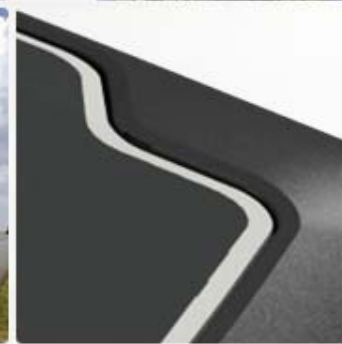


# Tramigo T22

TRAMIGO  
**T22**



Find, guide and protect your family and assets!

TRAMIGO™



# Getting Started

- **Power on the unit**
  - The green power LED will flash every 5 seconds
  - Charge the unit for 3.5 hours – plug into vehicle Cigar lighter plug or wall outlet – power LED is on solid when charging
- **Insert SIM card**
  - Ensure there is no PIN code
  - SIM must be able to send and receive SMS
  - SIM account must have credit (pre-paid)
  - Use new SIM card
- **Send OWNER,0000 command to the unit**
- **Set the unit Name – NAME,My car**
- **Add other users – AU,+555555,Friend**
  - 3 levels of security Owner, Friend, Guest
- **Turn on the reports you want**
  - Trip
  - Alarm
  - Speed
  - Power



# Unit Controls

- **Buttons**

- Power shuts down GPS and GSM
- Phone
  - Answers incoming call
  - Initiates outgoing call
- SOS triggers assistance report
- All buttons must be pressed for 2 seconds to activate
  - Press time can be configured
- Buttons can be configured off



- **LED**

- **Power (green)**
  - Flash every 5 seconds indicates unit is awake
  - Solid when charging
- **GPS (red) right side**
  - On indicates problem getting a GPS fix
  - Off indicates GPS fix
- **GSM (red) left side**
  - On indicates problem connecting to the GSM network
  - Off indicates connected
  - Flashing indicates trouble sending a SMS
    - No load fore pre-paid account
    - Network busy
- GSM and GPS LED flash when call is incoming



# Commands

- **3 main types of commands**
  - Automatic Reports – Requests that the T22 inform you of an event – Example: Trip, Zone, Alarm, Speed, Auto Find, Power. T22 responds with a confirmation that the report is active. ST will show which reports you have activated.
  - Status – Provides the current status of the unit – Example: Find, Find,Near, Status, Settings, Get
  - Configuration – Sets up how the unit operates – Example: Name, AddUser, Coord, Metric, Time, Language, Set
- **Commands can be upper or lower case**
- **Up to 5 commands can be sent at once. Ex: T>P>A>F**
- **User must have the correct authority to send a command**



# Reporting

- **Each user controls their own reporting**
- **STATUS shows which reports are active**
  - T22: Status, GPS: 80%, GSM: 100%, battery: charging, reports: Power, Trip (15), 13:46 Sep 26
- **SETTINGS shows which reports are active for all users**
  - T22: Settings, Alarm:-, Ignition:-, Power:1/2, Trip:2, Speed:-, Zone:-, user locations:5, Metric:on, 16:33 Aug 21
- **Reports can be longer than 1 SMS**
- **Automatic reports do not impact sleep mode**
- **Report language is the same for all users**
- **METRIC,OFF will display miles in all reports**
- **COORD,ON will add coordinates to all reports**
  - DMS is default, use COORD,DEC for decimal degrees



# Security

- **Owner sets password (alpha-numeric)**
  - Unit shipped with code 0000
  - Up to 20 digits can be used
  - Password,oldPassword,newPassword
- **Only authorized users will get response from unit**
  - ADDUSER command used to add users
  - If the phone number already exists then it is replaced
- **Up to 10 users can be authorized to access the unit**
- **3 Authorization Levels**
  - Owner – can configure the system and as well as Friend and Guest commands
  - Friend – can subscribe to automatic reports as well as Guest commands
  - Guest – can only use Find and Help commands.
- **SMS are protected by GSM security**
- **OWNER,password command is used if owner loses their phone**



