T23 Series Devices

TRAMIGO™

Installation Guide
V1.09.2

tracking.

Installation Guide

Contents:

1 Preface

Failure to comply with the following warnings and safety information may invalidate warranty, certification or type approval of this product.

Note: This guide applies to T23 and Revision B series "T23 Fleet" and "T23 Track".

Rev B devices have written "Rev B" on label under the battery and Firmware version has a letter 'P' before the version number.

Also, SIM card holder has a different design. Metal belt secures SIM card in place, see for example T23 Track image below.

In this document "T23" refers to previous T23 model and "T23 Series" to T23, T23 Fleet and T23 Track.

Internal components containing beryllium oxide may be used in this equipment. Dust from this material is a health hazard if inhaled or allowed to come into contact with the skin. Outmost care must be taken when handling these components.

Unauthorized modification to this equipment or associated accessories is forbidden without the express permission and agreement from the product manufacturer.

Safety Information

Please adhere to the following Safety and Installation information at all times.

Supply Voltage	:	+6V minimum to +32V maximum with or without battery
Fuses	:	Built-in fuse

WARNING!

This equipment may only be located in a position where it cannot interfere with the normal operation of the vehicle or present a hazard to the driver or passengers. Care must also be taken in routing all cables so that the insulation does not become worn or damaged.

Installation Information

All installation and service work must be carried out in accordance with MPT 1362, MPT 1372, RQAS, VSIB, 95/54/EC, ISO 21609 and / or any other statutory guidelines or directives currently in force.

Therefore it is strongly recommended that the T23 Series unit is installed and commissioned by suitably trained and qualified Installation Personnel i.e. in the UK those who are accredited and registered by the Vehicle Systems Installation Board (www.vsib.co.uk).

Important Notes!

Unauthorized changes or alterations to the equipment or on the installation will invalidate certification issued by the Approved Accreditation Body and may also affect the vehicle manufacturers warranty.

Under no circumstances may any part of the T23 Series system be installed inside the engine compartment area.

This unit should not be placed to direct sunlight or expose to high temperature.

This equipment should not be operated in hazardous environments i.e. areas that contain explosive materials or flammable vapors.

This equipment should not be operated in aircraft or in close proximity to medical equipment.

NOTE: Select the T23 Series power supply carefully. Always use the regulated car radio power outputs when available. Do not randomly select first wire with constant power. Consult a certified car technician if in doubt.

Regulatory Compliance Statements

FCC Warning Statement

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.

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

FCC RF Radiation Exposure Statement

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

2 Installation

Before you begin installing and configuring the system please ensure that you have read this manual thoroughly, referring to any supplementary information provided for the T23 Series unit and user options as required.

Figure 1 – T23 and T23 Fleet and Automotive Installation Kit

Figure 2 – T23 Track Unit

Note: T23 Track does not have Microphone and External GPS plugins. All other basic accessories are available.

1 - T23 Series- I/O cable	5 - T23 Series - USB (micro USB for portable charger)
2 - T23 Fleet - Unit	6 - T23 Series - AMIC (microphone)*/**
3 - T23 Series - BAT battery	7 - T23 Series - GPS Antenna external*/**
4 - T23 Series - CLA (Cigarette Lighter Adaptor)**	8 - T23 Series - SOS/ATB external**

*Not available with T23 Track. ** Optional accessory.

2.1 Installation Tools

✓ Automotive screwdrivers, spanners, socket sets ✓ Wire cutter, pliers ✓ Voltage Meter ✓ Automotive Electrical Tape (regular electrical tape will unwrap in 6 months) ✓ Waterproof and heat resistant Automotive 2 way tape (3M has a good tape that is used to secure trim on the vehicle exterior) ✓ Foam tape – for preventing rattles ✓ Small Ty-Wraps (for securing wires and case)	✓ Portable soldering Iron ✓ Flashlight ✓ Alcohol and cloth ✓ Spare T23 Series unit and accessories (in case of component failure) ✓ Tramigo™ T23 Series wiring diagrams (included in this document) ✓ Wire connectors and crimping tool or Posi-Lock wire connectors ✓ GSM Phone or PC (for configuration) ✓ Portable GPS receiver (for testing GPS signal strength). Any unit will work as long as it shows the GPS signal strength.

💡Charge the battery overnight before using your T23 Series for the first time.

2.2 Installation Site

The installation can be performed in any well ventilated and well lit area as found in a car dealership or accessory installation bay. There is no requirement to raise the vehicle. To obtain the first GPS lock, a clear view of the sky is required, which should be considered if designing a custom install center. A GPS repeater can be used to obtain a signal inside a building.

Care should be taken to avoid scratching the vehicle during the installation process. Protective clothing and vehicle covers should be used.

Installations are also performed on the customers home or office site, so a portable installation toolkit is required.

2.3 Unit Location

Your T23 Series unit can be mounted anywhere inside your vehicle or boat where the unit will not get wet and not exposed to excessive heat. The most common locations are behind the dashboard, under the center console, and under a side panel in the back of the vehicle. Pick a location where you can secure the unit firmly to prevent any rattling sounds after installation.

2.4 Antenna Location

In order for GPS to function correctly, the GPS should have a signal quality of 60% or higher in order to receive data from the satellites. Example, if the vehicle is parked in a metal-clad building then the performance of the T23 Series platform may be impeded. Whenever possible, it is preferred to park the vehicle in a location where the unit will have a clear all round view of the sky during installation time to test the signal strength.

If the external GPS antenna is used, the antenna module and wires should be hidden from view by the installer.

