[softogo]

# WireLess
# Telnet VT

User Manual

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# Table of Contents

# 1.I WTnVt Features

Wireless Telnet "WTNVT" is a Telnet client for Symbol Technologies series 3000 PDT (PDT 3940, 3140, 3840, 1040) and 6000 PDT (PDT 6140, 6840) terminals.

WTNVT support various terminal emulations : Standard ANSI, DEC-VT52, DEC-VT100 and DEC-VT220.

DEC-VT52 is a non-ANSI terminal. DEC-VT100 and DEC-VT220 are "ANSI-compliant" terminals. ANSI is an ANSI-X3 compliant emulation.

WTNVT is "fully-configurable" program by text configuration files, that allows local language customization, and special adaptation to various Telnet implementations, and expected terminal behaviors.

Configuration file is composed of "sections", to adapt:

- Local languages (text customization and special characters set).
- Symbol Technologies specific PDT features.
- TCP level protocol.
- Telnet level protocol.
- Terminal Emulation features and behavior.
- Full configurable keyboard sequences.
- Barcode reading.
- Printers.
- Communication port as keyboard

WTNVT is shipped with standard configuration files that responds to the most popular configurations.

WTNVT includes a "message file" that contains all the messages shown by the PDT WT application to the user. You can translate or modify the messages to adapt or localize the emulation. The message file to be used by WTNVT is choose by an option in the configuration file. (WTNVT program has already some message files in several languages).

The download process of the "message file" is the same as the "configuration file".

# 1.II Installing WTNVT

WTNVT installation is done in following steps:

- Building static configuration files (optional)
- Installing WTNVT program into PDT Non Volatile Memory (NVM).
- Configuring Network Parameters.
- Downloading dynamic configuration files (optional).

## 1.II.1 Static or Dynamic configuration files

Telnet application may require to modify standard WT parameters in configuration files. Those files may be downloaded into the terminal in several ways:

### 1.II.1.1 Static

In static configuration, the needed files are included and downloaded *with the WTNVT program* at once into the PDT NVM. If "Bios Boot" is done, terminal recalls the NVM parameters.

This option needs to rebuild a customized version of "WTNVT.HEX" and needs to install WTNVT Build Kit (that includes some Symbol SDK utilities).

If you choose static configuration files, be sure to keep the special WTNVT.HEX built version, if you need to download other terminals. If you modify some parameters you need to rebuild WTNVT.HEX and download all the PDTs.

### 1.II.1.2 Dynamic

Using dynamic configuration, needs to download the configuration files to the PDT from a Host computer, *at any time*, and can be done in several ways:

- Serial download from a PC with RSLINK or PDTCOM file transfer programs. This option needs to install RSLINK in a Windows-based PC.
- Network download from a PC with WTDnl server utility installed into a Windows-based PC connected to the network.
- Network download from the host computer using the printing feature included in the ANSI or DEC-VT standard.

If you choose dynamic configuration files, those files will be downloaded once. Dynamic download replaces the configuration files into the "Flash Memory" and they aren't lost when "Bios Boot" is done.

## 1.II.2 Building static configuration files

Modify the "_WTnVt.cfg" file under the folder WireLess TelNet\Nvm\VT\Cfg with a text editor.

You may modify the "message file" (_msg.cfg) or create a new file"
Rebuild the CfgVt.zip file with WinZip (CfgVt.zip includes all the configuration files).

Rebuild the wtnvt.hex file by "usrcfg" Symbol technologies utility.

## 1.II.3 Installing WTNVT program into PDT Non Volatile Memory (NVM)

To load **WTnVt** in a Symbol Technologies series 3000 PDT, it is necessary to download to the PDT NVM **two** “DOT.HEX” files:

- **WS24_xxx.HEX** Drivers Spectrum24 for 2Mb FH PDTs (PDTxx42).
- OR
- **WS11_xxx.HEX** Drivers Spectrum24 for 11Mb DS PDTs (PDTxx46).
- AND
- **WTnVTxx.HEX** Wireless Telnet VT Emulator Version X.X.

Using NvmHex or RsLink utilities (see Appendix D). These utilities send the ".HEX" file to the PDT by writing the Non Volatile Memory.

1. Erase the PDT NVM (EEPROM).
2. Load **WS24_xxx.HEX** (2Mb FH) OR **WS11_xxx.HEX** ( 11Mb DS) first, ***and boot the terminal***.
3. To the "Flash Erase" question, respond **[Y]** (Yes) to format the Flash disk. When boot, NVM (or EEPROM, or **B:**) contents are transferred to Flash Memory (or **E:** drive ), the network and TCP/IP drivers are installed
4. Erase the PDT NVM (EEPROM) (Yes, yes …).
5. Load **WTnVtxx.HEX** and boot the terminal.
6. After boot, the PDT Network configuration utility (CFG24 or CFG11) allows to set the appropriate values.

You may load other configuration files (_WTnVt.Cfg, _MsgVtXX.Cfg ) by RsLink utility, or use those included into standard **WTnVt** NVM.

## 1.II.4 Configuring Network Parameters

Network parameters need to be configured into the Host and Client systems.

PDT network parameters may be configured by CFG24 or CFG11 utility, called from WTNVT main menu.

Ask your Network Administrator for:

- The Host Computer IP address.
- The Telnet port (standard is 23).
- The Default Router (if any).
- The Subnet Mask
- The PDT IP address (if not bootp is used).
- The ESS Id used by the 802.11 S24 radio network.

See Chapter 2 – Network Configuration and Appendix E for CFG24 or CFG11 Utilities.

## 1.II.5 Downloading dynamic configuration files

If you choose dynamic configuration files, you need to download those files to the PDT. Those files will be downloaded once. Dynamic download replaces the configuration files into the "Flash Memory" and they aren't lost when "Bios Boot" is done.

### 1.II.5.1 Serial download

Serial download needs to install RSLINK utility into a Windows-based PC with Windows 95, 98, Me, NT4 or 2000.

After a "Bios Boot" the terminal in the "Boot Menu" asks for whished download. Choose "F1 By RsLink" option.

See Appendix C – Downloading Configuration File and follow the instructions for RSLINK download.

### 1.II.5.2 PC Network download

Wireless Telnet Download (WTDnl) is a TCP/IP server utility that allows to download configuration files from a PC to the PDT. PC Network download needs to install WTNDT utility into a Windows-based PC with Windows 95, 98, Me, NT4 or 2000.

The PC must be connected to the same network that uses the PDTs. You need to enter the PC IP address that is running the WTDN server into the PDT.

After a "Bios Boot" the terminal in the "Boot Menu" asks for whished download. Choose "F2 By Radio" option and supply the IP address.

See Appendix C – Downloading Configuration File and follow the instructions for RSLINK download.

#### 1.II.5.3 Host Network download

WTNVT has a feature that allows to store files that are "printed" (sent to the attached printer) by the PDT. If you send the configuration file to the PDT attached printer, the terminal recognizes it and stores the file in memory instead print it.

The configuration file must have the correct "printer header" to do that.

It is suggested to write a simple application associated to an special user that allows the configuration file to be downloaded by printing the current configuration files.

After download, the PDT disconnects from the network and restarts with the new configuration file.

See Appendix C – Downloading Configuration File and follow the instructions for RSLINK download.

# 1.III User Message File

The user message file contains all the messages the PDT displays. You can translate or modify the contents of the message file. The message file used by the terminal is set into the configuration file.

Several message files are stored into the PDT NVM (CfgVt.zip) and may be selected at run time by the configuration file.

The user message file (_MsgXX.cfg) is automatically downloaded with the configuration file if you use the RsLink download option. You must download this file **before** the configuration file (_WTnVt.Cfg) if you use the "print" system to download.

See Chapter 6 – Message File for the syntax and features of this file.

Warning : The user message file uses the font indicated into the configuration file to display messages.

Some messages (those displayed **before** configuration download) are unique and can not be translated.

# 1.IV Boot sequence

When WTnVt boots, the following sequence is done :

**1)** Driver installation test. Check if the S24 drivers are into the flash memory. If not, send the WS24_XXX.HEX or WS11_XXX.HEX file to install them (See Appendix D).
**2)** Recall parameters from NVM to flash, if the recall option is used (**"Recall.Yes"** file in CfgVt.zip). Overrides the downloaded files and restore NVM defaults (usually with static files).
**3)** CFG24 or CFG11 utility call, to view or modify network parameters.
**4)** WTnVt Application:
  **4.1)** WTnVt Boot Menu. Serial or Network download option (only at boot time).
  **4.2)** WTnVt Main Menu.

If a dynamic download is done, the new files are stored into the Flash memory to recall them into the next boot (usually with "**Recall.No"**).

You may call CFG24 or CFG11 utility from WTnVt application Main Menu later to modify network parameters.

You may exit to DOS with F10 ([FUNC]+[0]) function from Main Menu to perform DIAG24 or DIAG11 "site survey" utility.

# Chapter 2 – Network Configuration

Network parameters need to be configured into the Host and Client systems, and sometimes into other network devices.

Ask your Network Administrator for:

Network parameters:
- The Default Router (if any).
- The Subnet Mask

Host parameters:
- The Host Computer IP address.
- The Telnet port (standard is 23).

Terminal parameters:
- The PDT IP address (if bootp is not used).
- The ESS Id used by the 802.11 S24 radio network.

## 2.I Network

### 2.I.1 IP Addressing

IP addresses have 4 decimal numbers from 0 to 255. Addresses are provided in "dotted decimal" form. One part of the IP address (the left) is *"the subnet"* and the other part of the IP address (the right) is *"the computer"*.

The subnet Mask determines which numbers of the IP address belongs to the left or the right part. The Subnet Mask must be **the same** across the network.

Subnet masking have 4 decimal numbers, usually 0 **or** 255. Subnet masking means the part of the IP address that are *"the subnet"*, and the part of the address that are *"the computer"*. **Usually** subnet mask is:

- 255.0.0.0 (The first number is *"the subnet"*, the three others are *"the computer"*).
- 255.255.0.0 (The two first numbers are *"the subnet"*, the two others are *"the computer"*).
- 255.255.255.0 (The three first numbers are *"the subnet"*, the other is *"the computer"*).

### 2.I.2 Router

See the address of the Host computer, the terminal and the subnet mask to determine if they are or not into the same subnet.

Host computer and PDT S24 terminals will be into the same subnet, in this case, no router is needed.

If Host computer and PDT S24 terminals are not into the same subnet, router is needed. The router address **must** be into the same subnet than the terminal.

## 2.II Host

Start the Telnet host "service" or "daemon".
You may verify the host address by the "ping" utility from a Windows-based PC.
You may verify if the telnet service is available, using a "telnet" client program from any Windows-based PC.

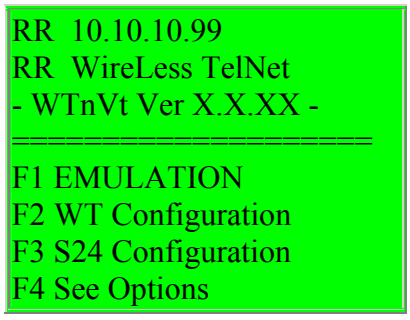
# 2.III Terminal

The terminal is configured in two ways:

**The network and terminal parameters**, by the CFG24 or CFG11 utility:

- The Default Router (if any).
- The Subnet Mask
- The PDT IP address (if bootp is not used).
- The ESS Id used by the 802.11 S24 radio network.

