

Tramigo T22
User Manual
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1 Product Overview

Tramigo™ is a new and easy way to be connected with your vehicle. **Tramigo™** adds security and provides peace of mind by showing you with your mobile phone the real-time location of your vehicles.

Tramigo™ provides the most advanced tracking, safety and security features available in the market. **Tramigo™** combines the features of both a car alarm and a tracking device into one easy to use product.

Tramigo™ is the first GSM/GPS tracking product that works world wide. The geographical data is built in so the user's privacy is guaranteed. Information flows directly between the owner's phone and the car instead of a 3rd party geographic data server. **Tramigo™** works with any pre or post paid SIM card and with any GSM phone.

Users can be notified of events such as journeys, break-ins, towing, ignition on, speeding, and even know if the passengers need assistance. **Tramigo™** can also be used with trucks, boats, buses, trailers, and motorcycles.

All **Tramigo™** tracking products have the following features:

- Vehicle Tracking and Management
- Accurate GPS Satellite Positioning
- Personal Assistance Button
- SMS Support on any GSM network
- In-built Geographical Data
- Customizable Locations
- M1 Smart Phone software

Only **Tramigo™** offers:

Convenience – All of the features are available from a normal mobile phone the most common device our customers already own and carry with them. – A PC, web site or PDA is not required to use the system.

Low Operating Costs – The only truly stand-alone product; no monthly fees or multi-year contracts paid for service providers. **Tramigo™** users pay only the SMS they use.

Advanced Features – Our safety and security, tracking, and performance features exceed all of our competitors products combined.

Security - There is widespread concern about internet security and many firms don't want the location of their assets available on a public or 3rd party web server. They want control of the information at their location where they can ensure their data is secure. Due to the fact that the geographic data is built into the unit our product runs without a 3rd party server.

Your **T22** tracking unit has been simplified for rapid installation and can be installed using only the cigar lighter. T22 has the basic Tramigo™ features plus:

- Simplified installation
- Enhanced GPS
- Low Power Consumption
- Motion Detector
- Battery backup
- Voice calls



1.1 T22 Top Uses

- **Kid tracker** – Put a T22 in their backpack so can keep track of them. Be notified when they travel a specified distance from home or school
- **Silent Car Alarm** – Turn on the Alarm and be notified when someone is in your car, truck or boat. Motorcycle owners can be notified if someone knocks over their bike.
- **Towing Alert** – Be notified that your vehicle is being towed and find the location of the vehicle
- **Excess Speeding** – Set the speed limit and be notified when it's exceeded. Perfect for checking on new drivers.
- **Unauthorized use of vehicle** – Turn on Ignition reporting and be notified when someone is using your vehicle. Good when on holidays or when you take your car in for repairs.
- **Covert voice monitor** – Leave your T22 anywhere you want to remotely listen in. Good for checking on babysitters, car repairs, hotel rooms. Listen in when your car alarm goes off to hear what's happening.
- **Emergency calls** – T22 can receive calls and can make outgoing calls only to the numbers you specify. Now you can give someone a phone without worrying about large phone bills.
- **Personal Assistance** – Anytime you need help press the Tramigo logo and your friends are automatically notified of your location. Leave a T22 with your grandparents so they can get help without having to dial a phone. You can also listen in to hear what the problem is.
- **Luggage Minder** – Leave your T22 in your bag when it's out of your sight and be notified if someone opens it or picks it up. Good for laptop bags in airport lounges.
- **Door Alarm** – Put a T22 in a bag and hang in on your doorknob for an instant door alarm. You will receive a text when someone enters the room. Also good for cottages or any place you leave unattended since you can also plug the unit into a wall plug
- **Arrival Notification** – Notify your family automatically when you are almost home. Good for boat owners as well.
- **Expense reporting** – Use Trip reports to automatically keep track of your mileage for expense reports
- **Power monitor** – Plug a T22 into the wall power and be notified within a day that the power has been turned off. Good for vacation homes and boats.

For more information about Tramigo™ products and accessories for your T22 visit our website at www.tramigo.net

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3 Getting Started

This section will describe how to initialise T22 after installation. For more information on the installation of T22 into a vehicle, please consult the "T22 Installation Guide". This manual will detail the use of T22 after installation has taken place.

3.1 Hardware Features

T22 includes:

- T22 Control Unit with battery
- USB Power Cable
- CLA Adaptor to power from Cigar Lighter Plug
- Universal Wall Plug
- Quick Start Guide

3.2 Light and Button Functionality



Figure 1 - T22 Unit Controls

Your T22 has 3 lights to indicate the status of the unit. Green means ok and red means that you have a problem. T22 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 T22 is sleeping

GSM LED – Red:

On	T22 is not connected to the GSM network
Off	T22 is connected to the GSM network

Flashing	T22 can't send a SMS
GPS LED - Red:	
On	T22 does not have a GPS fix
Off	T22 has a GPS fix
Power Button	Press for 2 seconds to activate
Personal Assistance Button	Press for 2 seconds to activate
Phone Button	Press once to answer incoming call Press for 2 seconds to initiate outgoing call to User 1, press a second time to User 2, etc. Incoming call is indicated by the GSM and GPS lights flashing together.

3.3 First Use

- Please read the Quick Start Guide before proceeding.
- After your T22 has been installed into the vehicle you are ready to become the 'Owner'. Owner authority has access to all the T22 commands and features.
- Ensure that your T22 has had a SIM installed and that the SIM has not run out of credit.
- Charge the battery for 3.5 hours using the wall charger or the CLA adaptor for your car electrical socket. Power light is on solid during charging.
- Check that the Power LED on T22 is emitting a short flash every 5 seconds.
- Check that the GSM LED is off.
- Send the following SMS to your T22 in upper or lower case:
OWNER
- T22 will respond with a text message stating:
Tramigo: Owner, Please reply OWNER,YES to register as owner, 09:25 Jan 14
- Send the following SMS to your T22 in upper or lower case:
OWNER,YES
- T22 will respond with a text message stating:
Tramigo: Owner, +635551234 registered, 09:25 Jan 14
- This means that you are now the Owner of T22 and it will accept any commands that you issue to it, providing they come from the same mobile phone number as you used for this initialisation.
- Note: The 2 step process is done to prevent errant SPAM messaging from interfering with the registration process.
- At this point you should change your T22 password to ensure a high level of security. You can do this by sending a command via text message to T22 – old password is 0000 by default:
PASSWORD,<old_password>,<new_password>
PASSWORD,0000,903WOOD
- The new password that you specify can be up to 20 digits long using letters and numbers. If your command is successful, T22 will reply with:

Tramigo: Password, changed to 903WOOD, 09:25 Jan 14

- You may now wish to personalise your T22 by specifying a name. The name shows in the start of all SMS the unit sends to you. To do so, send a command via text message to T22:
NAME,Julie's Car
- The new name that you specify can have a maximum of 15 characters. If your command is successful, T22 will reply with:
Julie's Car: Name, OK, 09:25 Jan 14

T22 is now ready for use. Try sending a [FIND](#) command via text message to receive a message describing the position of your vehicle. See how to add other users in the [Authorization](#) section

3.4 Authorisation

Your T22 has a PASSWORD to prevent unauthorized users from accessing the unit. You can also use this PASSWORD to add a new phone number if you lose your phone.

If you want to provide other users with access to your T22 you need to add their mobile phone numbers using the ADDUSER command.

Remember that OWNER authority gives access to all the commands, so most times you will only grant FRIEND or GUEST access to other users.

