TEKON
WIRELESS SENSORS TECHNOLOGY

WIRELESS TRANSMITTER DUOS inAIR

Tekon Wireless Transmitter DUOS inAirQuality is an accurate solution for measurement and monitoring of temperature, relative humidity, CO2, CO2 average and barometric pressure for demanding applications. Taking advantage from all the features of DUOS product family, it's the perfect solution for air quality monitoring, agriculture, buildings and other applications.

This device combines a built-in sensor that allows the monitoring of a range of relevant variables for air quality.

Product References	
	White
868MHz	PA210310410
915MHz	PA210310420

KEY FEATURES

−40 ºC TO 60ºC
TEMPERATURE SENSOR MEASUREMENT RANGE

0 TO 5000 PPM
CO2 SENSOR MEASUREMENT RANGE

0% TO 100%
HUMIDITY SENSOR MEASUREMENT RANGE

700 TO 1100 MBAR
BAROMETRIC PRESSURE SENSOR MEASUREMENT RANGE

DIGITAL INPUT

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

IP65 PROTECTION

DS_DUOS_INAIR_E01A

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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	2-FSK
Encryption method	AES 128 (Advanced Encryption Standard)	

WIRELESS NETWORK	
Maximum devices	55
Maximum hops	13
Communication period	5 to 43200 seconds (configurable)

TEMPERATURE MEASUREMENT	
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

HUMIDITY MEASUREMENT	
Range	0 to 100 %
Resolution	0,01 %
Full precision range	10 to 90 % (0..60ºC)
Response time (t_{63}) at 25ºC	8 seconds
Accuracy at 25ºC	± 3%
Sensor type	I2C digital sensor

CO2 MEASUREMENT	
Range	0 to 5000 ppm
Accuracy (at 25ºC and 1013 mbar)	0 ... 5000 ppm < ± (50 ppm + 3% of measured value)
Sampling time	5 to 3600 seconds (configurable)
Response time (t_{63})	75 seconds
Temperature dependency	± (1 + CO2 concentration [ppm] / 1000) ppm /ºC (-20 to 45 ºC)
Sensor type	I2C digital sensor

BAROMETRIC PRESSURE MEASUREMENT	
Range	700 to 1100 mbar
Accuracy (at 25ºC)	± 2 mbar (20 to 80% RH)
Temperature dependency	± 0,015 mbar/K
Sensor type	I2C digital sensor

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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

POWER SUPPLY

3x1,5 V AA lithium/alkaline/Ni-MH batteries [3]
External power supply with 5 VDC ± 5%
Peak current draw <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	IP65

CERTIFICATIONS AND APPROVALS

EN 301 489-1 V2.2.1

[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.
[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.