The CFG11 / CFG24 utility is called at boot time in terminal, or can be called from the main menu by the "F3 S24 Configuration" Option.



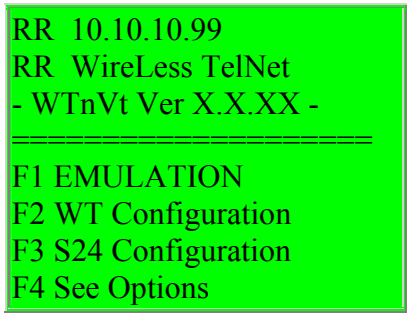

[FUNC] [3]
The standard password is "307".

See Appendix E - CFG11 / CFG24 Utility.

**The Host parameters**, by the WTnVt configuration menu:

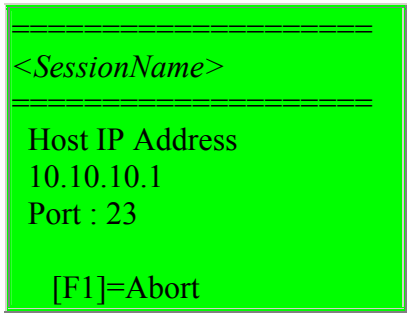
- The Host Computer IP address.
- The Telnet port (standard is 23).

These parameters are initialized by the configuration file (_WTnVt.Cfg) and may be changed by the user, by the main menu option "F2 WT Configuration".




[FUNC] [2]

The standard password is "248".




[CLEAR] Clears the input line.
[ENTER] Saves and goes to the next field.
[BKSP] Erases the last character.
[FUNC] [1] Aborts. Does not modify.

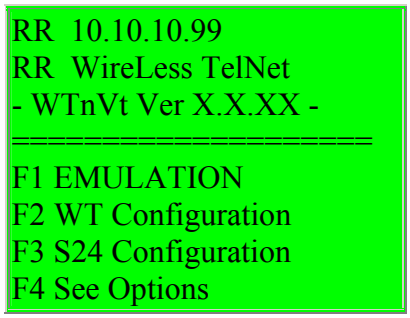
These modifications are stored in volatile memory, and are set to default configuration values when "Bios Boot".

# Chapter 3 – Terminal Operation

## 3.I Connecting to the host

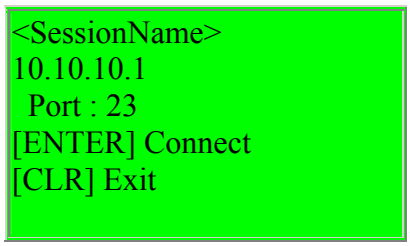
### 3.I.1 Main Menu

The IP address shown at the top of display is the terminal IP address.

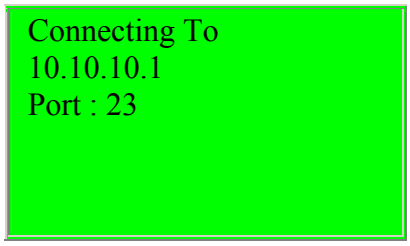



Key [FUNC] [1] to access to connection screens.

### 3.I.2 Connecting



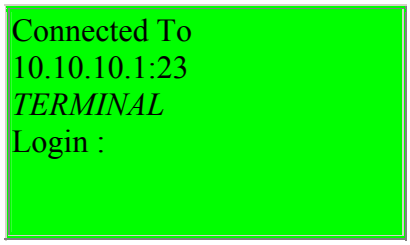

- Hit [ENTER] to connect to the present session.
- Hit [CLR] to go back to the main menu.
- Hit any key to go to the next session (if any) (see [SESSIONS] in Chapter 5).




While connecting to the host, wait for a few seconds. If the IP address or the Port are not correct, from the main menu do [F2] to change configuration. The default address and port come from the configuration file.

### 3.I.3 Connected, Manual

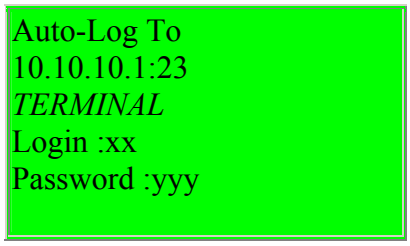
After Telnet connection, (manual log)




If the terminal is selected by host, the current terminal type (*TERMINAL*) appears.
Following the application, key the log name and password.

## 3.I.4 Connected, Auto Log

After Telnet connection, (Auto log)




If the terminal is selected by host, the current terminal type (*TERMINAL*) appears.
The keyboard is locked while "Auto-Log" feature is running. Waits for the Log prompt, and the password prompt (and optionally for user and code). After successful "sign on" or failure, the keyboard unlocks.
You will manually unlock the keyboard by the unlock sequence.

## 3.I.5 Out Of range

If the terminal is out of S24 radio network range, the terminal holds the connection and asks for retry or abort the session. The following screen appears :


If the session is aborted, the Telnet connection may remain opened in the host side and you should manually shutdown the session in the host.
On retry, the terminal tries to send the current transaction. Move to a radio covered area to retrieve the host session.

# 3.II Ending session

While connected in a telnet session, the session will be closed by the host, or by the user. To close the Telnet connection, key the end sequence. (Normally Ctrl-X), and the terminal returns to the main menu.

To swap to the next session hit the KeyNext key (see [SESSIONS] in Chapter 5).

To swap to the previous session hit the KeyPrev key (see [SESSIONS] in Chapter 5).

# 3.III Changing Host IP Address

From the Main Menu, key [FUNC] [2] to access to the configuration. Password protected. This is the active address, until a Bios Boot.

# 3.IV Printing

A printer may be attached to the serial port of the PDT. Special DEC-VTXXX sequences allow to redirect data flow to the printer. Printer driver in WTnVt is designed for "label" printers instead "line" printers, and data is stored in terminal to allow reprint operations.

While storing printer data, the terminal displays:

```
===== Loading =====
```

Before print, the terminal connects to the printer and displays:

```
==== Connecting ====
===== Printing =====
```

If printer is not responding, the terminal displays:

```
****** ERROR ******
    PRINTER
  NOT CONNECTED

[ENTER] To Retry
[CLEAR] To Abort
```

- [ENTER] Retries the whole connecting and printing operation.
- [CLEAR] Aborts operation and suppress printing data.

After a print operation, the following screen appears:

```
===== PRINTING =====
     LABEL
```


- [ENTER] restores the display and continue with terminal operations.
- [F1] Redo the last print operation.

Printer state may be checked by host using escape sequences.
"Pseudo printing" commands may be used to download configuration files to the PDT.

# 3.V Scanning

The scanner activation is done by the trigger keys, depending on the terminal model. The scanner is activated and configured by SCANNER section in configuration file. Each barcode symbology has a specific section in the same file.

Scanner state may be set on or off by host escape sequences (ROI or Telxon).

# 3.VI Keyboard Operation

PDT Keyboard is **"one finger"** operating. When a keystroke needs a combination of several keys, those keys should be keyed sequentially (**not at same time** like PC's Keyboard).

To make a "Function + Control + Up-Arrow" function (e.g. to do a logical scroll up), do the following sequence :

- Hit the [FUNC] key, then
- Hit the [CTRL] key, then
- Hit the ▲ Key.

The displayed blinking cursor reflects the keyboard state.

PDT Keyboard changes following the terminal. The same terminal may be shipped with different keyboards. The PDT keyboard has the following states:

| **Keyboard state** | **Key Sequence** | **Cursor Display** |
|---|---|---|
| *Normal* state **locked**, (toggle with Alpha key). | [ALPHA] key | **[v]** |
| *Alpha* state (in 35 keys terminals) **locked**, (toggle with Alpha key). | [ALPHA] key | **[^]** |
| *Shift* state, **single.** | [SHIFT] key | **[^]** |
| *Control* state, **single.** | [CTRL] key | **[c]** |
| *Function* state, **single**. | [FUNC] key) | **[f]** |
| *Function-Control* or *"Alt"* state, **single**. | FUNC]+[CTRL] keys | **[a]** |
| *Shift-Function* state, **single**. | [SHIFT]+[FUNC] keys | **[F]** |

**Locked**, means that the state remains locked, and changes at each time the [ALPHA] key is pressed ("toggle" system).
**Single**, means that the state applies **only** for the next keystroke, and then returns to the normal previous state.
**WTnVt** has predefined function keys that generates escape sequences following the current terminal type. These sequences are configured into the configuration file (Chapter 5) and may be changed. The defined function keys are:

- **[FUNC]+[1] to [FUNC]+[0]** (see [FNKEYS_XXXX] section)
- **[SHIFT]+[FUNC]+[1] to [SHIFT]+[FUNC]+[0]** (see [SFNKEYS_XXXX] section).
- "Arrow" cursor keys (  ,  , etc) generate escape sequences too (see [CURKEYS_XXX] section).
- Other keys may be "user configured" to send an escape sequence, (see Appendix A) and [SCANCODES] section).

Some function keys, are trapped by the PDT operating system and perform some specific functions like "Lamp" (Backlight), "Dark" (dark LCD display), "Light" (dim LCD display), and **may not be used** for other functions.

See also Appendix F – Keyboard Reference.

# 3.VII Screen and display

The displayed cursor reflects the keyboard state (see Keyboard Operation).

The emulated terminal normally has a 24 lines and 80 rows screen. WTNVT allows to configure non-standard display sizes emulation, up to 80 rows and 25 lines (See [EMULATION] section).

PDTs have a display with 8 or 16 lines and 20 or 21 rows. WTNVT allows to use it in "double height" (show 8 lines in a 16 lines terminal) to increase text visibility (and / or "double width").

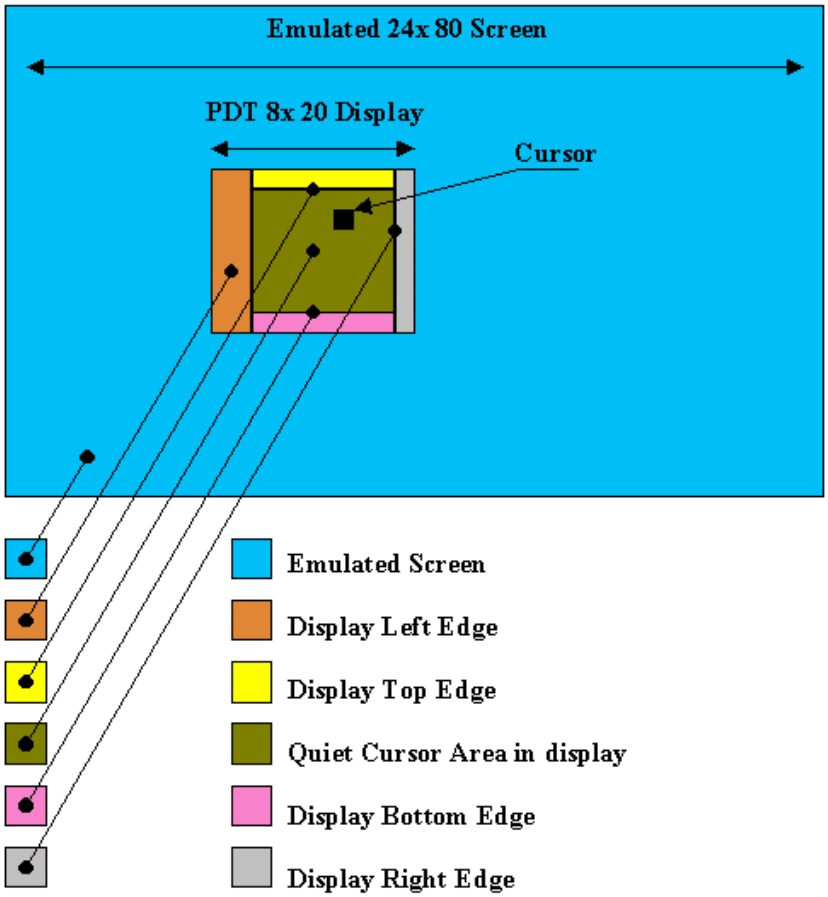
For easy-to-use applications it is recommended to write or adapt them to the physical display size of the hand held terminal.

