

# WIRELESS TRANSMITTER DUOS TEMP



Tekon Wireless Transmitter DUOS Temp is the perfect 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.

## Product References

	Black	White
868MHz	PA160410110	PA160410120
915MHz	PA160410130	PA160410140

## KEY FEATURES

### −40 °C TO 125°C

TEMPERATURE SENSOR MEASUREMENT RANGE\*

### AGRI FOOD INDUSTRY COMPATIBILITY

COMPATIBLE WITH AGRIFOOD INDUSTRY STANDARDS

### LONG COMMUNICATION RANGE

### DUAL TEMPERATURE PROBE

INTERNAL AND EXTERNAL PROBE

### WIRELESS LINK STRENGTH (RSSI)

AUTO DISCOVERY OF THE BEST WIRELESS LINK

### LOW POWER AND LONG BATTERY LIFE

MEASUREMENT AND TRANSMISSION OF BATTERY VOLTAGE

### WATER RESISTANT

IP67 PROTECTION

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

DS\_DUOS\_TEMP\_E02A

## TECHNICAL SPECIFICATIONS

RADIO SPECIFICATIONS	868MHZ	915MHZ
Range <sup>1</sup>	Up to 4 Km LoS	
Minimum communication distance	3 m @ 27 dBm (500mW)	
Radio transmit power <sup>2</sup>	0 to 27 dBm	8 to 27 dBm
Radio receiver sensitivity <sup>2</sup>	-97 to -110 dBm	
Frequency band <sup>2</sup>	868 to 869 MHz	902 to 928 MHz <sup>5</sup>
Radio channels	16	50 <sup>6</sup>
Radio transmission rate <sup>2</sup>	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

Range	-40 to 60 °C
Resolution	0,1 °C
Accuracy	Typical: ± 0,25 °C / Maximum: ± 0,5 °C
Sensor type	I2C digital sensor
Response time	1 second

## POWER SUPPLY (HARDWARE VERSION < 4.2)

3x3,6 AA lithium batteries <sup>3</sup>
3 years of estimated battery life <sup>4</sup>
External power supply with 12 VDC ± 5%
Peak current draw of 250 mA <sup>2</sup>
Supply voltage measurement accuracy ± 1 V DC
Sleep mode current consumption < 8 µA

## POWER SUPPLY (HARDWARE VERSION ≥ 4.2)

3x1,5 V AA Lithium/Alkaline/Rechargeable(Ni-MH) batteries <sup>3</sup>
3 years of estimated battery life <sup>4</sup>
External power supply with 5 VDC ± 5%
Peak current < 100 mA <sup>2</sup>

Supply voltage measurement accuracy  $\pm 100$  mVSleep mode current consumption  $< 30 \mu\text{A}$ 

OPERATING ENVIRONMENT	868MHZ	915MHZ
Temperature range	-40 °C to 60° C	
Humidity	95% maximum relative humidity (non-condensing)	

## INTERFACE

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

1 green LED (LED 3) and 1 red LED (LED 4) 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

## CASING

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

FACTORY DEFAULT SETTINGS	868MHZ	915MHZ
Frequency (MHz)	869,525	915,000
Radio transmit power	27 dBm	
Radio transmission rate	76,8 kbit/s	
Wireless channel	13	26
Transmitter ID	1	
Communication period	10 seconds	
Configuration time window at startup	10 seconds	
Wireless network ID	16777217	

## CERTIFICATIONS AND APPROVALS

EN 300 220 -2 V3.1.1

EN 301 489-1 V2.2.0

EN 301 489-3 V2.1.1

<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> Batteries not included.

<sup>4</sup> Considering a communication period of 10 minutes, and maximum transmit power (27dBm) at 25 °C

<sup>5</sup> In some countries, the frequency band admitted is not so extended as the default range.

<sup>6</sup> The radio frequencies admitted in Australia are available from channel 26 to channel 50.