BATTERIES

RECOMMENDED BATTERIES

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

PERFORMANCE TESTS
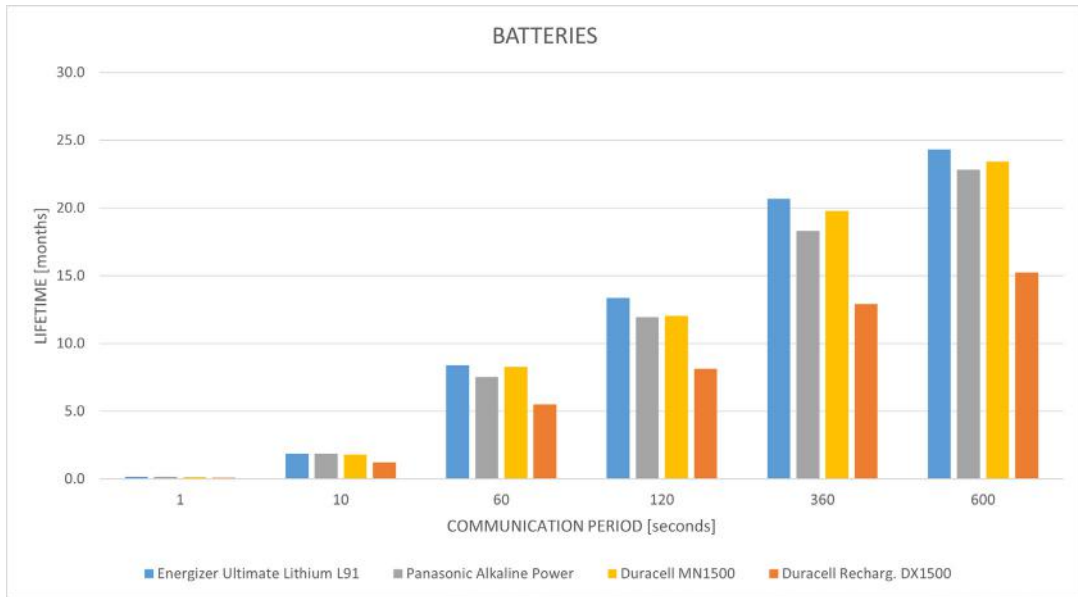
DIGITAL INPUT

TRANSMITTER DI OPERATION
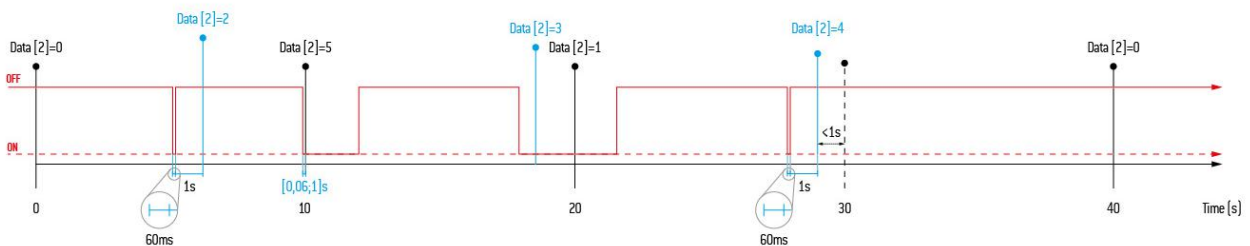
DI STATE / AWAKENED BY	Time	DI	DI+Time
OFF	0	2	4
ON	1	3	5

Note: If Communication Period is equal to 1 second, possible values are: 0, 1, 4 and 5.

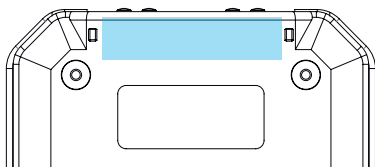## CONNECTION DIAGRAM
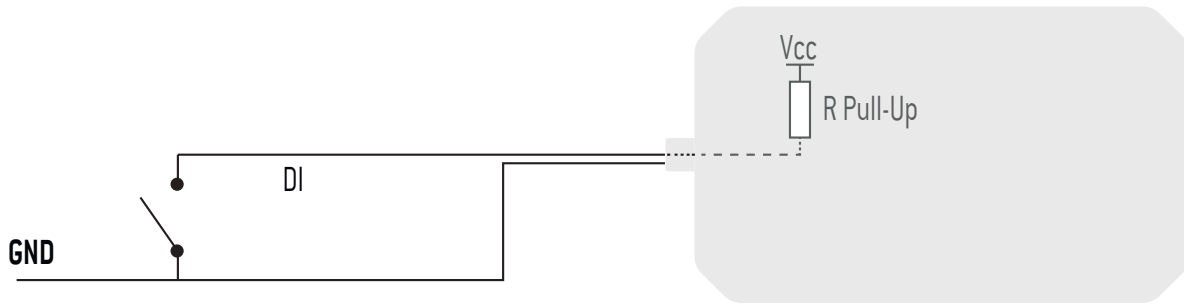
CALIBRATION SETTINGS

Linear Calibration (y=mx+b)*	m	b
CO_2	1 (default)	0 (default)
Temperature	1 (default)	0 (default)
Humidity	1 (default)	0 (default)
Barometric Pressure	1 (default)	0 (default)

