tekon
WIRELESS SENSORS TECHNOLOGY

TEMPERATURE

HUMIDITY

IP67 PROTECTION

WIRELESS TRANSMITTER DUOS HYGROTEMP

IoT ready

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

This device can be combined with different RH+T probes (in accordance with application needs), allowing a wide range of temperature and relative humidity measurements (from -40 to 80ºC and 0 to 100%).

KEY FEATURES

0% TO 100%
HUMIDITY SENSOR MEASUREMENT RANGE

−40 ºC TO 80 ºC
TEMPERATURE SENSOR MEASUREMENT RANGE *

DUAL PROBE
FOR TEMPERATURE AND HUMIDITY MEASUREMENT

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

Product References		
	Black	White
868MHz	PA164520110	PA164520120
915MHz	PA164520130	PA164520140

* Temperature sensor measurement range based on probe model TK07-PFT5.

DS_DUOS_HYG_TEMP_E01F

TECHNICAL SPECIFICATIONS

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

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

SUPPLY VOLTAGE

3x3.6 AA lithium batteries [3]

3 years of estimated battery life[4]

External power supply with 12 VDC ± 5%

Maximum current draw of 250 mA[2]

Supply voltage measurement accuracy ± 1 V DC

Sleep mode current consumption < 8 μA

OPERATING ENVIRONMENT	
Temperature range	-40 ºC to 60º 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 red LED (LED 4) and 1 green LED (LED 3) for wireless network operation status

1 magnetic reed switch for system reset

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

FACTORY DEFAULT SETTINGS	868MHZ	915MHZ
Frequency	869,525 MHz	915,000 MHz
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

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

CERTIFICATIONS AND APPROVALS
EN 61326 -1 -Class B - Industrial Requirements
EN 300 220 -2 V3.1.1
EN 301 489-1 V2.2.0
EN 301 489-3 V2.1.1

[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] Batteries not included.

[4] Considering a communication period of 10 minutes, and maximum transmit power (27dBm) at 25 ºC with PN EVE ER14505 batteries.

[5] In some countries, the frequency band admitted is not so extended as the default range.

[6] 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)
Humidity	1 (default)	0 (default)
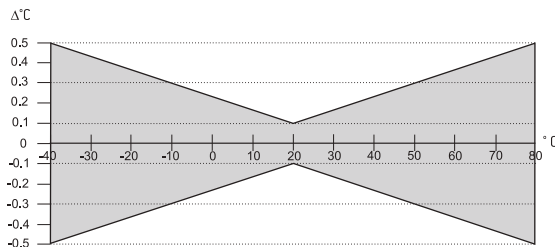
* Software configurable values

RECOMMENDED BATTERIES

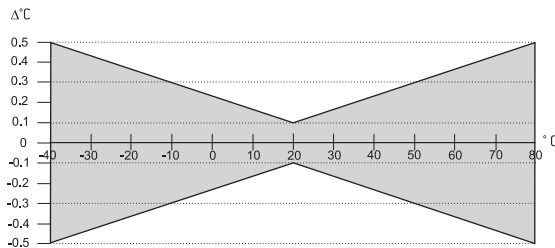| BRAND	SAFT	EVE
Model	LS14500	ER14505
Classification	Lithium-thionyl	Lithium-thionyl
Chemical System	$Li-SOCl_2$	$Li-SOCl_2$
Nominal Voltage	3,6 V	3,6 V
Type	AA	AA
Operating Temperature	-60ºC to 85ºC	-55ºC to 85ºC

HUMIDITY AND TEMPERATURE PROBE TK07-MFT9-HC01
REF.: PA164520003 (0,30M CABLE LENGTH) AND PA164520006 (2M CABLE LENGTH)

