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ITALY

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GPS solutions

X-TraX Group

X-10

Vehicle tracker

Attention please:
- Strictly follow the standards and recommendations for use and installation reported into the reference manual.
- This device must be installed by qualified and competent personnel only.
- Do not sabotage and / or modify the device in any way. Failure to comply with this rule will invalidate the product warranty.
- Using of this device is under the full responsibility of the person who install and use it. It is therefore necessary to use it carefully and in full compliance with the local legislation in force.
- This device is compatible with Nano size SIM Card working on 2G and 4G (LTE) GSM frequencies.
- X-TraX S.r.l. is not responsible for failures or damages caused by improper installations, incorrect settings or any improper use of the device.

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1. Package list

- ***X-10*** vehicle tracker with EGPRS/LTE Cat M1 modem, dual-mode GPS/GLONASS receiver and 433,92MHz RF module
- Rechargeable backup battery (Li-Polymer 850mA/h)
- Combined Power/Inputs/Outputs wiring
- Mounting clips

2. General description

X-10 is a smart and advanced vehicle tracker device. It has been developed to combine real-time monitoring and high security applications in an all-in-one solution.
It supports a wide suite of customizable functions that makes it flexible and suitable for any kind of application, such as: Jamming function, built-in RF module managing dedicated wireless sensors, Driver ID function, 2 Serial ports for connecting wired keypad, I/O expansion box and any customized accessory.
X-10 is the right choice to meet all your service requirements.

7. 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)

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6. ***Suggestions and implementing rules***

- ***X-10*** is a smart vehicle tracker with a rechargeable battery that works with an external power source and manages I/O signals.

- The installation of this device must be carried out in a workmanlike manner by qualified and competent personnel only.

- In order to get the first GPS valid fix it is necessary to place the device in a good position (better if in open sky) avoiding any metal surface obstructing it.

- This device is not water resistant. It comes with an internal rechargeable battery and works in environments with temperatures between -20° and 60°. It is therefore recommended to use it in environmental conditions suitable for its features.

- Please strictly follow rules and suggestions for use contained in this manual.

- In order to avoid any warranty restriction please do not dismount, modify or sabotage the device in any way.

- The use of this device is under the full responsibility of the user. It is therefore necessary to use it carefully and in full compliance with the local legislation in force.

- X-TraX S.r.l. is not responsible for any damage or disservice due to inappropriate installation or improper use of the device.

3. ***Specifications***

- Size: 73 x 54 x 22mm. Weight: 80gr (battery included)
- Power source: DC 8-30V
- Operating temperature: from -20°C to 60°C
- Rechargeable backup battery: Li-Polymer 850mA/h (3,7V) - over 4h lasting in "operating mode"
- Power consumption: in "operating mode" (GPS, GSM/GPRS, RF and G-Sensor ON - except battery charging) <30mA @ DC 12V; in "sleep mode" (GPS, GSM/GPRS and RF OFF, G-Sensor ON) <3mA @ DC 12V
- GSM/GPRS and GPS status LED
- EGPRS/LTE Cat M1 modem with embedded antenna (external GSM antenna available as optional)
- Dual-mode GNSS receiver with embedded antenna (external GPS antenna available as optional)
- Communication channels: SMS and GPRS/TCP (up to 2 Server IP)
- Unit programming by USB, SMS or GPRS/TCP
- 5 VIP SMS numbers
- Mileage Counter (GPS)
- Advanced real time Tracking setting
- Daily Timer report (up to 3 pre-defined Timers per day)
- Wake-up on movement, Periodical wake-up and Entering sleep mode reports
- Advanced Power Saving Mode setting
- Tow and Speed limit reports (GPS)
- Jamming function
- Driver ID management by remote control or active tag (up to 250)
- Driver ID management by wired keypad (up to 1500)
- Up to 5 physical Inputs: 2 Positives + 3 settable to Positive or to Negative
- Counter function (up to 4,294,967,295 counts)
- IG function for "Engine On" & "Engine Off" detection
- Up to 4 Analog Inputs (0~30V)
- 4 physical Outputs (Negatives 160mA)
- Up to 12 virtual Outputs (for configuration setting purpose only)
- Up to 100 advanced User-defined reports
- Up to 30 circular Geofences
- Auto-target function
- Up to 100 Time schedules
- Service mode
- 3D G-Sensor (adjustable sensitivity by remote)
- 433,92MHz RF module
- Extension I/O box (optional)
- 1 TTL 3V Serial port ('K') + 1 RS-485 Serial port ('S')
- Remote Firmware upgrade OTA (by FTP)

