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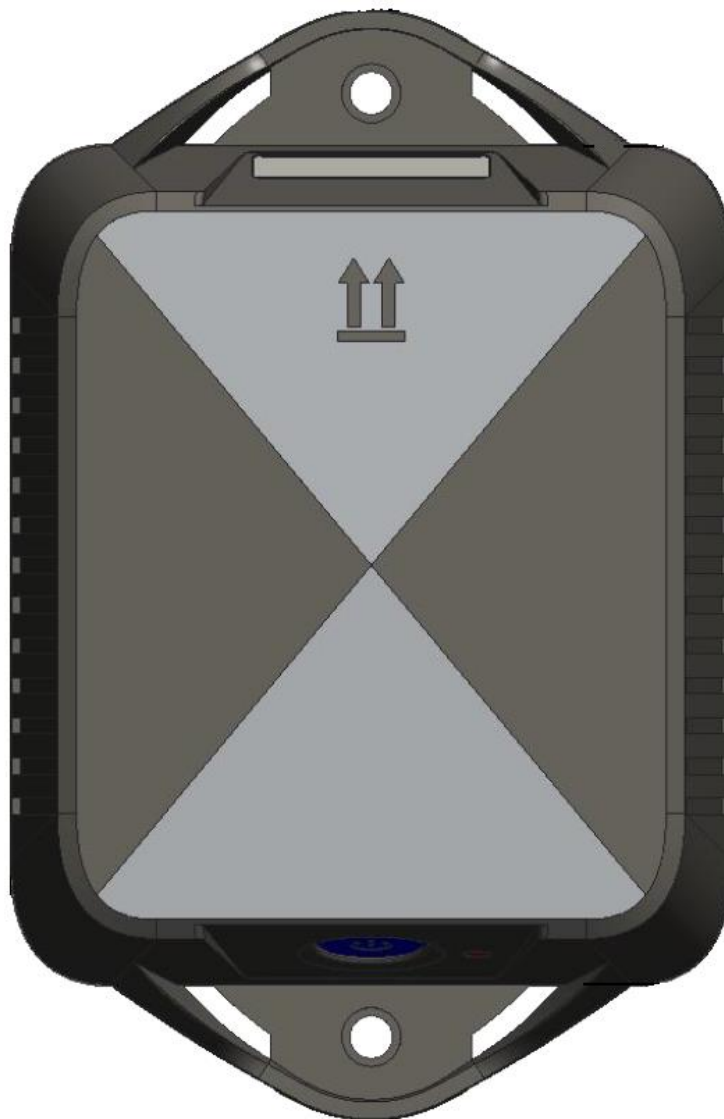
PRODUCT SPECIFICATIONS

MODEL: ST-580 ATC6

Sigfox™ Tracker

Document Version: V0.8

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Revision History

Rev. No.	Change History	Issue Date	Remark
0.1	Initiation	2019.06.03	Preliminary
0.2	Adding: ● Monarch Module WSG309S ● Sony GPS module SN5531 ● Ramway Battery ER34615	2019.09.24	
0.3	Wording modification	2020.03.20	
0.4	Changing ATEX description	2020.06.08	
0.5	Add FCC Warning	2020.08.17	
0.6	Changing Safety Standard to EN 62368-1 Changing Waterproof standard to ISO 20653	2020.09.17	
0.7	Changing Waterproof standard to IP6KX and IPX9K	2020.09.22	
0.8	Slight modification	2020.09.29	

Introduction：

The devices will be used to locate semi-trailers travelling between several locations and its movement (start/stop moving) via Sigfox networks.

This device will be a new model to ST-580 ATEX, the main difference is that the ATEX certification class will be **IIC T4 60degC** and using Liteon monarch module: WSG309S for multi-RC purpose.