If a user is not authorised to issue a command they will receive no response from the T22

To add users:

- You can also use the short form of the [ADDUSER](#) command:
AU,<phone number>,<security level>
- There are 3 authority levels:
 - OWNER – can send all commands – highest authority
 - FRIEND – doesn't get access to ADDUSER, DELUSER, DISABLE, ENABLE, NAME, PASSWORD, LANGUAGE, SET commands
 - GUEST – only allows FIND and HELP – lowest authority
- To add another user with FRIEND authority send:
AU,+5551234567,FRIEND
- You will receive a response
Tramigo: AddUser, +5551234567 has been added with authority FRIEND, 09:25 Jan 14
- You can display users with the [LISTUSER](#) (LU) command and delete users with the [DELUSER](#) (DU) command.
- If you lose your phone you send the Owner command with your password
OWNER,0000
- Once your new number is added you can delete your old number from the User list

4 Features

4.1 Location Directory

Built In Location Directory

T22 has an internal location directory, which can hold up to 7000 place names. Users can add up to 250 of their own places using the [ADDPLACE](#) command. These place names will be referenced in all reports that include the unit's location. You can also show geographic coordinates in your reports by using the [COORD](#) command.

4.2 Tracking Features

Each user with the correct authority has the option of turning on different types of automatic reports that will notify them of events that occur to the T22. See the commands section for a detailed explanation of all T22 commands.

FIND

T22 will respond to a [FIND](#) command by stating its current position and status. The message will state the location directory referenced location and whether T22 is parked or moving along with its current speed and heading. You can also send F or a blank SMS to receive a FIND report.

Automatic FIND

You can also have your T22 send automatic FIND reports triggered by time or distance travelled.

Nearest Locations

Using the NEAR parameter you can display the 3 nearest locations in case you don't recognize the closest one.

ALARM

The T22 has a built-in motion detector that you can activate using the [ALARM](#) command. When motion is detected you will receive an ALARM report. As a security backup your T22 will also notify you if your vehicle has moved 100m and the motion detector was not triggered.

TRIP

T22 can be configured to send a report at the start and end of every trip. This is done using the [TRIP](#) command. A trip is started when the unit has moved more than 300m and faster than 3 km/h. The trip ends after the unit has not moved for 15 minutes (configurable).

The TRIP end will include the following information:

Start position

End position
Time of journey
Distance travelled
Average and maximum speed

Speed

T22 can report when it's exceeded a speed limit you have set. Use the [SPEED](#) command to turn on this report.

Zone

T22 can report when it's within a specific distance from a location. The [ZONE](#) command can be used to notify you when your T22 leaves an area, or is approaching a place.

Ignition Report

For full installations T22 can be configured to send an Ignition report every time the ignition is switched on or off. You can turn this report on and off by using the [IGNITION](#) command.

NMEA Output

T22 outputs standard NMEA strings to the serial port, to be used with 3rd party navigation systems on PDA's and other devices. The availability of navigation varies in each country. NMEA will be outputted at a Baud rate of 115200. You require a special USB cable to connect to a PDA or other navigation device and a power source at the same time.

4.3 Phone Features

All phone features require the hands free kit option.

Listen

Users with OWNER authority can find out what's occurring in their vehicle with the [LISTEN](#) command. This command will have the T22 call your phone then you can hear the activity in your vehicle.

Voice Calls

The Phone button on your T22 can be used to call pre-programmed numbers. Simple press the button to call up to 3 SPEEDIAL numbers you have set up. You can also receive calls by pressing the Phone button. Incoming calls are indicated with a ring tone on the speaker and alternate flashing of the GSM and GPS lights.

4.4 Miscellaneous Features

Name Unit

You can personalise the name of T22 so that it will appear in the summary reports. This is done by using the [NAME](#) command.

Status

With the [STATUS](#) command you can see the status of the GSM network, GPS satellites, and battery power left. It also displays which reports you have turned on.

Settings

With the [SETTINGS](#) command you can see which reports you have turned on for all users, and system wide settings.

Power

You can be notified when the battery power drops below 20% with the [POWER](#) command.

4.5 Power Management

T22 conserves power by automatically going into sleep mode when the unit is idle. When in sleep mode all the unit lights are turned off. There are 4 sleep modes that progressively lower the power consumption. These modes are configurable using [SET](#) parameters.

1st mode shuts off GPS after 1 hour after a Trip ended or 10 minutes of inactivity

- Wakes up on incoming SMS, Trip Start, Charging
- Every hour, 5 minutes awake for 6 cycles (6 hours)

2nd mode shuts off GSM modem

- Wakes up on Trip Start, Charging
- Every hour, 5 minutes awake for 120 cycles (5 days)

3rd mode is same as 2nd

- Every day (1435 minutes) sleep, 5 minutes awake until 4th mode

4th mode shuts down when battery power is below 3.6v

- Wakes up only when charging

Notes:

- Motion detection wakes unit for 5 minutes then resumes current sleep mode
- Unit will not sleep when in a Trip or charging
- Unit will sleep if there are outgoing SMS that can't be sent due to network issues
- Automatic reports do not impact sleep mode
- If Power reporting is turned on a Low Power report is sent when the battery is below 3.65V (20%)

To turn off sleep mode send the command:

SET,Sleep,0

To turn sleep mode back on send the command:

SET,Sleep,1

Charging

Your T22 has a 1300mAh Li-Polymer rechargeable battery that provides power when your unit is not connected to the vehicle power. Charging time takes 3.5 hours and the unit power light is on solid during this time. You should always fully charge your unit before your first use because the battery will be drained from storage.

To charge the unit, connect the USB cable to the T22 and plug into the wall charger or the Cigar Lighter Adaptor for use inside your vehicle.

You can also use a USB port on a Windows XP computer to charge the unit if you install the USB Drivers first using the T22 USB Driver Setup.exe on the Tramigo CD (or download from www.tramigo.net).

5 Commands

T22 will only accept commands from a user with the correct authority. Unauthorized commands are ignored.

Commands are not case sensitive and common commands have a short form to save typing. Example for FIND you can send find, F, f, or a blank sms.

Each user must turn on the reports they require. To see which reports have been turned on by all users use the [SETTINGS](#) command.

5.1 Command Summary

Italicized parameters are optional

Security levels: 1 – Owner, 2 – Friend, 3 – Guest. Owner can also send all Friend and Guest commands, Friend can send all Guest commands

Type – U – User S – Support

Avail – P- Portable, F – Install version only, O – Optional accessory needed

User Commands

Command	Parameters	Alias	Security	Avail
AddPlace	placeName	AP	2	P
AddUser	phoneNum, <i>security</i>	AU	1	P
Alarm	<i>delay</i>	A	2	P/F/O
DelPlace	placeName	DP	2	P
DelUser	<i>userNumber</i>	DU	1	P
Disable	<i>password</i>	D	1	F/O
Find	<i>near/interval/off,distance/off</i>	F	3	P
Help	<i>command</i>	H	3	P
Ignition	<i>on/off</i>	I	2	F/O
Listen			1	P/O
ListUser	<i>userNumber/all</i>	LU	2	P
Lock	<i>time</i>	L	2	F/O
LowBalance	<i>number</i>	LB	1	P
Metric	<i>on/off</i>		2	P
Name	unitName	N	1	P
Owner	<i>password</i>		1 ¹	P
Password	oldPassword,newPassword		1	P
Power	<i>on/off</i>	P	2	P
Settings			2	P
Sms	phoneNum, <i>message</i>		2	P
Speed	<i>speedLimit/on/off</i>	S	2	P
SpeedDial	<i>slot,phoneNum</i>	SD	1	P/O
Status		ST	2	P
Time	gmtOffset		2	P
Trip	<i>on/off</i>	T	2	P
Unlock	<i>time,pulse</i>	U	2	F/O
Zone	<i>distance,placeName</i>	Z	2	P

¹ For first time use when no Owner is defined then unit will accept command from any phone number. Owner,password can also be issued from any phone.

Support Commands

These commands are used primarily by installation and support personnel

Command	Parameters	Alias	Security	Avail
Boot			2	P
Coord	<i>on/off</i>		2	
Debug	<i>on/off</i>		none	
Get	parameter id		2	
Language	<i>on/off</i>		1	
Set	parameter id,value		1	
Version			2	

5.1.1 Notes

1. Commands are not case sensitive, but parameters such as placeName can be.
2. Extra blanks should be ignored that occur before and after the command, and in placeName.
3. Up to 5 commands can be sent in one message using > symbol. Example TRIP>ALARM,OFF>STATUS can be sent in one SMS. The system response may exceed 1 SMS.
4. Incoming commands can be up to 80 characters in length.