4. Status LED and wiring description

Device status LED:

GSM LED - Blue	
Status	**Description**
Off	Modem Off, GSM network not available, modem in "sleep mode", SIM card not inserted or SIM PIN code enabled
Blinking *10 x (180ms On / 350ms Off)*	Device restarting
Blinking *100ms On / 2sec Off*	GSM network authentication in progress
Blinking *2 x 100ms On / 2sec Off*	Connected to GPRS Server
Solid On	FPT download in progress

GPS LED - Green	
Status	**Description**
Off	GPS receiver Off
Blinking *100ms On / 2sec Off*	Invalid GPS fix or GPS receiver in "sleep mode"
Blinking *2 x 100ms On / 2sec Off*	Valid GPS fix
Solid On	Firmware upgrade by FPT in progress

Attention: Remove SIM PIN code before using.

Attention: Insert the SIM card into the reader before turning on the device with the chip facing down.

5. Quick start

1- After inserting the SIM card, please turn ON the device by connecting Red wire (Positive) and 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 testing procedure. When the device is successfully connected to power supply both **blue** and **green LED** start blinking.

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

3- In order to get the first GPS valid fix, it's necessary to place the device in a good place (better in open sky condition) avoiding any metal surface obstructing it. When GPS is fixed **green LED** is blinking "2 x 100ms On / 2sec Off".

4- By SMS is possible to enable up to 2 user SMS numbers and assign a name to the device (max 12 characters).
The SMS format must be: **#CFG****Cell.1*****Cell.2*****Name#**
Example of SMS message to enable one single user SMS number and assign a device name: **#CFG****+391234567890*****X10#**

5- After user SMS numbers have been successfully enabled then it is possible to manage a suite of SMS functions by remote, such as query the device position, enable/disable predefined output.
Send **XPOS** SMS string to query the position.
Send **XON** SMS string to enable the predefined output, and send **XOFF** to disable it.

Only authorized SMS numbers by #CFG self-setting procedure (please refer to point No.4) or by Control Room remote settings are able to manage SMS functions (please refer to point No.5).

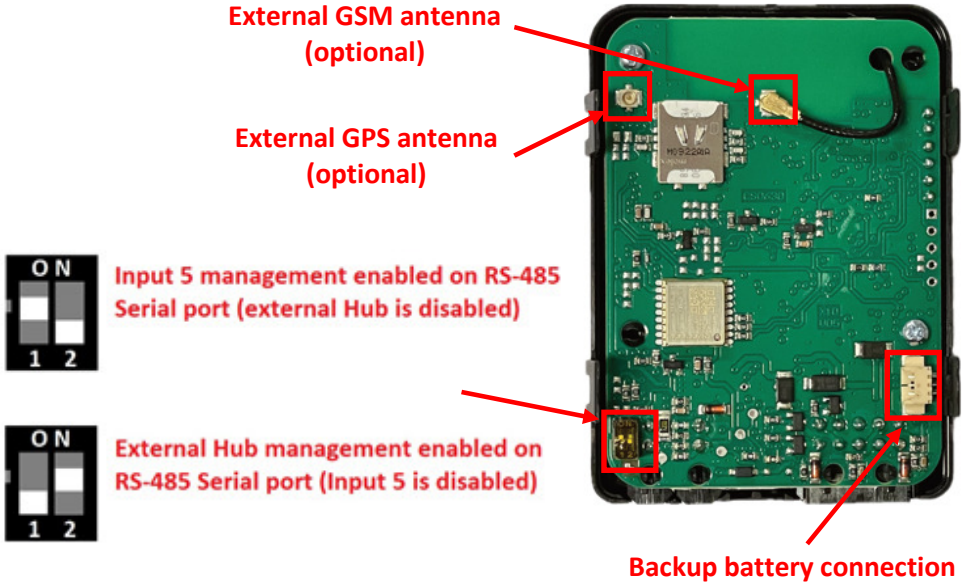
Attention: For better using and reliability this device must be pretested from authorized Control Room.

Serial ports description and external antennas installation:

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

K: TTL 3V type Serial port ('K').
Reserved for XT-KPAD wired keypad connection or OEM customized accessories following predefined X-10 communication protocol.