WTNVT has a "Logical Scroll" mechanism to allow large screen sizes to be mapped into the smaller PDT display (see [SCROLL] section). The map may be fixed or moving controlled by the *FixedMode=* option.

It is not recommended to use the moving option in an application, because users needs to learn functions keys to scroll, and understand the "Logical Scroll" system.

The "Logical Scroll" system automatically moves the PDT display into the screen area, following "edges", to show a display area around the cursor position.

User may move too the display area into the screen by using "Logical Scroll Keys".




In the fixed mode, the position of the display in the emulated screen is fixed, even if the cursor goes out of the display area.

# 3.VIII Troubleshoot

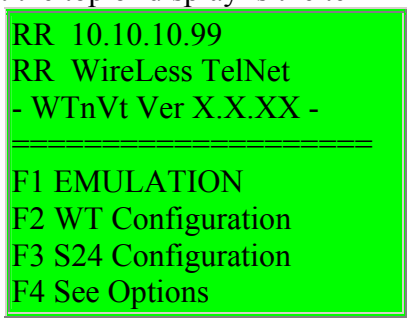
The RF transmission is a complex program with many protocol layers (RF, Ethernet, IP, TCP) in the operating system and an user application (client). This protocol stack in hand held terminals is subject to unexpected power off conditions (batteries removed, shocks, etc) that may prevent the terminal software to manage correctly some protocol sequences and may "hang" the terminal.

To restart the terminal in proper conditions, it will be necessary to reboot it by a "Bios Boot" command. See Appendix F -> Boot sequences.

# Chapter 4 – Local Operations

## 4.I Main Menu

The IP address shown at the top of display is the terminal IP address.

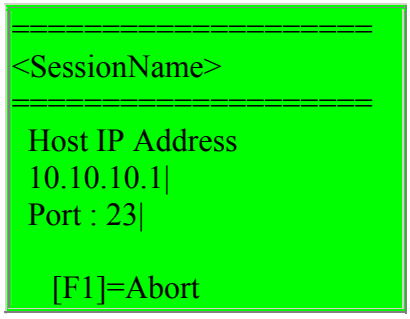



- [F1] Press [FUNC]+[1] to access the connect screens (see Chapter 3).
- [F2] Press [FUNC]+[2] to modify the Host IP address and port. (Protected by password).
- [F3] Press [FUNC]+[3] to modify network parameters by CFG24 or CFG11 utility (see Appendix E). (Protected by password).
- [F4] Press [FUNC]+[4] to view the present configuration options.

You may exit to DOS with F10 ([FUNC]+[0]) function to perform DIAG24 or DIAG11 "site survey" utility. (Protected by password).

## 4.II WT Configuration

[F2] WT Configuration



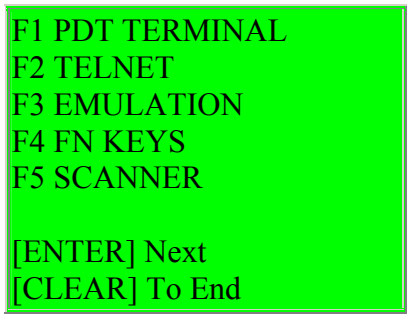

[CLEAR] Clears the input line
[ENTER] Save and goes to the next field
[BKSP] Erases the last character
[FUNC] [1] Aborts, does not modify.

These modifications are stored in volatile memory, and are set to default configuration values when "Bios Boot".

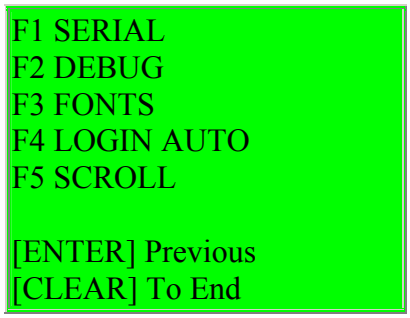
# 4.III View Options

## 4.III.1 Main Menu

[F4] See Options



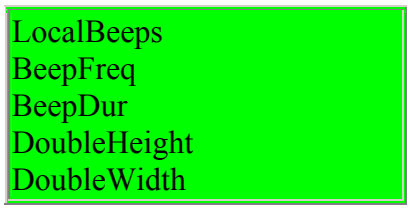

- [F1] PDT TERMINAL
- [F2] TELNET
- [F3] EMULATION
- [F4] FN KEYS
- [F5] SCANNER




- [F1] SERIAL
- [F2] DEBUG
- [F3] FONTS
- [F4] LOGIN AUTO
- [F5] SCROLL

## 4.III.2 PDT TERMINAL

[F4] See Options / [F1] PDT TERMINAL
Terminal section presents the following Options.




MsgFile
Font
Backlight
BLAutoOn
UserTmout
OffOnExtPwr
KeyClick
LocalBeeps
BeepFreq
BeepDur
DoubleHeight
DoubleWidth

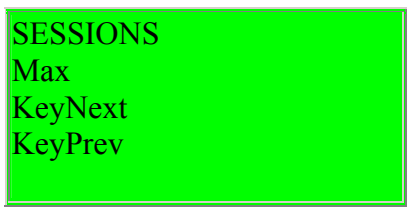
# 4.III.3 TELNET

### 4.III.3.1 Menu


- F1 SESSIONS
- F2 BY SESSION
- F3 TELNET

### 4.III.3.2 Sessions

[F4] See Options / [F2] TELNET / [F1] SESSIONS
Sessions section presents the following options.




Max
KeyNext
KeyPrev

### 4.III.3.3 By Session

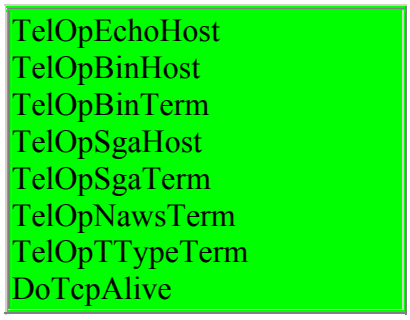
[F4] See Options / [F2] TELNET / [F2] BY SESSION

Session section presents the following options.


*<SessionName>*
*<HostIP>*
Port
TTypeSelByHost
TTypePreferred
*<Normalized-Name>*
TTypeName

**4.III.3.4 Telnet**

[F4] See Options / [F2] TELNET / [F3] TELNET
Telnet section presents the following options.




TelOpEchoHost
TelOpBinHost
TelOpBinTerm
TelOpSgaHost
TelOpSgaTerm
TelOpNawsTerm
TelOpTTypeTerm
DoTcpAlive

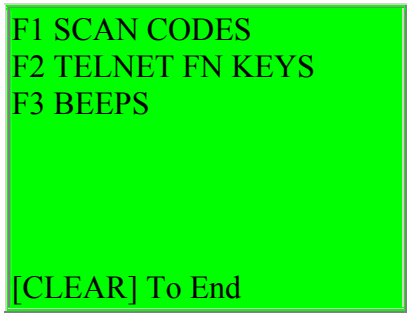
## 4.III.4 EMULATION

[F4] See Options / [F3] EMULATION
Emulation section presents the following options.


EscapeChar
LocalEcho
Underline
Bold
Blink
Caps
Lower
TelxonEscSeq
ROIEscSeq
HostBeeps
BeepFreq
BeepDur
TermWidth
TermHeigth
DestBksp
CurKeysApp
EnterCrNu
CrNuIsCrLf
EndScanCode
UnlkScanCode
Bits8Mode
Ignore8BCtrl
Answ

## 4.III.5 FN KEYS

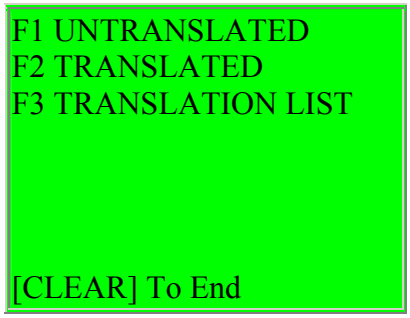
[F4] See Options / [F4] FN KEYS




- [F1] SCAN CODES
- [F2] TELNET FN KEYS
- [F3] BEEPS

**4.III.5.1 FN KEYS / SCAN CODES**

[F4] See Options / [F4] FN KEYS / [F1] SCAN CODES

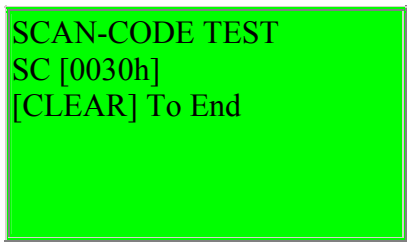



- [F1] UNTRANSLATED
- [F2] TRANSLATED
- [F3] TRANSLATION LIST

See Translation Routines and [SCANCODES] section.

**4.III.5.2 FN KEYS / SCAN CODES / UNTRANSLATED**

[F4] See Options / [F4] FN KEYS / [F1] SCAN CODES / [F1] UNTRANSLATED

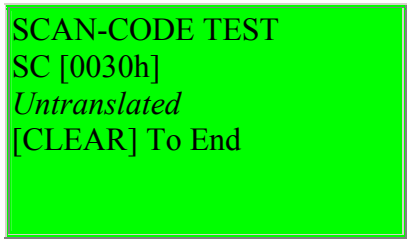



Hit any key to see the scan code generated by the key.
SC [0030h]= Scan code in hex word.

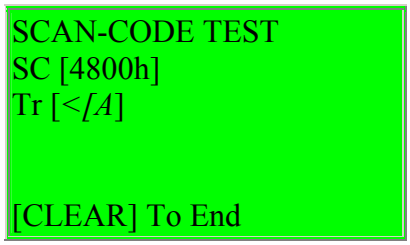
**4.III.5.3 FN KEYS / SCAN CODES / TRANSLATED**

[F4] See Options / [F4] FN KEYS / [F1] SCAN CODES / [F2] TRANSLATED.

Hit any key to see the scan code generated by the key.




