

T2PRO PROGRAMMING TOOL
FOR TELTRONIC HTT-500 / TRM-300 AND MDT-400
EQUIPMENT

Installation and basic programming guide



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1 INTRODUCTION

Welcome to installation and programming guide for T2PRO.

The T2PRO programming tool will be very useful to configure TETRA services, as well as options and accessories of your HTT-500 and/or MDT-400 communication equipment. It will also enable you to upgrade your equipment's software. With T2PRO you can also program TRM-300 equipments. Just follow this guide as programming a HTT-500.

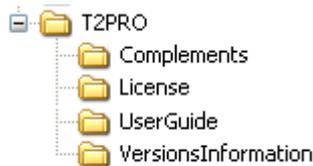
This manual is divided into several parts:

- How to install T2PRO on your PC.
- Description of the *Tetra Terminal Programming Tool Selector* application user interface.
- How to configure communication connections between HTT-500/MDT-400 equipment and the programming tool installed on your PC.
- Guide for updating Teltronic equipment software with the programming tool.
- Quick basic user parameters programming guide.

Before using T2PRO, please read this manual carefully and keep it for future reference.

1.1 T2PRO DISTRIBUTION

The application is distributed in a CD that includes:



- The **Setup.exe** file for installing and an *autorun.inf* file to execute the CD.
- **Complements:** *Microsoft .NET Framework 3.5*
- **Licence:** For the T2PRO programming tool for HTT-500 or MDT-400.
- **User guide:** User manuals for T2PRO in English and Spanish.
- **Version information:** A document informing about HTT-500 and MDT-400 programming tool versions and associated functions.

The file structure on the CD is displayed in the illustration on the right.

1.2 MINIMUM REQUIREMENTS FOR INSTALLATION AND USE OF T2PRO

Before installing the T2PRO programming tool, please bear in mind that:

- The programming tool is designed to operate under *Windows XP*, *Windows Vista* and *Windows 7* and requires a 32-bit processor at 1GHz or greater, 1GB of RAM and at least 500MB free space on the hard disk.
- It is necessary to install and use T2PRO from a PC account with administrator permissions, as certain libraries and drivers will need to be installed.

- You must also have *Microsoft .NET Framework 3.5* and *Microsoft Visual C++ 2005 Redistributable*. The T2PRO installer will automatically install these applications if they are not present on your PC.
- If you have an active *Firewall* on your PC, it should be configured so as to enable the installation and execution of T2PRO. If T2PRO is open before giving the execution permissions to the *Firewall*, close the programming tool and reopen it before beginning to use it.
- Communication between the applications installed on your PC and the HTT-500 or MDT-400 device is established via a programming cable. If you install T2PRO to program an HTT-500, you will need a programming cable (USB D037941 or RS232 D037940) to connect the equipment to the PC. If you are going to program an MDT-400, you will need the RS232 D026940 programming cable. For the communication to be effective, the user must configure the connections properly, as indicated later in this manual.

1.3 STEPS TO INSTALL T2PRO

The prior steps necessary to work with T2PRO are detailed in chapters 2 and 3 of this manual, which are summarised below.

Depending on the equipment you have and the functions you wish to be available, installation will be different. These are the possible options:

- If your licence is only for an HTT-500 install the application on the CD and then configure the ports. If, in addition, you already had a previous programming tool license for an MDT-400, this will be updated if you accept a warning message. If you have problems to access to TPS from the *Tetra Terminal Programming Tool Selector* application, please read "Frequent problems" chapter in this manual.
- If your license is only for an MDT-400 (TPS), install the application on the CD and then configure the ports. If, in addition, you already had a previous programming tool license for an HTT-500, this will be updated if you accept a warning message.
- If you need both licenses, you must have two CDs. First install one of them and then the other, following the indications given above.
- In addition, you must have *Microsoft .NET Framework 3.5* and *Microsoft Visual C++ 2005 Redistributable*. The programmer T2PRO will install automatically to your computer if you do not have them.

2 INSTALLING T2PRO

Your HTT-500 can be connected to the PC with two types of cable distributed by Teltronic: USB (D037941) or serial RS232 (D037940), as seen in chapter 1.

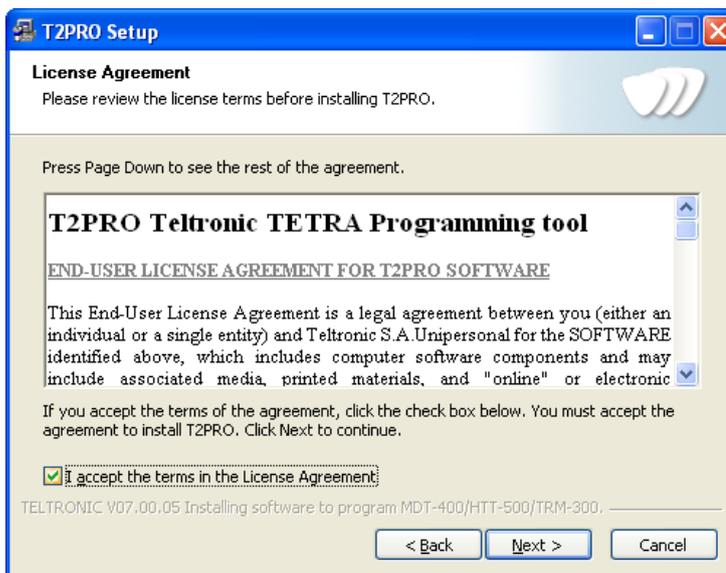
Below is an explanation of the installation and configuration of everything necessary to use T2PRO with both types of programming cables.

The programming tool is installed by executing the "Setup.exe" file on the CD provided. The CD will automatically launch this file when inserted. Below are the steps displayed by the wizard to install T2PRO. Advance from one step to the following by clicking on *Next*.



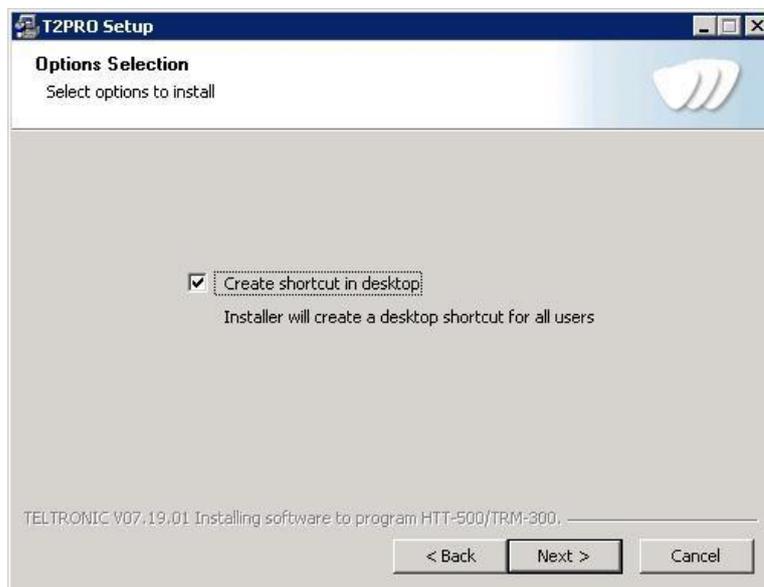
2.1 T2PRO LICENSE

Displays the T2PRO License Agreement. The user must accept the terms to proceed with the installation.



2.2 SHORTCUT IN DESKTOP AND START MENU FOLDER

Offers the possibility of creating a shortcut in desktop. The installation will always create another shortcut in the Windows start menu folder at the route Teltronic/T2PRO.

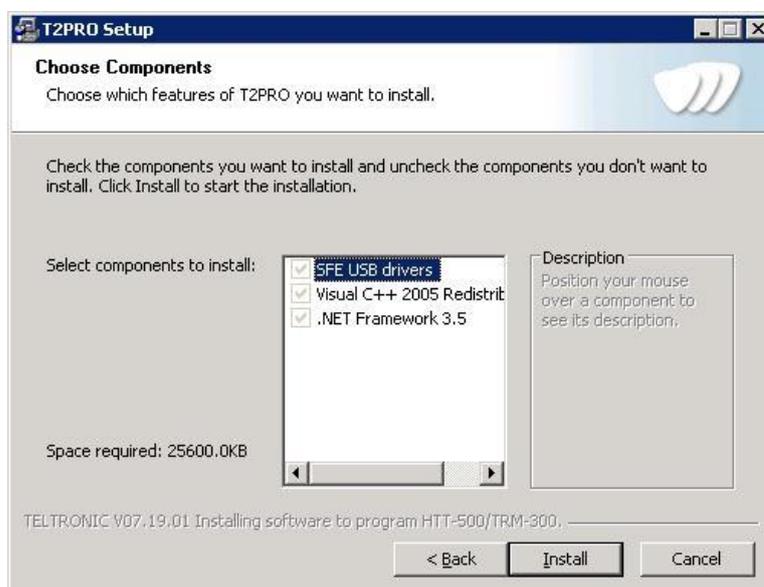


2.3 ADDITIONAL COMPONENTS TO INSTALL WITH T2PRO

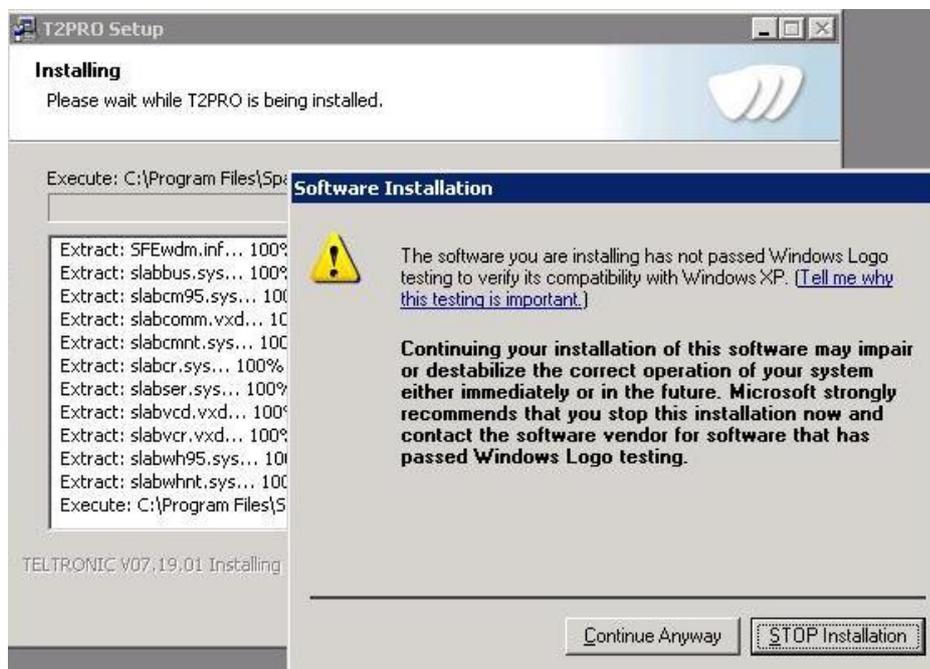
The wizard will show you some libraries and drivers necessary for correct operation of the application T2PRO. In the list below, you can see those components and they are checked only if they are required.

Microsoft .NET Framework 3.5 libraries are always required, and then they are always checked but they will be installed only if they were not already installed on your PC.

Microsoft Visual C++ 2005 Redistributable libraries and the **software for SFE device for the USB programming cable** will be checked only if wizard don't detect another previous version which had installed them on your PC. If your licence is only for MDT-400 and you are not going to update the HTT-500 version, neither will be installed. These components are necessary and for that, the user can't decide to install or not them.



Then you'll see a screen with the driver installation required. Select "Continue anyway" to proceed with the process.



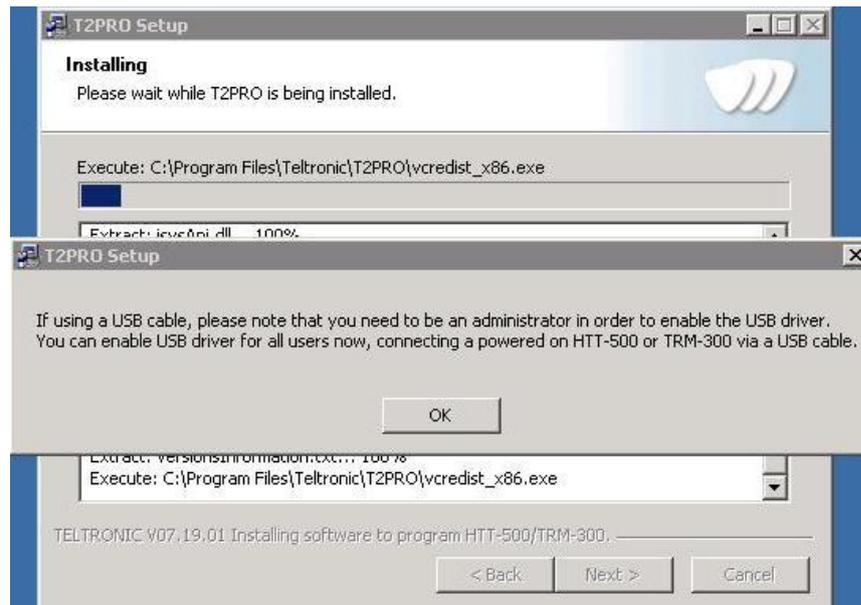
2.4 UNINSTALLING PREVIOUS VERSIONS DRIVER

If you have installed some T2PRO version 6 or earlier, the wizard will allow you to uninstall the device CP210 from the previous version.



2.5 INSTALL USB CABLE

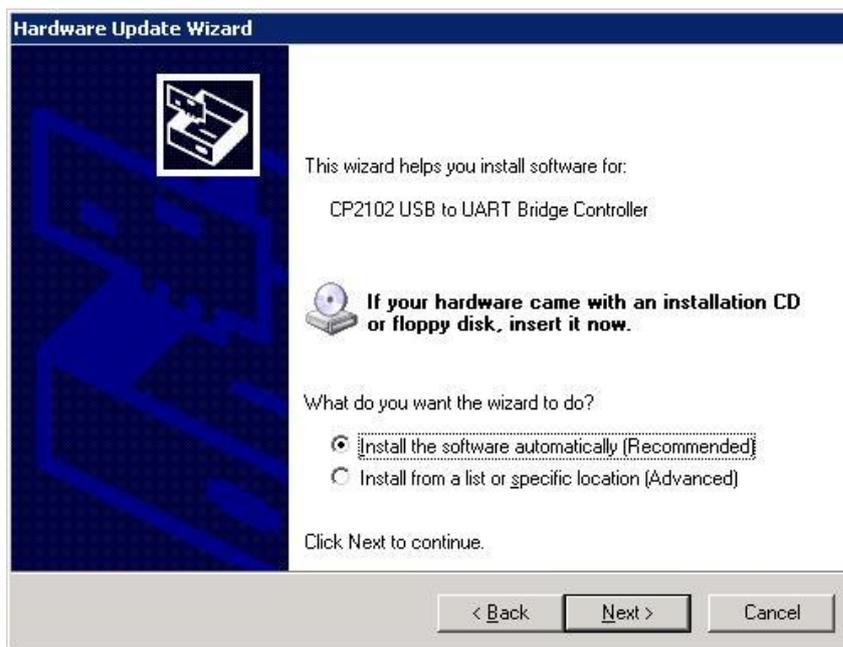
To use a USB programming cable (D037941) must have administrator permissions to enable it. To install this cable in the installation of the controller should connect the cable at this time of the installation.



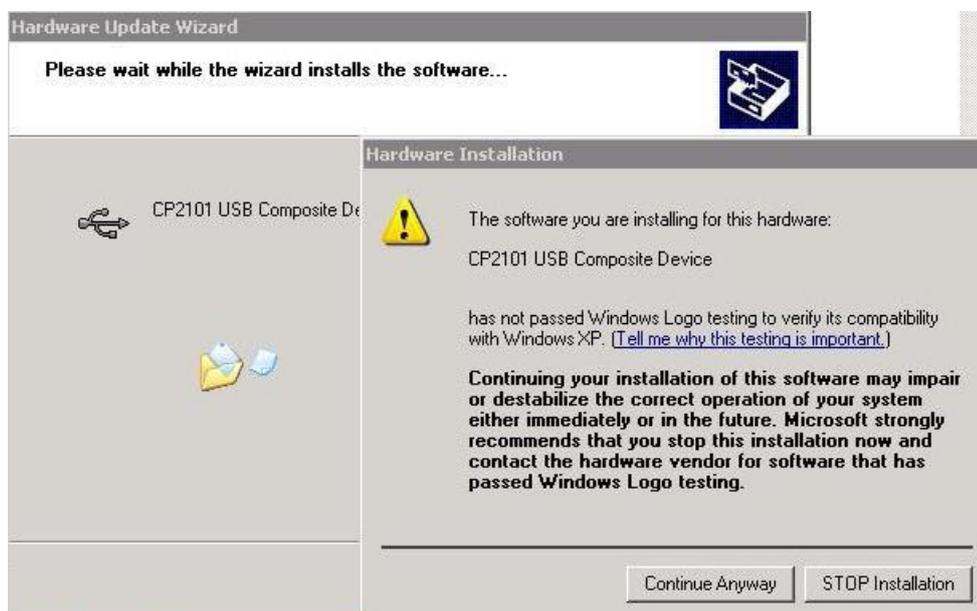
By installing the new driver for this USB cable, *Microsoft Windows* provides the ability to connect to *Windows Update* to search for new Software. Select "*Not, not this time*" to continue.



Then the driver installation wizard allows us to automatically find the required software. Select "*Install the software automatically (Recommended)*" and click *Next*.