# Find Report

- **T22: moving 0.31 km NE from San Antonio Village/Santol Street, Makati, NCR, RP, E with speed 24 km/h, 21:31 Sep 22**
- **T22: parked 0.18 km N from Tramigo Office, Belair, Makati City, PH, 14'33"36N, 121'01"08E, old position, 17:26 Sep 19**
- **F, Find, blank SMS all create FIND report**
- **F,x,y for automatic reports, x is minutes, y is km - F,OFF to turn off**
  - FIND report will be sent every x minutes
  - FIND report will be sent when the vehicle has moved y kilometers
- **FIND,near shows 3 closest locations – F,near,5 show 5 nearest**
- **T22: parked at Walter Mart Don Bosco, San Lorenzo, Makati City, PH, 13:58 Sep 26**
  - Indicates that unit is at a location when within 50m of location
  - Uses closest point from either pre-loaded or user location directory
  - Time stamp is from GPS, time zone is from GSM operator
  - Location is 4 parts first 3 contain information about the location and the 4th is the country code.



# Find Report

- **Unit state is based on Trip Status only**
  - Parked - a trip has not been detected
  - Stopped - a trip has started but the unit is not moving
  - Moving – A trip has started and the unit is moving
  - When a trip has just started the unit state can report parked, even if the vehicle is moving. See TRIP command for the trip parameters
- **Old Position is reported if last GPS fix is older than 3 minutes**
- **Date is Jan 1 until first GPS fix, Time is set after unit receives its first SMS.**
  - If operator time is wrong use TIME,gmtOffset to get the correct time





# Trip Report

- **T22: trip report, start at Arnaiz Avenue-Pasong Tamo, end at Tramigo Office, trip time 0:20, distance 2.06 km, max speed 64 km/h, avg speed 5.9 km/h, idle time 0:03, 20:32 Sep 25**
- **T,ON turns on reporting**
- **Trip is started when**
  - Ignition on is detected (UseIgnition) and
  - Speed is greater than 6 kmh (MovingSpeed) and/or unit has moved more than 300m (MinTripDistance), and been 1 or more minutes in length.
- **Trip is ended when**
  - Vehicle has been idle longer than trip end time (portable use)
  - In cities with slow traffic increase the end time for trip reporting (Default 15 min)
  - Example SET,TripEndTime,20
- **Distance travelled is accumulated and can be impacted by poor GPS reception**
- **Only the first part of the location name is used when the report exceeds 160 characters - 1 SMS (TripMaxReportLength)**
- **Reports longer than 1 SMS are chained. Most mobile phones will combine the SMS into one.**



# Trip Report

- **Trip start location is set to the last trip end location if the distance is less than TripStartLockDistance (default 500m)**
- **Trip Start reports can be turned on with a parameter setting – SET,TripStart,1**
  - T22: Trip started, at Arnaiz Avenue-Pasong Tamo, Makati, NCR, RP, 20:32 Sep 25
- **If unit is powered off Trip report will be sent when unit is powered on**
- **Trip will persist through a BOOT**



# Alarm Report

- **Tramigo: motion alarm detected, parked at Tramigo Office, Bel Air, Makati City, PH, N14'33"30, E121'01"10, 17:07 Sep 15**
- **Tramigo: shield alarm detected, stopped at Makati Medical Center, Makati, NCR, RP, N14'33"31, E121'00"52, 19:56 Aug 23**
- **Sends report when motion is detected.**
- **Controlled with 2 SET parameters, ShockCount and ShockTimeout between shocks**
  - Each shock must occur within the timeout period, number of shocks must be reached to trigger the alarm
  - Disabled once TRIP is started
  - Motion detector designed to operate in any orientation
- **As backup T22 will report if the vehicle has moved more than 100m (ShieldRadius) from where the Alarm was set**
- **Alarm is turned off after an Alarm report to prevent excess messages. To re-arm send A command**
- **If the motion detector is turned off only the Shield alarm will report**
  - SET,DisableShockSensor,1
  - SET,ShieldRadius,100 is default in meters and can be changed