Product Features:

- Sigfox™ Class 0U & Sigfox ready & monarch (multi-RC)
- The device is compliant with ATEX Zone 1 II 2G Ex ib IIC T4 Gb -20ºC ≤ Ta ≤ +60ºC
- Sigfox™ Radiated Power ≥ 12dBm against a metal plate
- Built-in GNSS solution
- Built-in BLE chip
- Built- in 3 axis accelerometer for motion sensing capability with a low power consumption mode
- Built- in temperature sensor with a precision of +/-0.5°C
- Battery life is expected to be five years under following conditions
    - 50 Sigfox™ uplink messages/day
    - 4 Sigfox™ downlink messages/day
    - 20 GNSS fix per day
    - Accelerometer always on in low power consumption mode
    - 50 BLE scan per day
- The device shall operate in a -20°C to + 60°C temperature range
- Configurable report intervals
- Support motion detection and REMOVAL_ATTEMPT function
- It shall be possible to attach the device using screws, blind rivets or glue
- The device shall measure or estimate the remaining battery level
- Button * 1 / RGB LED * 1 / NFC tag
- The warranty period shall be of 24 months from the date of delivery

H/W Specifications	
Sigfox® /BLE Module	Liteon WSG309S
Sigfox® Frequency	Multi-RC (Sigfox 0U certified)
Sigfox® Antenna	Built-in Pi-Fa antenna
MCU	ST STM32L072RZT6
Internal Flash	192Kbytes
External Flash	16Mbytes
Multi-GNSS	SN5531 (Sony GPS (CXD5605GF) module)
GNSS Antenna Type	
G-Sensor	ST LIS2DW12TR 3-Axis G-Sensor
Temperature Sensor	Silicon Labs Si7055-A20-IMR with a precision of +/-0.5°C
FW update	• FW upgrade via I/O PIN (factory side/debug use) • FW upgrade via BLE OTA
Transmission Power	
Receiving Sensitivity	
Transmission Distance	1KM~10KM
Battery	Lithium Thionyl Chloride engergy Battery：19Ah/3.6V, ER34615 / D SIZE. Ramway ER34615
Operating Temperature	With Battery: Operation: -20~
Humidity	5% to 95% Non-condensing
Button	1 button
LED	1 for RGB LED
NFC	ST ST25DV04K-IER6S3 Must (Tag to store Sigfox ID, PAC code, firmware version)
Weight	Around 240g
Dimension	W85.4 * L99.6 * D43.4 mm
Certification	FCC, CE (EU), Sigfox 0U certified, WEEE, RoHS RATEL (Serbia) CERT (Tunisia) ICASA (South Africa)
Waterproof	IP6KX & IPX9K (ISO 20653)
Drop test	IK10 (IEC 62262)
ATEX	Zone 1 II 2G Ex ib IIC T4 Gb -20ºC ≤ Ta ≤ +60ºC
Europe Railway usage	YES
WEEE & RoHS	YES
Safety	EN 62368-1

EMC	EN 301489-1
Short Range Devices	EN 300220-1
Country use	the provider shall ensure that the product can operate in the following countries: -> EU : France / UK/ Ireland / Germany / Spain / Italy / Romania / Czeck Republic / Slovakia / Hungary / Poland / Croatia / Bulgaria / Benelux / Austria -> Europe : Switzerland / Serbia / Portugal -> World : Tunisia, South Africa

Behavior of Sigfox Tracker：

The aim of the sensor is to give a fairly accurate location of a semi-trailer and the information of other assets in range (ones equipped with BLE tag).

- The accelerometer will allow to determine if the semi-trailer is moving or not
- GNSS will be used to define the device location
- Sigfox network will be used to transmit the position and the ID of devices in range.
- Messages to send
    - GNSS position
    - BLE tags in range
    - Heartbeat

Button Behavior：

- 1x simple click : Short press into TURN_ON state (when in STORAGE pahse)
- 3x simple click : PARAMETERS_UPDATE state, the device will send a sigfox message with a downlink request, from the downlink answer we will receive the updated parameters of the device. And finally, the device will update its parameters accordingly. (the device is not attached to the trailer when doing this)
- 1x long press (> 10s) : Long press (in PROVISIONING or OPERATIONAL phase) to reset the device

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FCC Statement:

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: 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.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 cm between the radiator and a human body.