Common locations are:
- Under the dashboard as far to the front of the vehicle as possible
- Under the plastic cover near the windshield wipers
- Under the plastic cover of the front or rear bumpers
- In the license plate lamp (on SUV types)
- In the side mirrors (when space permits)

Places to avoid are:
- Under the roof or roof posts
- Under rear window defogger wires

2.5   Personal Assistance Button Location

It is recommended that the Personal Assistance Button, when fitted, is located within easy reach and visibility of the vehicle driver, or where required in a covert location. Typically it will be fitted into a blank switch position.

2.6   Internal Backup Battery

First time use: Charge battery through IO cable (+VDC Red wire and ground Black wire) or wall adapter at least 3 hours. If battery status is low, power led is Orange.

Battery life is an average 1 year and 500 recharging cycles.

Internal Li-Polymer backup battery can handle temperatures from 0 °C (32 °F) up to 65 °C (149 °F).

You can activate temperature alarms as shown in following example:

R,10,TEMP,70 // Report to GPRS when temperature reaches 70 °C, and/or

R,1,TEMP,70 // SMS report to user #1 when temperature reaches 70 °C

SET,SHUTDOWNTEMPERATURE,75 // T23 Series will shut down when temperature reaches 75 °C

SET,HIGHTEMPERATURESHUTDOWNTIME,20 // The shutdown time is set to 20 minutes

Do not use damaged internal backup battery. One visible defect is bloated battery.

If battery is damaged, T23 Series may not wake up despite power is supplied to Unit through IO or USB.

Battery operating voltage in T23 Series is 3.30 – 4.22 VDC, if below that power led is Orange and T23 will not wake up until 3.30 VDC reached.

Note: Internal Li-Polymer backup battery can handle temperatures up to 65 °C (149 °F). In countries with hot climate this can be an issue. If internal backup battery is not needed, T23 Series is operational as long as power is supplied via USB or IO port.

Note: In hot climate or if T23 high temperature issues it is recommended to use following settings:

SET,SLEEP1REPEATS,2 // T23 goes to sleep after 2 hours

SET,SLEEP,1 // Enable the sleep functionality

2.7   Recommended Installation Sequence

The following installation sequence is recommended. Please refer to the instructions elsewhere in this document for further details.

1. Plan the whole installation and determine suitable locations, mounting arrangements and cable routes for all hardware items.
2. Connect Fit SIM card. Temporarily mount the main T23 Series unit and temporarily connect all wiring, while still able to see the status lights on the unit.
3. Configure the unit.
4. Test that all hardware features are working.
5. Mount Complete the permanent installation and wiring.
   o Perform final test of T23 Series functions.
   o Test that all vehicle buttons and switches still work.

3 Plan

Plan your complete installation first to avoid re-wiring later. T23 Series has four inputs, T23 has three outputs and T23 Track and T23 Fleet has 2 outputs.

INPUT consists of the following:	OUTPUT consists of the following:
1. Ignition Sensing	1. Immobilizer (12/24V)
2. Personal Assistance Button/ATB (or/and)	2. Customized Output (for relays/switches)
3. Customized Input (preferably for sensors)	3. Customized Output (for relays/switches)
4. Customized Input (preferably for sensors)	

3.1 Identifying I/O ports on your T23 Series

Connect your I/O cable to your T23 Fleet. Then lay them on a flat surface. Make sure the I/O cable does not twist and is parallel to the surface.

Figure 3 - T23 and T23 Fleet I/O port & I/O cable
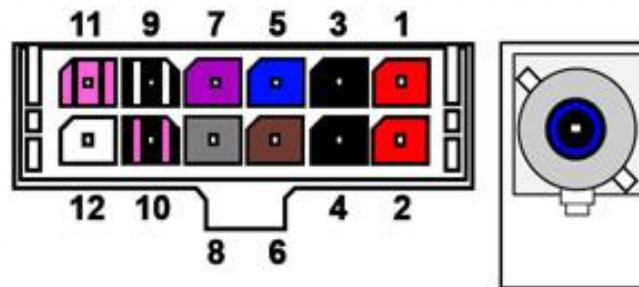
1- RED	"+ Power source" (from regulated 6-24V supply)	7- VIOLET*	INPUT 3 / Customized Input (preferably for powercut)
2- RED*	"+ Power source" (from regulated 6-24V supply)	8- GREY*	INPUT 4 / Customized Input (preferably for sensors)
3- BLACK	GND (any metallic chassis of engine) -*ground*	9-BLACK with white stripe	OUTPUT 1 / Immobilizer (12V/24V)
4- BLACK*	GND (any metallic chassis of engine) -*ground*	10- BLACK with pink stripe*	OUTPUT 2 / Customized Output (preferably for relays/switches)
5- BLUE	INPUT 1 / Ignition Sensing	11- PINK with black stripe* or PINK**	OUTPUT 3 / Customized Output or ANALOG Input / T23 Fleet only
6- BROWN	INPUT 2 / SOS or ATB	12- WHITE**	1-WIRE Bus / T23 Fleet only

*Only in T23 and T23 Fleet IO FULL version   **Only with T23 Fleet IO FULL version

Note: T23 and T23 Track do not have Analog input and 1-Wire interface bus. T23 Basic (5 wires) or Full (11 wires) IO cable can be used depending on accessories attached.

Figure 4 - I/O Cable configuration table

Contact support@tramigo.com for T23 Series customized I/O instructions.

3.2 T23 Track Ports

T23 Track has a different casing. It has no External GPS antenna and microphone ports. See image below.