# Zone Report

- T22: zone crossing detected, stopped at Makati Avenue-Kalayaan Avenue, Makati, NCR, RP, 21:36 Sep 22
- Reports when vehicle crosses a boundary that is a circle with radius of x km from the location selected.
- Z,on would report when the unit is 1 km (default) from the current location
- Z,2,Home – this would create a report when the unit is 2km from Home
- Z reports can only occur every 10 minutes to prevent excessive reporting if you are driving on the boundary. Change with ZoneArmTimeout
- Distance can be 0.1 to 999 km
- The place name can be a partial string and the closest match will be used. Both the system and user LD's are searched
- Only 1 zone can be active at a time per user
- Z,off turns off the Zone report
- Key Uses
  - Know when T22 is approaching a specific location
  - Know when T22 is leaving an area





# Speed Report

- **T22: speed limit detected, moving at Makati Avenue-Kalayaan Avenue, Makati, NCR, RP, NW at 121 km/h 21:36 Sep 22**
- Reports when vehicle exceeds a user defined speed. SPEED,120
- After a Speed report T22 will not report again until the speed is decreased by 50 kmh (SpeedLimitFilter)
- S,off turns of Speed reporting
- Speed limit can be set from 50 to 300kmh.
  - Lower is possible if you reduce the SpeedLimitFilter
- MaxSpeed parameter limits the highest speed T22 will report – default 200kmh. Raise this for special situations such as Racing or Helicopter use.



# User Location Directory

- **Users can add minimum 250 (actually many hundreds) of their own locations with ADDPLACE command**
- **Uses current coordinates of the vehicle**
- **Place name can be 40 characters**
  - Letters and numbers only
  - Commas end the command and other special characters are substituted with blanks
- **Duplicate place names are replaced**
- **DELPLACE,ALL removes all the user locations**



# Listen

- **LISTEN** command instructs the T22 to call your number
- You answer the call and can then listen to see what is happening in the vehicle
- T22 does not make any sounds
- Owner authority needed
- Designed for installation with a microphone
- **SET, MicrophoneGain, 7** will turn the volume to the highest value. 0-7 are valid settings



# Speed Dial

- **SPEEDIAL (SD) command is used to configure up to 3 phone numbers**
  - SD,1,+55122345
  - SD will display the numbers
  - SD,1 deletes the entry
- **User makes a call by pressing the phone button 1,2, or 3 times. First press must be for 2 seconds, after that shorter**
- **To hang up press the phone button**
- **Incoming calls make ring sound on speaker and flash the GPS and GSM lights**
  - Press the phone button to answer
- **Requires optional earpiece/microphone**





# Low Balance

- **LB can be used to forward incoming SMS from a number to the Owner**
  - Example LB,77 – all SMS from that number are sent to the Owner, useful if the Operator sends low balance warnings to their Pre-Paid customers.
- **LB,off turns off the forwarding**
- **If the warnings are not automatic, but require a SMS to activate then the SMS command can be used**
- **SMS forwards a message to a number via your T22**
  - Example SMS,77,Balance – sends a SMS containing the text Balance to 77. 77 responds with your balance to the T22 and the LB command forwards the response to the Owner



# Language

- **T22 can be configured to support other languages**
- **LF file must be loaded to the system first**
  - Contains all the literals in the system
- **LANGUAGE,ON turns on the alternate language**
- **LANGUAGE,OFF turns the unit back to English**
- **Unicode characters are supported**
  - Requires mobile phone with unicode support
- **All user commands and reports use the local language**
- **English commands will still work for support purposes, but the reports will be in the local language**



# Parameters

- **GET command to find parameter values**
- **SET command to change the values**
  - SET,DisableShockSensor,1
- **See User Manual for list**
- **Can also use numeric values**
  - SET,13,1 // Turns on TRIP start reporting
- **Saved during boot, battery removal**
- **SET,Defaults restores all SET parameters to default or reload the firmware to restore the settings**



# Whereels

- **T22: Parked, 2.60 km E of Arion Mall Rawamangun, Pulo Gadung, Jakarta, ID, 06 12'05"S, 106 54'46"E, 16:43 May 22**
- **Used to find out how far you are from a location.**
- **Location can be user or system directory**
- **Only partial string is needed to search for locations. Closed location that matches the sting is returned**



# LD Loading

- **File is split into 3 files. 1 for each Name field**
- **Analyser can be used to estimate space needed**
- **Unicode characters (Chinese, Thai) use double the space.**
- **Unit is booted after a load**
- **Current location is reset until a new GPS fix occurs**
- **User locations are not affected**
- **M1 PC can be used to load LD**
- **Loading time can take up to 3 minutes**