5.2 Command Detail

Each Tramigo command is defined with the following:

Command:	command name. Tramigo is not case sensitive
Alias:	alternate commands that can be used
Parameters:	command options. If <i>italicized</i> then optional
Description:	brief description of the command
Related Cmds:	commands that are related
Security:	security level
Message Format:	format of the response to the user
Notes:	special behavior of the command
Errors:	error patterns
Examples:	samples of command usage and responses

5.2.1 AddPlace

Command: AddPlace, placeName
Alias: AP
Parameters: placeName – required. 40 characters maximum, no commas
Description: Adds a place to the user location directory.

Related Cmds: DelPlace
Security: Friend
Message Format: Command Response

Notes:

1. The current coordinates of the unit are used, so its best if the unit is parked.
2. Place names must be unique. Adding a place with an existing name overwrites the existing coordinates. Only the first part of the location name is used.
3. Place names are not case sensitive for lookup purposes but will display in the case entered by the user.
4. Special place name all is reserved
5. Commas and other invalid characters are substituted with blanks. Extra blanks are removed.
6. Once a place is added it will appear in location messages when it's the closest point to the vehicle.
7. The user locations are separate from the system locations that were pre-loaded to the unit. This allows reset of only the User added locations.

Errors:

1. Parameter Error
2. List Full Error

Examples:

ADDPLACE,Home

Tramigo: AddPlace, place Home added to the user locations, 09:25 Jan 14

5.2.2 AddUser

Command: AddUser,phoneNum,*security*
Alias: AU
Parameters: phoneNum – required. Phone number in international format
Example +63.....
Security – optional. owner, friend, or guest. If omitted then guest is assumed.

Description: Adds a user to the system

Related Cmds: DelUser, ListUser, Settings

Security: Owner

Message Format: Command Response

Notes:

1. Up to 10 users can be added to the system
2. When added each user is assigned a user number from 1 to 10. This number is referenced in the [SETTINGS](#) report, and in the [LISUSER](#) report
3. Be careful adding other users with OWNER authority – they have access to all commands and can even delete you from the list.
4. Full international format numbers should be used example +852...
5. Adding the same phoneNumber will only replace the existing one and keep the current report settings. This can be done to change the user's authority.
6. To reset a user's reporting just delete and re-add the user.

Errors:

1. Parameter Error
2. List Full Error

Examples:

To add a user with FRIEND authority:

AddUser,+63025551234,friend

**Tramigo: AddUser, +63025551234 has been added with authority FRIEND, 09:25
Jan 14**

5.2.3 Alarm

Command: Alarm,*on/off*
Alias: A
Parameters: *on/off* – optional - Sets alarm reporting on or off.
Description: Turns on and off alarm reporting for the user.

Related Cmds: none
Security: Friend
Message Format: Command Response

Notes:

1. Alarm will ignore inputs when the ignition is turned on, when a trip is in progress.
2. When an alarm event is detected a Location message is sent to Owners and all users that have ALARM turned on
3. Alarm also enables the shock sensor
4. Alarm also enables the security shield (a special system ZONE with a distance of 0.1 km)
5. Alarm reporting is shut off after 1 report. User must turn on Alarm reporting to reactivate.

Errors:

1. Parameter Error

Examples:

ALARM

Tramigo: Alarm, reporting is turned on, 09:25 Jan 14

ALARM,OFF

Tramigo: Alarm, reporting is turned off, 09:25 Jan 14

When the shield is detected:

Tramigo: shield alarm detected, moving, 0.33 km NE of Big Splash,Marine Parade,SG, SW at 24 kmh, 09:25 Jan 14

When the shock sensor is detected:

Tramigo: motion alarm detected, parked, 0.23 km NE of West Coast Ferry Terminal,Clementi,SG, 09:25 Jan 14

5.2.4 Boot

Command: Boot
Alias: none
Parameters: none
Description: Restarts the Tramigo application code in the unit

Related Cmds: none
Security: none
Message Format: Command Response

Notes:

1. The GSM modem and GPS receiver are reset.
2. Used primarily by support but can be used when the unit is not responding.

Errors: none

Examples:

BOOT

Tramigo: Boot, OK, 09:25 Jan 14

5.2.5 Coord

Command: Coord,on/off/*format*
Alias: none
Parameters: on/off/*format* – optional, dms for degrees, minutes, seconds (default) or dec for decimal degrees
Description: Sets on and off coordinate display in Location messages or changes the formatting. Default is off.

Related Cmds: none
Security: Friend
Message Format: Command Response

Notes:

1. Coordinates are displayed in signed decimal degrees (-14.23354) or degrees minutes seconds format (14'33"12S)
2. Either format can be cut and pasted into Google Earth
3. Decimal degrees have 5 digits of precision
4. Format setting is retained until changed
5. Coordinates always display personal assistance events

Errors: none

Examples:

Coord,ON

Tramigo: Coord, reporting turned on, 09:25 Jan 14

Coord,dms

Tramigo: Coord, DMS reporting turned on, 09:25 Jan 14

5.2.6 *Debug*

Command: Debug,on/off
Alias: none
Parameters: on/off
Description: Sets on and off debug output to the USB port

Related Cmds: none
Security: none
Message Format: Command Response

Notes:

1. Debug output defined under diagnostics section.
2. Used by support personnel

Errors: none

Examples:

Debug,ON

Tramigo: Debug, reporting turned on, 09:25 Jan 14

5.2.7 DelPlace

Command: DelPlace,placeName

Alias: DP

Parameters: placeName – required. Must be a valid place name. Parameter all can be used to delete all the entries in the user location directory.

Description: Deletes a place from the user location directory.

Related Cmds: AddPlace

Security: Friend

Message Format: Command Response

Errors:

1. Parameter Error
2. Lookup Error

Notes:

1. To delete all the user locations the special placeName all can be used.
2. DelPlace will delete from either the system or user location directory.
3. If there are multiple records with the same placeName, then delete the closest place to the current position.

Examples:

DELPLACE,Glorietta Mall

Tramigo: DelPlace, Glorietta Mall deleted, 09:25 Jan 14

DELPLACE,all

Tramigo: DelPlace, All user locations deleted, 09:25 Jan 14

5.2.8 DelUser

Command: DelUser,*userNumber*
Alias: DU
Parameters: *userNumber*. Each user is assigned a number from 1 to 10 when added. all removes all non-owners.

Description: Deletes a user from the system

Related Cmds: AddUser,ListUser
Security: Owner
Message Format: Command Response

Notes:

1. You find the user number with the ListUser command
2. ALL is used to remove all of the non-owners from the user list

Errors:

1. Parameter Error
2. Lookup Error

Examples:

DELUSER,2

Tramigo: DelUser, Deleted user 2 +635552345900, 09:25 Jan 14

To remove all non-owners:

DELUSER,all

Tramigo: DelUser, all non-owners deleted, 09:25 Jan 14

5.2.9 Disable

Command: Disable,on/off,*password*

Alias: D

Parameters: on/off
password – optional and only needed when disabling the vehicle

Description: Toggles the vehicle immobilization (disables/enables the ignition from starting)

Related Cmds: none

Security: Owner

Message Format: Command Response

Notes:

1. When disabling, if the ignition is currently on then the command will not take effect for 45 seconds after the ignition is turned off and the user should be notified after the delay. If the ignition is off the command is executed immediately.
2. Ignition detection must be connected.
3. The output line to the immobilizer relay is only powered when starting the car and DISABLE has not been set.
4. To reset this the owner would send the DISABLE,off command to allow the vehicle to be started.