Figure 5 - T23 Track ports

3.3 Configuring I/O ports

Inputs and outputs can be configured by INPUT and OUTPUT commands.

For Advanced use only!

INPUT default settings:	OUTPUT default settings:
• INPUT,1,IGNITION,IGNITION,1,500,BOTH • INPUT,2,SOS,SOS,0,2000,ON (1) • INPUT,3,SENSOR,SENSOR,1,500,ON • INPUT,4,GENERAL,INPUT,1,500,ON	• OUTPUT,1,IMMOBILIZER,DISABLE,1,0 • OUTPUT,2,GENERAL,OUTPUT2,1,0 (2) • OUTPUT,3,GENERAL,OUTPUT3,1,0 (3)

(1) T23: This is the correct SOS default setting when T23-ATB is used with Tramigo Intelligent Immobilizer
   T23 Series: When T23-ATB used as a separate accessory; INPUT,2,SOS,SOS,1,2000,ON
(2) T23 Fleet and T23 Track: Output 2 is giving a ground all the time, until set ON and ground is lost.
(3) T23 Fleet and T23 Track: Not available, only with T23.

INPUT	DEFINITION	OUTPUT
(1 - 4) corresponds to PINS 5 -8	ID	(1 - 3): Output number PINS 9 - 11)
(1 - 4): 1 = Ignition, 2 = SOS, 3 = General, 4 = General	TYPE	(1 - 2): 1 = Immobilizer, 2 = General
Defines the name of the command for turning on/off the reporting.	LITERAL (TEXT)	Defines the name of the command for turning on/off the reporting.
(1/0): Defines if 0 or 1 used for ON.	HIGH	(1/0): Defines if 0 or 1 used for ON
(0 - 9999): Wait (ms) before registering input event (to filter noise).	DELAY	N/A
(ON/OFF/BOTH): When reports are sent	REPORT WHEN	N/A
N/A	TIME	(0 - 9999): Time (ms) how long output signal is sent, 0 = continuous

Important Note!

T23: All inputs use 3V minimum and 24V maximum for unit to detect "ON" state.

T23 Fleet and T23 Track: Inputs 1 and 3 use 3V minimum and 24V maximum for unit to detect "ON" state. Inputs 2 and 4 use GROUND to detect "ON" state.

T23 Fleet: Analog input and 1-Wire interface; refer to separate professional T23 Fleet accessory installation guide.

3.4   Mounting the T23 Series unit

After checking that all the functions are working properly, you are ready to permanently mount your unit. Your T23 Series unit can be mounted anywhere inside your vehicle or boat where the unit will not get wet. The most common locations are behind the dashboard, under the center console, and under a side panel in the back of the vehicle. Pick a location where you can secure the unit firmly to prevent any rattling sounds after installation.

In general, you can expect that a mounting situation under the dashboard of a vehicle will be satisfactory.

4   Connect

4.1   Fitting the SIM card

Before fitting the SIM card

T23 Series supports only Mini SIM card. Refer to picture below.

SMS and/or GPRS support is required, voice support is optional.

- If you have not already registered your SIM card with the mobile network, you should do this before proceeding. Please refer to the appropriate mobile network operator instructions on how you do this.
- Check that the SIM card can send and receive SMS using a mobile phone.
- Ensure that the SIM card is not protected by a PIN number.
- For prepaid accounts, ensure that there is sufficient load or credits to send SMS.
- It is recommended to use a new SIM card to ensure good contact with the SIM reader.
- Record the phone number of the SIM card.
- NOTE: If using GPRS, be sure that SIM card is 2G GSM network compliant, T23 Series does not support 3G/4G only SIM cards.

Important Note!

When inserting or removing the SIM card from the T23 Series, it is necessary to:
- Remember to turn off the power first before removing the battery.
- Do not bend or scratch the card.
- The golden chip should be kept clean at all times.
- To prolong the life cycle of the card, avoid any unnecessary insertion or removal of the card.

4.2   Steps in Fitting SIM card to T23 and T23 Fleet

1. Unscrew the back panel/cover.

2.   Push the battery lock to lift the battery and remove it.

3.   Pull the SIM card holder lock up a bit just to loosen the SIM holder. Note: <u>When SIM card has Micro or Nano model embedded to Mini SIM card, lift the plastic SIM holder up at least 30 degrees.</u> Then push forward to fit the SIM card.

Note: Put SIM Card wherein the gold plate touches the SIM reader pins. Follow the shape of the SIM holder.

4.   Put back the battery and gently push it downward to lock it.

Note: Remember to check first the GSM signal stability before assembling the unit back, the RED light should be OFF.

5.   Put the back panel/cover. You may return the back cover loosely screwed or unscrewed since it may fit well on the unit.

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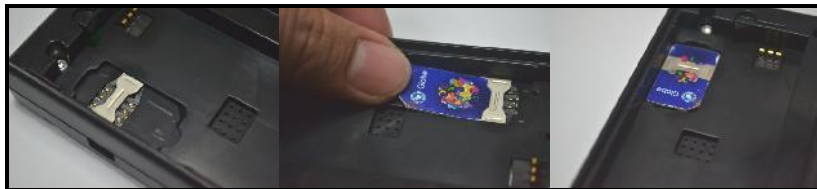## 4.3 Steps in fitting the SIM card to T23 Track

1. Open the back panel/cover.

2. Push the battery lock to lift the battery and remove it.

3. Insert SIM card edge under the metal SIM holder and then push it forward in place.

Note: Put SIM Card wherein the gold plate touches the SIM reader pins. Follow the shape of the SIM holder.