If the key is untranslated, displays the scan code.
SC [0030h]= Scan code in hex word.

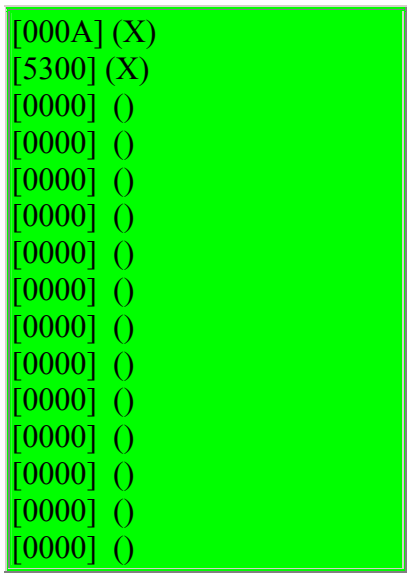



If the key is translated. Displays the scan code ant the translated string.
SC [0030h]= Scan code in hex word.
Tr [xxx] = Translated string

See Translation Routines.

**4.III.5.4 FN KEYS / SCAN CODES / TRANSLATION LIST**

[F4] See Options / [F4] FN KEYS / [F1] SCAN CODES / [F3] TRANSLATION LIST

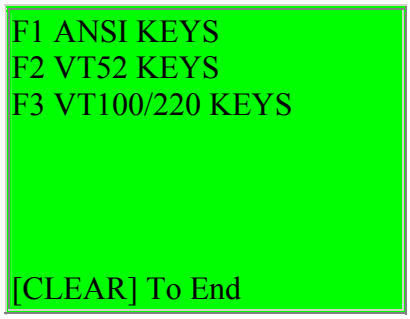



[000A]= Scan code in hex word.
(xxx) = Translated string

See also [SCANCODES] section.

### 4.III.5.5 FN KEYS / TELNET FN KEYS

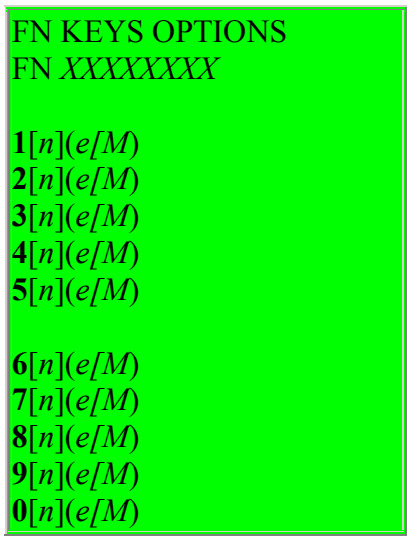
[F4] See Options / [F4] FN KEYS / [F2] TELNET FN KEYS




- [F1] ANSI KEYS
- [F2] VT52 KEYS
- [F3] VT100/220 KEYS

### 4.III.5.6 FN KEYS / TELNET FN KEYS / FUNCTION

[F4] See Options / [F4] FN KEYS / [F2] TELNET FN KEYS




Where :
*XXXXXXXX* = Terminal type, ANSI, VT52, VT100/220
**1**= Fn Number (1=F1 2=F2, etc.)
[*n*] = Number of characters of the string
(*string*)=The string associated with the key

See [FNKEYS_XXX] section.

### 4.III.5.7 FN KEYS / TELNET FN KEYS / SHIFT FUNCTION

[F4] See Options / [F4] FN KEYS / [F2] TELNET FN KEYS

**1**[*n*](*e*[*M*)
**2**[*n*](*e*[*M*)
**3**[*n*](*e*[*M*)
**4**[*n*](*e*[*M*)
**5**[*n*](*e*[*M*)

**6**[*n*](*e*[*M*)
**7**[*n*](*e*[*M*)
**8**[*n*](*e*[*M*)
**9**[*n*](*e*[*M*)
**0**[*n*](*e*[*M*)

Where :
*XXXXXXXX* = Terminal type, ANSI, VT52, VT100/220
**1**= Shift-Fn Number (1=Sh-F1 2=Sh-F2, etc.)
[*n*] = Number of characters of the string
(*string*)=The string associated with the key

See [SFNKEYS_XXXX] section.

### 4.III.5.8 FN KEYS / TELNET FN KEYS / CURSOR

[F4] See Options / [F4] FN KEYS / [F2] TELNET FN KEYS

CURSOR KEYS OPTIONS
CURSOR *XXXXXXXX*

UP [*n*](*e*[*M*)
DN [*n*](*e*[*M*)
LE [*n*](*e*[*M*)
RI [*n*](*e*[*M*)

Where :
*XXXXXXXX* = Terminal type, ANSI, VT52, VT100/220
[*n*] = Number of characters of the string
(*string*)=The string associated with the key.

See [CURKEYS_XXXX] section.

### 4.III.5.9 FN KEYS / TELNET FN KEYS / CURSOR APPLICATION

[F4] See Options / [F4] FN KEYS / [F2] TELNET FN KEYS

CURSOR KEYS OPTIONS
CURSOR APP *XXXXXXXX*

UP [*n*](*e*[*M*)
DN [*n*](*e*[*M*)
LE [*n*](*e*[*M*)

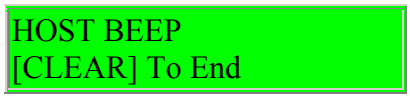

Where :
*XXXXXXXX* = Terminal type, ANSI, VT100/220
[*n*] = Number of characters of the string
(*string*)=The string associated with the key

See [CURKEYSAP_XXX] section.

**4.III.5.10 FN KEYS / BEEPS**

[F4] See Options / [F4] FN KEYS / [F3] BEEPS


See [TERMINAL] section.

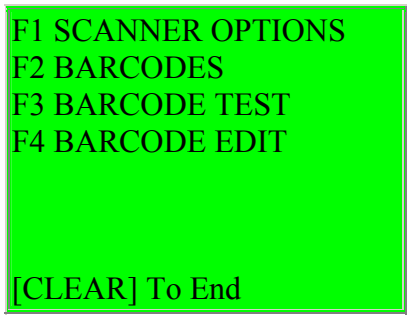



Hit any key to hear the beep.

See [EMULATION] section.

# 4.III.6 SCANNER

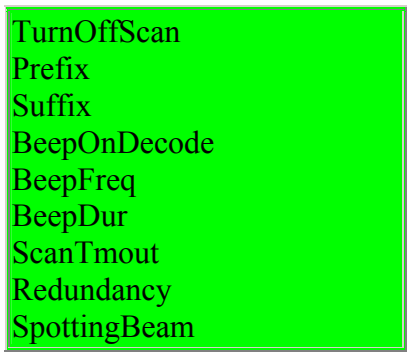
[F4] See Options / [F5] SCANNER




- [F1] SCANNER OPTIONS
- [F2] BARCODES
- [F3] BARCODE TEST
- [F4] BARCODE EDIT

**4.III.6.1 SCANNER / SCANNER OPTIONS**

[F4] See Options / [F5] SCANNER / [F1] SCANNER OPTIONS
Scanner section presents the following options.




Enable
TurnOffScan
Prefix
Suffix
BeepOnDecode
BeepFreq
BeepDur
ScanTmout
Redundancy
SpottingBeam

**4.III.6.2 SCANNER / BARCODES**

[F4] See Options / [F5] SCANNER / [F2] BARCODES

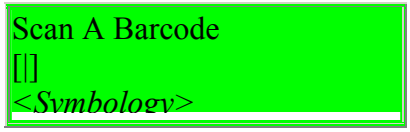

Where:
*XXXXXXXX* = Symbology
On
Min
Max
Opt

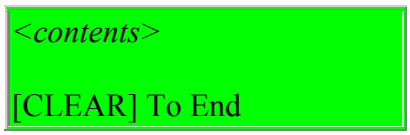
Hit any key to browse **all** the barcode symbologies.

See [<Symbology>] Sections.

**4.III.6.3 SCANNER / BARCODE TEST**

[F4] See Options / [F5] SCANNER / [F3] BARCODE TEST

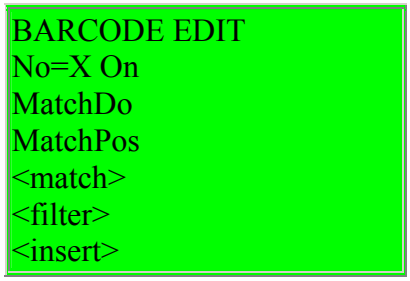





Scan a barcode.
Where:
<*Symbology*> : Is the barcode symbology of the scanned barcode.
<*contents*> : Is the content of the scanned barcode.

#### 4.III.6.4 SCANNER / BARCODE EDIT

[F4] See Options / [F5] SCANNER / [F4] BARCODE EDIT
Barcode Edition section present options.

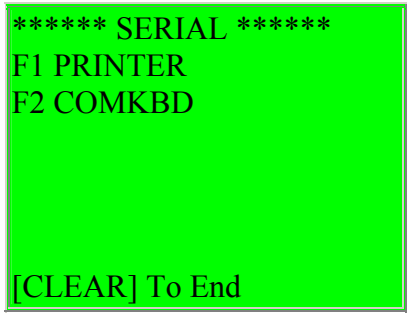



Hit any key to browse **all** the barcode edit sections.
On
MatchDo
MatchPos
<match>
<filter>
<insert>

## 4.III.7 SERIAL

#### 4.III.7.1 SERIAL / MENU

[F4] See Options / [F1] SERIAL




- [F1] PRINTER
- [F2] COMKBD

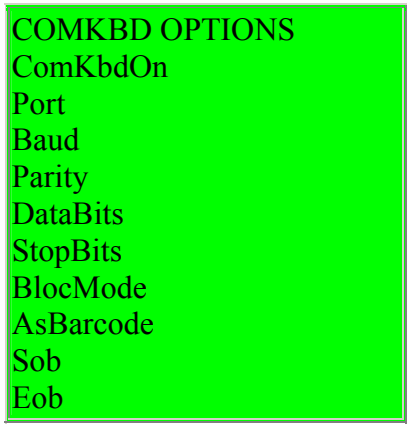
#### 4.III.7.2 SERIAL / PRINTER

[F4] See Options / [F1] SERIAL /[F1] PRINTER
Printer section presents the following options.


Type
Port
Baud
Parity
DataBits
StopBits
FlowControl
Dsr
Cts
Cd
Tmout
AskReprint

**4.III.7.3 SERIAL / COMKBD**

[F4] See Options / [F1] SERIAL / [F2] COMKBD
ComKbd section presents the following options.




ComKbdOn
Port
Baud
Parity
DataBits
StopBits

BlocMode
AsBarcode
Sob
Eob

## 4.III.8 DEBUG

[F4] See Options / [F2] DEBUG
Debug section present options.