Errors:

1. Parameter Error

Examples:

DISABLE,on,123456

When enabled and the ignition is off

Tramigo: Disable, Vehicle ignition disabled, 09:25 Jan 14

DISABLE,on,123456

When enabled and ignition is on

Tramigo: Disable, Vehicle ignition will be disabled 45 seconds after the ignition is turned off, 09:25 Jan 14

Later when the command is executed

Tramigo: Disable, vehicle ignition disabled, 09:45 Jan 14

DISABLE,off

Tramigo: Disable, vehicle ignition enabled, 09:45 Jan 14

5.2.10 Find

Command: Find, *NEAR/time/off,distance/off*
Alias: F, where, location, blank
Parameters: *near* – optional. Also returns the next 3 nearest places (First part of the location name only)
time – optional. Creates automatic FIND reports
off – optional. Turns off automatic time FIND reports
distance – optional. Creates automatic FIND reports
off – optional. Turns off automatic distance FIND reports

Description: Returns the state and location of the vehicle.

Related Cmds: COORD, METRIC

Security: Guest

Message Format: Location

Notes:

1. A blank SMS will issue the find command if the user is authorized otherwise it will be ignored.
2. Once the first GPS fix is received by the unit the FIND will always return a valid position. If there is no existing position then the string unknown position is returned.
3. Old GPS position is displayed when the last GPS fix is over 5 minutes old.
4. Date and time on location messages is the time of the last valid GPS position
5. Location will not change when IGNITION is off unless a TRIP is started or the vehicle has moved more than 300m
6. To determine presence:
 - a. Parked – vehicle is not in a Trip and not moving
 - b. Moving – vehicle is in a Trip
 - c. Stopped – vehicle is in a Trip and not moving
7. Automatic timed reports can be from 1 to 1440 minutes or daily or weekly. When in sleep mode the report will be sent when the unit wakes up next.
8. Automatic distance reports can be from 1 km to 10,000km
9. When in sleep mode all automatic reports will be sent only when the unit wakes up next.
10. Automatic reports are only sent to user who requested the report. Each user has their own interval.
11. Advanced command F,near,4 will return nearest 4 places. Max is 5

Errors:

1. Parameter Error

Examples:

Car is moving:

FIND

Tramigo: moving, 0.23 km NE of Glorietta Mall, Makati, PH, SW at 24 kmh, 09:25 Jan 14

Car is parked at the location and has an old GPS position and COORD,on:

Tramigo: parked, at Tramigo Office, Belair, Makati City, PH, N14'33"31, E121'01"09, old position, 09:35 Oct 7

Unit has never had a GPS fix:

Tramigo: parked, unknown position, 00:00 Jan 01

FIND,near

Tramigo: nearest locations: 0.05 km SW of Tramigo Office, 0.08 km N of Ayala Avenue-Rufino Street, 0.24 km E of Makati Sports Club, 09:43 Oct 7

Automatic reports

FIND,1,2.5

Tramigo: periodic find activated, report interval 1 minutes, 2.50 km, 16:35 Oct 9

FIND,,5

Tramigo: periodic find activated, report interval 5.00 km, 16:34 Oct 9

FIND,off

Tramigo: periodic find deactivated, 17:06 Oct 9

5.2.11 Get

Command: Get,parameter id
Alias: none
Parameters: parameter id
Description: Reports the setting of a parameter

Related Cmds: Set
Security: Friend
Message Format: Command Response

Notes:

1. Used by support personnel and advanced users

Errors:

1. Lookup Error

Examples:**GET,P_SMODE_ENABLE**

Tramigo: Get, parameter P_SMODE_ENABLE, value 1 (0x00000000), 09:25 Jan 14

5.2.12 Help

Command: Help,*command*
Alias: H, ?
Parameters: *command*
Description: Provides information on how to use a command.

Related Cmds: none
Security: Guest
Message Format: Command Response

Notes:

1. No parameter will return a list of the most common commands
2. Short forms for the commands will be used to save space

Errors:

1. Parameter Error

Examples:

HELP

Tramigo: Help, F - Find, S – Speed, T – Trip, ST – Status, AU – Add User, LU, List User, DU – Delete User, AP – Add Place, DP – Delete Place, A – Alarm, Z – Zone, email: support@tramigo.com, 09:25 Jan 14

HELP,Z

Tramigo: Help, Zone: Z,distance/off,placeName, 09:25 Jan 14

5.2.13 Ignition

Command: Ignition,*on/off*
Alias: I
Parameters: *on/off* - optional - Sets ignition reporting on or off
Description: Turns ignition reporting on or off for the user.

Related Cmds: none
Security: Friend
Message Format: Command Response

Notes:

1. The unit must be connected to the ignition circuit to detect when the ignition is turned on or off. This report is not recommended for quick installs as you will receive false ignition reports.
2. When using a connection to the ignition circuit set the following parameters:
 - a. SET,IngitionInputShock,0
 - b. SET,IngitionInputGPIO,1

Errors:

1. Parameter Error

Examples:

IGNITION,on

Tramigo: Ignition, reporting turned on, 09:25 Jan 14

IGNITION,OFF

Tramigo: Ignition, reporting turned off, 09:25 Jan 14

When ignition is turned on:

Tramigo: Ignition on detected, parked, 0.15 km NE of Kemaman Hospital, ,Chukai,Terengganu,MY, 09:25 Jan 14

When ignition is turned off:

Tramigo: Ignition off detected, parked, 0.30 km S of Kelab Darul Ehsan,Setapak,KL,MY, 09:25 Jan 14

5.2.14 Language

Command: Language, *on/off*
Alias: none
Parameters: *on/off* - optional – Turns on or off the alternate language
Description: Sets the language for the unit.

Related Cmds: none
Security: Owner
Message Format: Command Response

Notes:

1. Unit can have an alternate language loaded. VERSION command shows which language file (LF) is loaded.
2. Unit commands and reports will switch to the alternate language when turned on
3. System commands such as BOOT remain in English

Errors:

1. Parameter Error

Examples:

LANGUAGE,on

Tramigo: Language, turned on, 09:25 Jan 14

5.2.15 Listen

Command: Listen
Alias: none
Parameters: none
Description: Allows a user to listen to the vehicle cabin

Related Cmds: none
Security: Owner
Message Format: Command Response

Notes:

1. Command initiates an outgoing call to the User. The User can then answer the call and listen to vehicle cabin.
2. There is no indication in the vehicle that the call is in progress
3. Calls from unauthorized users are ignored and not answered
4. The owner(s) receives a message that the event occurred

Errors: none

Examples:

When the call is initiated by user 3:

Tramigo: Vehicle voice monitor activated by User 3, 09:25 Jan 14

5.2.16 ListUser

Command: ListUser, *userNumber/all*
Alias: LU
Parameters: *userNumber* - optional - Lists the full details for a specific user
all - optional - Lists details for all users
blank - provides a summary.

Description: Lists the users and their reporting status in the system

Related Cmds: none
Security: Friend
Message Format: Command Response

Notes:

1. If no parameters are used then a list of all users is provided. Only the last 4 digits of the phone number are displayed. LU,number can be used to get a detailed list for one user.
2. The detailed listing also provides the reporting that the user has subscribed to
3. Parameter ALL reports a detailed list for all users. May be a multi-part SMS.
4. Users can be in a different country than the T22 if roaming is enabled on the T22 SIM and the user's SIM
5. User PC is used when connected to a computer where you can send commands from the T22 M1 application

Errors:

1. Parameter Error
2. Lookup Error

Examples:

LISTUSER

Tramigo: ListUser,1-2345 2-4556 3-8992, 09:25 Jan 14

LISTUSER,3

Tramigo: ListUser, #3 +35855558992 Guest – Reports: Alarm - Trip, 09:25 Jan 14

LISTUSER,ALL

Tramigo: ListUser, #1 +63906433333 Friend - reports: none, #2 +15552221234 Owner - reports: Power - Trip - Speed - Zone, 19:31 Feb 16

5.2.17 Lock

Command:	Lock, <i>time</i>
Alias:	L
Parameters:	<i>time</i> – optional – Time in milliseconds that the output line is active. Default is 3000.
Description:	Locks the vehicle doors
Related Cmds:	Unlock
Security:	Friend
Message Format:	Command Response

Notes:

1. Lock parameters are set at installation time and are persistent
2. Full vehicle installation is required

Errors:

1. Parameter Error

Examples:**Lock**

Tramigo: Lock, OK, 09:25 Jan 14

5.2.18 LowBalance

Command: LowBalance,*number/off*

Alias: LB

Parameters: *number*– optional – phone number
off– optional – turns off

Description: Sets phone number that the GSM operator sends low balance notification from. Default is off.