In this installation process, *Microsoft Windows* finds the new driver displaying the window below. Select "Continue anyway" to continue your Hardware Installation.

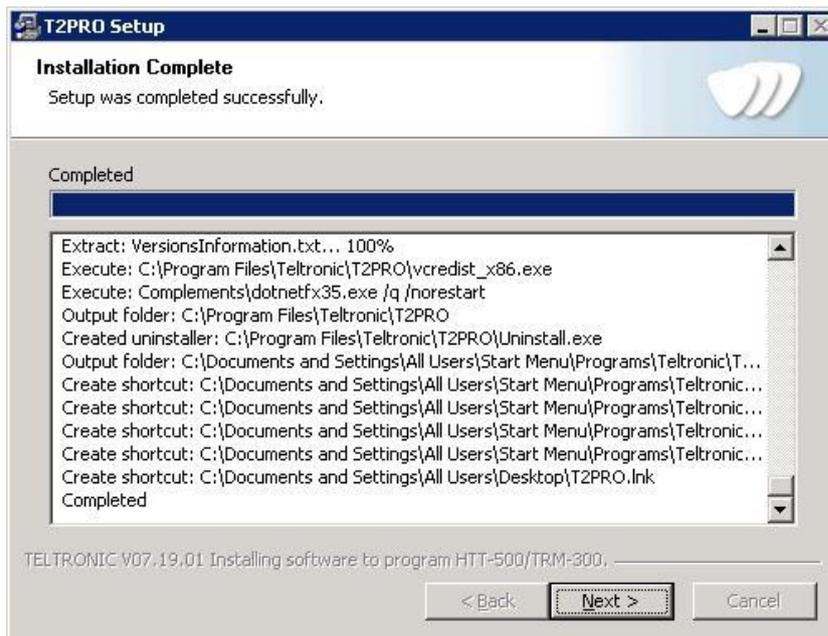




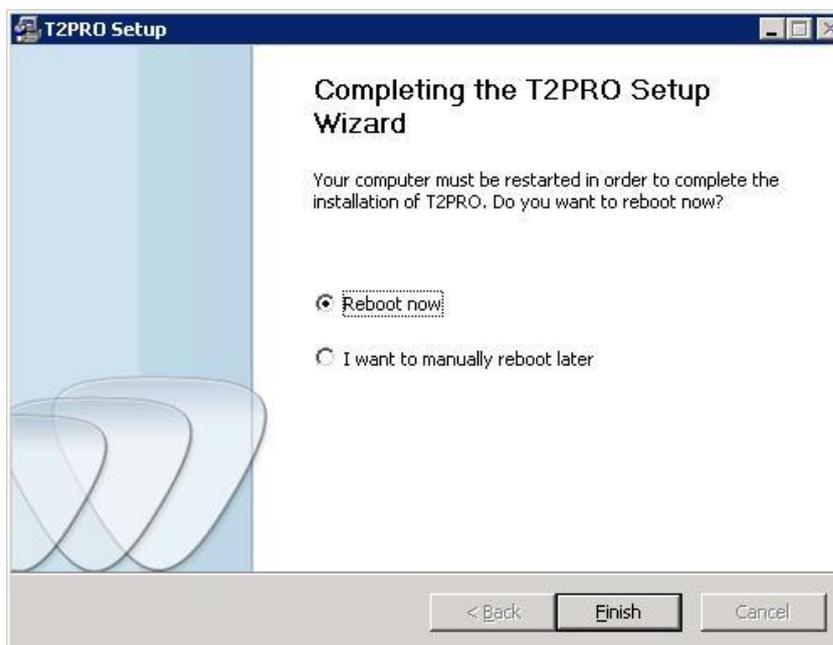
2.6 FINISH INSTALLATION

The wizard will finish installing T2PRO and some libraries necessary for correct operation of the application as you have read in section 2.3 of this guide (Additional components to install with T2PRO).





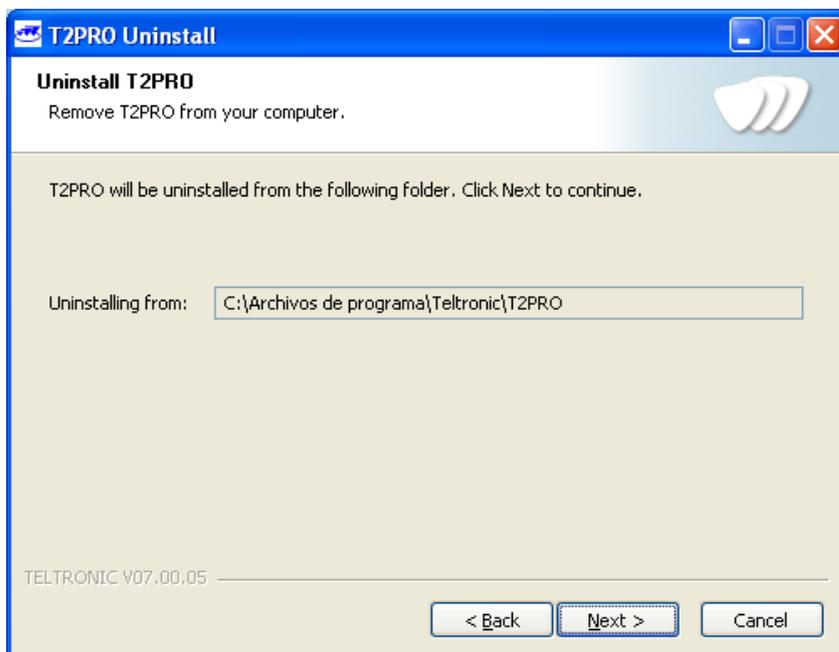
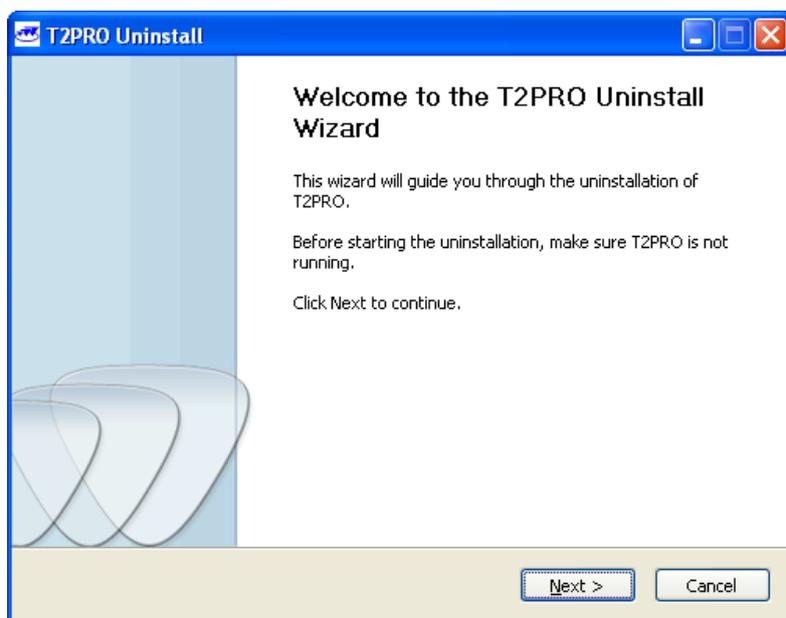
Finally, the installation is finished and the possibility of rebooting the PC to complete the installation is displayed. If this is not done, the proper functioning of the applications installed cannot be guaranteed.



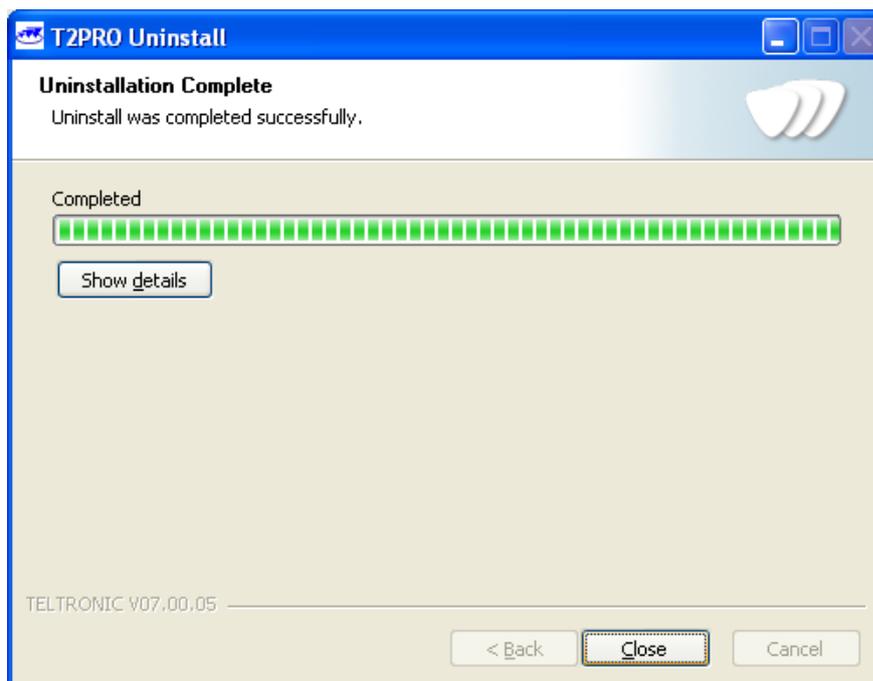
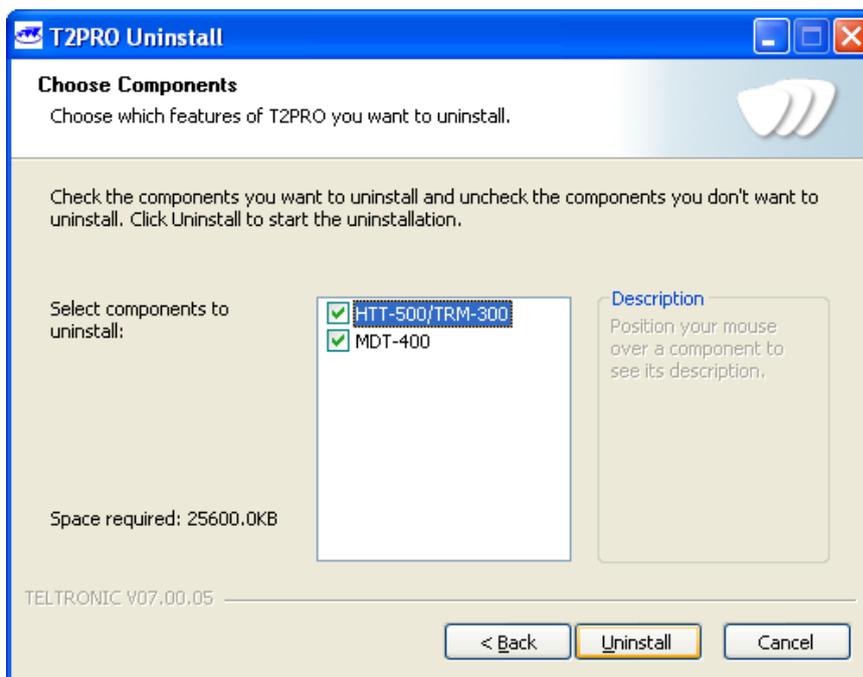
2.7 UNINSTALLING T2PRO

During the installation process, an uninstaller is also created, which can delete all the files and registration codes entered corresponding to the installation chosen (HTT-500/TRM-300, MDT-400 or both).

There are some exceptions to the uninstalling process: *Microsoft Visual C++ 2005 Redistributable*, *Microsoft .NET Framework 3.5* as well as the software for the *USB CP210x* device for the programming cable.



You can choose the components you are going to uninstall: HTT-500/TRM-300 programming tool, MDT-400 programming tool or both of them. If your installation was only for one of them, you don't have option in this window.



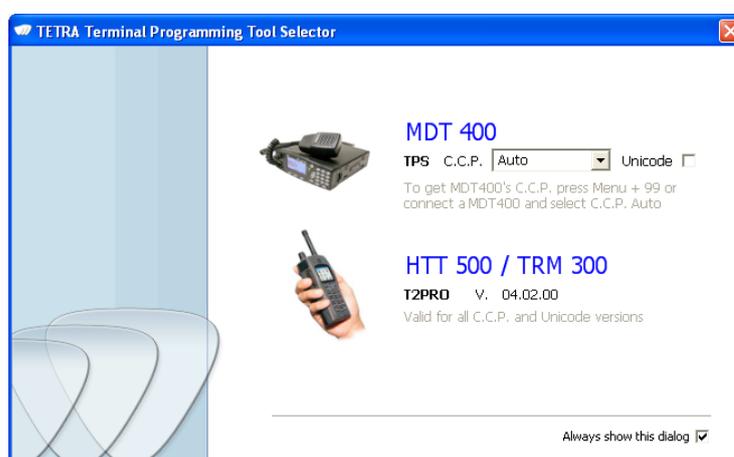
3 T2PRO AND TPS EXECUTION: TETRA Terminal Programming Tool Selector

Once installed, you can access the T2PRO application from the start menu route selected during installation (See section 2.2 of this manual). If you did not modify this route, it is by default: *Start menu -> Programs -> Teltronic -> T2PRO*, as can be seen in the illustration.



- T2PRO accesses the application.
- T2PROProgrammingGuide is an access to this user's guide in English.
- Uninstall T2PRO accesses the T2PRO program uninstaller (see section 2.6 of the manual).

On executing T2PRO, the following screen will be displayed, allowing you to select either MDT-400 (TPS) or HTT-500 (T2PRO) programming tools:



Access to either programming tool will be enabled or disabled according to whether you have a user's license for them. The distribution of TELTRONIC programming tools for HTT-500 and MDT-400 equipment is controlled by user licenses. For each of the programming tools you need a CD with its software as well as the license.

The CD installer will upgrade the version of these applications (T2PRO and/or TPS) if they are already installed on your PC, if you don't have a valid license this application will not be upgraded.

For MDT-400 (TPS) access from the application *TETRA Terminal Programming Tool Selector* to work, the version installed for the TPS on your PC should have a version date after January 2007. For updating or purchasing these applications, please contact your distributor or TELTRONIC S.A.U.

If you are going to execute the TPS programming tool for an MDT-400 from *TETRA Terminal Programming Tool Selector*, you should select the C.C.P. (Product Configuration Code) of your MDT-400 device from the dropdown menu in Fig. 9 and select the *Unicode* version, if you wish. If you do not know the C.C.P. for your device, connect it to the PC and select the *Auto* option for the application to detect the C.C.P. automatically.

If you disable "*Always show this dialog*" option, the following times you execute the T2PRO application, the programming tool used before will be opened directly and you won't see the selection tool window. You can enable again this option in both programming tools menu.

4 CONFIGURING PROGRAMMING TOOL CONNECTIONS

4.1 CONFIGURING T2PRO FOR AN HTT-500



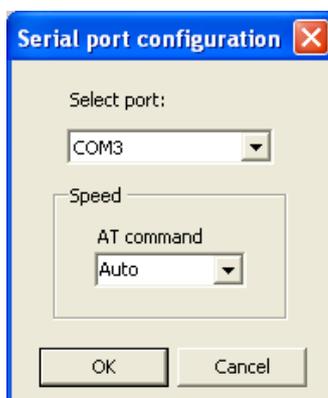
4.1.1 Configuring the USB port

For an HTT-500 to be able to communicate with T2PRO, you must configure the PC communication ports using the menus in the programming tool.

Accessing the **CONNECTION -> Serial Port** menu, you can configure the connection port. You must select the COM port (*Select port*) corresponding to the COM port to which the USB cable has been connected as can be seen in the illustration below. If you don't know terminal speed you can select "Auto" option and the T2PRO will detect the speed automatically.

If there are several USB ports on the list and you do not know which one the HTT-500 is connected to, you can find out in your PC menu: *Control Panel -> System -> Hardware -> Device Administrator -> Ports (COM & LPT)*. The port called *CP210x USB to UART Bridge Controller* is the one that the PC has associated to your Teltronic USB programming cable.

For correct communication, connections should be configured as displayed in the following figure (The COM number assigned by your PC may vary).

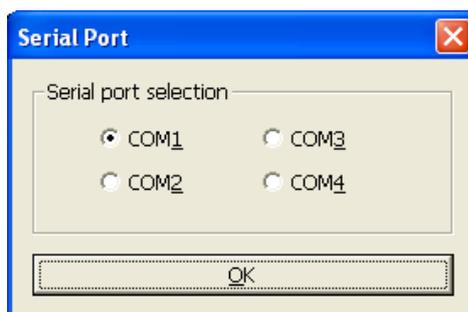


4.1.2 Configuring the RS232 port.

Follow section 3.1 of this manual, but selecting the COM port corresponding to the serial port of your PC to which you have connected the serial programming tool cable.

4.2 **CONFIGURING TPS FOR AN MDT-400**

To program an MDT-400 from the TPS, you only have to configure the serial port in the menu *Preferences* -> *Serial Port*. The following dialogue will be displayed, in which you can select the port you wish to use for communication.

