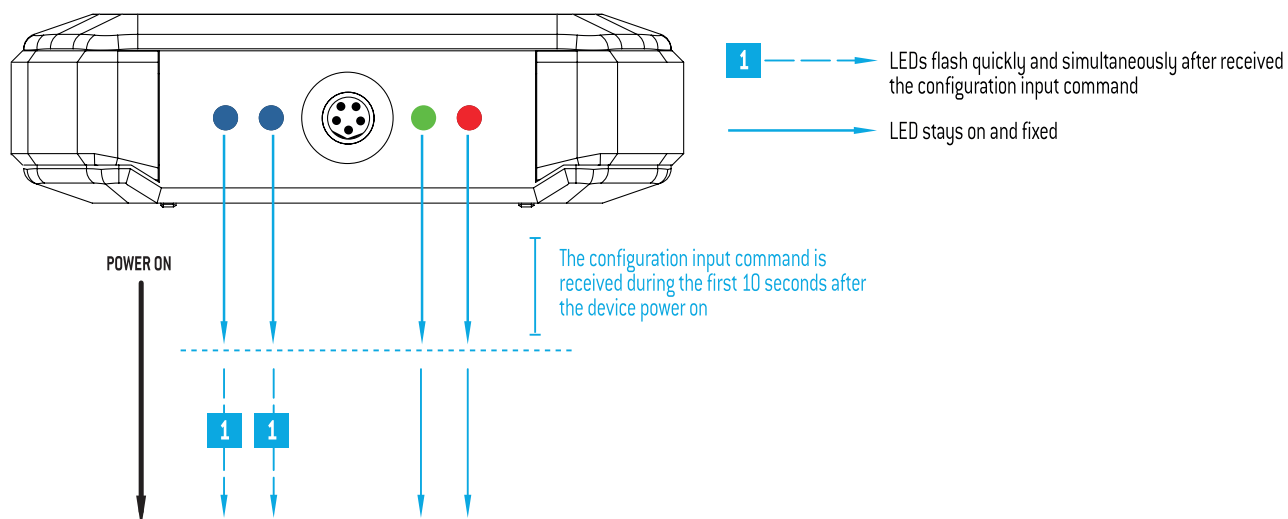
TECHNICAL DRAWINGS

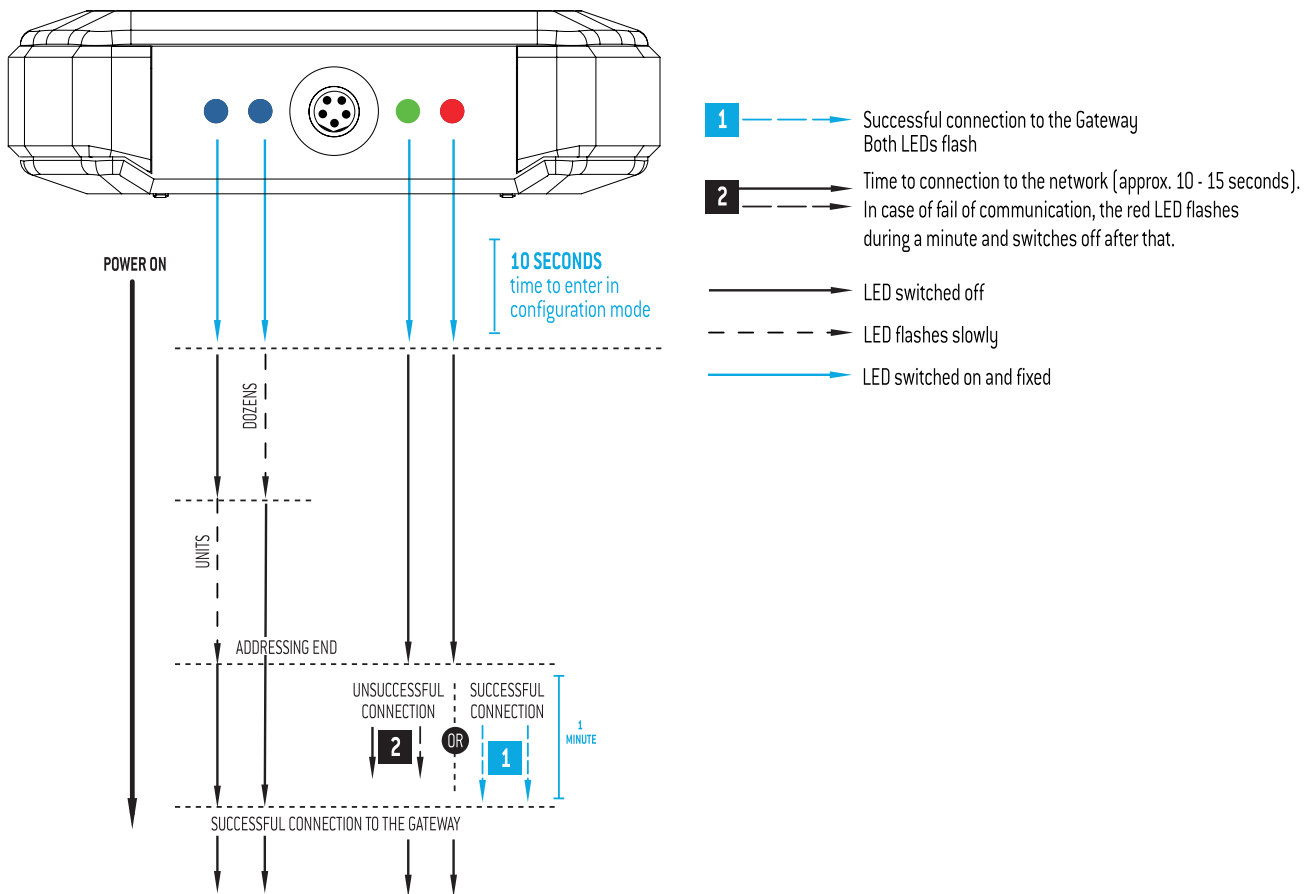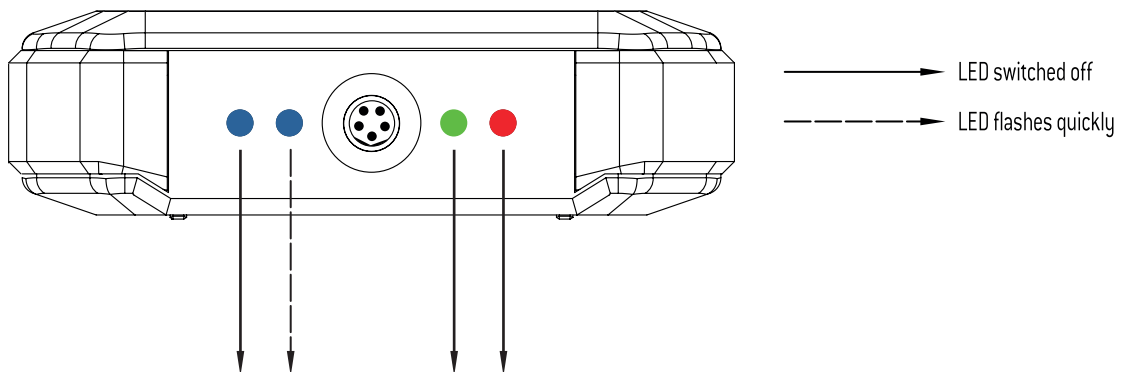### DIMENSIONAL DRAWINGS AND INTERFACE DESIGN   M8X5P PINOUT DIAGRAM

Rear view

146 mm

162 mm

88,5mm

Bottom view

25 mm

M8 probe connector

1 Brown (GND)
2 White (NA)
3 Blue (VCC)
4 Black (NA)
5 Grey (DI)

M8 4P
Probe sensor

3 x AA Battery holder

M8 5P configuration
cable connector

LEDS SIGNAGE

STARTING EQUIPMENT IN CONFIGURATION MODE

1 LEDs flash quickly and simultaneously after received the configuration input command

LED stays on and fixed

POWER ON

1 **1**

The configuration input command is received during the first 10 seconds after the device power on

STARTING EQUIPMENT NORMALLY

1 Successful connection to the Gateway
Both LEDs flash

2 Time to connection to the network (approx. 10 - 15 seconds).
In case of fail of communication, the red LED flashes
during a minute and switches off after that.