4. Put back the battery and gently push it downward to lock it.

Note: Remember to check first the GSM signal stability before assembling the unit back, the RED light should be OFF.

5. Put the back panel/cover.

4.4 T23 Series Wiring and Connections

Important Notes!

Unauthorized changes or alterations to the equipment or the installation will invalidate certification issued by the Approved Accreditation Body and could also affect the vehicle manufacturer's warranty. If in doubt only connect T23 Series to the vehicle power.

All wiring should be safely secured to avoid damage from, or chaffing by, any hot or moving parts.

Position the wiring carefully to avoid the possibility of snagging or impact damage during the normal use of the vehicle.

Before any holes are drilled, check that no parts, wires, pipes or tanks could be damaged at the other side of the hole. Suitable grommets must be used where wires are routed through body panels to prevent short circuits to the chassis.

Leave in-line fuses out of holders until the installation is complete.

> Note: T23 Fleet and T23 Track inputs 1 and 3 should be connected to voltage source (Ignition and Powercut), but inputs 2 and 4 are connected to Ground (SOS button and for example door sensors). T23 all inputs should be connected to voltage source.

Cable Assemblies

The T23 Series has one IO cable/Immobilizer (12/24V) for power, ignition sensing or external personal assistance button.

When you configure the T23 Series you will be able to carry out tests to determine whether suitable GSM and GPS signals are being received. If in doubt about the suitability of your planned location, it is recommended that you only install it temporarily until you are able to carry out the appropriate configuration tests, check chapter 3 for detailed steps.

4.5   Power Connection

T23 Series I/O cable is used to connect to permanent vehicle power in the fuse box or in regulated car radio output. NOTE: Permanent power source must be selected carefully.

In the first initial state of battery charging, just after plugging unit to power source, you might hear quiet buzzing sound. This is the magnetostriction effect of the inductor and fully normal operation. It will quiet down in a few minutes. After battery is fully charged, there is no sound.

Wire Color	Description	Notes
Red	Vehicle Supply Positive (+ve)	Connect to a permanent Positive supply (6 to 24V).
Black	Vehicle Supply Negative (-ve)	Connect to permanent Negative.

Mandatory: Always check that unit's I/O cable Power and Ground wires are protected with a 1 ADC fuse.

4.6   Ignition Sensing Connection

Wire Color	Description	Notes
Blue	Ignition Sensing	Connect pin 5 wire to ignition switch which has POWER ON for the whole driving trip not only for cranking.

(Note: if installing on a motorbike, it is recommended to tap BLUE and RED wires to ignition line to optimize power consumption and management)

4.7   Personal Assistance Button or T23-ATB

Connect the 2 wires from the Personal Assistance Button to:

Wire Color	Description	Notes
Brown	SOS/ATB pin connection	Connect ATB wire to pin 6 wire.
(ATB's second wire)	T23: Vehicle Supply Positive (+ve) T23 Fleet and Track: Vehicle ground	T23: Connect ATB second wire to a positive supply from car (low voltage recommended) Note: Be sure that serial 39kOhm/0.125W basic resistor is installed, T23 Only.

Note the personal assistance button can also be used to trigger the phone button in situations where a 3rd party hands free kit (in-car speaker and microphone) is attached to the T23 or T23 Fleet.

4.8   Sensor wiring

Wire Color	Description	Notes
Violet	Customizable Inputs (for sensor)	Connect sensor wire to pin 7 wire.
Grey	Customizable Inputs (for sensor)	Connect sensor wire to pin 8 wire.
(Sensor second wire)	Vehicle Supply Positive (+ve) or Ground.	T23: Violet/Grey sensor wire to a vehicle Supply Positive (+ve). T23 Fleet and Track: Violet sensor wire to a Supply Positive (+ve). Grey sensor wire to vehicle ground.

Any sensor that has a digital circuit can be used, i.e. giving ON or OFF state, just note according inputs when giving Ground and when giving Voltage.

4.9   GPS External Antenna Option

This option is needed when it is not possible to install the T23 or T23 Fleet in a location where the internal GPS antenna will work. This option allows the antennas to be located in a different location within the vehicle.

The GPS antenna should be positioned horizontally and located in a position where it will have over 60% signal quality. The ideal location in most cars is in the underside of the dashboard; however, it is important to ascertain that there are no conductive materials present in the construction of the dashboard prior to fitting the antenna.

The GPS antenna must have the black side facing toward the sky. The flat side with the magnet faces the ground.

Important Note!

The performance of the equipment may be impeded if the antenna is mounted beneath or in very close proximity to electrically conductive materials, such as metal, certain types of plastic, metal film or laminate (tinted) windscreens. If this applies to your vehicle please install the antenna elsewhere.

4.10 T23 Series 24V Installation

Older truck installations which have been measured to provide constantly more than 24V can cause unwanted behavior, such as, T23 Series unit stops charging due to damaged I/O port; or unit stops responding; or unit hangs.

Recommended Solution:

1. MANDATORY: Locate the vehicle's regulated power supply (which covers the radio and other electronic devices) and tap from that source. Usually, the power from that node is only 14V or less and is more stable because it is regulated compared to those connected directly from the batteries.

    Note: In 24V systems voltage regulator is mandatory to prevent power surges to T23 Series unit.

2. Use terminals or Posi-Taps to tap wires safely. This will reduce risk of fires and car warranty issues.

3. "Good grounding" is very important. Poor grounding may result to undercharging and T23 Series accessories will not work normally. To achieve good grounding, measure the resistance of the chassis and compare it directly to the battery's negative terminal. The closer the reading to the battery's reference impedance, the more ideal is the grounding.