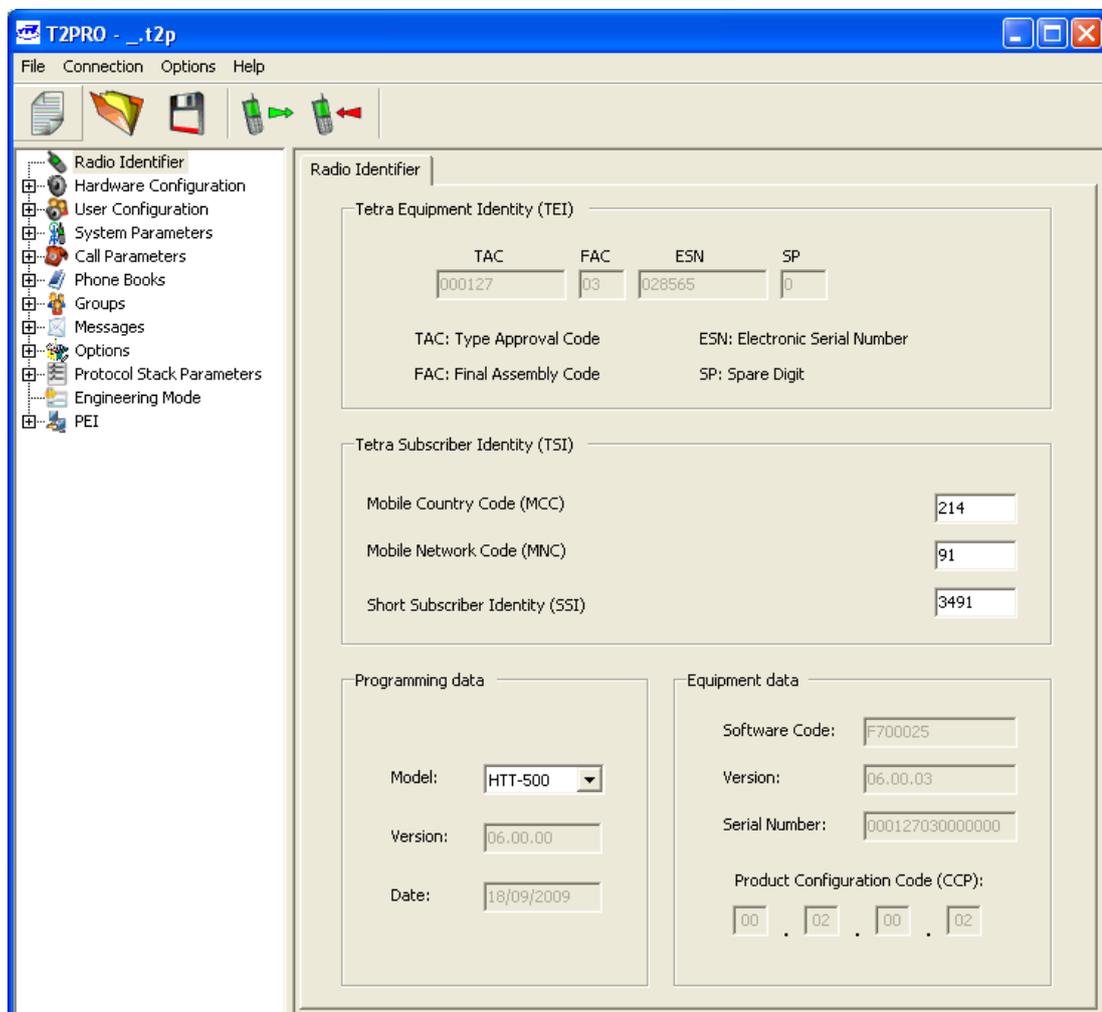


5 T2PRO PROGRAMMING TOOL MENUS

For an MDT-400 (TPS programming tool) the menus are similar to those of T2PRO for an HTT-500. Below is an explanation of the HTT-500 menus with some comments on possible modifications if you are programming an MDT-400.

The programming tool presents a user-friendly system of menus and submenus that will always be available on the main screen. From these menus it is possible to carry out all the actions possible on T2PRO. It also includes a toolbar with quick buttons for the principal actions on the menu.

As can be seen in the figure, on the left of the program there is a tree structure giving access to the screens for configuration of T2PRO parameters. The right-hand part of the window shows the screen selected in the tree.



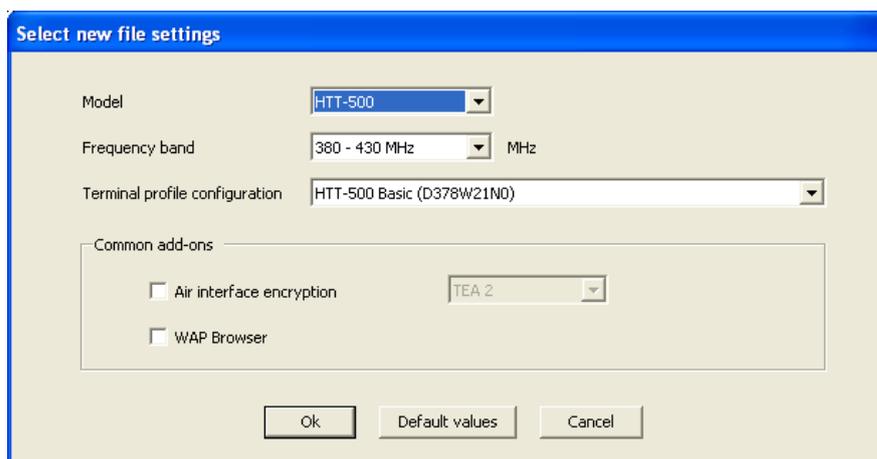
A chart is displayed with the T2PRO menus and submenus and then their functions are explained.

FILE menu:

A file that comprises the values given to all the parameters programmed on the HTT-500 device by the programming tool. The files bear the extension .t2p and cannot be edited.



- **New:** Shows a new file on screen with the default values of the programming tool parameters. You can choose model HTT-500 or TRM-300, the frequency band and the terminal profile configuration in the dialog window.



- **Open:** Displays the explorer to choose which .t2p file the user wishes to open.
- **Save as:** Displays the explorer to search for the location of the .t2p file to be saved.

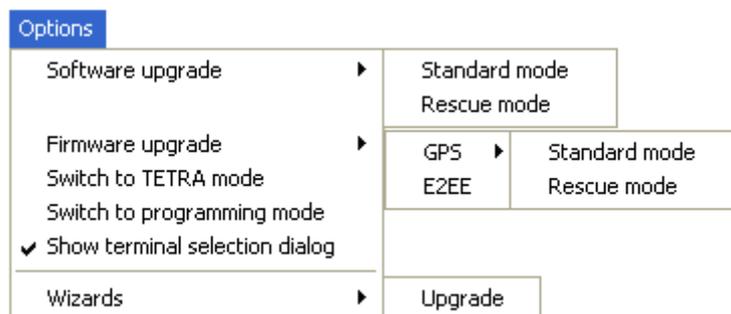
CONNECTION menu:

The menu to configure the connection between an HTT-500 device and the T2PRO programming tool



- **Serial Port:** Serial port configuration. Just select the PC serial port in which the USB cable driver was installed.

For correct communication, the connections must be configured as indicated in section 4 of this manual.

OPTIONS menu:

- **Software Upgrade:** Enables the loading of new software on an HTT-500 connected to the PC. From a dialogue window, the .cry file is requested with the desired software version. The battery of the HTT-500 should be charged for the upgrade to work correctly. Depending on the equipment status, there are two different ways to upgrade: **Standard mode** option or **Rescue mode** option. To obtain more information related to software upgrading, read section 6 of this manual.
- **Firmware Upgrade -> GPS:** Enables you to upgrade the firmware for an HTT-500's GPS device. Your handheld must be a model with GPS device included. This option requires your local distributor or Teltronic S.A.U to provide you with the file containing the new version of the GPS to be loaded as well as information about how to carry out this upgrade.
- **Firmware Upgrade -> E2EE:** Enables you to upgrade the firmware for an HTT-500's E2EE Teltronic device. Your handheld must be a model with E2EE Teltronic device included. This option requires your local distributor or Teltronic S.A.U to provide you with the file containing the new version to be loaded as well as information about how to carry out this upgrade.
- **Switch to TETRA mode:** Switches an HTT-500 connected in programming mode to TETRA mode.
- **Switch to programming mode:** Directly switches an HTT-500 connected in TETRA mode to programming mode. To restart with the terminal selection dialogue, just select the checkbox in the menu.
- **Show terminal selection dialog:** If you disable the 'Show terminal selection dialog' menu check, the following times you execute the T2PRO application the programming tool used the first time will be opened directly and you won't see the *TETRA Terminal Programming Tool Selector* window. You can enable again this option in the same menu check. You can also enable/disable this option in the *TETRA Terminal Programming Tool Selector*.
- **Wizards -> Update:** This option open a wizard to update a new software version in the terminal. You have to select a .cry file which contains the version to load at the terminal. After that the wizard reads and writes the terminal to update the programming new parameters. So this option is like Software Upgrade (Standard mode) + programming parameters update (read + write). To obtain more information related to software upgrading, read section 6 of this manual.

Toolbar buttons

In addition to the three direct access buttons: *new file*, *open file* and *save as*, there are two more buttons that do not appear on the menus, one for **reading the device** and another for **writing on the device**. To read the equipment configuration, click on  *Read*. To write a configuration in the equipment, click on  *Write*. The equipment automatically changes to programming mode until the reading or writing concludes.

6 EQUIPMENT SOFTWARE UPGRADES

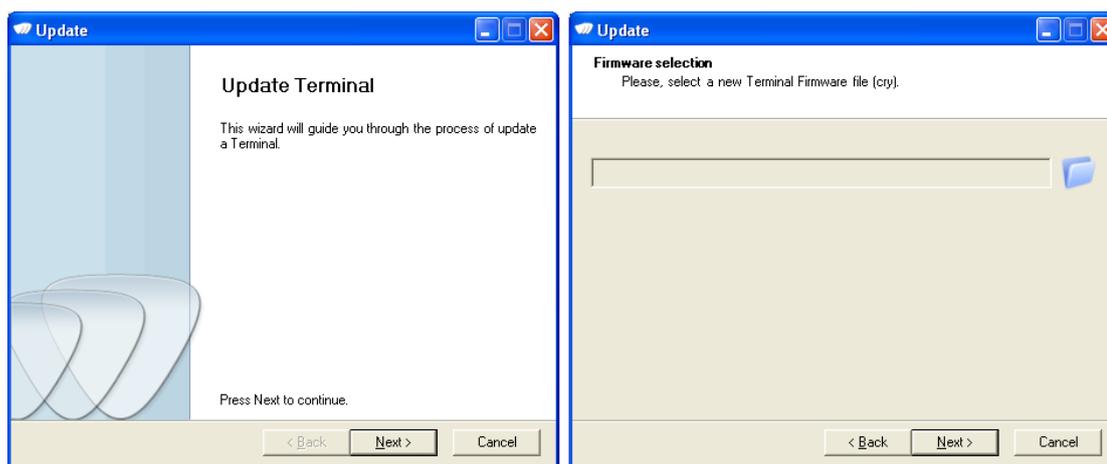
This section contains step-by-step instructions about how to upgrade HTT-500 software using the T2PRO programming tool. Two options are available to do that but previously you have to follow these steps:

- First, it is necessary to check that the HTT-500 battery has at least 50% of its total charge. If this is not the case, charge the battery before software upgrading.
- Then connect the HTT-500, while switched on, to the USB or serial RS232 programming cable and connect the other end to the corresponding port on your PC.
- Prepare the file “.cry” that will be requested during the upgrading process. This file contains the software version to be written on the HTT-500. Contact your local distributor or Teltronic SAU to get it. After selecting the file, start writing software. You should have the file “. cry” located in your local hard disk.
- Execute the T2PRO programming tool from your PC and if you go to the menu **Options** you will find two software upgrade options:
 - Use option 1 if you need a full update: software version and programming parameters.
 - Use option 2 if you want to update software version but not programming parameters. If the equipment will not turn on or does not answer on the serial port, you should use this option with *Rescue mode* to upgrade the software as you can read below.

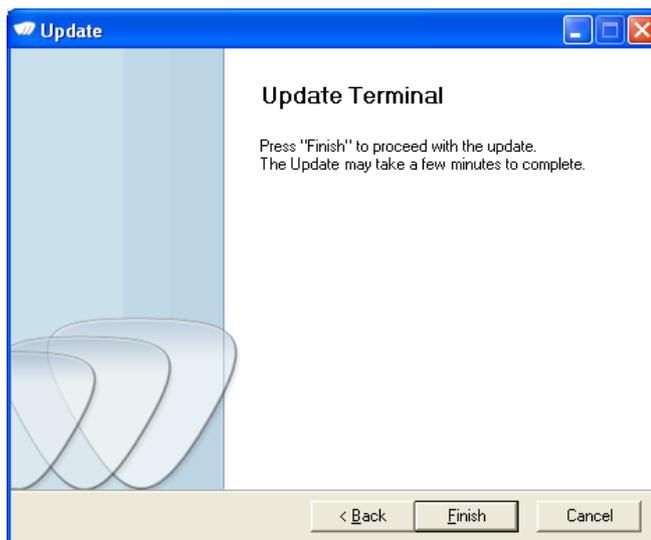
For more detailed information of the upgrade process consult your dealer or service.

Option 1

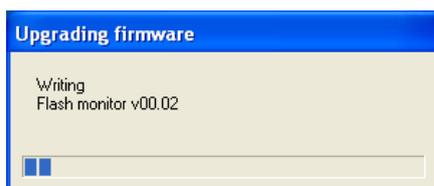
In the menu **Options -> Wizards -> Update** a wizard will be opened to guide you in the updating process. You have to select the .cry file path with the software version to load.



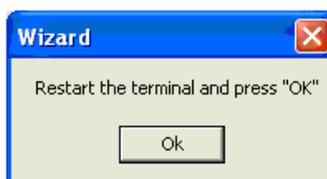
In next window you have to click “finish” button to start the updating process.



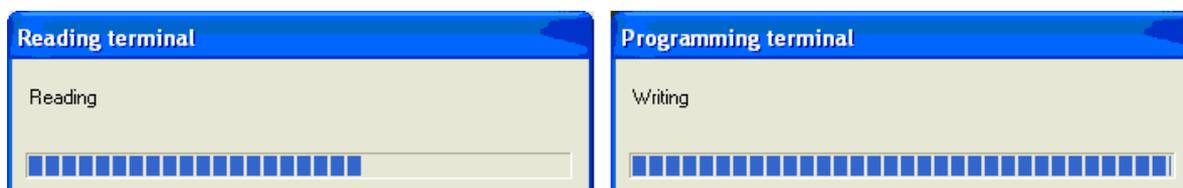
After that the wizard turns the equipment switched on in TETRA mode to software upgrade mode (the equipment shuts down the display and the LED flashes on green color, blinking slowly), needing no further action by the user. A new window following the upgrading firmware process will appear as you can see in next picture.



When it finishes, next window ask you to restart the terminal.



If you have restart the terminal and it is ready in TETRA mode, you have to press accept button and then the wizard reads and writes the terminal to update programming parameters.



Then the terminal will be completely updated.

Option 2

The menu **Options -> Software Upgrade** includes two way to perform the software update:

- **Standard mode** - The programming tool turns the equipment switched on in TETRA mode to software upgrade mode, needing no further action by the user.
- **Rescue mode** - The device must be previously in software upgrade mode. To set the device in this mode, you must follow dialog boxes instructions with RS-232 programming cable. If you prefer, you can also set the mode with the HTT-500 switched off, pressing the on button, the PTT and the upper auxiliary button at the same time (if you are using a TRM-300 you have to press the two buttons it has). Then, you can use RS-232 or USB programming cable. When the LED flashes green, the equipment is ready to upgrade the software.

This mode should only be used when the HTT-500/TRM-300 will not turn on, or turns on but does not work correctly. For example:

- If after a previously software upgrade process, the equipment will not turn on or does not answer on the serial port; you should set it to *Rescue mode* and upgrade the software.
- If after a previously software upgrade process, on trying to switch it on, the equipment only displays the message "*Accessories not available*" on screen, you should set it to *Rescue mode* and upgrade the software.
- Selecting either of these upgrade options, a dialogue window will be displayed requesting a .cry file with the version of the software you wish to record on the HTT-500. Contact your local distributor or Teltronic S.A.U to obtain the file that includes the new software version. Once the file has been selected, software recording will begin.

NOTE: For an MDT-400 the process will be similar but only is available with option 2 and from TPS programming tool (*Utilities -> Flash terminal*).

7 BASIC HTT-500 PROGRAMMING

This section explains how to program the basic T2PRO parameters to begin using an HTT-500.

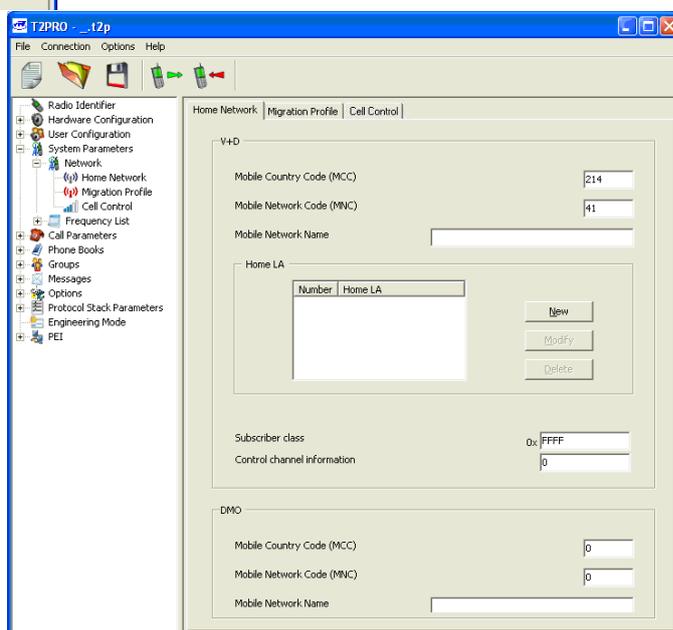
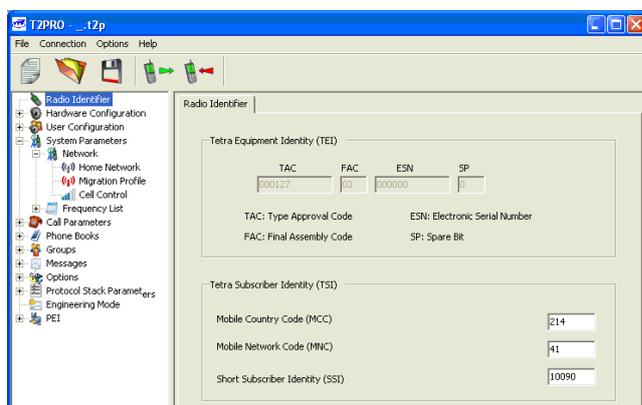
For an MDT-400 (TPS programming tool) the menus are similar to those of the T2PRO for HTT-500. Below is an explanation of the HTT-500 menus with some comments on possible modifications if you are programming an MDT-400.