InLog
*<InFile>*
OutLog
*<OutFile>*

InLog
*<InFile>*
OutLog
*<OutFile>*

## 4.III.9 FONTS

[F4] See Options / [F3] FONTS

*XXXXXXXXXXXXXXXX* 0F
*XXXXXXXXXXXXXXXX* 1F
*XXXXXXXXXXXXXXXX* 2F
*XXXXXXXXXXXXXXXX* 3F
*XXXXXXXXXXXXXXXX* 4F
*XXXXXXXXXXXXXXXX* 5F
*XXXXXXXXXXXXXXXX* 6F
*XXXXXXXXXXXXXXXX* 7F

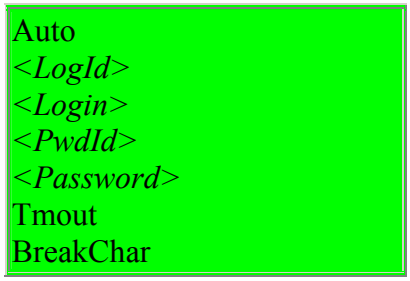
*XXXXXXXXXXXXXXXX* 8F
*XXXXXXXXXXXXXXXX* 9F
*XXXXXXXXXXXXXXXX* AF
*XXXXXXXXXXXXXXXX* BF
*XXXXXXXXXXXXXXXX* CF
*XXXXXXXXXXXXXXXX* DF
*XXXXXXXXXXXXXXXX* EF
*XXXXXXXXXXXXXXXX* FF

See [TERMINAL] section.

Displays each character of the current font. Each line contains 16 characters, from 00h to 0Fh. The address corresponds to the last displayed character of the line.

## 4.III.10 LOGIN AUTO

[F4] See Options / [F4] LOGIN AUTO
Login section presents the following options.




Auto
*<LogId>*
*<Login>*
*<PwdId>*
*<Password>*
Tmout
BreakChar

## 4.III.11 SCROLL

[F4] See Options / [F5] SCROLL
Scroll section presents the following options.

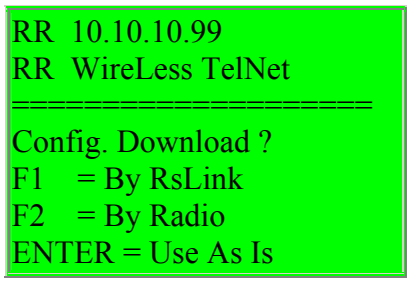

FixedMode
StartPosX
StartPosY
ScrollX
ScrollY
KeyUp
KeyDown
KeyLeft
KeyRight
EdgeLeft

EdgeRight
EdgeUp
EdgeDown

# 4.IV Boot Menu

This Menu appears only after a "Bios Boot" and allows to download "dynamic"configuration files.

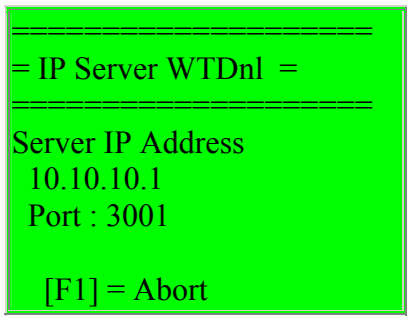
See Appendix C. for download configuration files.




- [F1] Press [FUNC]+[1] to download the configuration files by RsLink (serial connection).
- [F2] Press [FUNC]+[2] to download the configuration files by WTDnl (network connection).
- [ENTER] press ENTER key to use the present PDT configuration files (no download) and fall down to the main menu.

## 4.IV.1 WTDnl Configuration

[F2] By Radio




Supply the IP address of the host computer that has the WTDnl program running, and the port.

[CLEAR] Clears the line
[ENTER] Saves and goes to the next field
[BKSP] Erases the last character
[FUNC] [1] Aborts, do not modify and abort download.

These modifications are stored in flash memory if successful download, and are restored when "Bios Boot".

See Appendix C for WTDnl.

# Chapter 5 – Configuration File Options

## 5.I Features and syntax

The WT configuration file is a text file containing the default values for the WT options and several keyboard sequences generated by the terminal. Some of those values could be dynamically modified by the Host system. The name of this file is always "**_WTnVt.Cfg**".

The WT configuration file is a "Windows dot-ini-Like" text file, with sections, keys and values.

Configuration file includes :

- Printer Header
- Comments
- Sections
- Keys
- Values

Lines in configuration file must be : Printer Header, Comments, Sections, Keys + Values or empty lines.

### 5.I.1 Printer Header

The "*Printer Header*" is needed if the configuration file is downloaded through the print feature, this header indicates that there is not a label to print, but a configuration file to store in PDT memory.

Printer header **MUST** be in the first characters of the first line of the file, following the format:

**%%FILE=<filename>%%**
For this file, the header is **%%FILE=_WTnVt.cfg%%**

### 5.I.2 Comments

Comments in WT configuration file are indicated by two "slash" characters and takes effect to the end of the line. i.e.:
*// This is a comment*
*This is not a comment (must be a section, a key + value or an empty line)*

### 5.I.3 Sections

Section groups the options keys and values. Section names are in capital letters surrounded by brackets. i.e.: [TELNET], denotes the Telnet section.

The order of the sections into the file is no relevant.

### 5.I.4 Keys

These are keywords that have sense into their own section, and can't be moved from one section to another. Case (lowercase or uppercase) is not relevant for keywords, but are more readable.

Keys must be followed by "=" sign and the value of the parameter. i.e. : *LocalBeeps*=Yes.

## 5.I.5 Values

Values follow the keys and "=". each parameter expects the value in a fixed format (indicated with the parameter definition like "<format>"). Values may be empty in some cases.

Formats are :

**<Yes/No>**

Needs ***Yes*** or ***No*** value.

**<string / xxxx>**

Text ASCII characters, delimited or not by **"** character. If the string is delimited by **"**, the spaces (20h) are preserved, otherwise are ignored. xxx indicates the units or the meaning of the value.

**<hex-string>**

In this format, three characters represents one final character. There is three ways to supply "hex-strings" (each target character takes always 3 source characters):

| Mnemonic | Format | Description |
|---|---|---|
| "Escaped" | "/HH" | An slash ("/" or "\") and a two-digits hexadecimal value. i.e.: \1B for character 27. |
| "Numeric" | "999" | Three decimal digits. i.e.: 065 for character "A". |
| "Alphabetic" | "..A" | Two dots and one alphabetic character. i.e. : ..X for character "X" |

Hex-strings may be delimited by **"** to be more readable.

**<num / xxxx>**

Decimal numeric value (0 - 9). xxx indicates the units or the meaning of the value.

**<word>**

Hexadecimal four-digits value. i.e.: A50F.

**<uppercase letter>**

One uppercase character. i.e.: **N**.

# 5.II Sections

***[DOWNLOADS]***

This section allows you to configure the associated files for download.

***[TERMINAL]***

This section groups the PDT-specific features.

***[SESSIONS]***

This section allows to configure the host sessions available for the user.

***[SESSION_X]***

These sections (_0 to _3) group the Telnet connection options specific for each session.

***[TELNET]***
This section groups the features for the Telnet level negotiation and options and network features.
***[EMULATION]***
This section groups the Terminal emulation level features.
***[SCROLL]***
This section groups the "Logical scrolling" options to allow to map a standard 24x80 screen in a 8, or 16 PDT display.
***[LOGIN_X]***
This sections groups the Automated Login Options for host connection with automatic response of user name and password to the host login, and a supplemental user and code if necessary. Each "Login" section corresponds to a "session" section (by index).
***[FNKEYS_ANSI]***
This section groups the ANSI Function keys strings.
***[SFNKEYS_ANSI]***
This section groups the ANSI Shift + Function keys strings.
***[CURKEYS_ANSI]***
This section groups the ANSI normal cursor keys strings.
***[CURKEYSAP_ANSI]***
This section groups the ANSI application cursor keys strings.
***[FNKEYS_VT52]***
This section groups the VT52 Function keys strings.
***[SFNKEYS_VT52]***
This section groups the VT52 Shift + Function keys strings.
***[CURKEYS_VT52]***
This section groups the VT52 cursor keys strings.
***[FNKEYS_VT100]***
This section groups the VT100/VT220 Function keys strings.
***[SFNKEYS_VT100]***
This section groups the VT100/VT220 Shift + Function keys strings.
***[CURKEYS_VT100]***
This section groups the VT100I normal cursor keys strings.
***[CURKEYSAP_VT100]***
This section groups the VT100 application cursor keys strings.
***[SCANCODES]***
This section groups the translations that associates a keyboard Scan Code with a specific string.
***[SCANNER]***
This section groups the global scanner operation options.
***[UPC_E0]***Code UPC E0
***[UPC_E1]***
Code UPC E1
***[UPC_A]***
Code UPC A
***[EAN_8]***
Code Ean 8
***[EAN_13]***
Code EAN 13
***[MSI]***
Code MSI

***[CODABAR]***
Code CODABAR
***[CODE_39]***
Code 39
***[CODE_D25]***
Code Discrete 2/5
***[CODE_I25]***
Code Inter leaved 2/5
***[CODE_11]***
Code 11
***[CODE_93]***
Code 93
***[CODE_128]***
Code 128
***[PDF_417]***
Code PDF 417
These sections group the symbology-specific options.
***[PRINTER]***
This section groups the options for the PDT-attached printer.
***[DBGOPT]***
This section groups the options for debugging files generation.
***[BC_EDIT_X]***
Four sections, [BC_EDIT_0] to [BC_EDIT_3].
These sections group the options for the "Barcode editing" processing.
***[COMKBD]***
This section groups the options for the communications port as keyboard.

# 5.III [DOWNLOADS] Section

This section allows you to configure the associated files for download.

***Number***=<num> (2)
Number of associated files for download.
***File_X***=<string / name> (_MsgVTFr.Cfg)
Name of the associated file for download.

# 5.IV [TERMINAL] Section

This section groups the PDT-specific features.

***MsgFile***=<string / name> (empty)
Country Local File messages, you could translate or modify the messages that appears in the PDT Display.
***Font***=<string / name> (empty)
Name of the PDT font file. The supplied files are :VTX.fnt, 437.fnt, 850.fnt or 852.fnt.
You may modify or create new files for PDT with FontBld.exe (Included in Symbol Technologies Series 3000 SDK).
***BackLight***=<num / seconds> (5)

Timeout of PDT's display backlight timeout (in seconds).
***BLAutoOn***=<Yes/No> (Yes)
Yes=backlight is on at each time the user strikes a PDT key.
***UserTmout***=<num / seconds> (120)
Time after if there is no user action, the terminal enter in sleep mode. Terminal may be wake-up by scanner trigger or [PWR] key at the same point.
***OffOnExtPwr***=<Yes/No> (Yes)
Yes=Turn off (by time-out) when terminal is on external power.
No=Do not turn off (by time-out) when terminal is on external power.
***KeyClick***=<Yes/No> (No)
Yes=Striking a PDT key produces a short click.
***LocalBeeps***=<Yes/No> (Yes)
Some "Local" functions (internal to PDT) produces a beep.
***BeepFreq***=<num / Hertz> (1600)
Local beep frequency.
***BeepDur***=<num / milliseconds> (200)
Beep duration in milliseconds.
***DoubleHeight***=<Yes/No> (No)
Displays the characters in "Double Height". Each character takes 2 Lines height.
***DoubleWidth***=<Yes/No> (No)
Displays the characters in "Double Width". Each character takes 2 character width.
***PwdWConf***=<string / name> (empty)
Usually "234" WTn Configuration Password.
***PwdRfConf***=<string / name> (empty)
Usually "307" // RF Configuration Password.
***PwdExit***=<string / name> (empty)
Usually "307", exit to DOS Password.
***NoMenu***=<Yes/No> (No)
Yes=Do not display initial user menu.