Related Cmds: none

Security: Owner

Message Format: Command Response

Notes:

1. Any SMS coming from the specified phone number (find phone number from GSM operator) will be sent to all users with Owner authority. Used when GSM operator has low balance notification SMS.
2. Do not enter your phone number – enter the number that low balance messages come from.
3. Number only has to be set the first time. System wide command.

Errors:

1. Parameter Error

Examples:

LowBalance,220

Tramigo: LowBalance, SMS from 220 will be forwarded to Owner, 09:25 Jan 14

LowBalance,off

Tramigo: LowBalance, reporting turned off, 09:25 Jan 14

5.2.19 Metric

Command: Metric, *on/off*
Alias: none
Parameters: *on/off* – optional - on = metric units used, off = imperial units used.
Description: Selects metric or imperial measurement. Default is metric

Related Cmds: none
Security: Friend
Message Format: Command Response

Notes:

1. km or kmh are used for metric. mi or mph are used for imperial in all distances
2. If changed then Zone distance is displayed in new measurement unit

Errors: none

Examples:**Metric**

Tramigo: Metric, turned off – Miles will be used, 09:25 Jan 14

Metric,ON

Tramigo: Metric, turned on – Km will be used, 09:25 Jan 14

5.2.20 Name

Command: Name, *unitName*
Alias: N
Parameters: unitName – name that will be used for the unit. Default is Tramigo.

Description: Changes the vehicle name

Related Cmds: none
Security: Owner
Message Format: Command Response

Notes:

1. Maximum length is 15 characters, extra characters are automatically truncated
2. Limited characters allowed, letters, numbers, blank, hyphen, single quote Other characters are converted to blanks.
3. unitName is used on all Location and Command Response message formats

Errors:

1. Parameter Error

Examples:

NAME,Julie's Car

Julie's Car: Name, OK, 09:25 Jan 14

5.2.21 Owner

Command: Owner,*password*
Alias: none
Parameters: *password* – optional, system password
Description: Registers the owner of a unit

Related Cmds: none
Security: none
Message Format: Command Response

Notes:

1. The password is needed when there is an existing Owner defined in the user list
2. User will receive a confirmation SMS that must be responded to with OWNER,YES
3. There can be more than one Owner defined in the user list if needed as backup
4. All current Owners are notified when a new Owner is added for security reasons

Errors:

1. Parameter Error

Examples:

OWNER

Tramigo: Owner, Please reply OWNER,YES to register as owner, 09:25 Jan 14

**Then send:
OWNER,YES**

Tramigo: Owner, +635551234 registered, 09:25 Jan 14

5.2.22 Password

Command:	Password,oldPassword,newPassword
Alias:	none
Parameters:	oldPassword – system password newPassword – new system password
Description:	Changes the system password
Related Cmds:	Disable,Owner
Security:	none
Message Format:	Command Response

Notes:

1. The password can be 20 characters in length. Letters and numbers only. Not case sensitive
2. Default password is 0000

Errors:

1. Parameter Error

Examples:

PASSWORD,0000,903WOOD

Tramigo: Password, changed to 903WOOD, 09:25 Jan 14

5.2.23 Power

Command: Power,*on/off*
Alias: P
Parameters: *on/off* – optional - Turns power reporting on or off.
Description: Turns on and off power reporting for the user. Default is on

Related Cmds: none
Security: Friend
Message Format: Command Response

Notes:

1. Power reporting will notify the user when the battery capacity is below 20%

Errors: none

Examples:

POWER,ON

Tramigo: Power, reporting turned on, 09:25 Jan 14

When the internal battery is low:

Tramigo: Low power, parked, 0.25 km NE of Keming Primary School,Bukit Batok,SG, 09:25 Jan 14

5.2.24 Set

Command: *Set,parameter id,value*
Alias: none
Parameters: *parameter id,value*
Description: Sets a parameter with a value

Related Cmds: Get
Security: Owner
Message Format: Command Response

Notes:

1. Used for parameters that can be set when unit is configured prior to installation. These parameters are not frequently changed by the typical user
2. Parameter ID or value is not case sensitive
3. To reset all parameters back to factory settings use SET,DEFAULTS
4. See [T22 Parameters](#) for a complete list of parameters
5. The SET,DEFAULTS command can be used to set all the parameters back to the factory settings

Errors:

1. Lookup Error
2. Parameter Error

Examples:

To turn off start of trip reports

SET,TripStart,0

Tramigo: Set, parameter TripStart, value 0, 09:25 Jan 14

5.2.25 Settings

Command: Settings
Alias: none
Parameters: none
Description: Displays the unit settings

Related Cmds: none
Security: Friend
Message Format: Command Response

Notes:

1. Can exceed 160 characters. SMS split should be only after a complete setting
2. When a report setting is shown the numbers show the user numbers who have requested the report
3. Only report settings that are set ON will display
4. Used primarily for support. Users will use Status command.
5. RESETSETTINGS command is used to restore all factory defaults

Errors: none

Examples:

SETTINGS

Tramigo: Settings, Alarm=1/2/6, Ignition=1, Power=1, Speed=1, Trip=4, Zone=2/3, User Locations=22, System Locations=5344, Coord=Dec, Debug=on, Disable=on, Low Balance=4334, Metric=on, Shield=on, Speed=3/100, Time=+8, Trip End=5, Zone=5/Home, 09:25 Jan 14

5.2.26 Sms

Command: phoneNum,*message*

Alias: none

Parameters: number – phone number
message – optional - text message up to 56 characters

Description: Sends a SMS text message.

Related Cmds: none

Security: Owner

Message Format: Command Response

Notes:

1. If message parameter is omitted then a blank message is sent.
2. Commas are allowed in the message text
3. > symbol can't be used as this character is used to send multiple commands
4. Can be used to request a balance report for pre-paid GSM accounts that is forwarded to the Owner with the LowBalance command

Errors:

1. Parameter Error

Examples:

SMS,222

Tramigo: SMS sent to 222, 09:25 Jan 14

SMS,+358400200,yes

Tramigo: SMS yes sent to +358400200, 09:25 Jan 14

5.2.27 Speed

Command: Speed, *speedLimit/on/off*
Alias: S
Parameters: *speedLimit* – optional – Value from 10 to 300 kmh
Default is 120

Description: Turns on and off speed reporting for the user.

Related Cmds: none
Security: Friend
Message Format: Command Response

Notes:

1. GPS positions should be filtered to avoid false speed reports due to bad positions.
2. Report should not occur again until the speed limit is exceeded after the speed has decreased by 50km – set with P_SPEED_LIMIT_FILTER
3. Speed limit is set per user

Errors:

1. Parameter Error

Examples:

SPEED,110

Tramigo: Speed, speed limit 110 km/h, reporting is turned on, 09:25 Jan 14

When the vehicle exceeds 110 kmh:

**Tramigo: speed limit detected, moving, 0.22 km NE of Bangkok City Hall,
Phranakhon, Bangkok, TH, SW at 115 kmh, 09:25 Jan 14**

5.2.28 SpeedDial

Command: *slot,phoneNum*
Alias: SD
Parameters: *slot*- optional – Value from 1 to 3
phoneNum - optional
Description: Configures speed dial numbers

Related Cmds: none
Security: Owner
Message Format: Command Response

Notes:

1. Requires optional hands free kit
2. Up to 3 pre-defined numbers can be defined to initiate outgoing calls from T22
3. Pressing the phone button once for 1 second will call the phone number in slot 1, pressing twice will call phone number 2, etc.
4. To hang up press the phone button.
5. SD with no parameters displays the defined phone numbers
6. To erase a number omit the phone number

Errors:

1. Parameter Error

Examples:

To add an entry to slot 1

SPEEDDIAL,1,+5512345678

Tramigo: SpeedDial, +5512345678 added as speed dial 1, 09:25 Jan 14

To display all numbers using the short form of the command

SD

Tramigo: SpeedDial, 1 - +5512345678, 2 - +555456789, 09:25 Jan 14

To delete a entry

SPEEDDIAL,1

Tramigo: SpeedDial, speed dial 1 deleted, 09:25 Sep 18

5.2.29 Status

Command: Status
Alias: ST
Parameters: none
Description: Displays the unit status and user's settings

Related Cmds: none
Security: Friend
Message Format: Command Response

Notes:

1. Only settings that are set ON for the user will display
2. For each report turned on the parameters are also shown in brackets
3. TripEndTime in minutes is show in brackets after the Trip report indicator – example Trip (15).