7.1 Equipment and network configuration

First, it is necessary to configure the *Tetra Subscriber Identity (TSI)*, which as the name indicates, identifies the TETRA equipment and the network in which you wish to register it, by a series of codes. *TSI* has two parameters: *Short Subscriber Identity (SSI)* and *Mobile Network Identity (MNI)*. The latter is in turn divided into *Mobile Country Code (MCC)* and *Mobile Network Code (MNC)*.

The three parameters determining the network and the equipment code are on the T2PRO programming tool *Radio Identifier* screen.

The *System Parameters -> Home Network -> V+D* screen also contains the MCC and MNC parameters together with the network name. If you modify the values of *MNI* on one of the two screens, it will automatically be modified on the other. On the same screen, these parameters are configured for *DMO mode*. This special mode enables you to communicate directly with other TETRA radios without needing to use an infrastructure.



7.2 Configuring the frequencies

Once the parameters identifying the network in which the equipment is to be registered have been configured, you must configure the working frequencies or control channels (*System Parameters -> Frequency List*).

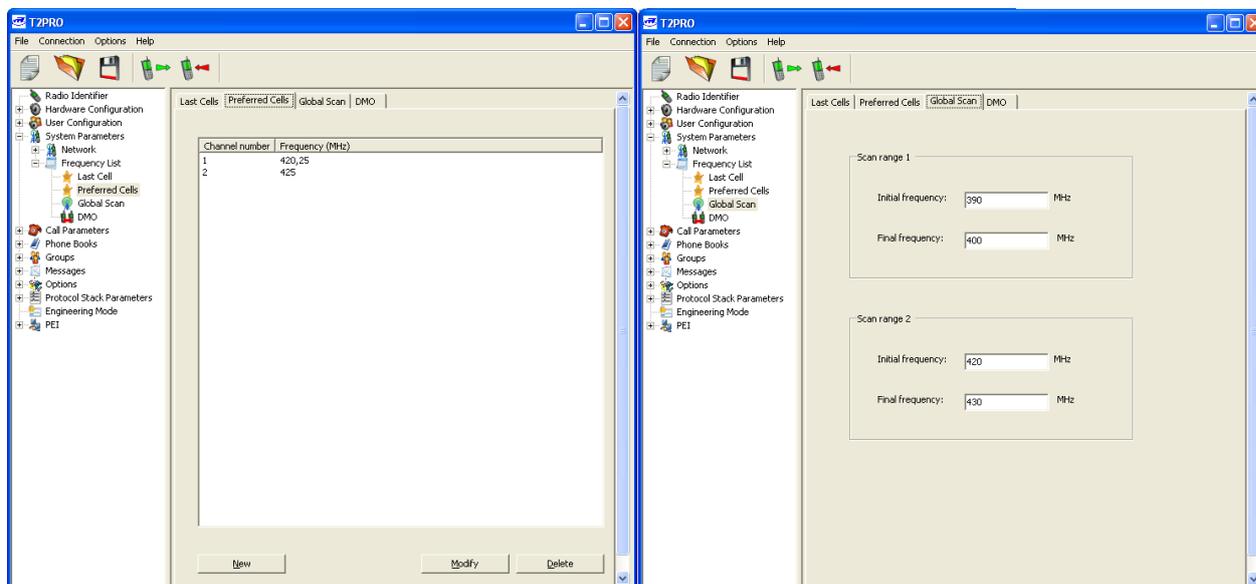
The first screen *System Parameters -> Frequency List -> Last Cells* is not modifiable by the user and it displays the last cells in which the HTT-500 device has been registered. The other two screens can be configured.

In *System Parameters -> Frequency List -> Preferred Cells* you can configure a list with the preferred frequencies, which will be the first the equipment will register for V+D. The list can be edited by adding, modifying or deleting frequencies as the programming tool wishes. The last screen (*System Parameters -> Frequency List -> DMO*) is similar to the previous, except that the frequencies configured are for operating the equipment in *DMO* instead of V+D mode.

And finally, the *System Parameters -> Frequency List -> Global Scan* screen, where you can optionally establish two ranges of frequencies to scan for the global search for equipment registration. This global scanning will begin if no valid frequency has been found in the previous frequency lists.

All these frequencies must be within the range of the working band determined on the *Hardware Configuration -> Hardware Parameters* screen.

The frequencies are always the reception frequencies that correspond to the BS transmission.



7.3 Configuring the group agenda

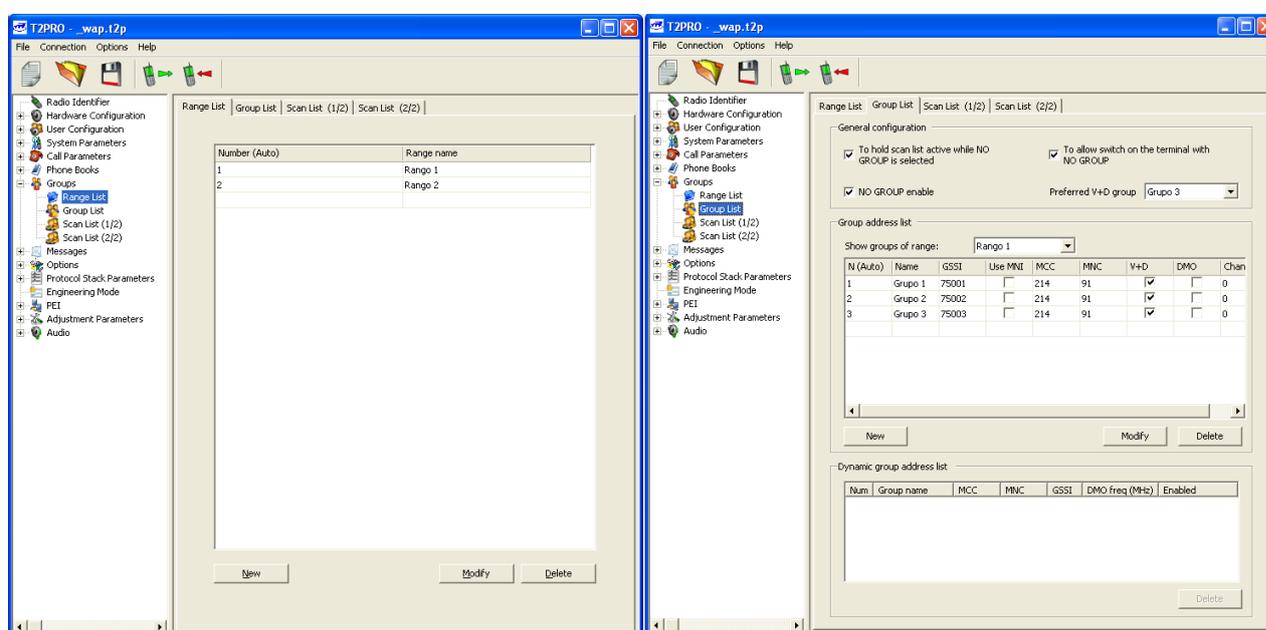
Another important part of the basic programming configuration is the user groups. It must be remembered that the configuration referring to group calls must always be made from T2PRO, as it is not possible for the user to edit or modify anything from the equipment menu.

The groups are organised in ranges or folders, in such a manner that each range can have several groups. The equipment programming tool will configure the structure of ranges and groups for an HTT-500 in the prepared T2PRO lists. The HTT-500 user can choose from the equipment the range of groups for communicating at any given moment.

On an HTT-500 it is in the menu *Groups* and in the TPS for an MDT-400 it can be found in the menu *Call Parameters* -> *Phone books*.

The logical process for programming groups is:

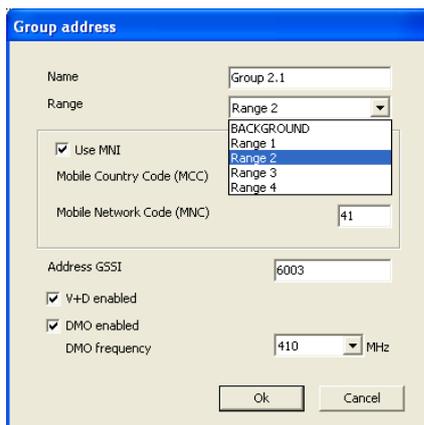
1) Program ranges and then, groups for each range:



To program a new group, click *New* button and fill in the fields displayed on the opened window shows in the following illustration: **name** of the group, **range** it belongs to, **network codes** (if the checkbox “*Use MNI*” is not selected, the programmed default values will be used – *Home Network*), the group **identifier** (GSSI), and the checkboxes to select to enable/disable **V+D and/or DMO mode** options. If DMO is enabled, select one of the frequencies for the **DMO channel** associated to the new group from the list.

To add or edit ranges or groups, you can also write in every row over the grid. To go from a cell to another cell, you can use tab key or arrow keys. To modify cells with check boxes, you can use space key. When you go to a new row, the previous row values will be validated and a warning message will appear if something is not right. When a row is correct, the column Number (Auto) will be filling in with the next one index. If this column value keeps on (null), something is not right, so the modified cells won't be saved and they won't be written in the handheld if you program it.

To delete a range or group you have to go to a row cell and click *Delete* button in T2PRO.

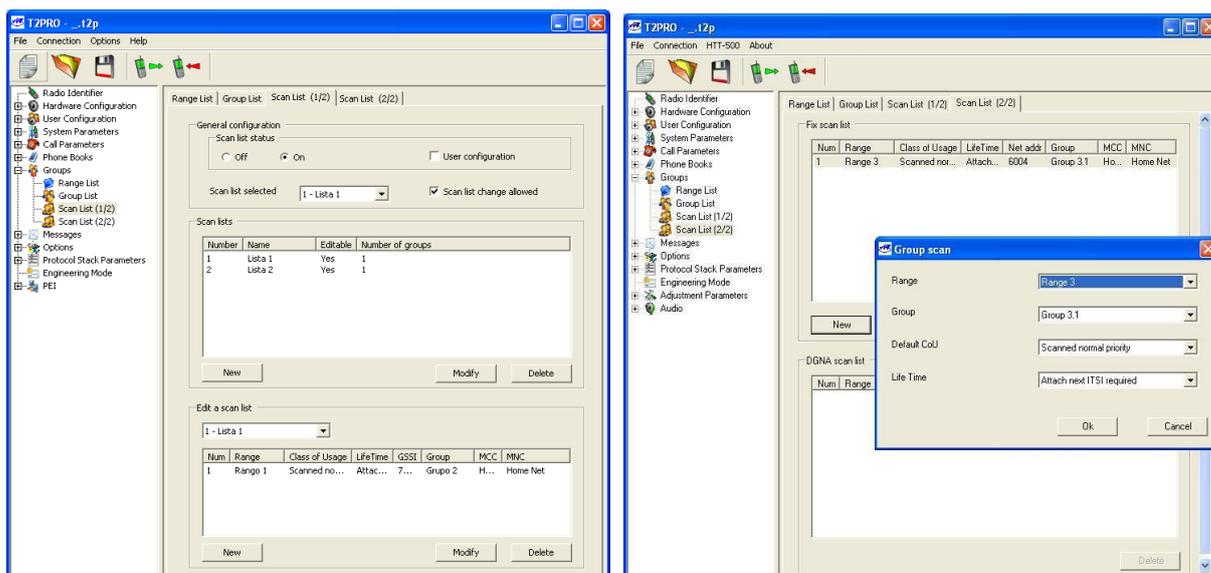


- 2) **Configuring scanning lists.** To configure the groups that you wish to be in listening status, use scanning lists.

Several scanning lists can be created in the first square (Tab 1/2; see image on the left). Each list is filled with the groups you wish, using the second square. From the HTT-500, the user can select the scanning list they wish to activate or edit its contents (depending on user permissions).

In the second tab (2/2; see illustration on the right) the fixed scanning list is configured, these groups remains active regardless of the selected scan list. Dynamic lists (DGNA) are established from the network and cannot be modified by user.

In this manner, a group call from any of the groups configured in the active scanning list of the fixed scanning lists will be automatically received. Using the 'scan list status' all scanned groups (including fixed and DGNA lists) can be activated/deactivated, with the only exception of the groups programmed with Default CoU 'always scanned'.

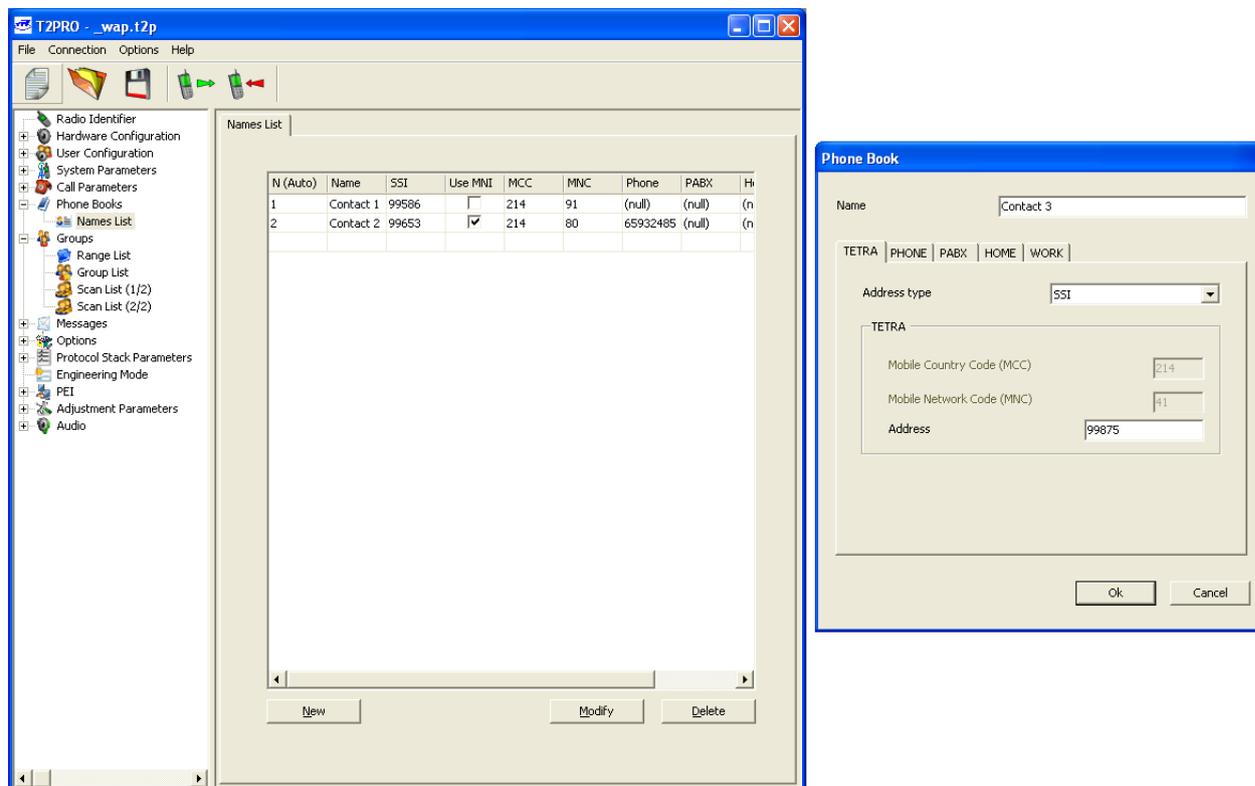


7.4 Configuring the individual agenda

Individual calls between two users are private. From T2PRO, in the *Phone Books* menu, it is possible to initially configure individual contacts (Individual TETRA addresses or telephone addresses). To add or edit a contact you can fill in them in the grid cells over the row you want to change (in the same way than in ranges and groups). Another option to save changes is with *New* and *Modify* buttons. A window will be opened to fill in parameters as you can see in right picture, and values will be validated and will be updated in the grid. To delete a contact you have to go to that row and click *Delete* button in T2PRO.

In TPS for an MDT-400 you can find this menu in *Call Parameters* -> *Phone books* -> *Private calls*.

