tekon
WIRELESS SENSORS TECHNOLOGY

WIRELESS TRANSMITTER DUOS HYGROTEMP



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%).

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

KEY FEATURES

0% TO 100%
HUMIDITY SENSOR MEASUREMENT RANGE

–40 °C TO 80 °C
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

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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

POWER SUPPLY *(HARDWARE VERSION < 4.2)*
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

POWER SUPPLY *(HARDWARE VERSION >= 4.2)*
3x1,5 V AA Lithium/Alkaline/Rechargeable (Ni-MH) batteries [3]
3 years of estimated battery life [4]
External power supply with 5 VDC ± 5%
Peak current < 100 mA [2]
Supply voltage measurement accuracy ± 100 mV
Sleep mode current consumption < 30 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 300 220 -2 V3.1.1
EN 301 489-1 V2.2.0
EN 301 489-3 V2.1.1

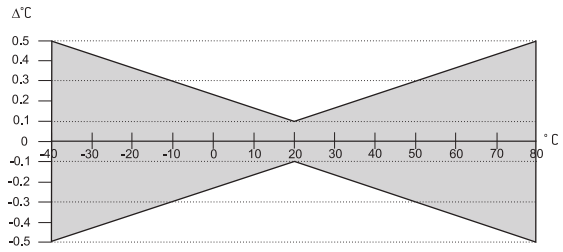
CALIBRATION SETTINGS

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

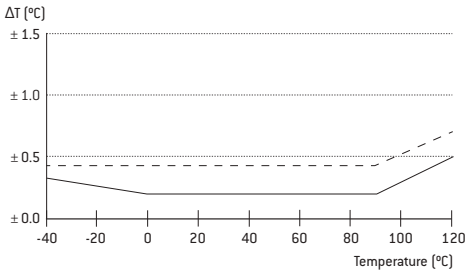
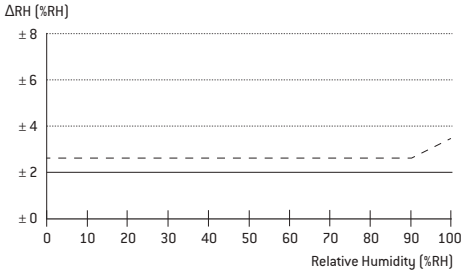
HUMIDITY AND TEMPERATURE PROBE TK07-PFT5 [7]

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	

DUOS T+RH EXTERNAL PROBE TK-TRH-XX [8]

REF.: PA164520007 (0,50M CABLE LENGTH) AND PA164520008 (2M CABLE LENGTH)

	Temperature	Humidity
Range	-40 to 80 ºC	0 to 100%
Resolution	0,015ºC	0,01%
Accuracy		
	±0.2ºC (0 to 90ºC); ±0.4ºC (90 to 120ºC)	±2% (0 to 90%); ±3% (90 to 100%) @ 25ºC
Sensor type	I2C Digital	
Sensor case	Stainless steel	
Response time	1 second	
Connector	M8 female socket 4 poles	
Electromagnetic compatibility	EN61326-1; EN61326-2-3	

BATTERIES

RECOMMENDED BATTERIES *(HARDWARE VERSION < 4.2)*

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

RECOMMENDED BATTERIES *(HARDWARE VERSION >= 4.2)*

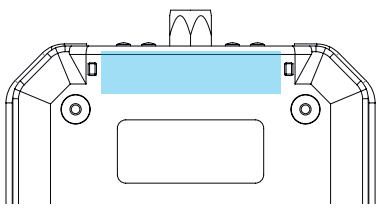
BRAND	ENERGIZER	PANASONIC	DURACELL	DURACELL
Model	Ultimate Lithium L91	Alkaline Power	MN1500	DX1500H
TME Part Number	BAT-FR6/EGL-B4	BAT-LR06/P-B4	BAT-LR6/DR-B12	ACCU-R6/2500/DR
Classification	Lithium	Alkaline	Alkaline	Rechargeable
Chemical System	Li/FeS_2	Zn/MnO_2	Zn/MnO_2	Ni-MH
Nominal Voltage	1,5 V	1,5 V	1,5 V	1,2 V
Type	AA	AA	AA	AA
Operating Temperature	-40ºC to 60ºC	-20ºC to 54ºC	-20ºC to 54ºC	-10ºC to 50ºC

VOLTAGE THRESHOLD (VDC)	INTERNAL TEMP. ≥ -10º	INTERNAL TEMP. < -10º
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.