	Temperature	Humidity
Range	-40 to 80 ºC	0 to 100%
Resolution	0,01ºC	0,01%
Accuracy		±2% (0 to 90%); ±3% (90 to 100%)
Temperature dependance	-	<(0,025 + 0,0003*HR)% RH per ºC, 20º reference
Sensor type	I2C Digital	
Sensor case	Metal body + Metal grid	
Response time	1 second	
Connector	M8 female socket 4 poles	
Electromagnetic compatibility	EN61326-1; EN61326-2-3	

## HUMIDITY AND TEMPERATURE PROBE TK07-PFT5
REF.: PA164520001 (0,30M CABLE LENGTH) AND PA164520004 (2M CABLE LENGTH)

	Temperature	Humidity
Range	-40 to 80 ºC	0 to 100%
Resolution	0,01ºC	0,01%
Accuracy		±2% (0 to 90%); ±3% (90 to 100%)
Temperature dependance	-	<(0,025 + 0,0003*HR)% RH per ºC, 20º reference
Sensor type	I2C Digital	
Sensor case	Polycarbonate, white	
Response time	1 second	
Connector	M8 female socket 4 poles	
Electromagnetic compatibility	EN61326-1; EN61326-2-3	

RSSI LEVELS

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

MAGNETIC SWITCH
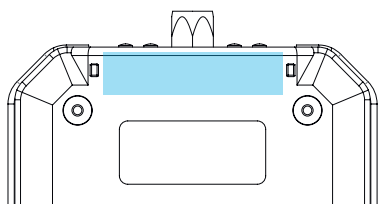
The DUOS Wireless Transmitters have a magnetic switch that allows to reset the devices.
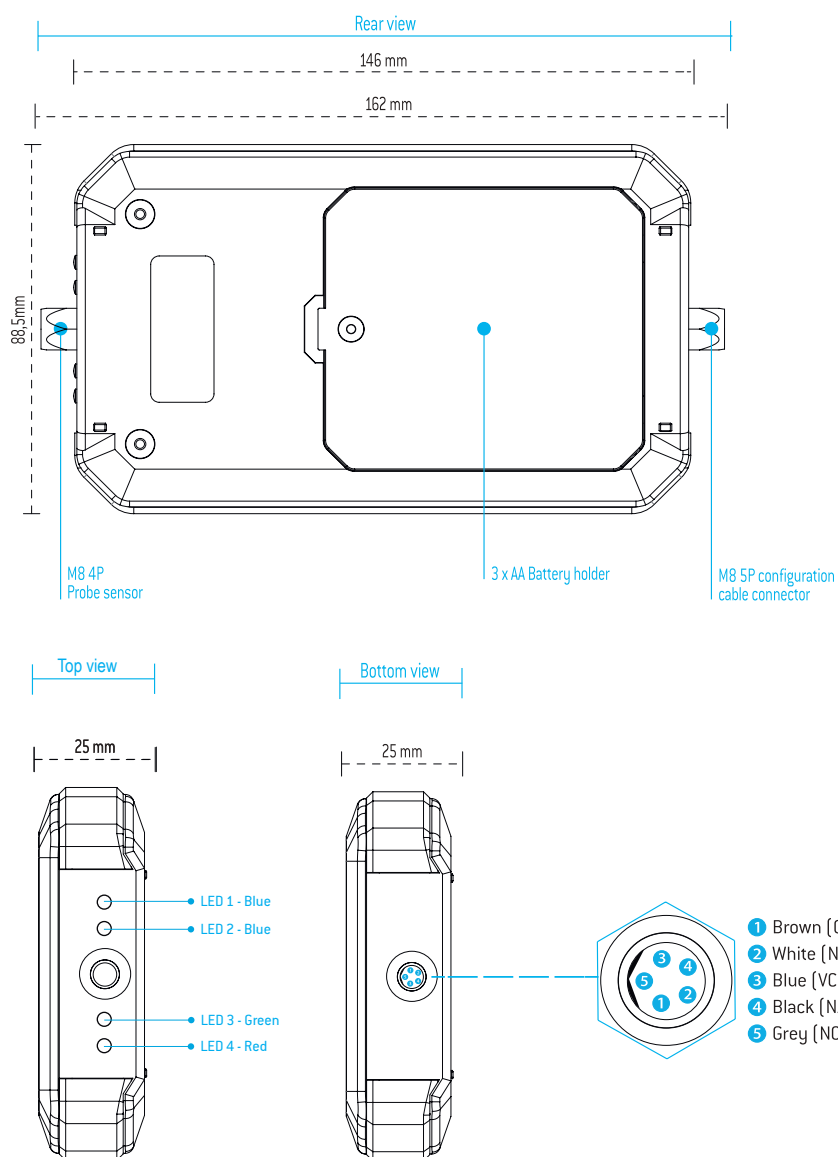
Operation Mode:
Slide a magnet in the area marked in the image. All LED's will be active and the transmitter will be restarted.