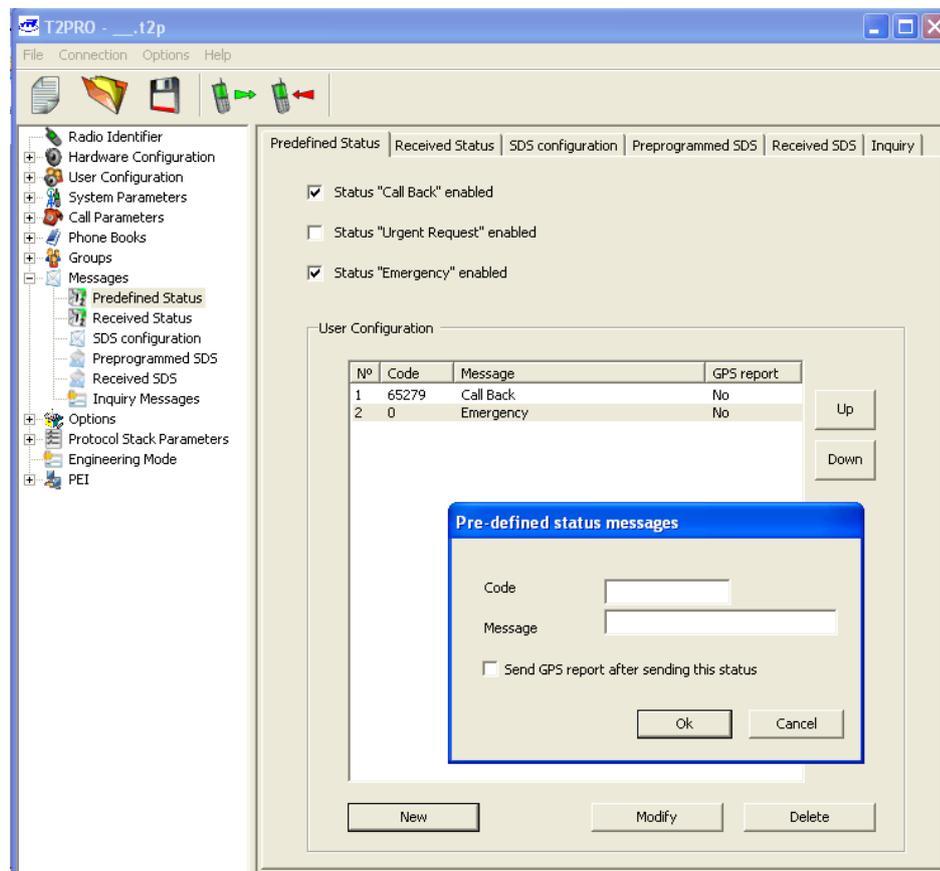
Even so, the user can also modify or add new contacts from the corresponding menu on the device.



7.5 Configuring status messages

Predefined status messages that appear on your HTT-500 will be those that have previously been programmed from T2PRO. It is not possible to edit them or modify them from the equipment menu.

On the *Messages -> Predefined Status* screen, you can select the status messages you want your device to have as predefined. Three are already fixed that can be selected if the user desires. They are: *Call Back*, *Urgent Request* and *Emergency*. In addition, other customised messages can be added for each user. The T2PRO list (See illustration) will display all those selected to show on the equipment, both fixed and personalised. The list can be reorganised from the programming tool to choose the position of the messages on the HTT-500 menu.

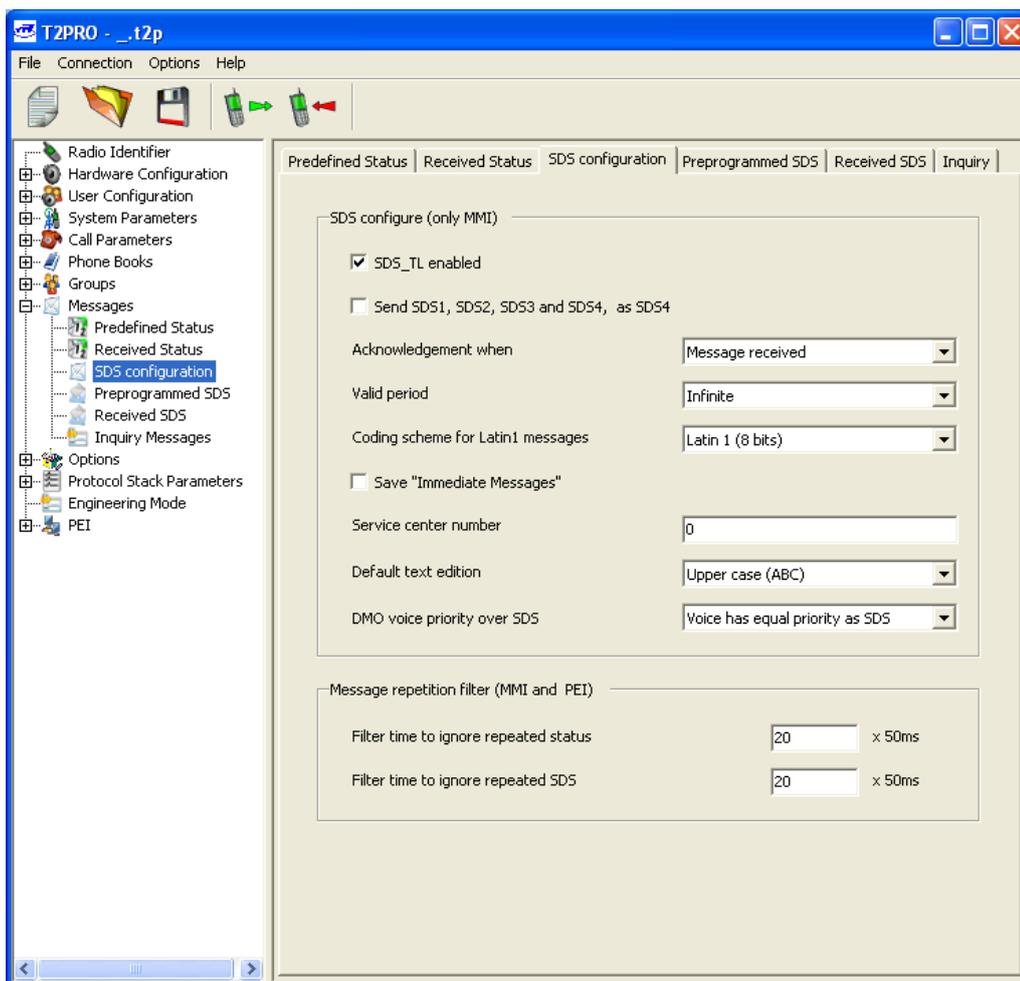


7.6 Configuring text messages

To use SDS text messages it is not necessary to enable anything. On the *Messages -> Preprogrammed Message* screen you can change the configuration if you wish.

On the *Messages -> Received Messages* screen there is a non-editable list with the messages received by your HTT-500 device.

If your network or the terminals of other manufacturers only allow the SDS4-TL format, you will have to activate the options “*SDS_TL enabled*” and “*Send SDS1, SDS2, SDS3 and SDS4, as SDS4*” that are in *Messages -> Short Data Service*.

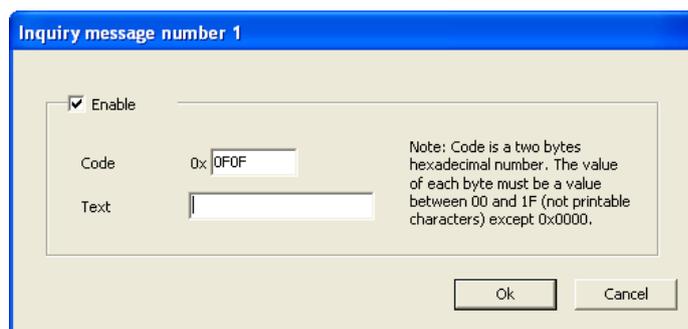
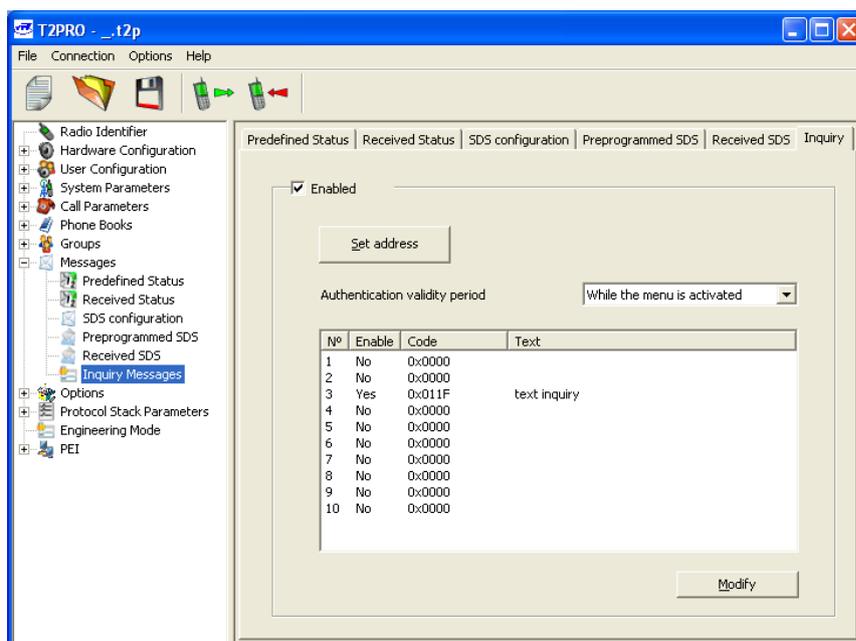


7.7 Configuring inquiry messages

To use inquiry messages it is necessary to enable it on the *Messages -> Inquiry Messages* screen.

Inquiry messages are a list of predefined template messages (up to 10). Each template has a text that will be wrapper into a SDS using its code value. User will add, manually, extra text to this SDS.

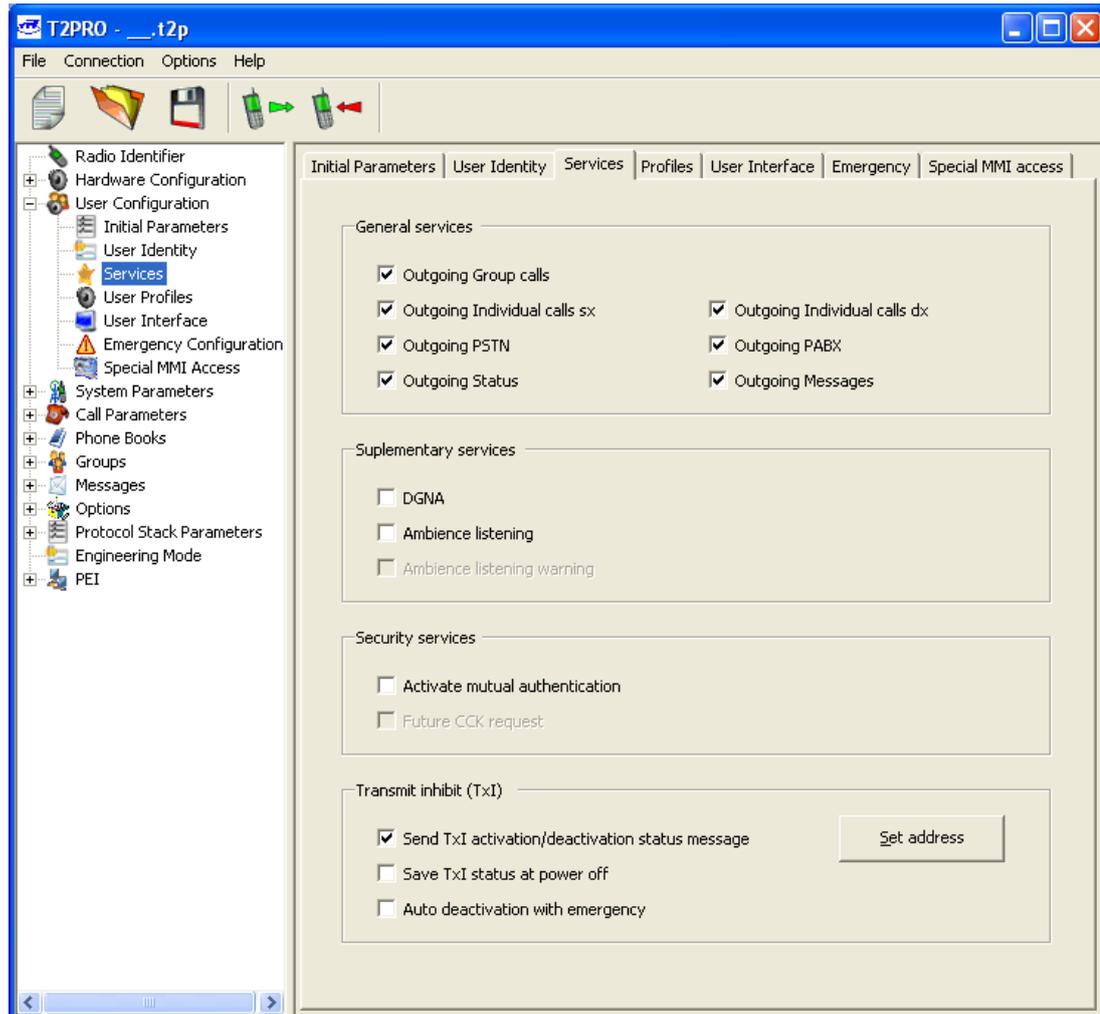
All templates have the same destination address. It can be configure with "Set address" button. Each template can be activated individually and its code value is a two bytes hexadecimal number (0..F). The value of each byte must be a value between 0x00 and 0x1F (not printable character) except 0x0000 value.



7.8 Configuring services

On this screen, you can disable certain types of calls and general HTT-500 services. Remember that many other functions depend on the terminal programming and the network configuration. Ask your supplier about the services available.

The type of calls and services are only limited transmission, as in reception this is not possible. In any case, functionality depends to a large extent on what the infrastructure allows.



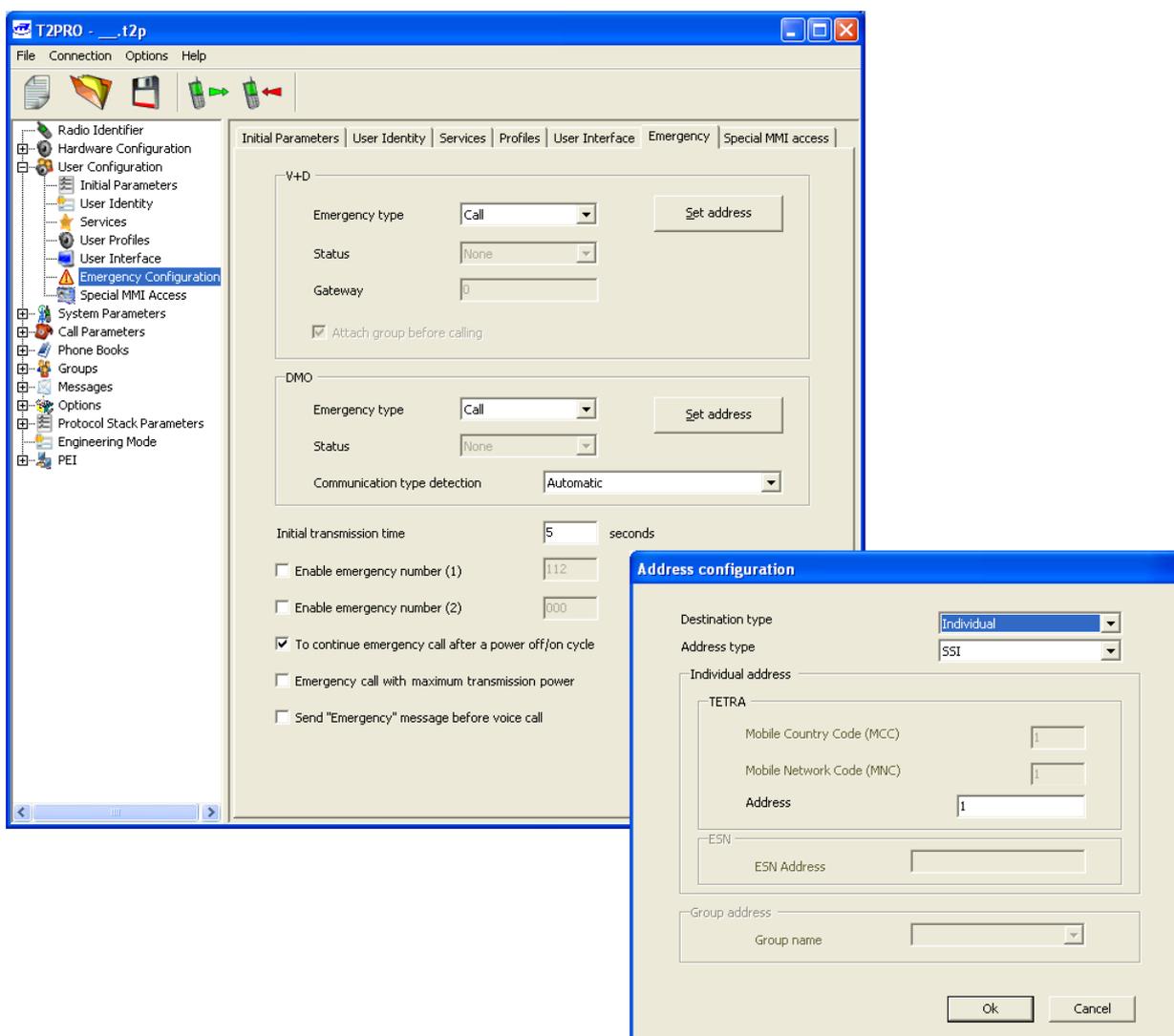
7.9 Configuring emergency calls

An HTT-500 device can be used to make emergency calls both in V+D and DMO modes (Orange button of the HTT-500). To configure the action to be carried out on launching an emergency call it is necessary to go to the T2PRO menu: *User Configuration -> Emergency Configuration*. And from there you can select for each mode:

- *Emergency type*: If you wish to launch a call or send a status message.
- *Call type*: If you send an individual contact or send to all the members of a group.
- *Individual Address*: In the case of an individual call, it is necessary to select the type of destination address (*Address type*) and fill in the corresponding fields in the address description.
- *Group Address*: For group calls, the group to send the emergency must be chosen.
- *Status*: If a status message is to be sent, one of the predefined status is selected (See section 5.5)