## CALIBRATION SETTINGS

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

\* Software configurable values

## BATTERIES

### RECOMMENDED BATTERIES (HARDWARE VERSION < 4.2)

BRAND	SAFT	EVE
Model	LS14500	ER14505
Classification	Lithium-thionyl	Lithium-thionyl
Chemical System	Li-SOCl <sub>2</sub>	Li-SOCl <sub>2</sub>
Nominal Voltage	3,6 V	3,6 V
Type	AA	AA
Operating Temperature	-60°C to 85°C	-55°C to 85°C

### RECOMMENDED BATTERIES (HARDWARE VERSION >= 4.2)

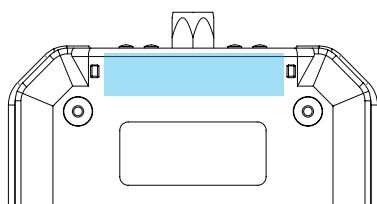
BRAND	ENERGIZER	PANASONIC	DURACELL	DURACELL
Model	Ultimate Lithium L91	Alkaline Power	MN1500	DX1500H
TME Part Number	BAT-FR6/EGL-B4	BAT-LR06/P-B4	BAT-LR6/DR-B12	ACCU-R6/2500/DR
Classification	Lithium	Alkaline	Alkaline	Rechargeable
Chemical System	Li/FeS <sub>2</sub>	Zn/MnO <sub>2</sub>	Zn/MnO <sub>2</sub>	Ni-MH
Nominal Voltage	1,5 V	1,5 V	1,5 V	1,2 V
Type	AA	AA	AA	AA
Operating Temperature	-40°C to 60°C	-20°C to 54°C	-20°C to 54°C	-10°C to 50°C

VOLTAGE THRESHOLD (VDC)	INTERNAL TEMP. ≥ -10°	INTERNAL TEMP. < -10°
Critical battery	3 V	2,5 V

## RSSI LEVELS

SIGNAL (DBM)	QUALITY
0 to -50	Excellent
-51 to -60	Good
-61 to -70	Acceptable
-71 to -100	Poor

## MAGNETIC SWITCH



The DUOS Wireless Transmitters have a magnetic switch that allows to reset the devices.

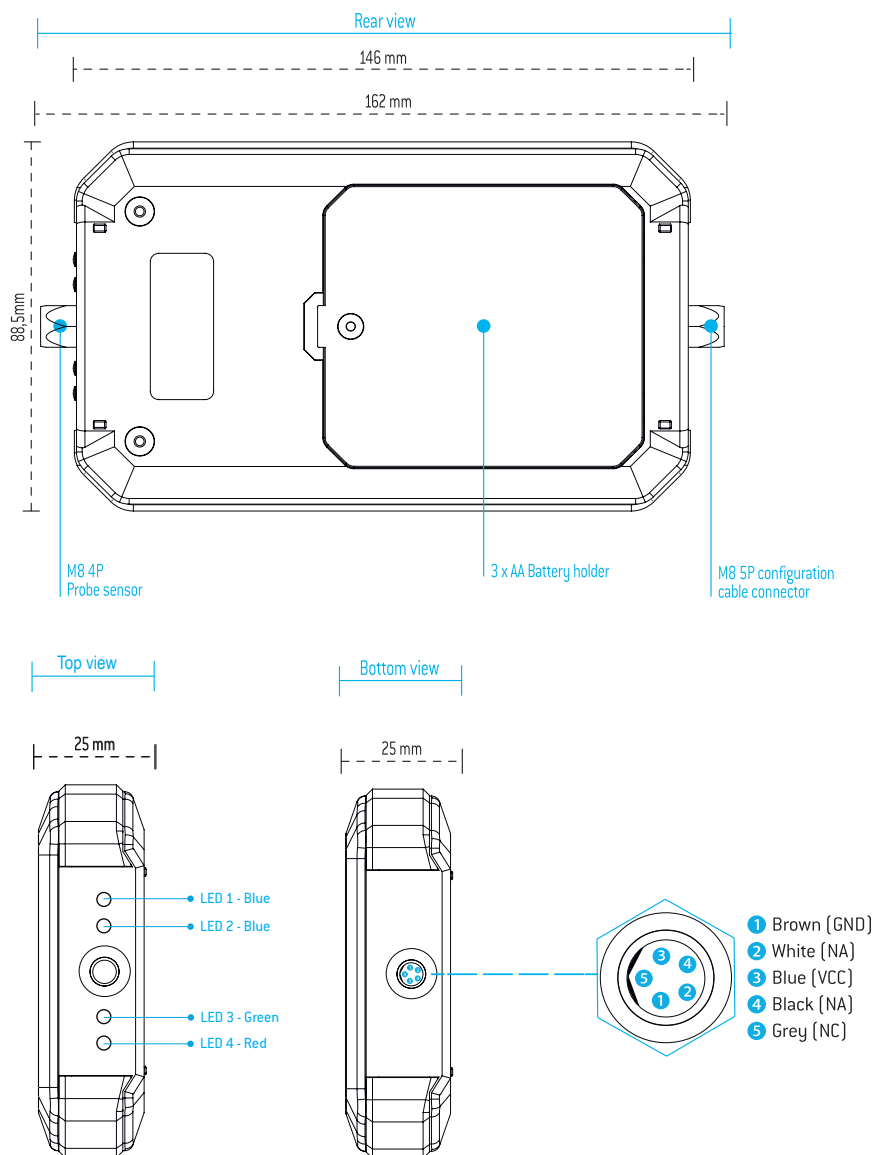
### Operation Mode:

Slide a magnet in the area marked in the image. All LED's will be active and the transmitter will be restarted.

