

WIRELESS TRANSMITTER DUOS DI+TEMP

REF.: PA160411210 / PA160412510



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.

DS_DUOS_DI+TEMP_E01B

TECHNICAL SPECIFICATIONS

RADIO SPECIFICATIONS	868MHZ	915MHZ	2,4GHZ
Range ¹	Up to 4 Km LoS, 27 dBm (500mW)	Up to 4 Km LoS, 27 dBm (500mW)	Up to 2 Km LoS, 10dBm (10mW)
Minimum communication distance	3 m @ 27 dBm (500mW)	3 m @ 27 dBm (500mW)	0m @ 10dBm (10mW)
Radio transmit power ²	0 to 27 dBm	8 to 27 dBm	-10 to 17dBm
Radio receiver sensitivity ²	-97 to -110 dBm	-97 to -110 dBm	-91 to -108dBm
Frequency band ²	868 to 869 MHz	902 to 928 MHz	2,4 to 2,5 Ghz
Radio channels	16	50	83
Radio transmission rate ²	1,2 to 76,8 kbit/s		
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 125°C
Resolution	0,1 °C
Accuracy	Typical: ± 0,25 °C / Maximum: ± 0,5 °C
Sensor type	I2C digital sensor
Response time	1 second
Connector	M8 female socket, 4 poles

TEMPERATURE MEASUREMENT INTERNAL PROBE	868MHZ	915MHZ	2,4GHZ
Range	-40 to 80°C	-40 to 80°C	-20 to 80°C
Resolution	0,1 °C		
Accuracy	Typical: ± 0,25 °C / Maximum: ± 0,5 °C		
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

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.

POWER SUPPLY

3x3.6 AA lithium batteries (PN EVE ER14505)³3 years of estimated battery life⁴External power supply with 12 VDC $\pm$ 5%Peak current draw of 250 mA²Supply voltage measurement accuracy $\pm$ 1 V DCSleep mode current consumption < 8 μ A

VOLTAGE THRESHOLD (VDC)	TINT > 25°C	-25°C < TINT < 25°C	TINT < -25°C
Low battery	8,5	(Tint / 50) + 8	7,5
Critical battery	8	(Tint / 50) + 7,5	7

INTERFACE

2 blue LED (LED 1 and LED 2) for wireless network address identification and general operation status

1 red LED (LED 4) and 1 green LED (LED 3) 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	915MHZ	2,4GHZ
Temperature range	-40 to 80°C	-40 to 80°C	-20 to 80°C
Humidity	95% maximum relative humidity (non-condensing)		

FACTORY DEFAULT SETTINGS	868MHZ	915MHZ	2,4GHZ
Frequency (MHZ)	869,525 MHz	904,000 MHz	2403,750 MHz
Radio transmit power	27 dBm	27 dBm	10 dBm
Radio transmission rate		76,8 kbits/s	
Wireless channel	13	4	4
Transmitter ID		1	
Communication period		10 seconds	
Configuration time window at startup		10 seconds	
Wireless network ID		16777217	

CERTIFICATIONS AND APPROVALS

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

EN 300 228 - Electromagnetic compatibility and Radio Spectrum Matters (ERM); Wideband transmission systems; Data transmission equipment operating in the 2,4 GHz ISM band and using wide band modulation techniques; Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive.

EN 300 440 - Electromagnetic compatibility and Radio Spectrum Matters (ERM); Short Range Devices; Radio equipment to be used in the 1 GHz to 40 GHz frequency range; Part 2: Harmonized EN under article 3.2 of the R&TTE Directive.

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

³ Batteries not included.⁴ Considering a communication period of 10 minutes, and maximum transmit power (27dBm) at 25 °C, with PN EVE ER14505M batteries and Digital Input OFF.

