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SAT PLUS

Attention: carefully respect the rules and recommendations contained in the manual

- SAT PLUS is a GSM/GPS device that connects to an external power supply and manages wired signals I/O. It must be installed by qualified and competent personnel.
 - The device is not waterproof, has an internal rechargeable battery and works in outdoor temperature conditions between -20°C and 60°C. It is therefore not recommended to use SAT PLUS in environments unsuitable for its characteristics.
 - Do not sabotage and/or modify the device in any way. Failure to comply with this rule will invalidate the guarantee of the product. The device warranty (*12 months from the date of activation or 18 months from the date of purchase – whichever comes first*) only applies to hardware components of the device that are not subject to an accident, misuse, negligence, fire or damage generated by other external causes, modifications.
 - Mechanical Line Solutions S.r.l. is not responsible for failures or damages caused by installations not carried out properly, for incorrect settings or for any improper use of the device.
 - The use of this device is under the complete responsibility of whoever installs and uses it. It is therefore necessary to use it with care and in full compliance with local legislation in force.
 - This device is compatible with Nano format SIM Cards operating at the GSM 2G and 4G/LTE frequencies.
- To complete the first activation, place the device in an optimal point, possibly outside, so that the receiver GPS/GLONASS can make a valid first position (fix PS).

Directives and conformities

This device is consistent and in conformity to the following International Directives:

- E9 10R-02.6166 Homologation
- With the essential requirements and other relevant provisions of the Directive RED 2014/53/EU
The product has been tested according to the following standards:
 - . Safety: EN IEC 62368-1
 - . EMC (Electromagnetic Compatibility): EN 301 489-1 V2.2.3; EN 301 489-3 V2.1.1; EN 301 489-17 V3.2.4; EN 301 489-19 V2.1.1; EN 301 489-52 V1.1.0
 - . EMF (Electromagnetic Fields): EN IEC 62311: 2020 clause 7.2
 - . Radio Spectrum: EN 301 511 V.12.5.1 clause 4.2.5, 4.2.16 & 4.2.17 (GSM and DCS); EN 303 413 V1.2.1 clause 4.2.2 (GPS); EN 300 220-2 V3.1.1 (RF Receiver)



Package list

- Vehicle tracker with Quectel combined GPS/EGPRS/2G module and built-in 433,92MHz RF module
- Rechargeable backup battery (Li-Polymer 850mA/h)
- Combined Power/Inputs/Outputs wiring
- Mounting clips

Specifications

- Size: 73 x 54 x 22mm. Weight: 80gr (battery included)
- Power source: DC 8-30V
- Operating temperature: from -20°C to 60°C
- Internal rechargeable backup battery: Li-Polymer 850mA/h (3,7V)
 - GSM/GPRS and GPS status LED
 - Quectel combined GPS/EGPRS/2G module
 - Embedded GSM and GPS antenna
 - External GPS antenna (optional)
- Communication channels: SMS and GPRS/TCP
- Mileage Counter (managed by GPS)
- Advanced real time Tracking setting
- Daily Timer report (up to 3 pre-defined Timers per day)
- Wake-up on movement & Entering sleep mode reports
- Advanced Power Saving Mode setting
- Tow and Speed limit reports (managed by GPS)
- Driver ID management by remote control (up to 250 drivers)
- Driver ID management by wired keypad (up to 1500 drivers)
- Up to 5 physical Inputs: 2 Positives + 3 settable to Positive or to Negative
- IG function for "Engine On" & "Engine Off" detection
- Up to 4 Analog Inputs (0~30V) and 4 physical Outputs (Negatives 160mA)
- Auto-target function
- Extension I/O box (optional)
- Remote Firmware upgrade OTA (by FTP)

Quick start

To activate SAT PLUS, turn ON the device by connecting the **Red wire** (Positive) and the Black wire (Negative) to main power supply. Please connect also White wire (Input 1) to ACC signal (+15) in order to maintain the device always ON during the activation procedure. When the device is successfully connected to power supply, both **blue** and **green LED** will start blinking.

Please wait for a few seconds till the modem will successfully authenticate to the GSM network. When the GPRS connection is established with the Server, the **blue LED** will be blinking "2 x 100ms On / 2sec Off".

In order to get the first GPS valid fix, it's necessary to place the device in a optimal location (better if outside) avoiding any metal surface obstructing it. Once correctly activated, the GPS **green LED** is blinking "2 x 100ms On / 2sec Off".

Power/Inputs/Outputs ports connection:



P/I/O: 10 pins connector combining Power, Inputs and Outputs signals. Up to 4 Inputs (1 Positive/Analog + 3 settable to Positive/Analog or to Negative), and up to 4 digital Outputs (all Negatives) can be managed through this port.

P/I/O (Power, Inputs and Outputs)	Wire
Pin 1: Power Supply '+' (DC 8-30V) (*)	Red
Pin 2: GND '-' (Negative) (*)	Black
Pin 3: Input 1 Positive / Analog 1 (DC 0-30V) ACC/Ignition Key (*)	White
Pin 4: Input 2 Positive / Analog 2 (DC 0-30V) or Negative	Grey
Pin 5: Input 3 Positive / Analog 3 (DC 0-30V) or Negative	Green
Pin 6: Input 4 Positive / Analog 4 (DC 0-30V) or Negative	Violet
Pin 7: Output 1 Negative (160mA @ DC 12V)	Yellow
Pin 8: Output 2 Negative (160mA @ DC 12V)	Orange
Pin 9: Output 3 Negative (160mA @ DC 12V)	Brown
Pin 10: Output 4 Negative (160mA @ DC 12V)	Blue
'S' Port: Input 5 Positive NOTE: Please check dip-switch setting on unit PCB	Pink



Serial ports connection:



USB: Micro-USB port is reserved for FW upgrading (USB cable is not included in the kit). Only Control Rooms are allowed to perform this operation.

K: Reserved for XT-KPAD wired keypad connection (Driver ID management)

S: Reserved for **Input 5 (Positive)** connection or for the Input/Outputs expansion (optional)

**K- Wired Keypad
(optional)**



**External
GPS/GLONASS
Antenna (optional)**



Power Supply + (Red)	●	Positive (DC 8-30V) (*)
GND - (Black)	●	Negative (GND) (*)

Power supply ←

Input 1 (White)	○	Positive / Analog 1 (DC 0-30V) <i>Ignition Key (*)</i>
Input 2 (Grey)	●	Positive / Analog 2 (DC 0-30V) or Negative
Input 3 (Green)	●	Positive / Analog 3 (DC 0-30V) or Negative
Input 4 (Violet)	●	Positive / Analog 4 (DC 0-30V) or Negative
Input 5 (Pink / 'S')	●	Positive (available on port 'S')

← **Inputs**

Outputs →

Output 1 (Yellow)	●	Negative (160mA @ DC 12V)
Output 2 (Orange)	●	Negative (160mA @ DC 12V)
Output 3 (Brown)	●	Negative (160mA @ DC 12V)
Output 4 (Blue)	●	Negative (160mA @ DC 12V)