MWS Tag User Manual

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MWS Tag User Manual

2.4GHz active Tag with different kind of sensor on board, embedded antenna, datalogging capability, long-life battery power supply.

MWS active tags provide sensors data to the MWS Reader (see MWS Reader User Manual) allowing the user to monitor temperature, electronic sealing, humidity, etc.

1. Technical specifications

INTERNAL DEVICES	Frequency: 2.4 GHz
	Power: Programmable up to 4.5 dBm
	Standard: IEEE 802.15.4
	Reading distance: 100 m
	Memory: 2 Mb flash for data-logging (1 data logged = 7 byte)
	Sensors (see Table 2) Different kind of sensors configuration available from the following list: - internal temperature - external temperature probe - humidity internal sensor - optical sensor (for electronic seal use) - reed sensor (for door opening sensing) - accelerometer - displacement transducer
POWER SUPPLY	Non-rechargeable lithium batteries 3Vdc (standard CR2). Battery life from 2 to 10 years
WORKING TEMPERATURE	-20 / +60℃
DIMENSIONS	The following case are available depending on MWS Tag model small case: Width 65 mm – Height 50 mm – Depth 37 mm large case: Width 97 mm – Height 62 mm – Depth 40 mm
WEIGHT	small case: 70 g large case: 190g
PROTECTION DEGREE	IP65

Table 1: MWS Tag specifications

Internal temperature sensor (STS21)	Resolution: 0,01℃ Accuracy: ±0,2℃ Operating range: from – 20 to 60 ℃
External temperature probe (STS21)	Resolution: 0,01℃ Accuracy: ±0,2℃ Operating range: from – 40 to 125 ℃ cable length: 2m
Internal Humidity/Temperature (SHT25)	Resolution: 0,01℃ Accuracy: ±0,2℃ Operating range: from – 20 to 60 ℃ Resolution: 0,04% Accuracy: ±1,8% Operating range: from 0 to 100 %RH
Displacement transducer (e.g. Gefran PZ12-A) (many different kind of potentiometer with different range allowed)	Accuracy: <0.1% FS Resolution: 0.01 mm Operating range: 25 mm
Electronic seal (optical sensor, e.g. OPB732)	Distance from the door: up to 2cm Operating range: from – 20 to 60 ℃
Door opening sensing (reed sensor. e.g. Comus PPS 24)	Distance from the magnet: up to 1cm Operating range: from – 20 to 60 ℃

Table 2: MWS Tag: sensors specifications

2. Hardware setting

Active tags allow to read sensors and save their values in memory. Sensors can be soldered directly on the main board (like temperature/humidity sensor), wired or cabled (like a displacement transducer or optical sensor) or connected using a plug-in connector (accelerometer sensor or external temperature sensor). Depending on the application a tag can have one or more sensors on board (not every combinations are possible).

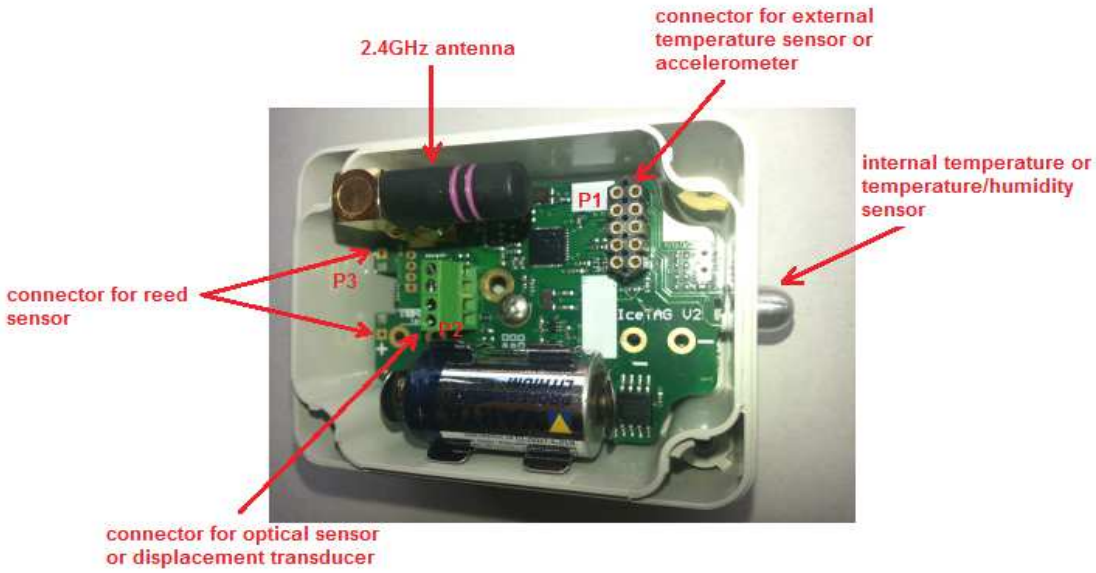

Figure 1: MWS Tag – main board with battery and internal temperature sensor soldered