CASING

Dimensions	162 x 88,5 x 25 mm
Weight	100 g
Material	ABS UL94HB
Protection index	IP67

CALIBRATION SETTINGS

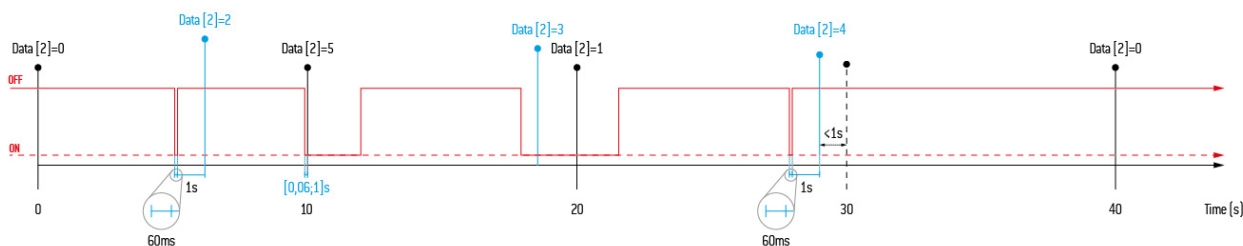
Linear Calibration ($y=mx+b$)*	m	b
External temperature	1 (default)	0 (default)
Internal temperature	1 (default)	0 (default)

* Software configurable values

DIGITAL INPUT

TRANSMITTER DI OPERATION

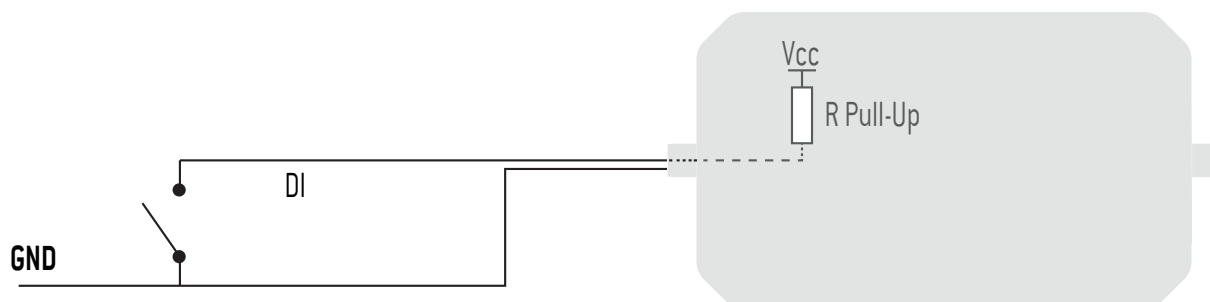
- Transmission triggered by C.P.
CP - Communication Period = 10 seg
- DI - Digital Input State
- TX-DI - Transmission triggered by DI



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.