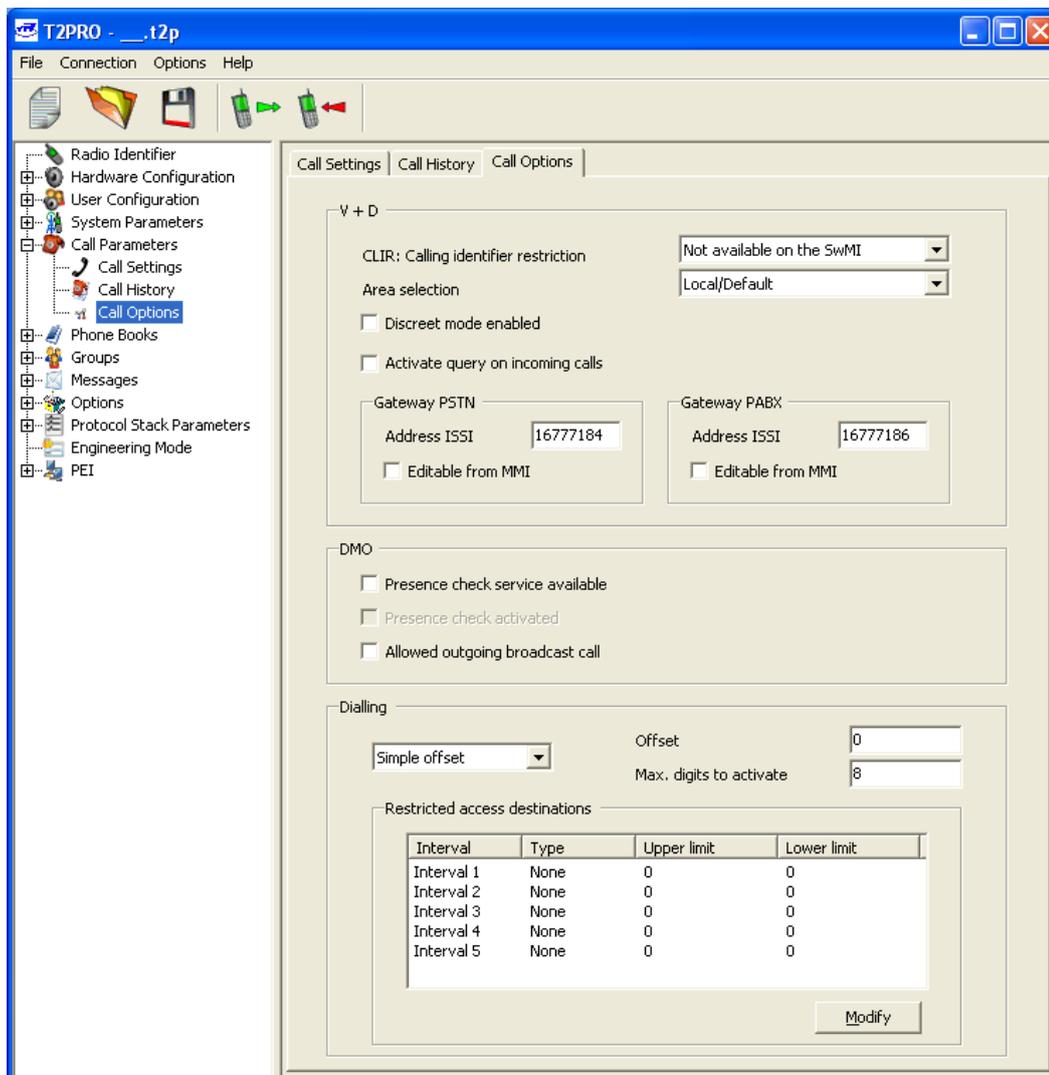
For DMO mode, it is only possible to configure emergency codes, either individual or group, but never status messages.

In the TPS for an MDT-400 you can find this option in *Call Parameters -> Phone books -> Emergency calls*.



7.10 Configuring telephone calls (PSTN-PABX)

If calls are going to be established to telephones from the TETRA terminal, the infrastructure gateways must be programmed from the T2PRO screen: *Call Parameters* -> *Call Options*.

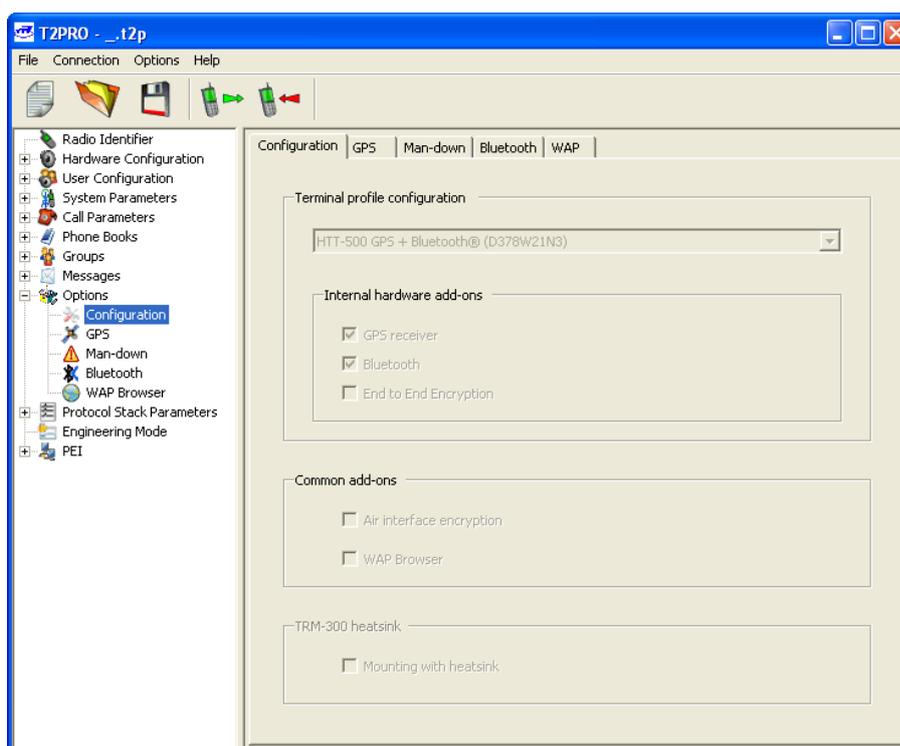


7.11 Configuring options

Possible HTT-500 configurations are currently:

- HTT-500 Basic (D378W21N0): Without additional options
- HTT-500 GPS (D378W21N1)
- HTT-500 Bluetooth® (D378W21N2)
- HTT-500 GPS + Bluetooth® (D378W21N3)
- HTT-500 E2EE - End to End Encryption + GPS (D378W21N4)
- HTT-500 E2EE Teltronic- End to End Encryption + GPS (D378W21N5)

For the GPS and Bluetooth options to be enabled and configured in T2PRO, the necessary hardware module must have been incorporated during the HTT-500 manufacturing process. Once the HTT-500 has been read, you can see the options your equipment has available on the *Options -> Configuration* screen, as can be seen in the illustration below. If you need an option that is not enabled in your equipment, please contact your distributor or Teltronic S.A.U.



All the options can be enabled or disabled on the HTT-500 by checking the box “*Option enabled*”. It may also allow the configuration of the option from HTT-500 or keep it fixed as defined in the programming (“*Editable from MMI*”).

7.11.1 GPS

If your HTT-500 was manufactured with a GPS option, you will be able to configure this function on this T2PRO screen.

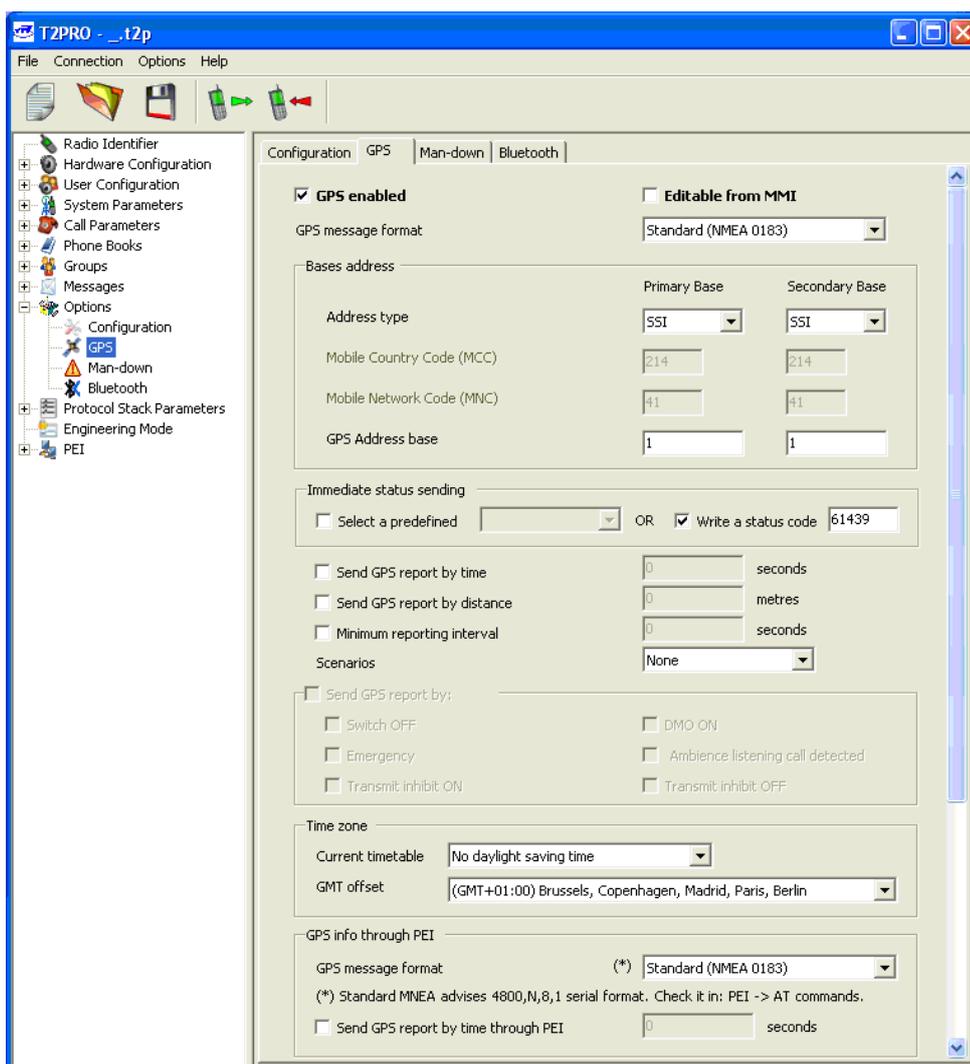
The three possible GPS formats are:

- Standard (NMEA 0183)
- Teltronic Short Format
- Location Information Protocol (LIP)

The primary and secondary bases are used to configure sending and position *triggers*. The primary receives GPS positions and can configure transmissions. The secondary is basically used as a support for the primary in case it stops working at any time.

GPS position can be sent in several ways:

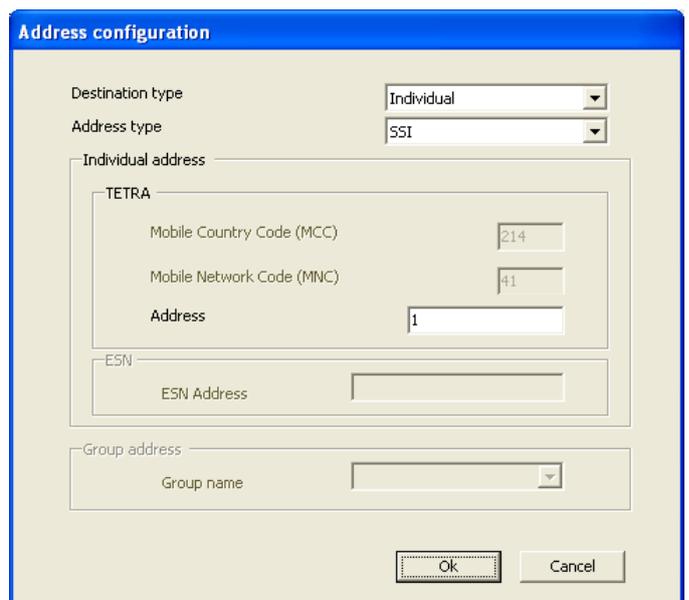
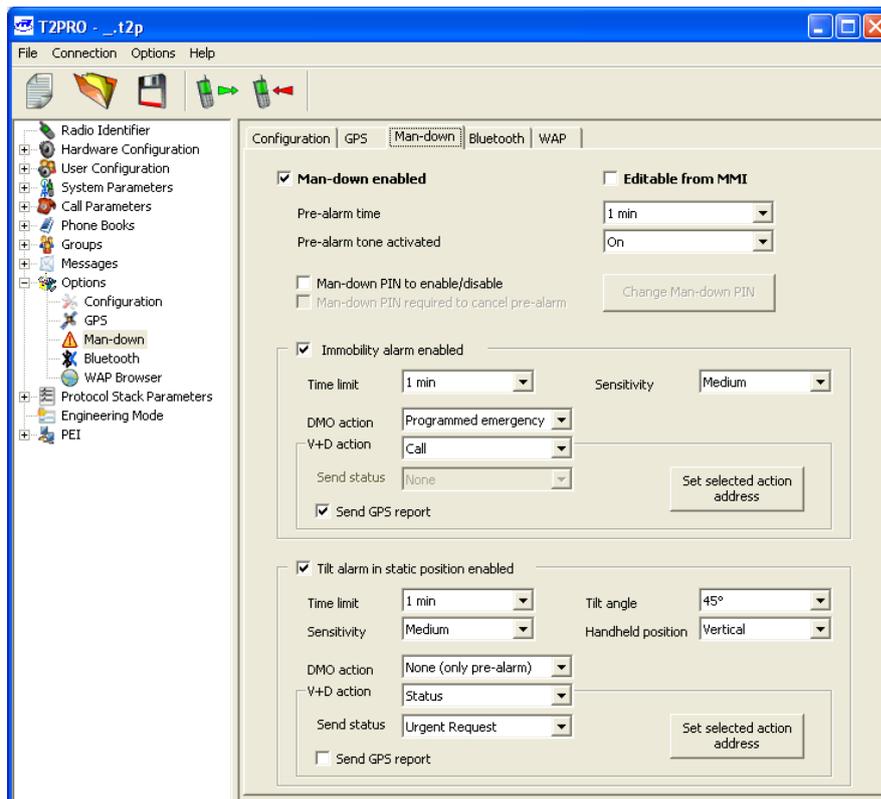
1. Regular sending by time elapsed.
2. Sending with relation to distance covered.
3. Immediate request by status.
4. (Only for LIP format): You can configure the transmission when carrying out actions such as switching off the device, activating DMO mode, sending an emergency or activating the *ambience listening service*.



7.11.2 Man-down

This option consists in the HTT-500 detecting situations that could indicate the user is in danger, either due to absence of movement (*Immobility alarm*) or inclination (*Tilt alarm*). Both types of alarm can be configured in T2PRO with the desired action for when the alarm is activated.

For more detailed information about this function, please consult the reference guide provided by your distributor.

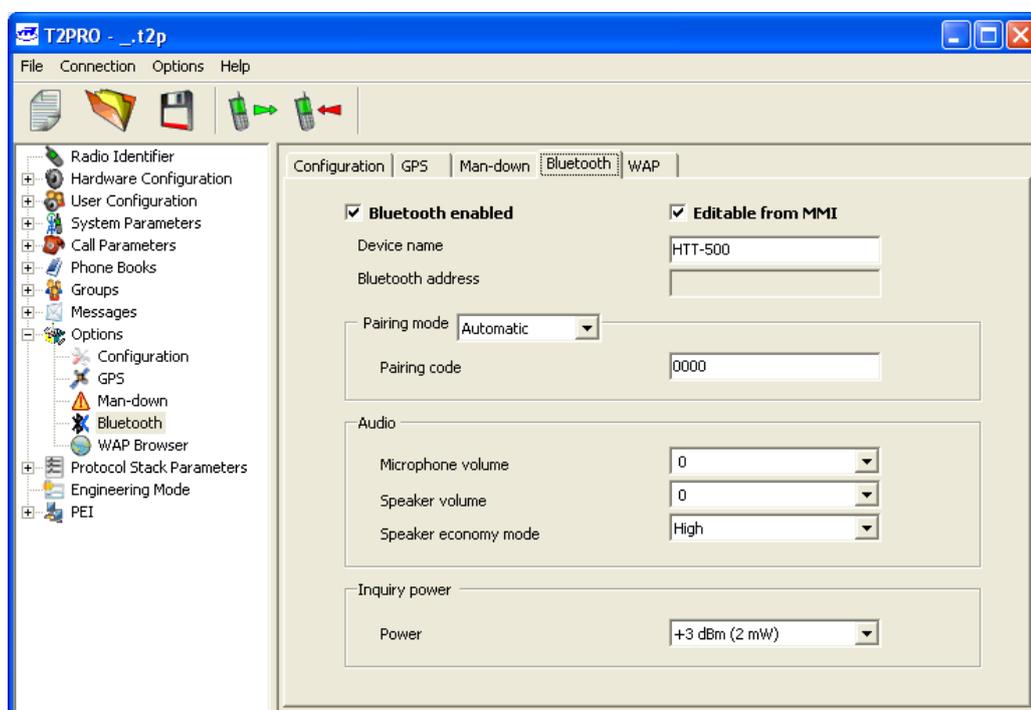


7.11.3 Bluetooth

To use this option with your HTT-500, it must have been installed and enabled in your terminal.

Once configured, an HTT-500 will search for any *Bluetooth* devices within its reception area. The *pairing* process is similar to authentication and is carried out only the first time a *Bluetooth* device is connected to an HTT-500. Both devices must know a key code (*pairing code*), and as a result, both record a code that will be used for future connections between them. If “*Manual*” mode is selected, the user must enter the code in the HTT-500 when the devices are paired. If “*Auto*” mode is chosen for the *pairing*, it will be carried out automatically with the programmed *pairing code*.