4. Check the installation wiring. Always measure the total voltage to check for its voltage drop. Important Note: Loose wire tapping should be re-soldered to avoid heat and power loss.

5. Insulate all wires to avoid short circuit with automotive electrical tape or heat shrinks.

6. Remove the car battery before any welding or work to do on the engine. This will avoid voltage spikes that will damage the T23 Series and its accessories.

7. Jump start using another vehicle (especially dual batteries) can cause a power spike. The T23 Series must be disconnected first from power supply to avoid short circuit.

5   Configure

After completion of the Installation as described in Section 2, you are ready to configure your T23 Series.

Figure 6 - T23 and T23 Fleet lights and buttons

Figure 7 - T23 Track lights and button

Your T23 Series has 3 lights to indicate the status of the unit. Green means OK and red and blue means that you have a problem. T23 and T23 Fleet buttons require you to press for 2 seconds to prevent accidental triggering.

Power LED - Green:
Flashing (5 seconds)   Power is on.
On   Charging
Off   Power is off or T23 Series is sleeping.

Power LED - Orange:
Flashing (5 seconds)   Power is ON but is too low.

Power LED - Yellow:
On   Charging and the power is still low.

GSM LED – Red:
On   T23 Series is not connected to the GSM network.
Off   T23 Series is connected to the GSM network.
Flashing   T23 Series is having problems sending a SMS.

GPS LED - Blue:
On   T23 Series does not have a GPS fix.
Off   T23 Series has a GPS fix.

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Power Button	Press for 2 seconds to activate.
Personal Assistance Button (SOS/ATB) *	Press for 2 seconds to activate.

When using an external SOS/ATB button, the T23 Series is configured to arm the Alarm by pressing the button for less than 5 seconds. The external SOS/ATB can also be used to activate the phone functions. Note: When T23 and T23 Fleet SOS button is pressed and input #2 is configured to for example Door Open sensor, you will receive 'Door Open' alarm instead of the SOS alarm.

Phone Button *	Press once to answer incoming call. Press for 2 seconds or more to initiate an outgoing call to User 1, press a second time for User 2, etc. Second and third press does not have to be 2 seconds.
	Incoming call is indicated by the GSM and GPS lights flashing together.
Remote Assistance Button	Press for 5 seconds or more to activate Assistance message. (*)Press for 0.2 to 1.9 seconds to use as phone button. Second press must be within 1 second to dial 2nd speed dial number.

* Note: Not available with T23 Track, but external SOS button is available.

5.1 Configuration Steps

- Check that the green Power light is solid ON (charging) or emitting a short flash every 5 seconds (fully charged).
- Check that the red GSM light is OFF.
- Read the instructions in the T23 Series User Manual.
- Send the following SMS to your T23 Series in upper or lower case from the Owner's phone if possible:
  > OWNER
  > Note: It is the same with Owner,0000 from previous registration.
- T23 Series will respond with a text message stating:
  > Tramigo: Owner, +635551234 registered
- This means that you are now the Owner of T23 Series and it will accept any commands that you issue to it, provided they came from the same mobile phone number as you used for this setup.
  - o If the Owner's phone is not available you can add their number with the Adduser command:
    AU,phoneNum,OWNER

If you have Ignition Sensing connected, then you need to issue the following commands:
  - o Set,IgnitionInputGPIO,1
  - o Set,IgnitionInputShock,0

Note: T23 Series' default configuration is using shock sensor for ignition sensing.

If you want the SOS button as ALARM, then you need to issue the following commands:
  - o Input,2,SOS,SOS,1,2000,ON
  - o Set,SOSGPIO,1

If you use SOS button with Tramigo Intelligent Immobilizer, issue following commands:
  - o Input,2,SOS,SOS,0,2000,ON
  - o Set,SOSGPIO,1

Additional Information: For FW version 1.08 and later, use INSTALL command to have an easier way of configuration.

Send command INSTALL and follow instructions that will be sent by the T23 Series
1. Start the car to configure ignition sensing.
2. Press SOS button for 3 seconds if installed.
3. Vehicle will be disabled after 30 seconds if immobilizer is installed.

Note that the INSTALL command requires the unit is mounted <u>firmly</u> in its final position inside the vehicle.

The above is related to a Tilt alarm; an alarm is received if unit is tilted. A handy feature detecting for example vehicle towing.

To check status of installation, send:
   o GET,INSTALLSTATUS

To void the Install command settings, send:
   o UNINSTALL

6 Test

Test all the wiring connections and GPS signal.

- Check the GPS signal by moving the vehicle to a location with a clear view of the sky. When the blue GPS light goes off (1-3 minutes) send a FIND command to check the location. Send STATUS command to check GSM and GPS levels.
- If Ignition sensing (blue wire from Pin 5 of T23-IO) is connected, test by
  - Setting the Parameter
    - Set,IgnitionInputGPIO,1
    - Set,IgnitionInputShock,0
  - And turning ON the Ignition reporting by sending Ignition,On
  - Turn On and Off Ignition switch and you should receive SMS each time during the Ignition switching
- Test the external SOS button by pressing for 2-3 seconds. You should receive an SMS from the unit.
- Test Alarm by sending command to the device.
  - Send Alarm,On
  - Shake unit – you should receive Motion Alarm
- If the Sensor/s are connected, test by
  - Turning on Sensor reporting
  - Send Sensor,On
  - Activate and deactivate the sensor and by default you should receive one (1) SMS during activation.