# 5.V [SESSIONS]

This section allows to configure the host sessions available for the user.

***Max***=<num / sessions> (4)
Maximal number of sessions, range 1-4.
***KeyPrev***=<word / scancode> (2D00 Fn-Ctl-Y)
Previous session key.
***KeyNext***=<word / scancode> (2C00 // Fn-Ctl-Z)
Next session key.

# 5.VI [SESSION_X]

These sections (_0 to _3) group the Telnet connection options specific for each session.

**SessName**=<string / name> (empty)
Is the name of the session, displayed to the user.

***HostIP***=<string / address> (0.0.0.0)
Host IP address or 0.0.0.0. This is the default Host IP Address. The user may override this value. This value is recalled in a "Bios Boot Sequence".
***Port***=<num / port #> (23)
Telnet connection port at host IP address. The user may override this value. This value is recalled in a "Bios Boot Sequence".
***TTypeSelByHost***=<Yes/No> (Yes)
In order to set this option to Yes, needs *TelOpTTypeTerm=Yes* too. If WT option *TelOpTTypeTerm=* is No, set this option to No too.
Telnet protocol allows the host to select the most convenient terminal-type choose among a list (normally following host custom settings) indicating which types of terminal emulation are available in the client side and which type of terminal emulation is wished by the user. (The list shown by WT is always ANSI, VT52, VT100 and VT220 terminal types).
* If *TTypeSelByHost=*Yes:
The final terminal type emulation done by WT is selected by the Host.
* If *TTypeSelByHost=*No:
Emulation terminal type emulation selected by user (*TTypePreferred=*) is not modifiable by the Host. (Information is only sent to the host for application purposes).
***TTypePreferred***=<number> (0)
0=ANSI emulation
1=DEC-VT52 emulation
2=DEC-VT100 emulation
3=DEC-VT220 emulation
(DEC-VT100 and DEC-VT220 are "ANSI-compliant" terminals and differs by ANSI-X3 terminals by codes sent by function keys and other few details).
* If *TTypeSelByHost*=Yes:
This terminal is indicated to the host as the preferred by the user in the available terminal-type list.
* If *TTypeSelByHost*=No:
This terminal is indicated to be the only emulation possible by the terminal (no list).
***TTypeName***="<string / Name>" (empty)
Telnet terminal type negotiation uses "normalized" terminal types names, but some hosts may need other specific forms.
If this string is empty, WT uses system "normalized" strings.
If not empty, sends the string as the name of the user preferred terminal type (*TTypePreferred=*).

# 5.VII [TELNET] Section

This section groups the features for the Telnet level negotiation and options and network features. Telnet protocol has "Options" that can be negotiated between client (WT) and Host computer.

***TelOpEchoHost***=<Yes/No> (Yes)
(Telnet Option) During telnet connection negotiation, the terminal sends (=Yes) or not (=No) a request to the Host to ask to do "remote echo".
***TelOpBinHost***=<Yes/No> (No)

(Telnet Option) During telnet connection negotiation, the terminal sends (=Yes) or not (=No) a request to the Host to ask the host to perform a "binary" connection. (the host may send characters from 00h to FFh).
***TelOpBinTerm***=<Yes/No> (No)
(Telnet Option) During telnet connection negotiation, the terminal sends (=Yes) or not (=No) a request to the Host indicating that the terminal wants to perform a "binary" connection. (the terminal may send characters from 00h to FFh).
***TelOpEorHost***=<Yes/No> (No)
(Telnet Option) During telnet connection negotiation, the terminal sends (=Yes) or not (=No) a request to the Host asking to do an end of record during binary connection.
***TelOpEorTerm***=<Yes/No> (No)
(Telnet Option) During telnet connection negotiation, the terminal sends (=Yes) or not (=No) a request to the Host indicating that the terminal wants to perform an end of record during binary connections.
***TelOpSgaHost***=<Yes/No> (Yes)
(Telnet Option) During telnet connection negotiation, the terminal sends (=Yes) or not (=No) a request to the Host to suppress the "Go Ahead" system.
***TelOpSgaTerm***=<Yes/No> (Yes)
(Telnet Option) During telnet connection negotiation, the terminal sends (=Yes) or not (=No) a request to the Host indicating that the terminal wants to suppress the "Go Ahead" system. (terminal never sends "Go Ahead" signal).
***TelOpNawsTerm***=<Yes/No> (No)
(Telnet Option) During telnet connection negotiation, the terminal sends (=Yes) or not (=No) a request to the Host indicating that the terminal wants to Send NaWS (Window Size). Set this option to =Yes only if the host really needs terminal window size information).
***TelOpEnvTerm***=<Yes/No> (No)
(Telnet Option) During telnet connection negotiation, the terminal sends (=Yes) or not (=No) to the Host a request for indicating that the terminal wants to send environment variables (currently not used).
***TelOpTTypeTerm***=<Yes/No> (Yes)
(Telnet Option) During telnet connection negotiation, the terminal sends (=Yes) or not (=No) a request to the Host indicating that the terminal wants to send the Terminal Type (what kind of terminal is connected) information to the host. (If =No, not terminal type information is sent to the host and the emulation performed by WT is that indicated by *TTypePreferred=*).
***DoTcpAlive***=<Yes/No> (Yes)
Yes = WT periodically pings the Host to test the TCP connection state.
***Passive***=<Yes/No> (No)
Yes=WT waits for telnet host commands.
No=WT send telnet commands to host.

# 5.VIII [EMULATION] Section

This section groups the Terminal emulation level features, and the way that some emulation features are done by WT.

***EscapeChar***=<hex> (\1B)
Escape character for VT and ANSI Sequences. Normally this character is 1Bh, but it may be changed if host system requires. These changes apply only for received escape sequences.
***LocalEcho***=<Yes/No> (No)

Do not echo locally characters keyed by user (normally, echo is done by host). See also Telnet Options / *TelOpEchoHost=*.
***Underline***=<Yes/No> (Yes)
Yes=Map underline character attribute to reverse video.
No=Ignore this attribute.
***Bold***=<Yes/No> (Yes)
Yes=Map bold character attribute to reverse video.
No=Ignore this attribute.
***Blink***=<Yes/No> (Yes)
Yes=Map blink character attribute to reverse video.
No=Ignore this attribute.
***Caps***=<Yes/No> (No)
Yes=Force the keyboard to caps lock.
No=Let the keyboard "as is".
***Lower***=<Yes/No> (Yes)
Yes=Force the keyboard to lowercase.
No=Let the keyboard "as is".
***TelxonEscSeq***=<Yes/No> (Yes)
Yes=Manage or No= ignore, the specific Telxon escape sequences (see Telxon escape sequences).
***RoiEscSeq***=<Yes/No> (Yes)
Yes=Manage or No= ignore, the specific ROI escape sequences (see ROI escape sequences ).
***HostBeeps***=<Yes/No> (Yes)
Yes=Makes a beep when receives a BEL (07h) C0 control character from the host.
***BeepFreq***=<num / Hertz> (2200)
Host Beep frequency.
***BeepDur***=<num / milliseconds> (300)
Host Beep duration.
***TermWidth***=<num / columns> (0)
Logical width of the emulated screen in columns. 0=uses default 80. Top to 80.
***TermHeigth***=<num / lines> (0)
Logical height of the emulated screen in lines. 0=uses default 24. Top to 25.
***DestBksp***=<Yes/No> (Yes)
When receiving a BS control character, cursor moves to left. In addition, if this option is =Yes, the character under the cursor before moving is deleted (blank).
***CurKeysApp***=<Yes/No> (No)
Yes=The cursor keys (Up, Down, Left and right arrows) sets the "Application" cursor keys sequences by default. Switch between "normal" ([CURKEYS_XXX]) and "application" ([CURKEYSAP_XXX]) cursor keys sequences can be done by host (see also Terminal Mode).
***EnterCrNu***=<Yes/No> (No)
Yes=By default ENTER key sends CR+NUL (0Dh 00h ) (telnet standard).
No=By default ENTER key sends CR (0Dh) only (DEC Standard).
ENTER key sequence may be also modified dynamically by host, (see also Terminal Mode).
***CrNuIsCrLf***=<Yes/No> (Yes)
Yes=When CR NUL is received (standard Telnet terminator line) WT performs CR and LF functions.
No=When CR NUL is received WT performs Only CR function.
***EndScanCode***=<word / scancode> (0018 / Ctrl-X)

The scan code of the key that ends the current Telnet session. Ctrl-X is the default key to End session. You can see scan code for each key in the terminal by "[F4] See Options / [F4] FN KEYS / [F1] SCAN CODES / [F1] UNTRANSLATED"
***UnlkScanCode***=<word / scancode> (2200 / Func-Ctrl-G)
Unlocks the keyboard or the scanner if the application miss to send the unlock escape sequence after the locking sequence. You can see scan code for each key in the terminal by "[F4] See Options / [F4] FN KEYS / [F1] SCAN CODES / [F1] UNTRANSLATED"
***Bits8Mode***=<Yes/No> (No)
(Sent characters)
Yes=8 Bits Mode:
* CSI output sequence "\1B [" are translated in "\9B".
* SS3 output sequence "\1B O" are translated in "\8F".
See 7 and 8 Bits Mode.
No=7 Bits Mode, no translation.
This option may be dynamically modified by host (Select C1 Controls).
***Ignore8BCtrl***=<Yes/No> (No)
(Received characters)
Yes=Ignore C1 controls characters (80h to 9Fh) functions, and display them. This option may be turned to =Yes for displaying special characters in non-DEC fonts (like 437.fnt, 850.fnt or 852.fnt).
No=Process C1 controls and perform functions.
***AnswerBack***="<string / Id>" ([IP])
The answerback string that is sent to the ENQ request. May be :

- "[IP]" (Sends the Terminal IP address)
- "[MAC]" (Sends the terminal MAC address)
- Any other string up to 20 chars.

# 5.IX [SCROLL] Section

This section groups the *"Logical scrolling"* options to allow to map a standard 24x80 screen (called *"virtual screen"*) in a 8, or 16x20 PDT physical display.

Do not mistake the *"Logical Scrolling"* (that is a PDT display movement in the emulated virtual screen) with *"Screen Scrolling"* (that is a text movement into the emulated terminal screen) and *"Scroll Area"* (that is selected a part of the emulated virtual screen).

See also "Screen and Display" figure in Chapter 3.