LED switched off

LED flashes slowly

LED switched on and fixed

POWER ON

10 SECONDS
time to enter in
configuration mode

DOZENS

UNITS

ADDRESSING END

UNSUCCESSFUL CONNECTION SUCCESSFUL CONNECTION

2 OR **1**

1 MINUTE

SUCCESSFUL CONNECTION TO THE GATEWAY

TRANSMITTER FAILURE

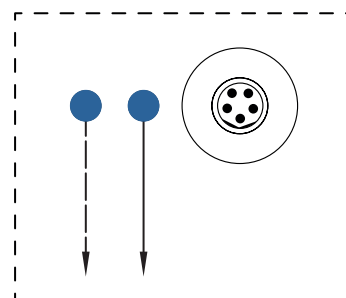LED switched off

LED flashes quickly

CRITICAL BATTERY LEVEL

CRITICAL BATTERY LEVEL
Device stops communication with Gateway
One LED stays permanently flashing at 0.5Hz (1 second on, 1 second off) and
the remaining LEDs are switched off.

LED switched off

LED flashes slowly

ACCESSORIES

DUOS DIGITAL TEMPERATURE PROBE PLUG AND PLAY (PROBE PG)
REF.: PA160410001

Plug and Play DUOS external temperature probe with M8 connector.

DUOS DIGITAL TEMPERATURE PROBE 2M AND 5M
REF.: PA160410002 (2M) / REF.: PA160410003 (5M)

2M or 5M cable DUOS external temperature probe with M8 connector.

DUOS TRANSMITTER SARC
REF.: PA160410005

Cable used to configure DUOS Transmitter using Tekon Configuration software.

DUOS POWER SUPPLY 230VAC/ 12V DC
REF.: PA160410006

230V/50Hz Power supply cable to be used with the wireless gateway and repeater DUOS.

DUOS EXTERNAL POWER CABLE
REF.: PA160410008

DUOS Transmitter external power supply cable.

DUOS DI+TEMP EXTERNAL CABLE
REF.: PA160410009

DUOS DI+TEMP Digital Input cable.

COMPLEMENTARY PRODUCTS

WIRELESS GATEWAY DUOS
REF.: PA160410210 / PA160411910

- Scalable network up to 55 transmitters;
- Supports up to 12 repeaters in series;
- Up to 4Km (868MHz) / 2Km (2.4GHz) communication distance (LoS) with 128-bit AES encryption;
- Automatic Mesh Network Management;
- Automatic communication quality mechanisms;
- Multiple networks simultaneously;
- AES KEY Data encryption 128bits;
- Modbus RTU communication for process;
- Simple, intuitive and free configuration software.
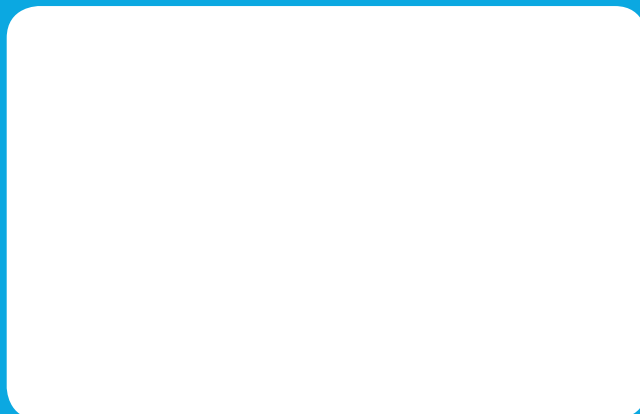
WIRELESS REPEATER DUOS
REF.: PA160410310 / PA160412010

- Up to 4Km (868MHz) / 2Km (2.4GHz) communication distance (LoS);
- Auto discovery of the best wireless link;
- Automatic forwarding of communication;
- Simple, intuitive and free configuration software.

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