7 Mount

Tips: You now have an option to install the T23 Series units without the battery. This installation can be done in areas where temperature exceeds the battery operation range of 60°C.

There are 2 primary methods of mounting the T23 Series unit:
1. *Use the 4 screw holes to attach to a flat surface inside the vehicle. Use self-drilling sheet-metal screws, diameter max ST 4.2 mm, length about 20mm, cross recessed, pan head.
2. Use double-sided automotive grade tape to attach the case to the vehicle.

* T23 Track: Cable tie or double sided tape.

You may choose to mount the T23 Series somewhere covertly e.g. under the dashboard, but in all cases the T23 Series GPS antenna must be placed such that sufficient signal quality is available to the antenna to allow for GPS signal reception from the orbiting GPS satellites and cellular radio communications with the mobile radio network. GPS signals do not pass through metal or electrically conductive material. Note that T23 Track does not have external GPS antenna option.

Figure 8 – T23 and T23 Fleet automotive installation/Wires connected

Figure 9 – T23 Track automotive installation/Wires connected

Check your windscreen: Should the windscreen be provided with heating that uses a metal film or fine wires built into the windscreen, or features a special heat reflecting athermic layer, then the GPS signal will be screened off from the T23 Series.

The T23 Series should then be mounted at the side of the windscreen where there is sometimes a special zone free of the metallization.

If this does not work, then you can place the T23 and T23 Fleet external GPS antenna under the windshield wipers, front or rear bumpers, or any location where only plastic covers the antenna. If you need to run the GPS antenna cable through the engine compartment, use a standard plastic automotive grade shrouding to protect the cable.

TIPS: T23 and T23 Fleet GPS antenna comes with a FAKRA connector and may not fit on smaller holes during the installation. You have the option to remove it so the GPS antenna would still fit according the desired location then after the installation, return back the FAKRA connector in reverse steps of how you removed it.

7.1   How to remove FAKRA from GPS antenna:

1. Pull out the Fakra lock (black) using a pair of tweezers.
2. Gently pull the GPS cable out from the Fakra connector.
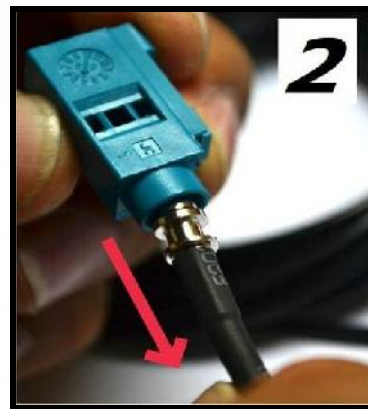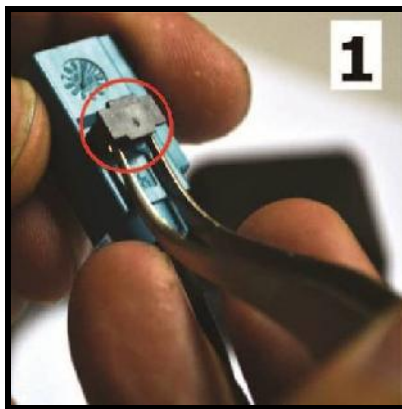
Note: Only with T23 and T23 Fleet.

Window Tinting

GPS signals are blocked by metal surfaces which can include some brands of window film that contain metal particles. To ensure that GPS, cell phone, smart tag, and radio reception is not affected either:

1. Use a non-metallic tint.
2. Avoid tinting the front windshield where the T23 Series unit is located (Worldwide legislative trend is to ban windshield tinting due to increased risk of accidents).
3. Leave a 15 cm gap at the bottom of the windshield and place the T23 Series by this opening. This still provides security for vehicle occupants.
4. With T23 and T23 Fleet Use the External GPS Antenna and place the GPS antenna under the front bumper or under the windshield wipers – as long as the antenna is not covered by metal.

The list of good quality non-metallic film includes the 3M film, Madico CharcOOl (not Madico CharcOAl), Huper Optik Ceramic (Stark), and FormulaOne Pinnacle (ceramic film). Costs for good quality metallic film is similar to non-metallic film.

WARNINGS:

- T23 Series should be installed in a cool place where air can pass through to avoid unit overheating.
- If you are to install T23 Series under the dashboard, make sure that upper or lower base of the unit is touching the surface to allow air to pass through as stated above.
- Your T23 Series must be securely mounted in a location where it cannot interfere with the normal operation of the vehicle. It must not be located in a position where the cables or the T23 Series Unit may become a hazard to the driver or any passengers.
- Under no circumstances may any part of the T23 Series system be installed inside the engine compartment area. (except the GPS antenna cable)