Possible sensors installed are:

- internal temperature, soldered on board
- internal temperature/humidity, soldered on board
- external temperature probe, connected to P1
- optical sensor, connected to P2
- reed sensor, connected to P3
- accelerometer, connected to P1
- displacement transducer,connected to P2

Most sensors are provided by TERTIUM Technology to guarantee the optimal performance together with the lower consumption as possible.

MWS Tags are provided with the hw configuration (sensors on board) requested by the customer.

MWS Tag can be used without any sensors as well to identify objects or places.

3. Setting and test

To change MWS Tag settings and get sensors data the user need a MWS Reader and the TT_IceTag_PCDemo application (otherwise a simple Terminal program can be used to send command string and get responses. See TERTIUM_IceTag_Reader_Protocol for further details).

To configure and test the MWS System, see document *Configuration and test using IceTag_PCDemo*.

4. Other information and support

Declaration of conformity

Manufacturer	TERTIUM Technology S.r.l. Via Picotti,8 56124 Pisa Italy
Product	MWS Tag
Description	2.4GHz RFID active tag with sensors on board
Conformity standard **ETSI version**	EMC: EN 301.489-1 V1.9.2, EN 301.489-3 V1.6.1 [Art. 3.1b – 99/05/CEE] Safety: EN 60950-1:2006 +/A11:2009 +/A12:2011 +/A1:2010 [Art. 3.1a – 99/05/CEE] EMF: EN 50364:2010 [Art. 3.1a – 99/05/CEE]

The present document declares that MWS Tag product is compliant with the standards described above and they meet the essential requirements expressed in the European Directive 99/05/CE and FCC rules.

Dr. Marco Consani

Based on these declarations, the product can bear the following mark:

CE

Federal Communication Commission (FCC) Notice

FCC certified: FCC ID: Y6D-MWSAT010

THIS DEVICE COMPLIES WITH PART 15 OF THE FCC RULES. OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS: (1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE, AND (2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED, INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIRED OPERATION.

NOTE: THE **GRANTEE** IS NOT RESPONSIBLE FOR ANY CHANGES OR MODIFICATIONS NOT EXPRESSLY APPROVED BY THE PARTY RESPONSIBLE FOR COMPLIANCE COULD VOID THE USER'S AUTHORITY TO OPERATE THE EQUIPMENT.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

—Reorient or relocate the receiving antenna.

—Increase the separation between the equipment and receiver.

—Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

—Consult the dealer or an experienced radio/TV technician for help.

Disposal

According to art.13 of the Legislative Decree dated 25 July 2005, no.151 (implementation of the European directive 2002/96/EC) the disposal of electric and electronic equipment (WEEE) must not be carried out as urban waste, but it must be done separately following specific guidelines. Such obligation is expressed by the following symbol, applied on the container. The disposal will be managed by the producer and therefore the consumer wishing to get rid of the device shall contact the producer and shall follow the procedure he has adopted to collect aforementioned waste.

RoHS Conformity

The device has been realized using materials and constructive processes conforming to the limits imposed by the directive 2003/108/CE (RoHS) concerning the use of dangerous substances in electronic products.

Warranty

TERTIUM Technology guarantees that this product will be exempt from material defects of production and conforming to the stated technical data, under conditions of normal use, for the period of one year-old from the date of purchase. The warranty covers the reparations but it is void if TERTIUM Technology determines that the product has been damaged following improper installation, abuse, not authorized reparations or modifications.
The slip (receipt) or freight bill can be issued.

Assistance

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Precautions of use

Attentively read all the precautions of use and the operating instructions before use.

If necessary, clean the device with a dampened cloth. Do not immerse in water. Do not directly apply detergents on the product.
The device has not been designed for use in processes or machineries for the monitoring and the safety of human life or for medical treatments.
The reparations can be carried out only by TERTIUM Technology technical personnel.

Legal notes

TERTIUM Technology declines every responsibility in relation to possible damages, losses of income or any other damage resulting from the use of this product.
The content of this manual cannot be brought anywhere without the permission of the producer.
The technical specifics of the product and the information brought in the manual are subject change without notice; for the latest information, visit www.tertiumtechnology.com