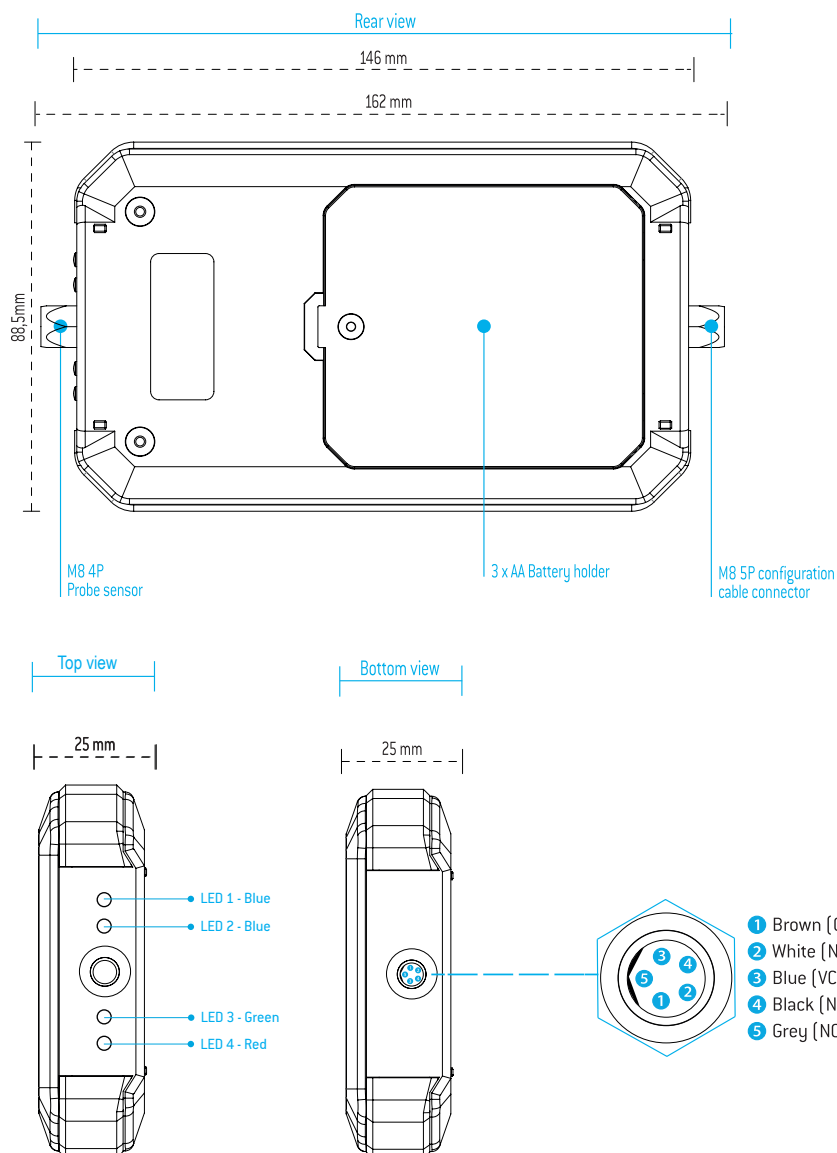
CONNECTION DIAGRAM



TECHNICAL DRAWINGS

DIMENSIONAL DRAWINGS AND INTERFACE DESIGN

M8X5P PINOUT DIAGRAM



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.

RELATED PRODUCTS



DUOS WIRELESS GATEWAY

REF.: PA160410210 / PA160411910

- Scalable network up to 55 transmitters;
- Supports up to 12 repeaters in series;
- Up to 4Km [868MHz/915MHz] / 2Km [2.4GHz] communication distance (LoS);
- Automatic Mesh Network Management;
- Automatic communication quality mechanisms;
- Multiple networks simultaneously;
- AES KEY Data encryption 128bits;
- Modbus RTU communication for process;



DUOS WIRELESS REPEATER

REF.: PA160410310 / PA160412010

- Up to 4Km [868MHz/915MHz] / 2Km [2.4GHz] communication distance (LoS);
- Auto discovery of the best wireless link;
- Automatic forwarding of communication;



DUOS WIRELESS GATEWAY IOT

REF.: PA160410240 / PA160411920

- Ethernet TCP/IP communication;
- Integration with Tekon IoT Platform;
- Scalable network up to 55 transmitters;
- Multiple networks simultaneously;
- Automatic Mesh Network Management;
- Up to 4Km [868MHz/915MHz] / 2Km [2.4GHz] communication distance (LoS);
- Multiple networks simultaneously;
- AES KEY Data encryption 128bits;

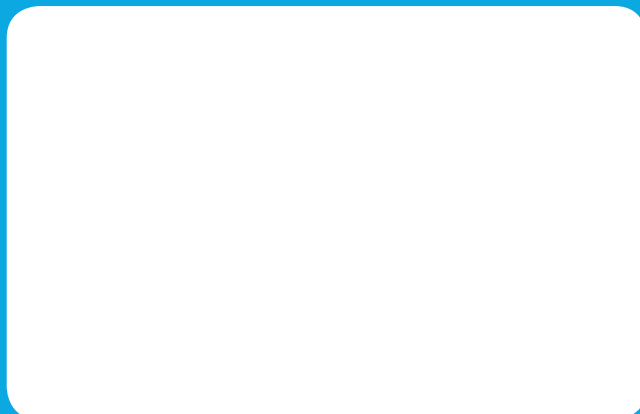
REVISION HISTORY

VERSION	
E01B	Addition of 915MHz frequency information in “Radio Specifications”, “Temperature Measurement Internal Probe”, “Operating Environment” and “Factory Default Settings” tables; Revision of “Peak current” topic in “Power Supply” table; Reform of “Voltage Threshold” table; Identification of led number in “Interface” table; Reform of “Certifications and approvals” table; Led layout in “Technical Drawings”; Inclusion of “DUOS Wireless Gateway IoT” in “Related Products” table;

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