8 Wiring Diagrams

Most common setup is to connect the power wires, ignition sensing and SOS button.
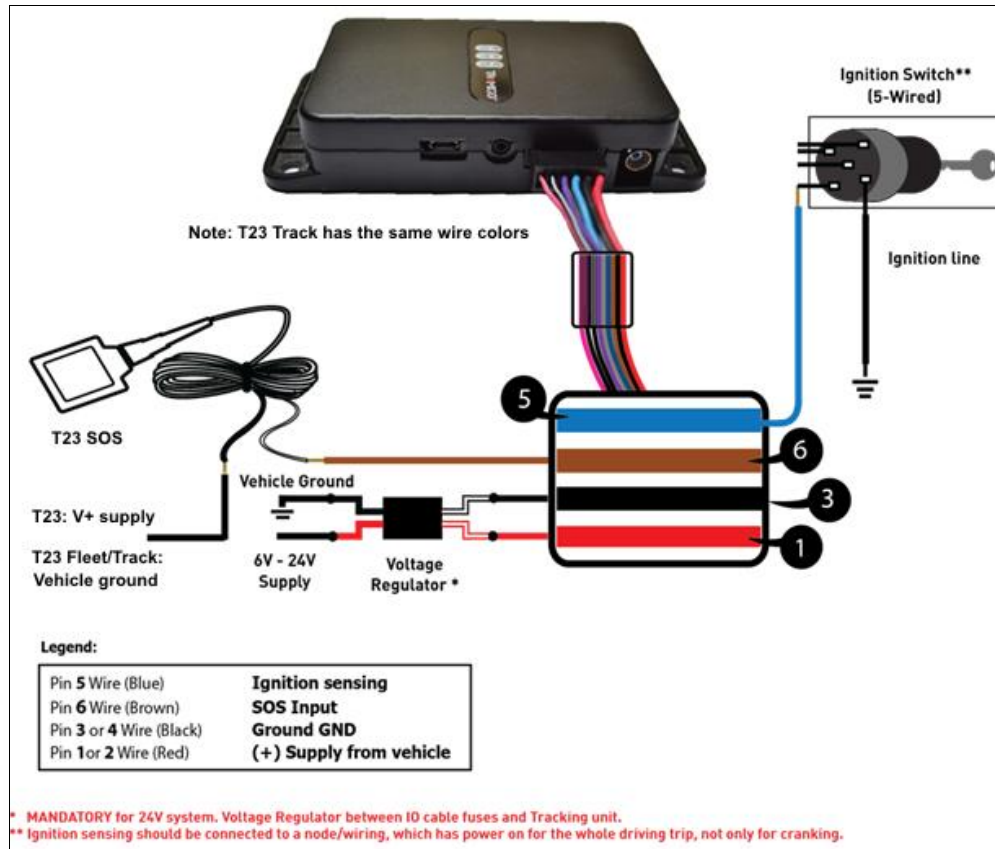

Figure 10 – T23 Series common installation wiring diagram
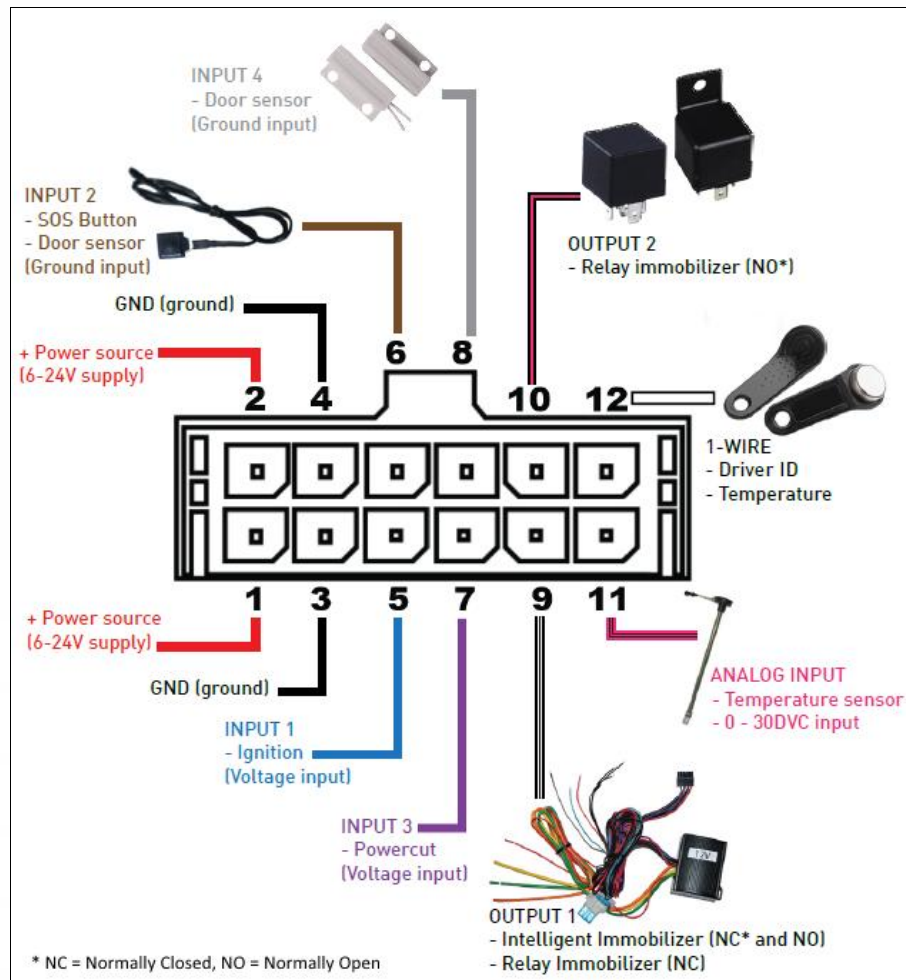
Possible input and output options:

Figure 11 – T23 Fleet inputs and outputs

Note:

- Only T23 Fleet has Analog input and 1-Wire interface.
- T23 all inputs are Voltage sensing and wire #11 is NC Output.
- T23 Track is the same as T23 Fleet, excluding Analog Input and 1-Wire interface.