# Support Commands

- **BOOT** – does a software re-boot
- **VERSION** – shows the version of the system
  - T22: Firmware version: 0.8.24, LD: RP,Version=02.01, LF: Tagalog,Version=1.4, GSM: TC63 REVISION 01.021, IMEI: 355633000377753, IMSI: 515022400620398, 11:47 Oct 13
  - IMSI is the International Mobile Subscriber Identity number
- **GETVER** – for M1 compatability
- **INFO,11** – shows details on reception and battery



# Debug

- **DEBUG,ON** turns on debug messages to the USB port
- When using a PC all commands are prefixed by **\$PFST** (upper case)
- **M1 PC** does not require the **\$PFST** prefix
- **Output is configured using trace masks**
  - `DEBUG,TRACE,40000000 //  
MODEM_COMMUNICATION`
  - `DEBUG,TRACE,20000000 //  
MODEM_NONPERIODIC`
- **To combine you AND the trace masks – hexadecimal format – Example ALL modem 70000000**



# Debug Commands

- **Print Event Log**
  - DEBUG,TRACE,RESET
  - DEBUG,TRACE,08000000
  - INFO,10
- **Print Status**
  - INFO,11
- **GPS Status for support**
  - INFO,12
- **List User Location Directory**
  - INFO,5
- **Export default literals**
  - DEBUG,EXPORTLANG
- **Memory Allocations**
  - INFO,6
- **Reboot History**
  - INFO,8





# Bug Reporting

- **Include the following with a description on how to re-create the issue.**
  - VERSION
- **If the problem is not easy to re-create also send**
  - Event Log (take this right after the problem)
  - Reboot History
  - Back box
- **Running the Debug configuration file in M1 PC generates the information needed**



# Power Management

- **T22 has 4 sleep modes. Power light goes off when sleeping**
  - SET, Sleep, 0 turns off sleep mode
- **Sleep modes are configurable with SET command**
- **1st mode shuts off GPS after 1 hour after a Trip has ended or after 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
- **Motion detection wakes unit for 5 min then resumes current sleep mode**
- **Unit will not sleep when in a Trip or charging**
- **If motion sensor disabled, it will not wake the unit up**
- **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%)**



# Power Consumption

- **Average consumption**
  - 80 mA average when awake
  - 43.4 mA average Sleep mode 1
  - 3.4 mA average Sleep mode 2
  - 0.3 mA average Sleep mode 3
  - 0.02 mA average Sleep mode 4 (unit must be charged to wake up)
- **Battery: Lithium Polymer - 1300 mAH**
  - Approx 1-3 year life (like mobile phone battery)



# Connectors - Back

- Mini USB for power and PC connection
- 5 PIN Molex connector for I/O options
- 2.5mm audio plug – 4 circuit – for handsfree





# Connectors - Front

- MMCX – for external GPS antenna





# Hardware Specifications

- **Size: 95mm x 60 x 20**
- **Weight: 126g**
- **Power: Input voltage Min 6v / Max 32v DC**
- **GPS – Fastrax iTrax03**
- **GSM – Siemens TC63**
  - Quadband: 850/900/1800/1900 MHz
  - GSM release 99
- **Case: IP 31 design**
- **Temperature**
  - Operating: -30 C to +75 C
  - Storage: -40 C to +85 C



# T22 Install

- **T22 is for permanent installations in a vehicle and includes:**
  - T22 Unit
  - Install case
  - External GPS Antenna
  - I/O Wiring cable
  - Power cable
  - External Personal Assistance button
  - Installation Manual

# T22-SOS



- External button
- Connects to T22-IO cable
- Press for 2 seconds to use as panic button
- Press for 200ms to <2 seconds for HF dialing.
- 2<sup>nd</sup> press must be within 1 second to dial 2<sup>nd</sup> number





# T22 I/O Options

- **T22 supports one input and one output line**
- **Line use is configured using SET commands**
- **Input line can be used for one of:**
  - Ignition sensing
  - Panic button/ Phone button
- **Output line can be used for:**
  - Immobilizer