Errors: none

Examples:

STATUS

Tramigo: Status, GSM: 80%, GPS: 60%, Battery: 100%, Reports: Alarm, Trip (15), 09:25 Jan 14

5.2.30 Time

Command: Time,gmtOffset
Alias: none
Parameters: gmtOffset – number of hour's adjustment from GMT
Description: Adjusts the timestamp in messages to local time

Related Cmds: none
Security: Friend
Message Format: Command Response

Notes:

1. Normally GMT offset from the SMS is used. This command overrides the SMS value. Time,off reverts back to SMS GMT offset.
2. Used when GSM operator time is not correct
3. Valid values are +12.0 to -12.0 and off

Errors:

1. Parameter Error

Examples:

TIME,8

Tramigo: Time, adjusted to GMT + 8 hours, 09:25 Jan 14

5.2.31 Trip

Command: Trip, *on/off*
Alias: T
Parameters: *on/off* – optional - Turns Trip reporting on or off
Description: Controls Trip reporting

Related Cmds: none
Security: Friend
Message Format: Command Response, Trip

Notes:

1. Reports when a trip has started and ended.
2. Trip starts when ignition on is detected and when the speed is > 6 kmh and unit has moved more than 300m
3. If ignition detection is not available then the trip start is determined when the speed is > 3 kmh and the unit has moved more than 300m.
4. Trip ends when ignition off is detected or the vehicle is idle longer than the TripEndTime (default 15 min). This is to prevent a false trip break when stopping for gas or traffic. TripEndTime is show in the [STATUS](#) report.
5. Trips less than 300m are ignored
6. Idle is < 3 kmh.
7. Can exceed 160 characters. Only the first part of the location name is used when the message length exceeds 1 SMS
8. Trip start reports can be turned on/off with the TripStart parameter

Errors:

1. Parameter Error

Examples:

To turn on reporting

TRIP,ON

Tramigo: Trip, reporting turned on, 09:25 Jan 14

When a trip is started the following message is sent:

Tramigo: Trip started, 3.23 km NE of Glorietta Mall Manila PH, 09:25 Jan 14

When a trip is completed the following message is sent:

Tramigo: Trip report, Start: 12:45 Jan 13, 3.23 km NE of Glorietta Mall, End: 14:00 Jan 13, 4.13 km W of Alabang Town Center, Trip time: 1:15, Distance: 45 km, Max Speed: 79 kmh, Avg Speed: 25 kmh, Idle time: 0:12, 09:25 Jan 14

5.2.32 Unlock

Command: Unlock, *time, pulse*

Alias: U

Parameters: *time* – optional – Time in milliseconds that the output line is active. Default is 800.
pulse – optional – Number of pulses sent. Default is 1

Description: Unlocks the vehicle doors

Related Cmds: Lock

Security: Friend

Message Format: Command Response

Notes:

1. Unlock parameters are set at installation time and are persistent
2. Parameters vary by vehicle make and model
3. Requires full vehicle installation

Errors:

1. Parameter Error

Examples:

Unlock

Tramigo: Unlock, OK, 09:25 Jan 14

5.2.33 Version

Command: Version
Alias: none
Parameters: none
Description: Displays the software and hardware versions

Related Cmds: none
Security: Friend
Message Format: Command Response

Notes:

1. Used for support purposes
2. IMSI is only available when the GSM modem is connected to the network
3. IMEI is needed for warranty claims

Errors: none

Examples:

STATUS

Tramigo: Firmware version: 0.8.32, LD: T22 RP Philippines,Version=03.10, LF: Tagalog,Version=1.0, GSM: TC63 REVISION 01.021, IMEI: 355633000377753, IMSI: 515022400620398, 16:03 Mar 7

5.2.34 Zone

Command: *Zone,distance/on/off,placeName*

Alias: *Z*

Parameters: *distance* – optional. Distance is in the units used by the system. Default is 1. Minimum is 0.1 maximum is 999.
placeName – optional. Name of the location. Default is the current location of the vehicle.

Description: Turns Zone reporting on and off. Notifies user when the vehicle is entering or leaving an area. The area is defined by a circle with a radius defined by the distance from the place name.

Related Cmds: None

Security: Friend

Message Format: Command Response

Errors:

1. Parameter Error
2. Lookup Error

Notes:

1. Zone crossing is reported whenever the unit crosses a circle with radius of *distance* from the *placeName*
2. Once a crossing is detected there is a 10 minute delay between reports
3. Adding a new Zone will replace the current active Zone
4. Once distance is set it remains the default for future Zone commands until changed.
5. The user can enter a partial string for the *placeName*, and if a unique name is not found then the system will select the closest *placeName*. Lookup is only done on the first name field of the location.

Examples:

ZONE

Tramigo: Zone, Vehicle will report when 1 km from current Location, 1.1 km W of Glorietta Mall, 09:25 Jan 14

ZONE,5,home

Tramigo: Zone, Vehicle will report when 5 km from, Home, 09:25 Jan 14

When the Zone crossing is detected the following report is sent to the user:

Tramigo: Zone crossing detected, moving, 0.11 km NE of Berjaya Times Square,Kuala Lumpur,KL,MY, SW at 33 kmh, 09:25 Jan 14

6 Troubleshooting

Problem: Unit will not turn on when pressing the power switch	
Possible Cause:	Resolution:
Power switch was not pressed for 2 seconds or more	Press power switch longer.
Battery is not installed	Check that battery is installed and close battery cover. Battery is needed to power the unit even when connected to a power source
Battery needs charging	Recharge battery. If battery is completely discharged then the Lights will not turn on for 1.5 hours
Power switch disabled	Remove and re-insert the battery
Problem: Unit will not respond to SMS	
Possible Cause:	Resolution:
GSM light is on or flashing	Refer to GSM problem resolution
Unit is sleeping	Wait for unit to wake up or activate motion detector.
User is not authorised	Check that user's phone number is added to the user list.
User is does not have a high enough authority for the command	Check the user's authority with the LISTUSER command. T22 will not respond to any unauthorised commands.
Problem: GSM light is on solid	
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 your receive a ring tone.
No SIM card	Insert working SIM card. Check in phone that the SIM can send SMS messages.
SIM card has expired	Check in phone that the SIM can send SMS messages. Replace SIM card if needed.
SIM has PIN code set	Remove PIN code by inserting SIM in you phone and deleting the code.
SIM is warped or damaged	Inspect SIM and try another 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	Recharge the unit for 5 minutes and the GSM will start working.
Unknown problem	Remove and re-insert the battery.
Problem: GSM light is flashing (T22 is trying to send a SMS but having a problem)	
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 your 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 quickly
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 (T22 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 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 external GPS antenna outside the vehicle.
Unit has been moved a large distance without a location fix. Example: on a flight.	Remove and re-insert the battery to reset the location.
Problem: Owner has lost their phone	
Possible Cause:	Resolution:
	If a backup owner has been defined then use their phone to add your new number in. Use OWNER,password to add you new number in then delete the old number with the DELUSER command
Problem: Owner has forgotten their password	
Possible Cause:	Resolution:
	The owner can send the RESETSETTINGS command to set the password back to 0000. All other settings are also reset as if the unit was new.
Problem: Time stamp in the SMS reports is wrong	
Possible Cause:	Resolution:
T22 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 when first used.	Wait for the GPS and GSM lights to go off.
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 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 of buildings. This can generate short trip reports	Turn off trip reporting when in these locations.