## TECHNICAL DRAWINGS

## DIMENSIONAL DRAWINGS AND INTERFACE DESIGN

## POWER SUPPLY AND COMMUNICATIONS CONNECTOR



## 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/ 5V DC

REF.: PA160413610

230V/50Hz Power supply cable to be used with DUOS wireless transmitters with the new hardware version.



#### DUOS POWER SUPPLY 230VAC/ 12V DC

REF.: PA160410006

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



#### DUOS GATEWAY EXTERNAL POWER CABLE

REF.: PA160410007

Cable for external power and communication with the wireless gateway DUOS.

### RELATED PRODUCTS



#### DUOS WIRELESS GATEWAY

REF.: PA160410210 / PA160411910

- Scalable network up to 55 transmitters;
- Supports up to 12 repeaters in series;
- Up to 4Km 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 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 communication distance (LoS);
- AES KEY Data encryption 128bits;



#### DUOS WIRELESS REPEATER

REF.: PA160410310 / PA160412010

- Up to 4Km communication distance (LoS);
- Auto discovery of the best wireless link;
- Automatic forwarding of communication;
- Improvement of mesh network with reliability;

## REVISION HISTORY

## VERSION

E01B	Inclusion 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;
E01C	Inclusion of information about the frequency range used in Australia. Changing the default configuration of radio channel on 915 MHz models.
E01D	Inclusion of "RSSI Levels" and "Magnetic Switch" tables
E01E	Removal of 2,4GHz frequency
E01F	Removal of "Voltage Threshold" table Inclusion of "Recommended batteries" table
E02A	Inclusion of "Power Supply" information for hardware version $\geq 4.2$ Reorganization of "Recommended batteries" table Inclusion of information about industrial property. Inclusion of new external power supply on "Accessories" table.

© BRESIMAR AUTOMAÇÃO, S.A.

All rights reserved.

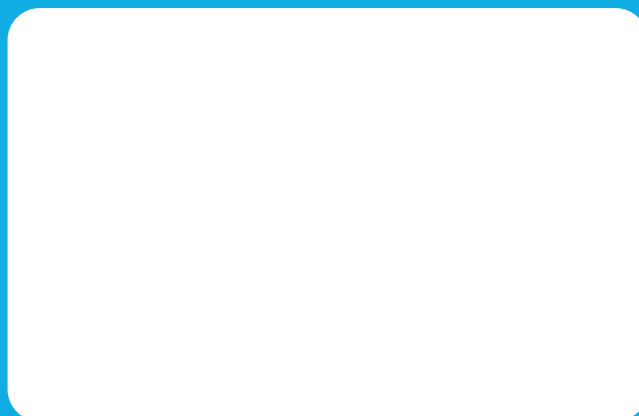
The contents of this document (texts, images, brands, corporate image, trade name, designs, methodological and product descriptions, among others), as well as its structure and design, are owned by Bresimar Automação, SA (herein in referred to as Bresimar) or, it has legitimacy for its use, being strictly prohibited the modification, exploitation, reproduction, communication to third parties or distribution of all or part of the contents of this document, without the prior express written consent of Bresimar .

Bresimar will not be liable for any claim, loss or damages resulting from or arising from a cause over which Bresimar has no control, whether by acts or omissions, breach of contract or non-compliance with applicable laws by the Supplier , as well as incidents caused by the client's systems.

**TEKON ELECTRONICS**  
a brand of Bresimar Automação S.A.

Avenida Europa, 460  
Quinta do Simão  
3800-230 Aveiro  
PORTUGAL

P.: +351 234 303 320  
M.: +351 933 033 250  
E.: [sales@tekonelectronics.com](mailto:sales@tekonelectronics.com)



Cofinanciado por:



UNIÃO EUROPEIA  
Fundo Europeu  
de Desenvolvimento Regional