9 T23 Series Accessories

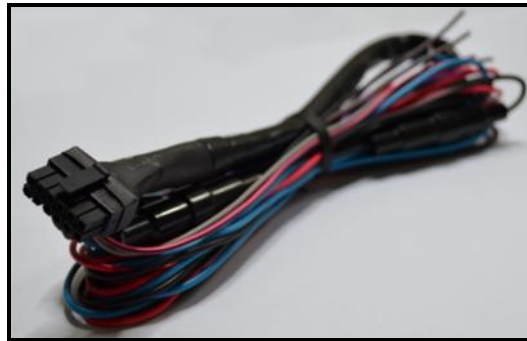Figure 12 – T23 and T23 Fleet-GPS (optional)

Figure 13 - T23 Series-IO
(Note: Supply T23 Series model information and target usage.)

Figure 14 - T23 Series-SOS (optional)

Figure 15 - T23 Series-USB + T23 Series-CLA (optional)

10 Troubleshooting

Problem: Unit does not turn on when the power switch is pressed	
Possible Cause:	Resolution:
Power switch was not pressed for 2 seconds or more.	Press power switch longer.
Battery needs charging (sometimes lights will be very dim).	Recharge battery. If battery is completely discharged then the Lights will not turn on for 1.5 hours.
Powers switch disabled by configuration.	Remove and re-insert the battery to turn unit on.

Problem: Unit does not respond to SMS	
Possible Cause:	Resolution:
GSM light is on or flashing.	Refer to GSM problem resolution.
GSM Network is slow.	Wait for SMS. Some GSM networks slow down during peak times or when they have equipment problems.
Unit is sleeping.	Wait for unit to wake up or activate the motion sensor.
User is not authorized.	Check that the user's phone number is added to the user list.
User does not have a high authority for the command.	Check the user's authority with the LISTUSER command. T23 Series will not respond to any unauthorized commands.

Problem: GSM light is always ON	
Possible Cause:	Resolution:
No GSM signal	Check with a mobile phone to see if there is a signal in the area or try to call the unit to see if you receive a ring tone.
No SIM card	Insert working SIM card. Check through a phone that the SIM can send SMS messages.
SIM card has expired.	Check through a phone that the SIM can send SMS messages. Replace SIM card if needed.
SIM has PIN code set.	Remove PIN code through a phone by inserting the SIM and delete the code.
SIM is warped or damaged.	Inspect SIM, clean the contacts. If re-inserting does not help try another SIM to see if it will work.
Roaming not enabled.	If you are in a different country your SIM account must have roaming enabled.
Battery is low (for portable use)	Recharge the unit for 5-15 minutes and the GSM will start working.
Unknown problem	Remove and re-insert the battery after 1 minute.

Problem: GSM light is flashing (T23 Series fails in sending message)	
Possible Cause:	Resolution:
No GSM signal	Check with a mobile phone to see if there is a signal in the area or try to call the unit to see if you receive a ring tone.
Network busy	Wait a few minutes to see if the message gets through.
Zero balance on pre-paid account.	Add credit to the account. Unit will recover on its own or send BOOT command to restart the device.
Phone number in user list is incorrect.	If you have just added a new user, check that the phone number is correct.

Problem: GPS light is on (T23 Series does not have a current location)	
Possible Cause:	Resolution:
Unit does not have clear view of the sky.	Move the unit to a location where the sky is visible. Tall buildings, trees, heavy rain, car tinting, can cause problems with the GPS reception.
Car tinting is blocking the GPS signal.	Move the unit outside the vehicle – if the light goes off then the tinting is blocking the signal. Either change the tinting in the windshield or install the optional T23 or T23 Fleet external GPS antenna outside the vehicle.
Unit has been moved a large distance without a location fix. Example: on a flight or train trip.	Remove and re-insert the battery to reset the location.

Problem: Owner has lost their phone	
Possible Cause:	Resolution:
N/A	If a backup owner has been defined then use their phone to add your new number in. Use OWNER,password to add your new number and then delete the old number with the DELUSER command.

Problem: Owner has forgotten their password	
Possible Cause:	Resolution:
N/A	The owner can send the RESETSETTINGS command to set the password back to 0000. All other settings are also reset as if the unit is new. The Owner will have to register the setting and users again.

Problem: Time stamp in the SMS reports is wrong	
Possible Cause:	Resolution:
T23 Series requires a GPS fix to determine the time zone and connection to the GSM network to determine the time. Time will show 00:00 Jan 01 on first use.	Wait for the GPS and GSM lights to go off then send the unit an SMS to check the time.
GSM Operator time is incorrect	Use the TIME command to override the GSM time. Some GSM operators have problems with DST and roaming phones.

Problem: Trip end report late and shows long idle time	
Possible Cause:	Resolution:
Motion detector is detecting movement and unit thinks trip is still active.	Reduce sensitivity of motion detector, or locate motion detector in different location.

Problem: Trip reports are received when vehicle is parked	
Possible Cause:	Resolution:
Vehicle is parked with a limited view of the sky so the GPS signals are weak and bounce off the buildings. This can generate short trip reports.	Turn off trip reporting when in these locations. If you are not interested in short trip reports Increase the minimum trip distance to 1 km or higher Set,MinTripDistance,1000

Problem: Vehicle shows as parked, but its moving	
Possible Cause:	Resolution:
Your T23 Series will report a state of Parked when a Trip has not been started which takes 300m, so if a FIND or any other report is received during this time, it will show the vehicle as "Parked".	None. Once a Trip Start is detected, the vehicle state will change to moving or stopped

As Tramigo constantly strive to improve products, all specifications are subject to change without notice. The information provided herein is believed to be correct at the time of going to press.