Problem: Vehicle shows as parked, but its moving	
Possible Cause:	Resolution:
You T22 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 as Parked.	None

7 T22 Parameters

T22 parameter defaults are changed with the [SET](#) command and displayed with the [GET](#) command.

Boolean units are 1 for on and 0 for off.

Important: Changing the parameters can greatly impact the behaviour of the unit, so only advanced users should change the default values. Use the SET,DEFAULTS command to return all the settings back to the factory defaults.

Name	Default	Units	Comment
MovingSpeed	6	km/h	Speed threshold to decide if the vehicle is moving or stopped
UseIgnition	1	boolean	Use ignition input (GPIO wired or shock) in vehicle state handling
IgnMinSat	7		If the number of satellites in fix is greater than this value, ignition off is ignored
DisableShockSensor	0	boolean	Disable shock sensor
DisablePowerButton	0	boolean	Disable power button
GPSIgnitionDistLimit	300	m	Distance limit (from locked coordinates) to turn ignition on
GPSIgnitionDistLimit3Sat	3000	m	Distance limit (from locked coordinates) to turn ignition on if navigating with 3 satellites
MaxDistanceAtLocation	50	m	Maximum distance from a landmark to report "at location"
IgnitionOnAvgSpeed	30	km/h	Minimum average speed to prevent ignition off (applies only to shock/ignition detection)
IgnitionOnMaxSpeed	30	km/h	Maximum speed max-min difference to prevent ignition off (applies only to shock/ignition detection)
MinTripDistance	300	m	Minimum trip distance
TripMaxReportLength	160	chars	Maximum trip report length with complete names (otherwise only the first part of the location name is used)
TripEndTime	15	min	Trip end time
TripStart	0	boolean	Trip start reports enabled/disabled
TripStartLockDistance	500	m	Distance limit to use previous trip end location as the new start location
ShockCount	3		Shock sensor sensitivity: loop counter
ShockTimeout	1000	ms	Shock sensor sensitivity: timeout
PowerButtonHoldTime	2	s	Required duration of power button press
PanicButtonHoldTime	2	s	Required duration of panic button press
WakeOnShock	1	boolean	Wake up from sleep on shock sensor input
WakeOnIgnition	1	boolean	Wake up from sleep on ignition input
Sleep	1	boolean	Enable sleep mode
SleepTimeoutWake	10	min	Sleep timeout from the last wake trigger
SleepTimeoutIgnition	60	min	Sleep timeout from ignition switched off
NoSleepInTrip	1	boolean	Don't go to sleep if a trip in progress
NoSleepGSM	0	boolean	Don't go to sleep if GSM not registered to network
NoSleepDisabled	1	boolean	Don't go to sleep if the vehicle is immobilized
NoSleepCharge	1	boolean	Don't go to sleep if the battery is being charged

Name	Default	Units	Comment
Sleep1OnTime	5	min	On time in sleep mode 1
Sleep1OffTime	55	min	Off time in sleep mode 1
Sleep1Repeats	6		Number of repeats in sleep mode 1
Sleep1GsmOff	0	boolean	GSM turned off in sleep mode 1
Sleep2OnTime	5	min	On time in sleep mode 2
Sleep2OffTime	55	min	Off time in sleep mode 2
Sleep2Repeats	120		Number of repeats in sleep mode 2
Sleep2GsmOff	1	boolean	GSM turned off in sleep mode 2
Sleep3OnTime	5	min	On time in sleep mode 3
Sleep3OffTime	1435	min	Off time in sleep mode 3
Sleep3Repeats	0		Number of repeats in sleep mode 3
Sleep3GsmOff	1	boolean	GSM turned off in sleep mode 3
SpeedLimitFilter	50	km/h	After a speed limit report, the speed must drop this much below the limit until more reports are sent
VoltageShutdown	3500	mV	Low voltage shutdown limit
VoltageWarning	3650	mV	Low voltage warning limit
VoltageWarningFilter	100	mV	After a low voltage report, the voltage must rise this much above the limit until more reports are sent
ShieldRadius	100	m	Shield radius
DisableDelay	45	s	Immobilization delay
ResetAfterLDLoad	1	boolean	Reset the system after location/language database download
MemallocErrorLimit	10		Limit for dynamic memory allocation failures to cause a restart
ItalkErrorLimit	20		Limit for iTalk message allocation failures to cause a restart
IgnitionInputGPIO	0	boolean	Use GPIO input as the ignition input
IgnitionInputShock	1	boolean	Use shock sensor as the ignition input
SOSGPIO	0	boolean	External GPIO input used as a combined SOS/HF button instead of ignition input
EventLogSize	7500	bytes	Maximum size of an event log file
EnableFixValidation	1	boolean	Enable fix validation
MaxSpeed	200	km/h	Maximum accepted speed (otherwise the fix is interpreted as invalid)
ValidFixFilter	2		Reject this amount of fixes after the first fix before location/speed is used by system
RejectVelocityUnreliable	0	boolean	Reject a fix if "velocity unreliable" flags are set by the navigation
NavigationRestartSNR	30		Navigation auto-restart: SNR limit for visible satellites
NavigationRestartMinSat	3		Navigation auto-restart: required number of visible satellites
NavigationRestartTimeout	180	s	Navigation auto-restart: time limit for visible satellites without a valid fix
NavigationRestartOnWake	1	boolean	Restart navigation when waking up from a sleep
MaxAccel	15000	mm/s ²	Maximum accepted acceleration
AccelInvalidateTime	15	s	Time for invalidating fixes after the acceleration limit is exceeded
AccelSpeedReset	5500	mm/s	After an acceleration limit, the speed must drop this much for fixes to be accepted
ShortInvalidFixCount	5		Number of consecutive invalid fixes required

Name	Default	Units	Comment
			to determine a long break in fix availability
ATTimeout	3000	ms	Timeout for waiting responses to AT commands from the GSM modem
ATOPSTimeout	90000	ms	Timeout for waiting a reply to operator selection command
ATCommandPause	50	ms	Pause between consecutive initialization commands
IgnOnArmedTimeout	300	s	Shock/ignition: Shock timeout when ignition is on
IgnOnCycleTimeout	10	s	Shock/ignition: Period for arming the sensor when ignition is on
IgnOffArmedTimeout	300	s	Shock/ignition: Shock timeout when ignition is off
IgnOffCycleTimeout	5	s	Shock/ignition: Period for arming the sensor when ignition is off
IgnLoopArmedTimeout	10	s	Shock/ignition: Shock timeout in ignition off loop
IgnLoopCycleTimeout	2	s	Shock/ignition: Period for arming the sensor in ignition off loop
IgnLoopCount	0		Shock/ignition: Ignition off loop count
ZoneArmTimeout	10	min	Minimum time interval between two consecutive zone reports
ZoneDistanceLimit	200	m	Distance limit for filtering zone reports from a vehicle parked close to the zone boundary
HfMinPressTime	200	ms	Minimum time to recognize a HF button press (for GPIO input)
HfMinTimeBetweenPress	200	ms	Minimum break between two HF button presses (for GPIO input)
HfMaxTimeBetweenPress	1000	ms	Maximum break between two HF button presses (for GPIO input)
SOSMinPressTime	0	ms	HF button hold time for SOS detection (for GPIO input)
TraceMask	0	32-bit hex	Trace class mask
TraceTimeUTC	1	boolean	Print time in debug messages in UTC format

8 Warranty

Should your T22 fail in normal use within the first 12 months from the date of invoice, TRAMIGO will guarantee to repair the unit. For claims under this option, Tramigo requires that failure follows reasonable and normal use of the equipment. Where product is used for purposes or in environments for which it was not designed, Tramigo reserves the right to levy our standard repair charge. Tramigo's decision on whether to accept product under warranty will be final.

The Customer covers the cost of shipment to Tramigo. Tramigo covers the cost of the return.

Where any other party has attempted a repair, the repair warranty will be invalidated. Tramigo reserves the right to either return the product to the Customer without further work or to levy the standard repair charge after acceptance from the Customer.

The Return Material Authorisation (RMA) procedure must be used to return all goods. Prior to returning the product to Tramigo under this option, please give full details of the reasons for returning the equipment.