* Software configurable values

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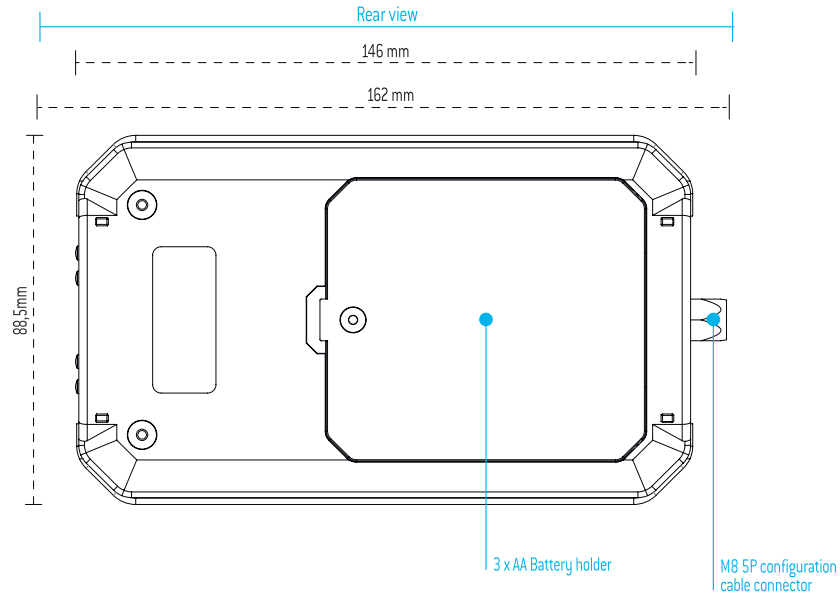
Operation Mode:
Slide a magnet in the area marked in the image. All LED's will be active and the transmitter will be restarted.

TECHNICAL DRAWINGS

DIMENSIONAL DRAWINGS AND INTERFACE DESIGN	POWER SUPPLY AND COMMUNICATIONS CONNECTOR

Rear view

146 mm

162 mm

88,5mm

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 (Digital Input)
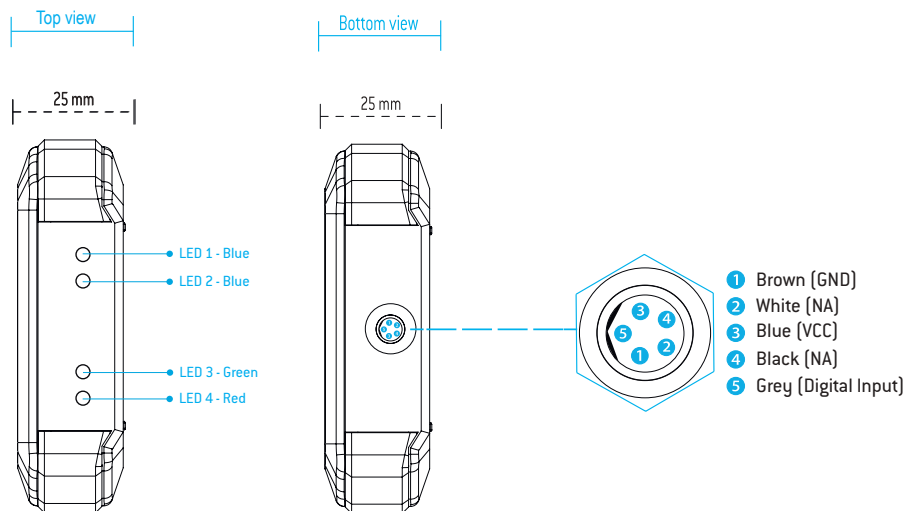
ACCESSORIES

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.

DUOS TRANSMITTER SARC
REF.: PA160410005
Cable used to configure DUOS Transmitter using Tekon Configuration software.

DUOS POWER SUPPLY 230V AC / 5V DC
REF.: PA160413610
230V/50Hz Power supply cable to be used with the wireless gateway and repeater DUOS.

REVISION HISTORY

VERSION	
E01B	

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