TECHNICAL DRAWINGS

DIMENSIONAL DRAWINGS AND INTERFACE DESIGN   POWER SUPPLY AND COMMUNICATIONS CONNECTOR

Rear view

146 mm

162 mm

88,5mm

M8 4P
Probe sensor

3 x AA Battery holder

M8 5P configuration
cable connector

Top view

25 mm

LED 1 - Blue
LED 2 - Blue

LED 3 - Green
LED 4 - Red

Bottom view

25 mm

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

ACCESSORIES

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.

HUMIDITY AND TEMPERATURE PROBE TK07-MFT9-HC01
REF.: PA164520003 (0,30M CABLE LENGTH)   AND PA164520006 (2M CABLE LENGTH)
Temperature and relative humidity probe for Wireless System DUOS Hygrotemp.

HUMIDITY AND TEMPERATURE PROBE TK07-PFT5
REF.: PA164520001 (0,30M CABLE LENGTH)   AND PA164520004 (2M CABLE LENGTH)
Temperature and relative humidity probe for Wireless System DUOS Hygrotemp.

DUOS EXTERNAL POWER CABLE
REF.: PA160410008
DUOS Transmitter external power supply 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 communication distance (LoS);
- Automatic Mesh Network Management;
- Multiple networks simultaneously;
- AES KEY Data encryption 128bits;
- Modbus RTU communication for process;
- Simple, intuitive and free configuration software.

DUOS WIRELESS REPEATER
REF.: PA160410310 / PA160412010
- Up to 4Km communication distance (LoS);
- Auto discovery of the best wireless link;
- Automatic forwarding of communication;
- Simple, intuitive and free configuration software.

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);
- AES KEY Data encryption 128bits;
- Simple, intuitive and free configuration software.

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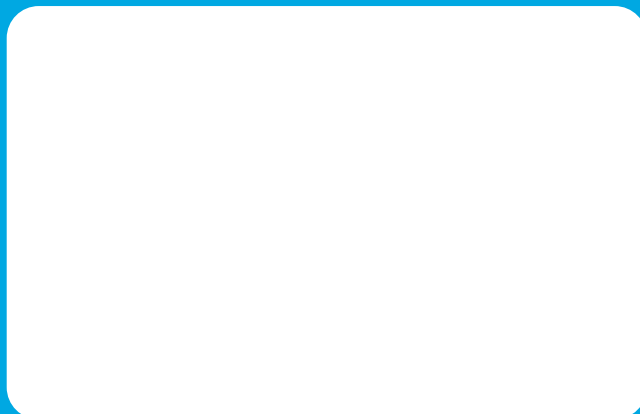
REVISION HISTORY	
VERSION	
E01B	Inclusion of 915MHz frequency information in "Radio Specifications", "Internal Temperature", "Operating Environment" and "Factory Default Settings" tables; Revision of "Peak current" topic in "Power Supply" table; Reform of "Voltage Threshold" table; Identification of 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 2,4 GHz frequency
E01F	Removal of "Voltage Threshold" table Inclusion of "Recommended batteries" table