S: RS-485 type Serial port ('S').
Reserved for **Input 5 (Positive)** connection.
Note: Upon request, alternatively it is possible to covert Serial port 'S' from default RS-485 to TTL 3V format for connecting XT-MINI HUB I/O expansion box (HW modification on X-10 PCB is required).



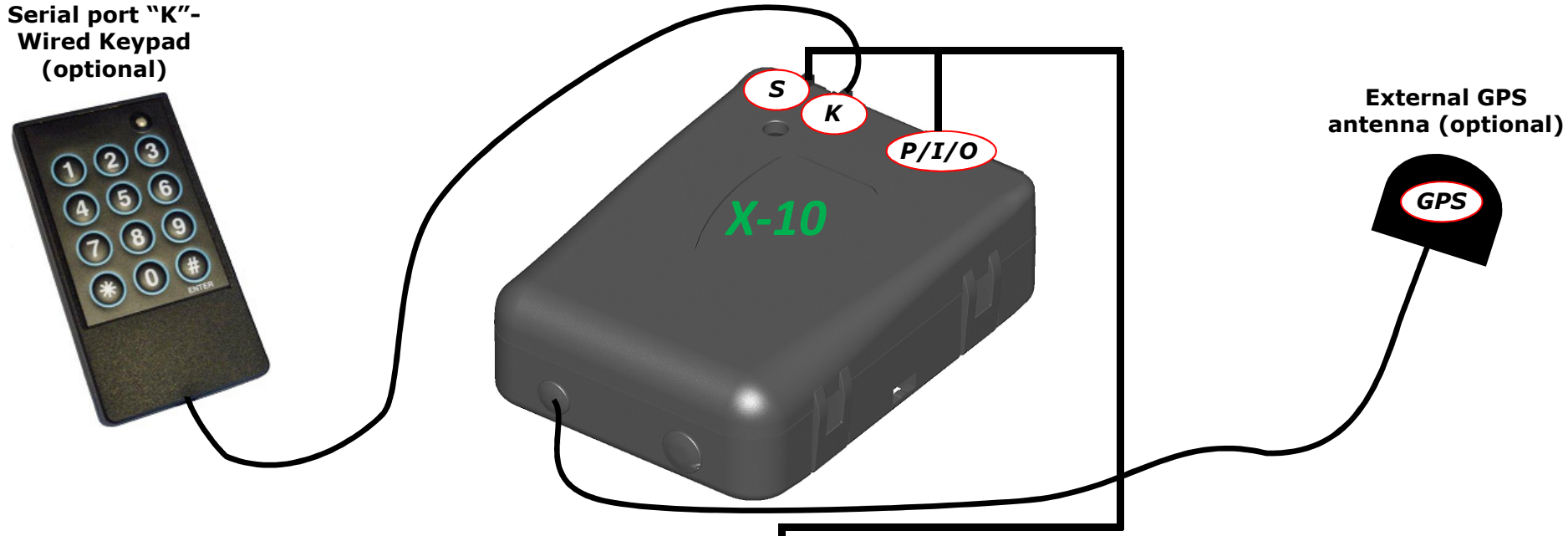
Power/Inputs/Outputs ports connection:

P/I/O: 10 pins connector combining Power, Inputs and Outputs signals. This port provides 4 Inputs (1 Positive/Analog + 3 settable to Positive/Analog or to Negative), and 4 Outputs (all Negatives).
***(*)* IG Function:** By connecting Red and Black wires to Positive and Negative signals of the vehicle main battery the devices can detect "Engine On" & "Engine Off" status avoiding to connect White wire (Input 1) to *ACC/Ignition Key* signal. After enabling IG function, Input 1 becomes available for other purposes.
In order to enable this function please contact your reference Control Room providing the exactly voltage levels measured on vehicle main battery when "Engine On" and "Engine Off" conditions.

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*

Installation diagram for *X-10* tracker



Power supply

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

IG Function

(*) IG Function: *By connecting Red and Black wires to Positive and Negative signals of the vehicle main battery the devices can detect "Engine On" & "Engine Off" status avoiding to connect White wire (Input 1) to ACC/Ignition Key signal. After enabling IG function, Input 1 becomes available for other purposes.*
In order to enable this function please contact your reference Control Room providing the exactly voltage levels measured on vehicle main battery when "Engine On" and "Engine Off" conditions.

Inputs

Input 1 *(White)*	Positive / Analog 1 (DC 0-30V) *Ignition Key* ***(*)***
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')

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)