In the audio *Bluetooth* part of T2PRO, you can configure audio options for *Bluetooth* communication. The “*Speaker economy mode*” option indicates that the audio-*Bluetooth* connection is always established (“*None*”) or that this connection remains open only 30 seconds (“*Medium*”) or 5 seconds (“*High*”), after the last audio connection.

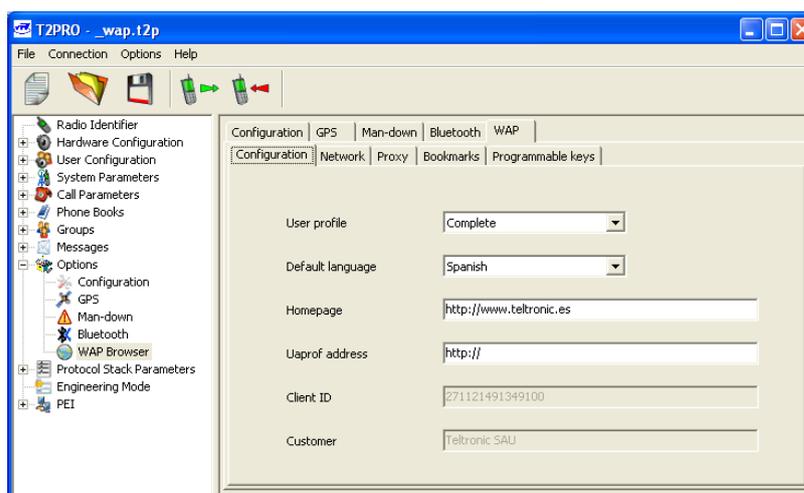


7.11.4 WAP Browser

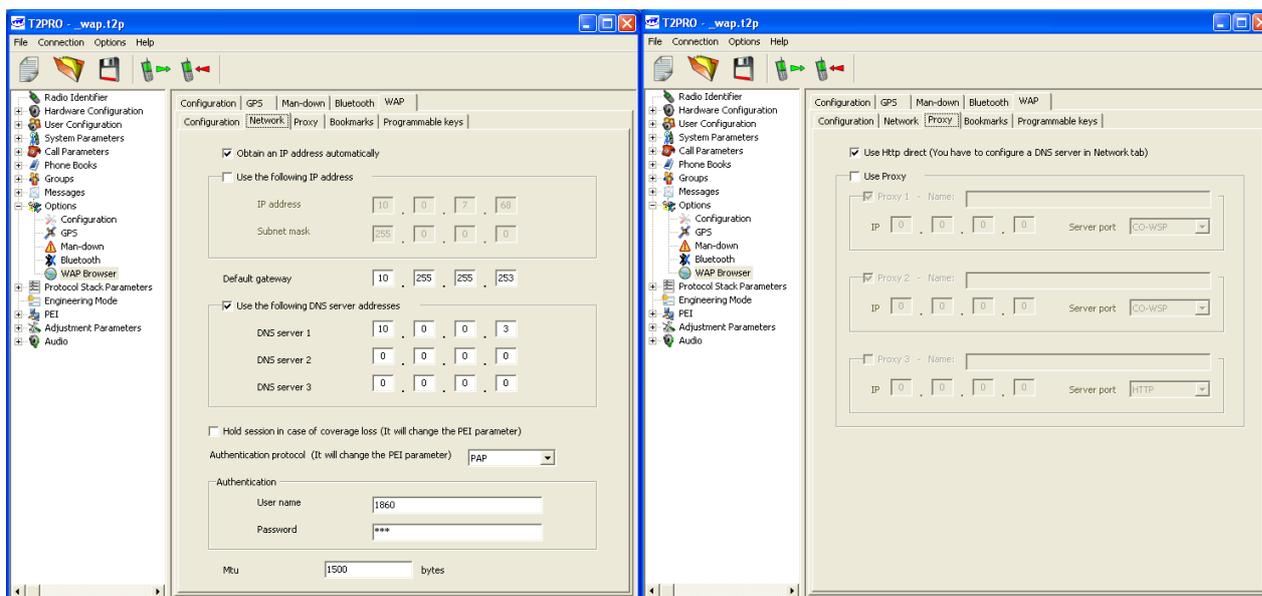
To use this option with your HTT-500, it must have been enabled in your terminal.

To program basic WAPRO configuration you have to fill in:

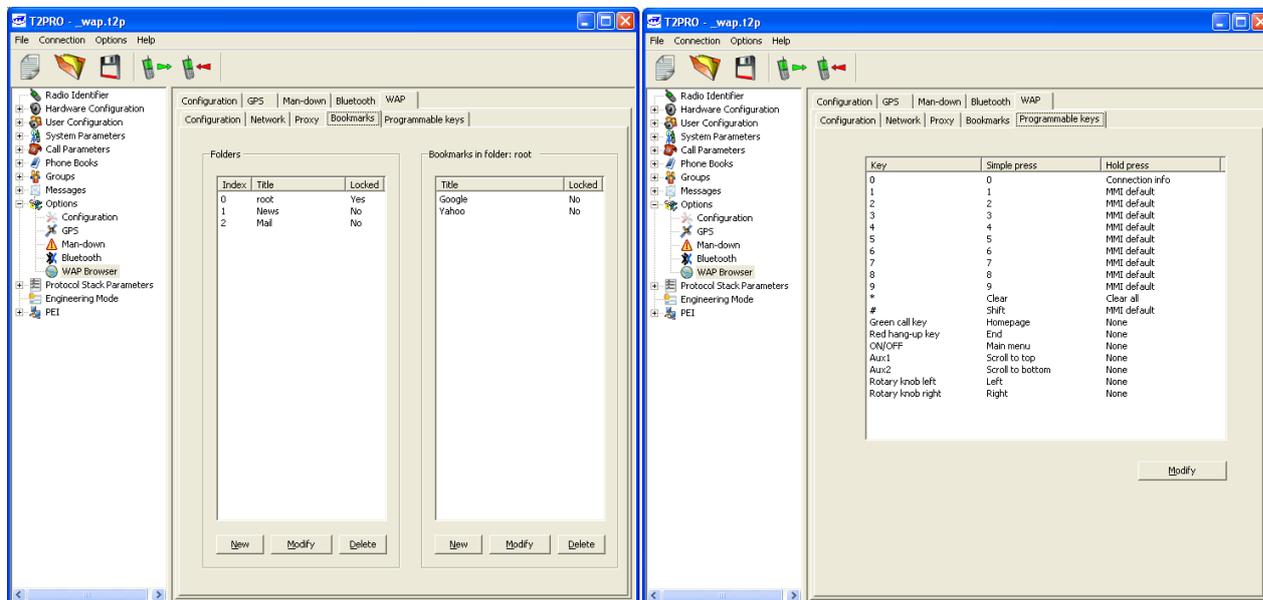
- **Configuration -> User Profile.** It fix if the handheld can manage WAP as user (*Simple*) or as administrator (*Complete*). The second one option will allow to configure WAP options in handheld
- **Configuration -> Uaprof address.** It is an optional parameter to find a handheld configuration in this address.



- **Network -> IP address.** You can select IP address automatically or configure other ones in T2PRO.
- **Proxy y DNS server.** If you check *Use http direct* you will have to set at least one of the DNS Server addresses in *Network* tab. That is not necessary if you set one or several Proxy (name, IP address and server port).



- **Bookmarks.** You can program bookmarks to find easily those addresses you use frequently. To organize these bookmarks you can group them in folders or keep them in root folder.
- **Programmable keys.** You can program simple and/or hold press for some predefined keys to use them as quickly access in WAP navigation.



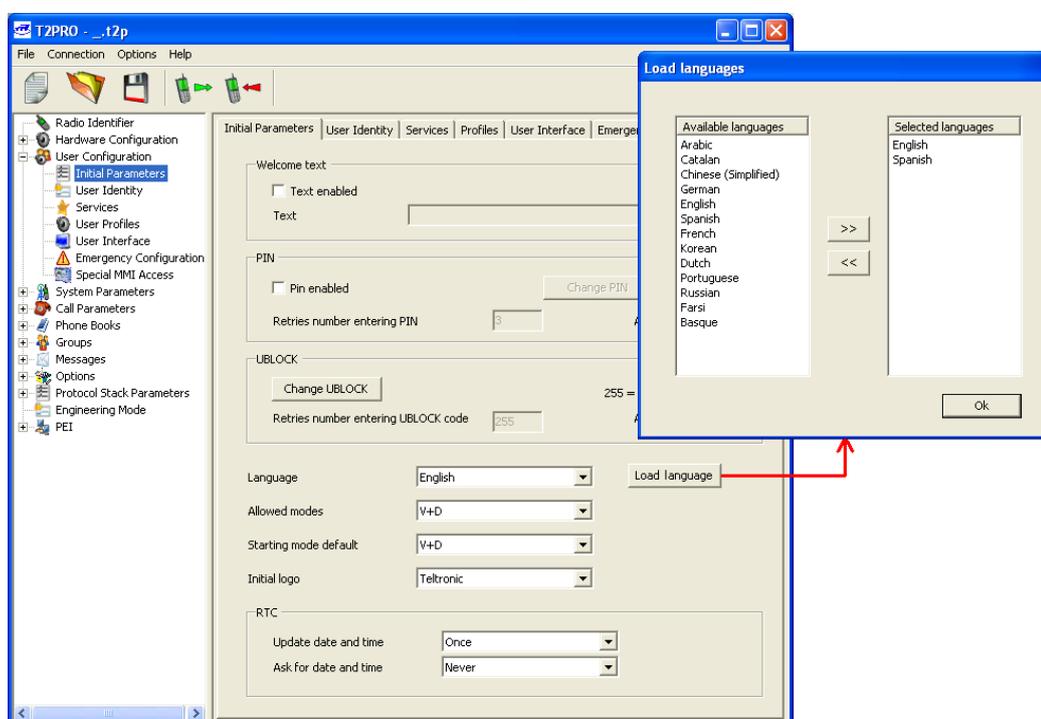
7.12 Configuration of languages available

The language of HTT-500 menus is programmable from T2PRO, from the window:

User Configuration-> Initial Parameters -> Language.

A dropdown menu will display all the languages that will be recorded on the device. The default language displayed on switching on the device after writing will be the selected one. Then, from HTT-500 menus, the user will be able to change the language to any of those available on this menu.

The programming tool can configure the languages that will be available to the HTT-500 user by means of the *Load language* button on this screen. The illustration displays two lists: The one on the left displays all the languages available on T2PRO and on the right, those that the programming tool has selected to write on HTT-500.

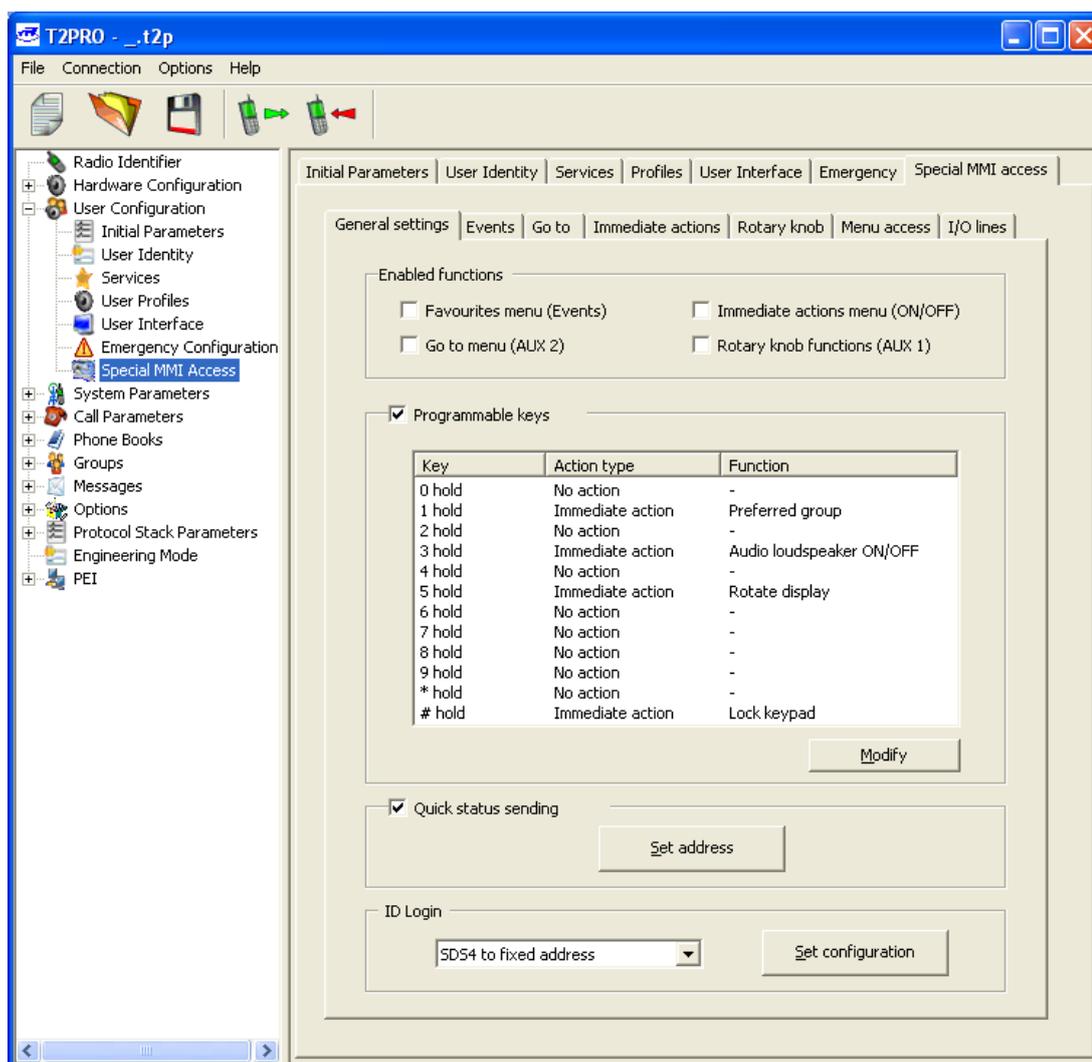


7.13 Configuring Special MMI Access

The *Special MMI Access* function enables activation and configuring in the Teltronic device of certain actions that are triggered when an event occurs or configuration of quick keys access menus or restricted access... It can be configured from the *User Configuration -> Special MMI Access* screen.

- **Programmable keys**
- **Events (Favourites Menu)**
- **Go To**
- **Immediate actions**
- **Rotary knob**
- **Menu access**
- **Quick status sending**
- **ID Login**
- **I/O lines**

For more detailed information about this function, please consult the reference guide provided by your distributor.

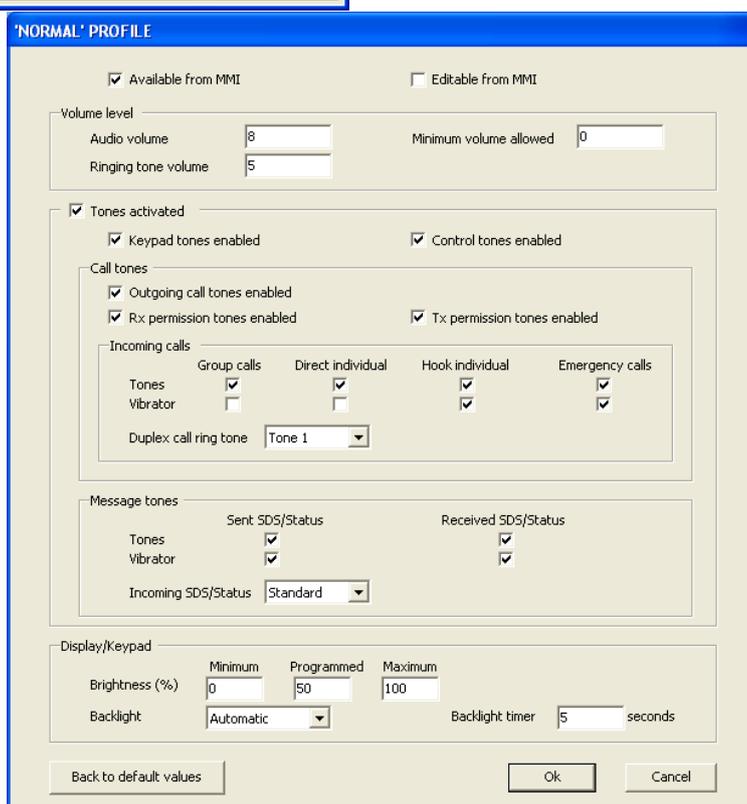
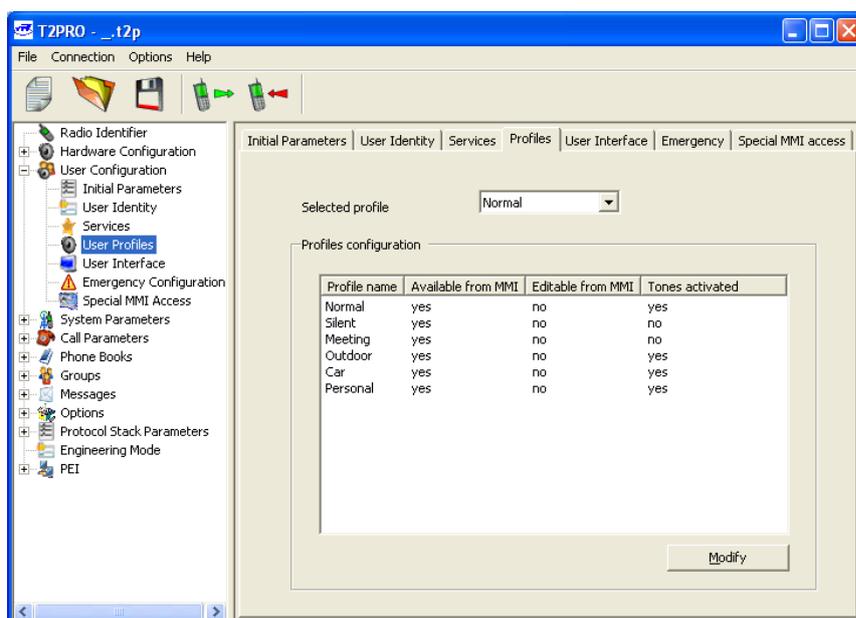


7.14 User profile configuration

Several profiles can be configured for the HTT-500 user to be able to select one or another according to interest, from the *User Configuration -> User Profiles* screen.