***FixedMode***=<Yes/No> (No)
Yes=*"Fixed Screen Mode"*. The PDT display shows a part of the terminal virtual screen, and never moves, even if the cursor is out of the display. The "Logical Scroll Keys" has no effect.
No=*"Auto Scroll Mode"*. The PDT display always shows the screen area where the cursor is. The displays moves following "edges" (see *EdgeXXX*=). In this mode, The "Logical Scroll Keys" manually moves the display into the screen (see *KeyXXX*=).
***StartPosX***=<num / row> (0)
When in *"Fixed Screen Mode"* (see *FixedMode*=), the left start position for terminal display in virtual screen. The first left position is 0.
***StartPosY***=<num / line> (0)
When in *"Fixed Screen Mode"* (see *FixedMode*=), the top start position for terminal display in virtual screen. The first top position is 0.
***ScrollX***=<num / rows> (0)

When in *"Auto Scroll Mode"* (see *FixedMode*=), the number of rows that the display moves (left or right side) when *KeyLeft*= or *KeyRight*= keys are pressed.
If 0 the value is initialized to the display width.
***ScrollY***=<num / lines> (0)
When in *"Auto Scroll Mode"* (see *FixedMode*=), the number of lines that the display moves (up or down side) when *KeyUp*= or *KeyDown*= keys are pressed.
If 0 the value is initialized to the display heigth.
***KeyUp***=<word> (3200 / Fn+Ctrl+Up)
When in *"Auto Scroll Mode"* (see *FixedMode*=), the scan code of the key that moves the display up in logical screen. You can see scan code for each key in the terminal by "[F4] See Options / [F4] FN KEYS / [F1] SCAN CODES / [F1] UNTRANSLATED".
***KeyDown***=<word / scancode> (3100 / Fn+Ctrl+Up)
When in *"Auto Scroll Mode"* (see *FixedMode*=), the scan code of the key that moves the display down in logical screen. You can see scan code for each key in the terminal by "[F4] See Options / [F4] FN KEYS / [F1] SCAN CODES / [F1] UNTRANSLATED".
***KeyLeft***=<word / scancode> (2500 / Fn+Ctrl+Left)
When in *"Auto Scroll Mode"* (see *FixedMode*=), the scan code of the key that moves the display left in logical screen. You can see scan code for each key in the terminal by "[F4] See Options / [F4] FN KEYS / [F1] SCAN CODES / [F1] UNTRANSLATED".
***KeyRight***=<word / scancode> (2600 / Fn+Ctrl+Right)
When in *"Auto Scroll Mode"* (see *FixedMode*=), the scan code of the key that moves the display right in logical screen. You can see scan code for each key in the terminal by "[F4] See Options / [F4] FN KEYS / [F1] SCAN CODES / [F1] UNTRANSLATED".
***EdgeLeft***=<num / rows> (4)
When in *"Auto Scroll Mode"* (see *FixedMode*=), the lesser number of rows that can remain in the left cursor side before make an "auto scroll".
***EdgeRight***=<num / rows> (1)
When in *"Auto Scroll Mode"* (see *FixedMode*=), the lesser number of rows that can remain in the right cursor side before make an "auto scroll".
***EdgeUp***=<num / lines> (1)
When in *"Auto Scroll Mode"* (see *FixedMode*=), the lesser number of rows that can remain above the cursor before make an "auto scroll".
***EdgeDown***=<num / lines> (1)
When in *"Auto Scroll Mode"* (see *FixedMode*=), the lesser number of rows that can remain under the cursor before make an "auto scroll".

# 5.X [LOGIN_X] Section

This section groups the Automated Login Options for host connection with automatic response for user name and password questions during the host sign-on process, and a supplemental user and code if necessary. Each "Login" section corresponds to a "Session" section (by index).
The section [LOGIN_0] corresponds to the section [SESSION_0], [LOGIN_1] corresponds to the section [SESSION_1], and so on.

See also "AutoLog" in chapter 3.

***Auto***=<Yes/No> (No)
Yes=When a successful connection to a host, WT waits for the *"LogId="* string and sends the *"Login="* string. Then waits for the *"PwdId="* and sends the *"Password="* string. A second

login process is done if the *"UsrId"* and *"CodId"* strings are not empty, and returns the control to the WT user emulation.
***Tmout***=<num / seconds> (30)
The time that WT waits for "*LogId=*" or "*PwdId=*" in seconds before fails.
***BreakChar***=<hex> (\04 / Ctrl+D)
Some systems will need a control character to abort any running program and call the sign-on procedure (often a Ctrl-D \04). If \00 Nothing is sent.
***LogId***=<string> ("login:")
The string that WT waits for to send the *"Login="* string.
***Login***=<string> ("wtusr")
The string that WT sends after receive the *"LogId="* string.
***PwdId***=<string> ("password:")
The string that WT waits for to send the *"Password="* string.
***Password***=<string> ("wtpwd")
The string that WT sends after receive the *"PwdId="* string.
***UsrId***=<string> ("user:")
Optional.
The string that WT waits for to send the *"User="* string.
***User***=<string> (empty)
Optional.
The string that WT sends after receive the *"UsrId="* string.
***CodId***=<string> ("code:")
Optional.
The string that WT waits for to send the *"Code="* string.
***Code***=<string> (empty)
Optional.
The string that WT sends after receive the *"CodId="* string.

# 5.XI [FNKEYS_ANSI] Section

This section groups the ANSI Function keys strings. Function keys are generated pressing the [FUNC] key, then a numeric key. The default configuration file provides the standard strings for each terminal type.

If the string is empty the key is ignored (has no function). If a string is supplied, this string is sent. A translation of this string may be done if the terminal is operated in "8 Bits Mode" (see 7 and 8 Bits Mode).

There are three ways to supply function keys "hex-strings" (each target character takes always 3 source characters) :

| Mnemonic | Format | Description |
|---|---|---|
| "Escaped" | "/HH" | An slash ("/" or "\") and a two-digits hexadecimal value: i.e.: \1B for character 27. |
| "Numeric" | "999" | Three decimal digits. i.e.: 065 for character "A". |
| "Alphabetic" | "..A" | Two dots and one alphabetic character. i.e.: ..X for character "X". |

***KEY_F1***=<hex-string> ("" empty).
...
***KEY_F0***=<hex-string> ("" empty).

# 5.XII [SFNKEYS_ANSI] Section

This section groups the ANSI Shift + Function keys strings. Shift Function keys are generated pressing the [SHIFT] key, the [FUNC] key, then a numeric key. The default configuration file provides the standard strings for each terminal type.

***KEY_F1***=<hex-string> ("" empty).
...
***KEY_F0***=<hex-string> ("" empty).

See also [FNKEYS_ANSI] Section for the "hex-strings" syntax.

# 5.XIII [CURKEYS_ANSI] Section

This section groups the ANSI "normal" cursor keys strings. Cursor keys are generated pressing the Up, Down, Left and Right arrows keys. The default configuration file provides the standard strings for each terminal type.

***KEY_UP***=<hex-string> ("" empty).
***KEY_DOWN***=<hex-string> ("" empty).
***KEY_LEFT***=<hex-string> ("" empty).
***KEY_RIGHT***=<hex-string> ("" empty).

See also *CurKeysApp=* Option, "Terminal Mode" and "Translation Routines" for switching between "normal" and "application" cursor keys.
See also [FNKEYS_ANSI] Section for the "hex-strings" syntax.

# 5.XIV [CURKEYSAP_ANSI] Section

This section groups the ANSI "application" cursor keys strings. Cursor keys are generated pressing the Up, Down, Left and Right arrows keys. The default configuration file provides the standard strings for each terminal type.

***KEY_UP***=<hex-string> ("" empty).
***KEY_DOWN***=<hex-string> ("" empty).
***KEY_LEFT***=<hex-string> ("" empty).
***KEY_RIGHT***=<hex-string> ("" empty).

See also *CurKeysApp=* Option, "Terminal Mode" and “Translation Routines” for switching between "normal" and "application" cursor keys.
See also [FNKEYS_ANSI] Section for the "hex-strings" syntax.

# 5.XV [FNKEYS_VT52] Section

This section groups the VT52 Function keys strings. Function keys are generated pressing the [FUNC] key, then a numeric key. The default configuration file provides the standard strings for each terminal type.

***KEY_F1***=<hex-string> ("" empty).
...
***KEY_F0***=<hex-string> ("" empty).

See also [FNKEYS_ANSI] Section for the "hex-strings" syntax.

# 5.XVI [SFNKEYS_VT52] Section

This section groups the VT52 Shift + Function keys strings. Shift Function keys are generated pressing the [SHIFT] key, the [FUNC] key, then a numeric key. The default configuration file provides the standard strings for each terminal type.

***KEY_F1***=<hex-string> ("" empty).
...
***KEY_F0***=<hex-string> ("" empty).

See also [FNKEYS_ANSI] Section for the "hex-strings" syntax.

# 5.XVII [CURKEYS_VT52] Section

This section groups the VT52 cursor keys strings. Cursor keys are generated pressing the Up, Down, Left and Right arrows keys. The default configuration file provides the standard strings for each terminal type.

***KEY_UP***=<hex-string> ("" empty).
***KEY_DOWN***=<hex-string> ("" empty).
***KEY_LEFT***=<hex-string> ("" empty).
***KEY_RIGHT***=<hex-string> ("" empty).

See also *CurKeysApp=* Option, "Terminal Mode" and "Translation Routines" for switching between "normal" and "application" cursor keys.
See also [FNKEYS_ANSI] Section for the "hex-strings" syntax.

# 5.XVIII [FNKEYS_VT100] Section

This section groups the VT100 / VT220 Function keys strings. Function keys are generated pressing the [FUNC] key, then a numeric key. The default configuration file provides the standard strings for each terminal type.

***KEY_F1***=<hex-string> ("" empty).
...
***KEY_F0***=<hex-string> ("" empty).

See also [FNKEYS_ANSI] Section for the "hex-strings" syntax.

# 5.XIX [SFNKEYS_VT100] Section

This section groups the VT100 / VT220 Shift+Function keys strings. Shift Function keys are generated pressing the [SHIFT] key, the [FUNC] key, then a numeric key. The default configuration file provides the standard strings for each terminal type.

***KEY_F1***=<hex-string> ("" empty).
...
***KEY_F0***=<hex-string> ("" empty).

See [FNKEYS_ANSI] Section for the "hex-strings" syntax.

# 5.XX [CURKEYS_VT100] Section

This section groups the VT100 / VT220 normal cursor keys strings. Cursor keys are generated pressing the Up, Down, Left and Right arrows keys. The default configuration file provides the standard strings for each terminal type.
See also *CurKeysApp=* Option, "Terminal Mode" and "Translation Routines" for switching between "normal" and "application" cursor keys.

***KEY_UP***=<hex-string> ("" empty).
***KEY_DOWN***=<hex-string> ("" empty).
***KEY_LEFT***=<hex-string> ("" empty).
***KEY_RIGHT***=<hex-string> ("" empty).

See also *CurKeysApp=* Option, "Terminal Mode" and "Translation Routines" for switching between "normal" and "application" cursor keys.
See also [FNKEYS_ANSI] Section for the "hex-strings" syntax.

# 5.XXI [CURKEYSAP_VT100] Section

This section groups the VT100 / VT220 application cursor keys strings. Cursor keys are generated pressing the Up, Down, Left and Right arrows keys. The default configuration file provides the standard strings for each terminal type.

***KEY_UP***=<hex-string> ("" empty).
***KEY_DOWN***=<hex-string> ("" empty).
***KEY_LEFT***=<hex-string> ("" empty).
***KEY_RIGHT***=<hex-string> ("" empty).