Tramigo products are intended for legal usage only under all applicable international and local laws. Tramigo shall not be responsible for any harmful interference or unlawful conduct associated with the operation of Tramigo products.

You assume all risk and liability caused by using the product with peripheral equipment or accessories not supplied or approved by Tramigo, or caused by repairs or modifications carried out by parties not authorised by Tramigo. No potentially harmful external equipment or other objects should be connected to Tramigo products.

You assume all liability relating to the usage of Tramigo products. Tramigo shall under no circumstances be responsible for any loss of data or income or any special, incidental, consequential or indirect damages howsoever caused.

Please note:

The device is an aid and should never be relied upon as an only emergency device. Its functionality is dependent on wireless networks and GPS satellites which may not be available all the time, and connections cannot be guaranteed under all conditions. To make emergency communications, the device must be turned on and located in an area with adequate wireless network signal strength.

Tramigo T22 One-Year Limited Warranty

Tramigo Ltd. ("Tramigo") warrants that this T22 tracking device ("Product") is free from defects in materials, design and workmanship under normal use in accordance with the operating instructions and pursuant to the following terms and conditions:

1. The limited warranty for the Product extends for ONE (1) year beginning on the date of the original purchase of the Product by the first end-user ("Consumer"). This one

- year period is extended by each whole day that the Product is out of your possession for repair under this warranty.
2. The limited warranty extends only to the original purchaser (the Consumer) of the Product and is not assignable or transferable to any subsequent purchaser/ end-user.
 3. During the limited warranty period, Tramigo will repair, or replace, at Tramigo's sole option, any defective parts, or any parts that will not properly operate for their intended use with new or refurbished replacement items if such repair or replacement is needed because of product malfunction or failure during normal usage. No charge will be made to the Consumer for any such parts. Tramigo will also pay for the labor charges incurred by Tramigo in repairing or replacing the defective parts. The limited warranty does not cover defects in appearance, cosmetic, decorative or structural items, including framing, and any non-operative parts. Tramigo's limit of liability under the limited warranty shall be the actual cash value of the Product at the time the Consumer returns the Product for repair, determined by the price paid by the Consumer for the Product less a reasonable amount for usage. Tramigo shall not be liable for any other losses or damages (unless otherwise required by law). These remedies are the Consumer's exclusive remedies for breach of warranty.
 4. Upon request from Tramigo, the Consumer must prove the date of the original purchase of the Product by a dated bill of sale or dated itemized receipt.
 5. The Consumer shall bear the cost of shipping the Product to Tramigo. Tramigo shall bear the cost of shipping the Product back to the Consumer after the completion of service under this limited warranty.
 6. The Consumer shall have no coverage or benefits under this limited warranty if any of the following conditions are applicable:
 - a. The Product has been subjected to abnormal use, abnormal conditions, improper storage, exposure to moisture or dampness, unauthorized modifications, unauthorized connections, unauthorized repair, misuse, neglect, abuse, accident, alteration, improper installation, or other acts which are not the fault of Tramigo, including damage caused by shipping
 - b. The Product has been damaged from external causes such as collision with an object, or from fire, flooding, sand, dirt, windstorm, lightning, earthquake or damage from exposure to weather conditions, an Act of God, or battery leakage, theft, blown fuse, or improper use of any electrical source, damage caused by computer or internet viruses, bugs, worms, Trojan Horses, cancelbots or damage caused by the connection to other products not recommended for interconnection by Tramigo.
 - c. Tramigo was not advised in writing by the Consumer of the alleged defect or malfunction of the Product within fourteen (14) days after the expiration of the applicable limited warranty period.
 - d. The Product serial number plate or the enhancement data code has been removed, defaced or altered.
 - e. The defect or damage was caused by the defective function of the cellular system or by inadequate signal reception by the external antenna, or viruses or other software problems introduced into the Product.
 7. Tramigo does not warrant uninterrupted or error-free operation of the Product. If a problem develops during the limited warranty period, the Consumer shall take the following step-by-step procedure:
 - a. The Consumer shall return the Product to the place of purchase for repair or replacement processing.
 - b. If "a" is not convenient because of distance (more than 30 kilometers) or for other good cause, the Consumer shall ship the Product prepaid and insured to Tramigo. See www.tramigo.net for the address of the repair center nearest you.

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- c. The Consumer shall include a return address, daytime phone number and/or fax number, complete description of the problem, proof of purchase and service agreement (if applicable). Expenses related to removing the Product from an installation are not covered under this limited warranty.
 - d. The Consumer will be billed for any parts or labor charges not covered by this limited warranty. The Consumer will be responsible for any expenses related to reinstallation of the Product.
 - e. Tramigo will repair the Product under the limited warranty within 30 days after receipt of the Product. If Tramigo cannot perform repairs covered under this limited warranty within 30 days, or after a reasonable number of attempts to repair the same defect, Tramigo at its option, will provide a replacement Product or refund the purchase price of the Product less a reasonable amount for usage.
 - f. If the Product is returned during the limited warranty period, but the problem with the Product is not covered under the terms and conditions of this limited warranty, the Consumer will be notified and given an estimate of the charges the Consumer must pay to have the Product repaired, with all shipping charges billed to the Consumer. If the estimate is refused, the Product will be returned freight collect. If the Product is returned after the expiration of the limited warranty period, Tramigo's normal service policies shall apply and the Consumer will be responsible for all shipping charges.
8. You (the Consumer) understand that the product may consist of refurbished equipment that contains used components, some of which have been reprocessed. The used components comply with Product performance and reliability specifications.
 9. ANY IMPLIED WARRANTY OF MERCHANTABILITY, OR FITNESS FOR A PARTICULAR PURPOSE OR USE, SHALL BE LIMITED TO THE DURATION OF THE FOREGOING LIMITED WRITTEN WARRANTY. OTHERWISE, THE FOREGOING LIMITED WARRANTY IS THE CONSUMER'S SOLE AND EXCLUSIVE REMEDY AND IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED. TRAMIGO SHALL NOT BE LIABLE FOR SPECIAL, INCIDENTAL, PUNITIVE OR CONSEQUENTIAL DAMAGES, INCLUDING BUT NOT LIMITED TO LOSS OF ANTICIPATED BENEFITS OR PROFITS, LOSS OF SAVINGS OR REVENUE, LOSS OF DATA, PUNITIVE DAMAGES, LOSS OF USE OF THE PRODUCT OR ANY ASSOCIATED EQUIPMENT, COST OF CAPITAL, COST OF ANY SUBSTITUTE EQUIPMENT OR FACILITIES, DOWNTIME, THE CLAIMS OF ANY THIRD PARTIES, INCLUDING CUSTOMERS, AND INJURY TO PROPERTY, RESULTING FROM THE PURCHASE OR USE OF THE PRODUCT OR ARISING FROM BREACH OF THE WARRANTY, BREACH OF CONTRACT, NEGLIGENCE, STRICT TORT, OR ANY OTHER LEGAL OR EQUITABLE THEORY, EVEN IF TRAMIGO KNEW OF THE LIKELIHOOD OF SUCH DAMAGES. TRAMIGO SHALL NOT BE LIABLE FOR DELAY IN RENDERING SERVICE UNDER THE LIMITED WARRANTY, OR LOSS OF USE DURING THE PERIOD THAT THE PRODUCT IS BEING REPAIRED.
 10. Tramigo neither assumes nor authorizes any authorized service center or any other person or entity to assume for it any other obligation or liability beyond that which is expressly provided for in this limited warranty including the provider or seller of any extended warranty or service agreement.
 11. This is the entire warranty between Tramigo and the Consumer, and supersedes all prior and contemporaneous agreements or understandings, oral or written, relating to the Product, and no representation, promise or condition not contained herein shall modify these terms.
 12. This limited warranty allocates the risk of failure of the Product between the Consumer and Tramigo. The allocation is recognized by the Consumer and is reflected in the purchase price.
 13. Any action or lawsuit for breach of warranty must be commenced within eighteen (18) months following purchase of the Product.