The profiles available are: *Normal, Silence, Meeting, Outdoors, Car, and Personal*. The HTT-500 programming tool can modify default values assigned to each of these profiles regarding availability for the HTT-500 user, volume level, activation and configuration of the different tones and vibrations of the device and display options.

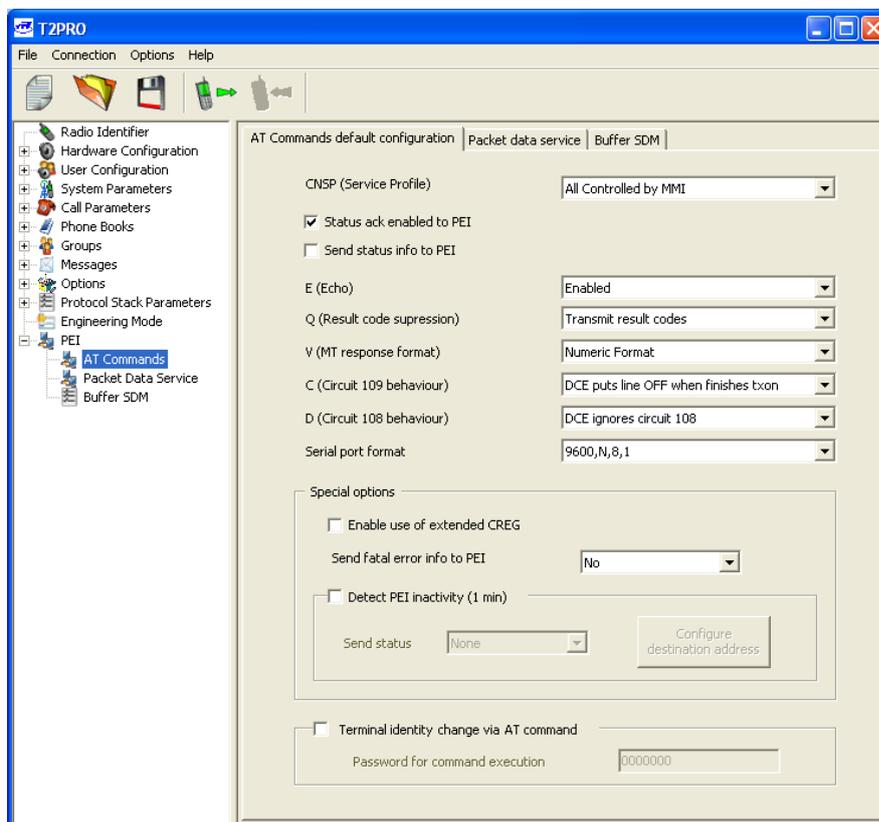
For more detailed information about this function, please consult the reference guide provided by your distributor.



7.15 Peripheral equipment interface (PEI)

To configure parameters for the remote control of the terminal via the PEI interface using AT commands. You have to check the external application connected to the terminal because its configuration must be compatible with this configuration.

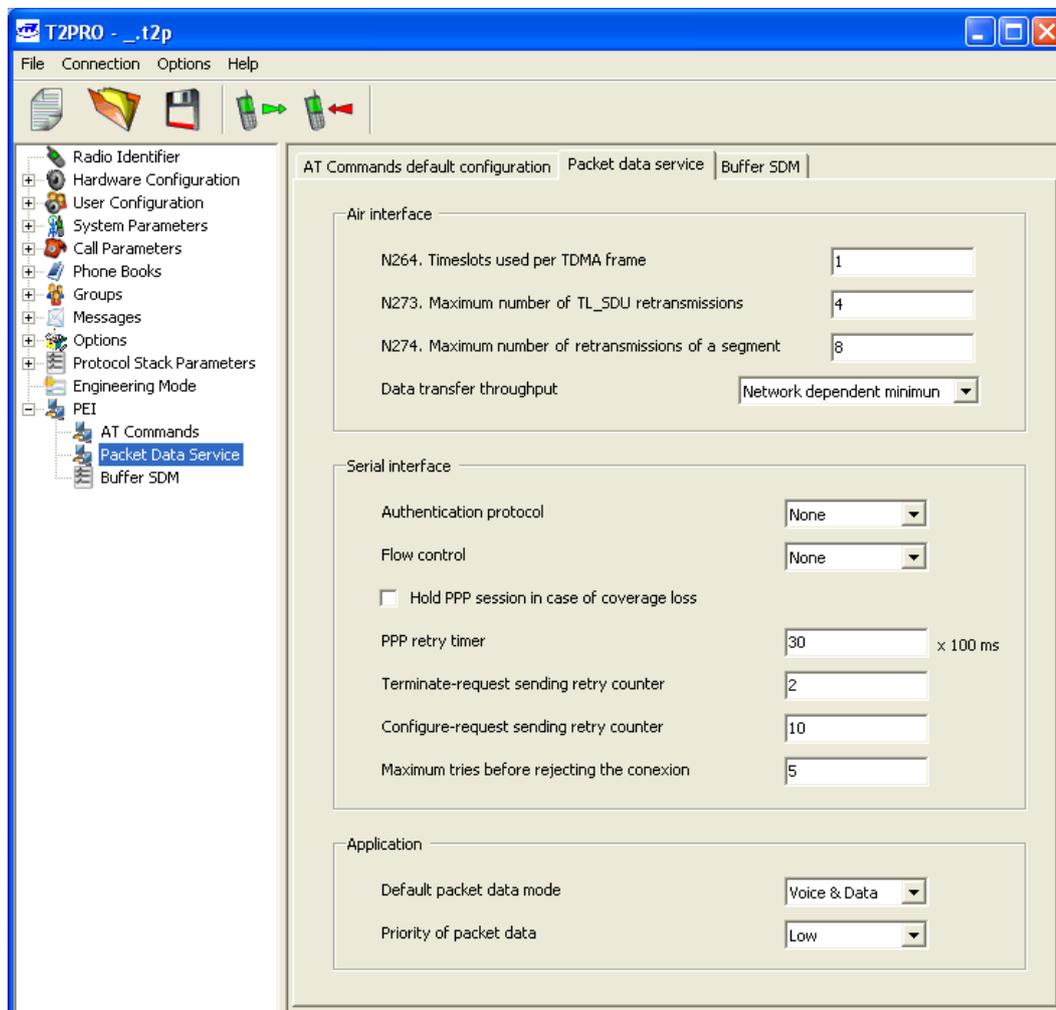
AT Commands



- **Serial port format:** Configure the way to send data through terminal rear connector. You can set baud to 4800, 9600, 19200, 28800, 38400, 57600 or 115200. Parity will be set to 'none' (N), data bit to 8 and stop bit to 1.
- **Special options:**
 - **Enable use of Extended CREG:** Standard command +CREG is extended to give the external application information about the system operation (normal mode / fall back mode).
 - **Send fatal error info to PEI:** This Teltronic special command is used to send information about fatal errors detected by the terminal in numeric or verbose mode.
 - **Detect PEI inactivity:** Availability of PEI connection is detected by the terminal by means of an inactivity timer which represents a countdown to zero. When the terminal receives any valid command, the timer is reloaded to a fixed value of one minute. If the timer reaches zero, the terminal will consider the communication with the external application has been lost. It is possible to configure a status message to be sent just when the PEI inactivity is detected. This status message will be sent to a pre-defined address.
- **Terminal identity change via AT command:** New proprietary (non standard) AT command is defined in order to allow an external application to change the terminal ISSI. Due to security reason, this command is not available by default. The password is defined as a secret key to avoid any unkind use if a terminal is stolen. This password must be send within the command in order to validate the application which intends to change the terminal identification.

Packet data service

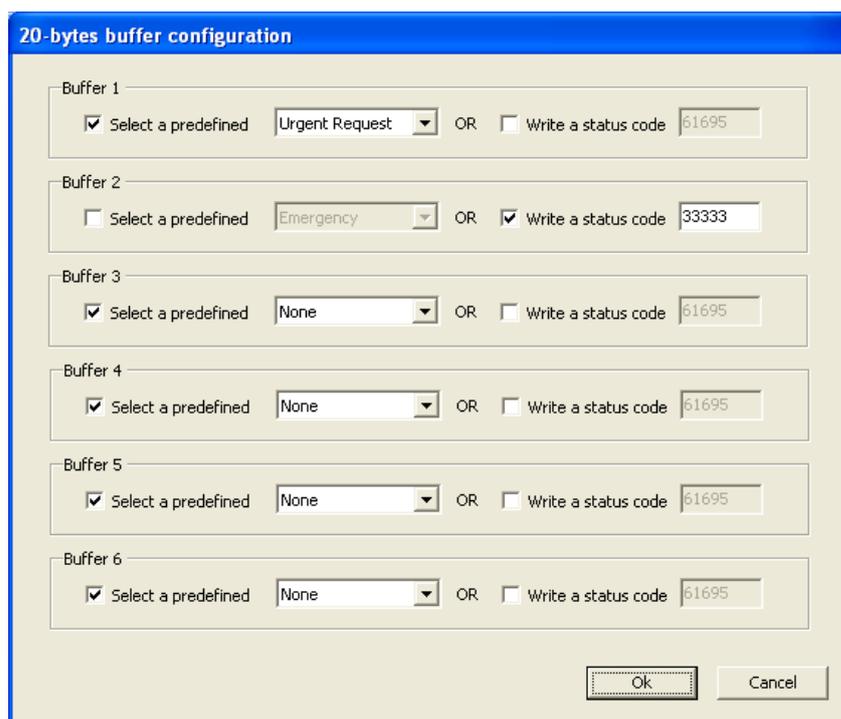
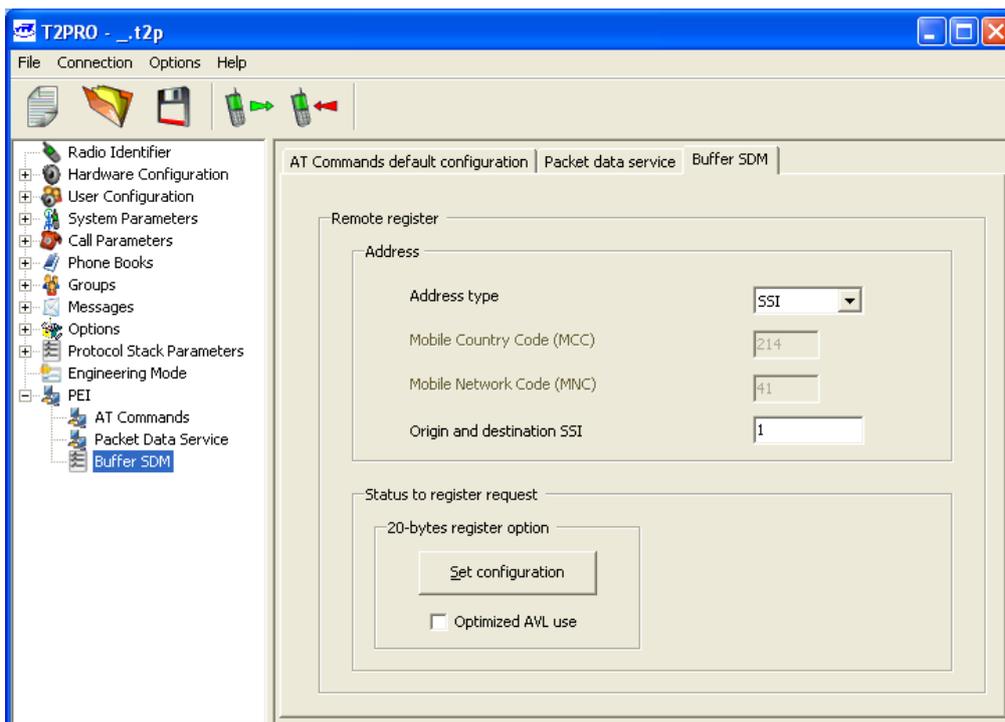
The parameters to configure the packet data service are separated in: Air interface, serial interface and application as you can see in picture below.



Buffer SDM (Remote register)

Six internal 20-byte register can be filled by PEI with a special AT command. The content of these registers will be sent over the air (packed as an SDS type 3 message) to a pre-programmed destination address when receiving a pre-defined status. This pre-defined status received will be signalled also through the PEI. Just after sending the SDS type 3 message, the content of the register is cleared (filled with 0's).

If Optimized AVL use is activated, the content of 20-bytes buffer will be sent to the air in a TELTRONIC proprietary format.



8 APPENDIX

8.1 *Minimum information necessary for programming*

The network manager must supply the following information:

1. Basic parameters:
 - **Mobile Country Code (MCC)**
 - **Mobile Network Code (MNC)**
 - **Frequency** (or list of frequencies) of the control channels
2. List of **Group Short Subscriber Identities (GSSI's)**.
3. **Individual Short Subscriber Identities (ISSIs)** assigned to this/these terminal/s (numbers activated in SwMI).
4. If calls to telephones (PSTN/ PABX) are allowed, you will need the **gateway** numbers.

The network planner must supply the following information:

1. List of **texts associated to the GSSI's** (names of the groups). If any of them are scanned in the list of scanner groups, it must be known if it is allowed for the user to enable/disable the scanners and add/remove groups from the scanner.
2. Optional: **ISSIs agenda with its associated text**.
3. Optional: If the possibility of making an **emergency call** is desired (Orange button), you must know the destination (ISSI, GSSI, telephone...) and the initial transmission time.
4. Optional: If you use **SDSs**, you must know the format and type of confirmation.
5. Optional: If you use **Status**, you must have the status list available, with the code and text associated to each.
6. Optional: If you work in **DMO**, you must know the list of **GSSI's, frequency** and associated **text**.

8.2 Frequent problems

1. Cannot access the HTT-500 from the TETRA Terminal Programming Tool Selector.

If the T2PRO programming tool option of the application launched by the programming tools for an HTT-500, is not accessible, this is because the CD you have does not hold a license for your HTT-500 and you never previously had a license for the HTT-500. Please contact your distributor to obtain a license.

2. Cannot access the MDT-400 from the TETRA Terminal Programming Tool Selector. If the TPS programming tool option from the application launched by the programming tools for your MDT-400 is not accessible, this may have several causes:

- You never had a license to program your MDT-400 with TPS. In this case, if you wish to program the MDT-400, you must request a license from your distributor.
- You have a CD with a TPS (MDT-400) license and a version date after January 2008, but it was never installed. In this case it is necessary to install it and once installed, it will be available from the *TETRA Terminal Programming Tool Selector*.
- You have a TPS (MDT-400) license with a version date before January 2008. Install the TPS application and execute it from the user administrator account from which you had installed T2PRO. If you already had this TPS version installed on your PC with a date before January 2008, you do not need to reinstall it, just execute TPS from this user account. Then repeat the T2PRO installation for an HTT-500, which you have on your new CD.

3. No communication between the Teltronic device and the PC: Check that the port connection configuration is correct, checking section **"4. Configuring programming tool connections"** in this user manual. If you have any doubts regarding this section or the problem remains unsolved, read the solutions proposed below:

- If you do not know which port the USB programming cable for your HTT-500 is connected to, you can find it in your PC menu: *Control Panel -> System -> Hardware -> Device Administrator -> Ports (COM & LPT)*. The port called *CP210x USB to UART Bridge Controller* is the one that the PC has associated to your Teltronic USB programming cable. The port for the RS232 cable appears as *Communication port (COM1)* in the same menu of your PC.
- If the port you wish to communicate with does not appear on the *"Serial Port Connection"* configuration list, make sure your HTT-500 is properly connected to the PC with the programming cable and that the HTT-500 is on and in TETRA mode. If it is in programming mode, please switch the HTT-500 off and then on again before continuing.

8.3 Abbreviations

AUX	Auxiliary button
BS	Base station (Part of the infrastructure)
DMO	Direct Mode Operation
GSSI	Group Short Subscriber Identity
ISSI	Individual Short Subscriber Identity
MCC	Mobile Country Code
MMI	Man Machine Interface
MNC	Mobile Network Code
PTT	Push To Talk button
SDS-TL	Short Data Service – Transport Layer
SwMI	Switching and Management Infrastructure
TETRA	Terrestrial Trunked Radio
TPS	TETRA Programming Software for MDT-400
T2PRO	Teltronic TETRA programming tool
V+D	Voice + Data Mode Operation

8.4 Some TETRA concepts

Direct call	Just press the button (Normally PTT) and begin to speak. Your voice will directly be reproduced in the other device's loudspeaker.
Hook call	Press the button (normally AUX) and wait for the answer. You hear A call "ring!" and should "unhook". This type is only possible in private calls, as group calls are always direct.
Scanner	Enables you to listen to other groups in addition to the one selected on screen. If they speak to you though any of them, you can temporarily connect to them to communicate. At the end of the communication, you return to the one originally on screen.
Ranges	The user can have the groups organised so as to facilitate on-screen search. This is very useful when the equipment has many groups. Thus, groups will be put into folders that are called "ranges".