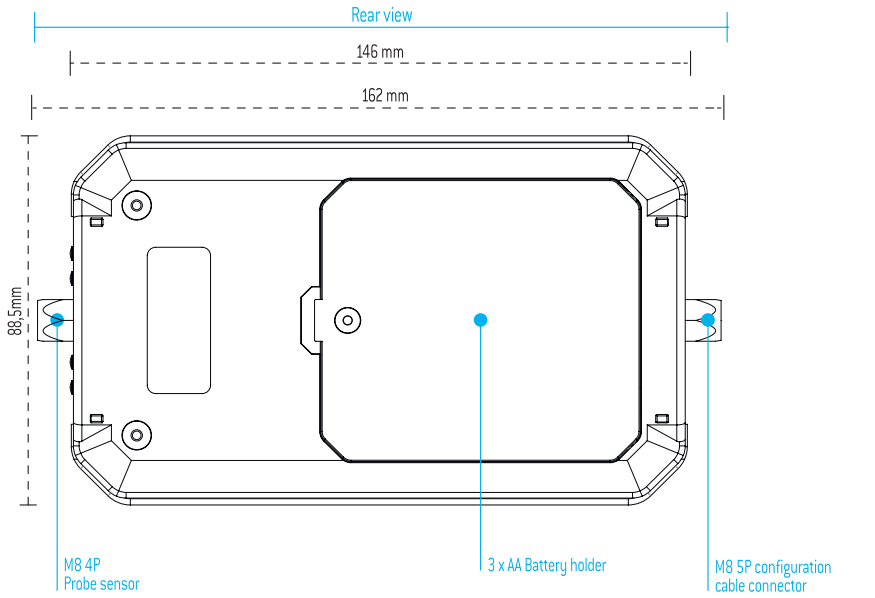
Operation Mode:

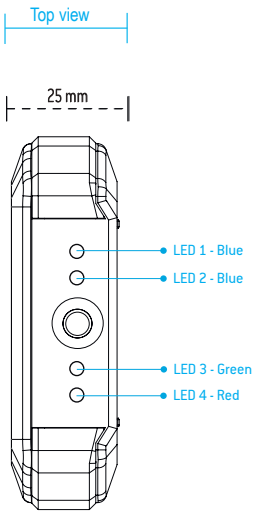
Slide a magnet in the area marked in the image. All LED's will be active and the transmitter will be restarted.

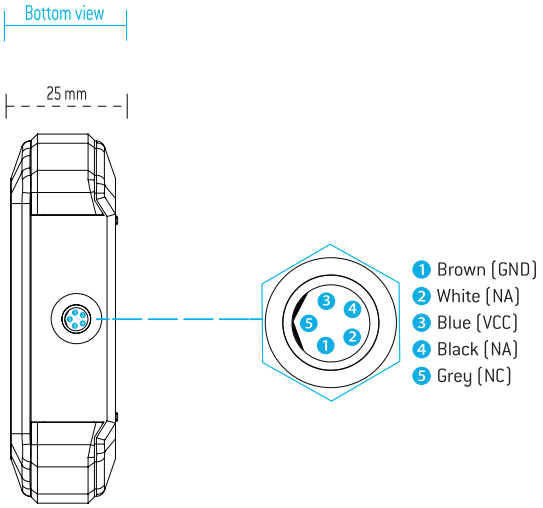
[1] Range depends on the RF propagation environment and Line of Sight (LoS). Always verify your wireless network's range by performing a Site Survey.
[2] Dependent on radio channel selection.
[3] Batteries not included.
[4] Considering a communication period of 10 minutes, and maximum transmit power (27dBm) at 25 ºC.
[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.
[7] Discontinued product. Models only functional in DUOS Hygrotemp transmitters with firmware version < 7.0.0.
[8] Models only functional in DUOS Hygrotemp transmitters with firmware version >= 7.0.0 and for DUOS IoT Gateway with software version >= 3.1.1.

TECHNICAL DRAWINGS

DIMENSIONAL DRAWINGS AND INTERFACE DESIGN







POWER SUPPLY AND COMMUNICATIONS CONNECTOR

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.



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 TEMPERATURE AND HUMIDITY EXTERNAL PROBE TK-TRH-XX

REF.: PA164520007 (0,50M CABLE LENGTH) AND PA164520008 (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.

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
E02A	Inclusion of “Power Supply” information for hardware version >= 4.2 Reorganization of “Recommended batteries” table Inclusion of information about industrial property. Removal of discontinued humidity probe TK07-MFT9-HC01
E03A	Inclusion of “DUOS T+RH EXTERNAL PROBE TK-TRH-XX” information. Removal of “Related Products” table. Update of notes information.

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