See also *CurKeysApp=* Option, "Terminal Mode" and "Translation Routines" for switching between "normal" and "application" cursor keys.
See also [FNKEYS_ANSI] Section for the "hex-strings" syntax.

# 5.XXII [SCANCODES] Section

This section groups the translations that associates a keyboard Scan Code with a specific string.

See also "Translation Routines" for scan code translation system.

You can see the active translations in the terminal with "[F4] See Options / [F4] FN KEYS / [F1] SCAN CODES / [F3] TRANSLATION LIST".

You can see the keyboard scan codes by "[F4] See Options / [F4] FN KEYS / [F1] SCAN CODES / [F1] UNTRANSLATED".

<word>=<hex-string> (empty)
<word> = Scan code value.
<hex-string> = String sent if the key is pressed.

See also [FNKEYS_ANSI] Section for the "hex-strings" syntax.

# 5.XXIII [SCANNER] Section

This section groups the global scanner operation options.

***Enable***=<Yes/No> (Yes)
Yes=The scanner is enable by default.
No=The scanner is disable by default.
Scanner can be dynamically enabled or disabled by specific ROI and Telxon sequences.
***TurnOffScan***=<Yes/No> (Yes)
Yes=Disable scanner after a successful read, re-enable scanner by ROI escape sequences.
***Prefix***=<hex-string> (empty)
This string is sent before the barcode
***Suffix***=<hex-string> (empty)
This string is sent after the barcode
***BeepOnDecode***=<Yes/No> (Yes)
Yes=generates a beep after a successful good barcode read.
No=Do not beep.
***BeepFreq***=<num / Hertz> (888)
Good scan beep frequency. (in hertz).
***BeepDur***=<num / milliseconds> (200)
Beep duration in milliseconds.
***ScanTmout***=<num / seconds> (10)
Time after the scanner turns off if continuous holding the trigger.
***Redundancy***=<num / pass> (1)
Number of good barcode reads needed to successful decode it.
May be required if using poor quality barcodes to prevent misreads.
Warning : redundancy increases the decode time.
1=No redundancy (one pass)
***SpottingBeam***=<Yes/No> (No)
Activates the "Double Trigger" feature for the Long Range scanners that allows to have an aiming spot (first position, fixed) and a scanning spot (second position, sweep).
Do not activate this option in a standard scanner.
Yes=The scanners uses the double trigger.
No=The scanner the scanner don't uses the double trigger.

***ReplaceChar[0_4]***=<hex-string/ hex-string> (/1A/00)
Replaces the first char indicated for the second one in the Barcode.

# 5.XXIV [<Symbology>] Sections

The Available symbologies are :
UPC_E0
UPC_E1
UPC_A
EAN_8
EAN_13
MSI
CODABAR
CODE_39
CODE_D25
CODE_I25
CODE_11
CODE_93
CODE_128
PDF_417
Those sections groups the symbology-specific options.
***On***=<Yes/No> (most popular)
The scanner is able to decode this symbology.
Warning : Enabling too much symbologies should increase decode time and generate misreads.
***Min***=<num / char number> (smart ...)
Minimum characters accepted in this barcode type.
***Max***=<num / char number> (smart ...)
Maximum characters accepted in this barcode type.
If *Min*= < *Max*=, reads barcodes between *Min*= and *Max*= length.
*If Min*= > *Max*=, reads barcodes that have *Min*= OR *Max*= length.
*If Min*=0 and *Max*=0, reads variable barcode length. (minimum and maximum allowed depends on the barcode type).
Warning : Some barcode types may generate misreads with variable length.
***Opt***=<num> (0)
0=Option disabled.
1=Option Enabled.
Option are available in some barcodes (supplemental, check-digit, etc.)

# 5.XXV [BC_EDIT_X] Section

Four sections, [BC_EDIT_0] to [BC_EDIT_3].
These sections group the options for the "Barcode editing" processing.
Barcode reads may be modified by performing an editing process before send them to the input fields.
The editing process has three parts :
1) Evaluates the match conditions to determine if the process applies to this barcode read. The barcode must match ALL the conditions switched to "Yes" (LenDo, MatchDo, TypeDo).

2) Filter the barcode to keep or eliminate data by the "Y/N" pattern (Filter).
3) Insert some characters by the "*" mask (Insert).
***On***=<Yes/No> (No)
Yes=Evaluates this section, and perform Barcode Editing (if match).
No=Do not evaluate this section (all the following options are ignored).
***LenDo***=<Yes/No> (No)
Yes=Do match barcode length.
Editing is performed if satisfies this condition.
***LenMin***=<number / length> (0)
The minimum length to match.
***LenMax***=<number / length> (0)
The maximum length to match.
***MatchDo***=<Yes/No> (No)
Yes=Do Match string.
Editing is performed if satisfies this condition.
***MatchPos***=<num / position> (1)
The position in the barcode to perform the match test. (start at 1)
***MatchStr***=<string / pattern> "033"
The string to match in the barcode at given position.
***TypeDo***=<Yes/No> (No)
Yes=Do match Barcode type.
Editing is performed if satisfies this condition.
***TypeBc***=<num / barcode> (0)
0=UPC_E0, 1=UPC_E1, 2=UPC_A, 3=MSI, 4=EAN_8, 5=EAN_13, 6=CODABAR, 7=CODE_39, 8=CODE_D25, 9=CODE_I25, 10=CODE_11, 11=CODE_93, 12=CODE_128, 13=PDF_417.
***Filter***=<string / pattern> (empty)
Editing; Filter the source barcode data with this pattern:
Y=Keep the character.
N=ignore the character.
***Insert***=<string / mask> (empty)
Editing; After filter processing, applies this mask to the result data:
*=Keeps the character from the barcode.
NNN=Insert a new char

# 5.XXVI [PRINTER] Section

This section groups the options for the PDT-attached printer.

***Type***=<string / Name> (PS1000)
Printer type connected.
***Port***=<num / Com#> (1)
1=Com1
2=Com2
Communication port. One digit.
***Baud***=<num> (96)
12=1200 Bauds
24=2400 Bauds
48=4800 Bauds

96=9600 Bauds
19=19200 Bauds
38=38400 Bauds.
Baud rate. Two digits.
***Parity***=<uppercase letter> (N)
O=Odd
E=Even
N=None
M=Mark
S=Space
Data parity.
***DataBits***=<num> (8)
7= 7 Data bits.
8= 8 Data bits.
Data bits.
***StopBits***=<num> (1)
1= 1 stop bit.
2= 2 stop bits.
Stop bits.
***FlowControl***=<uppercase letter> (N)
N=None (No flow control).
S=Software flow control (XON / XOFF).
H=Hardware flow control (CTS / RTS).
***Dsr***=<Yes/No> (Yes)
Yes=Data Set Ready (DSR) sensing signal for connection.
No=Ignore DSR.
***Cts***=<Yes/No> (No)
Yes=Clear To Send (CTS) sensing signal for connection.
Np=Ignore CTS.
***Cd***=<Yes/No> (No)
Yes=Carrier detect (CD) sensing signal for connection.
No=Ignore CD.
***Tmout***=<num / seconds> (60)
Maximum time waiting for printer ready signal before fails.
If printer fails, a message alerts the user and allow to retry print operation or abort.
***AskReprint***=<Yes/No> (Yes)
Yes=After a successful print, ask to the user to reprint the same label or to continue.
No=After a successful print, informs the user and continue.
***Display***=<Yes/No> (Yes)
Yes= A printing message is shown while printing.
No=No printing message is shown while printing.

# 5.XXVII [DBGOPT] Section

This section groups the options for debugging files generation. These options may be used ONLY for debugging purposes. Full memory condition is not checked, and subsequent printing operations may fail. You MUST manually empty the files.

***InLog***=<Yes/No> (No)

Logs in a file all data received.
***InFile***=<string / name> (empty)
File Name.
***OutLog***=<Yes/No> (No)
Logs in a file all data sent.
***OutFile***=<string / name> (empty)
File Name.

# 5.XXVIII [COMKBD] Section

This section groups the options for the communications port as keyboard.
See the ***OffOnExtPwr*** option to disable the time-out power off.

***ComKbdOn***=<Yes/No> (No)
Yes=Uses the communication port as a keyboard entry.
No=Do not use.
***Port***=<num / Com#> (1)
1=Com1
2=Com2
Communication port. One digit.
***Baud***=<num> (96)
12=1200 Bauds
24=2400 Bauds
48=4800 Bauds
96=9600 Bauds
19=19200 Bauds
38=38400 Bauds.
Baud rate. Two digits.
***Parity***=<uppercase letter> (N)
O=Odd
E=Even
N=None
M=Mark
S=Space
Data parity.
***DataBits***=<num> (8)
7= 7 Data bits.
8= 8 Data bits.
Data bits.
***StopBits***=<num> (1)
1= 1 stop bit.
2= 2 stop bits.
Stop bits.
***BlocMode***=<Yes/No> (No)
Yes=Data is received as a block delimited by Sob (Start Of Bloc) pattern (optional) and Eob (End Of Bloc) Pattern (mandatory). Data between Sob and Eob are used. Data may be processed as a barcode (prefix, etc.) ***AsBarcode=Yes***.
No=Data is received by one character at a time, and processed as a keyboard entry (caps, lower and translation routines). For translation routines a 00 is added to create a scan-code.

***AsBarcode***=<Yes/No> (No)
Yes=The input data (with ***BlocMode=Yes***) is processed as a barcode, prefix, suffix, and edit mode are available.
No=The input data is processed as a bloc of keyboard entry.
***Sob***=<hex-string> ("" empty).
Start of bloc pattern. Used in ***BlocMode=Yes*** only. Optional blocs may not have start pattern.
***Eob***=<hex-string> ("" empty).
End of bloc pattern. Used in ***BlocMode=Yes*** only. Mandatory, blocs should have end pattern.
***DoTmout***=<hex-string> (N).
N=no. No time.
P=Process. When the time out is reached, all the data received is processed.
D=Discard. When the time out is reached, all the data received is not processed.
***BlocTmout***=<num> (100).
Number of milliseconds in the bloc to time out.

# Chapter 6 – User Message File

## 6.I Features and syntax

The WT User message file is a text file containing the text of the messages displayed by WTnVt. The name of this file may be "_MsgVtXX.Cfg".

The WT user message file is a "Windows dot-ini-Like" text file, with sections, keys and values.

Message file includes:

- Printer Header
- Comments
- Sections
- Keys
- Values

Lines in configuration file must be : Printer Header, Comments, Sections, Keys+Values or empty lines.

This file may be loaded into the NVM with the configuration file (CfgVt.zip).

This file may be dynamically loaded into PDT by RsLink or WTDnl or by pseudo "print" system.

### 6.I.1 Printer Header

The "*Printer Header*" is needed only if the message file is downloaded through the print feature, this header indicates that there is not a label to print, but a configuration file to store in PDT memory.

Printer header **MUST** be in the first characters of the first line of the file, following the format:

**%%FILE=<filename>%%**

For this file, the header is **%%FILE=_MsgVtXX.cfg%%**

Where "XX" is a language code.

### 6.I.2 Comments

Comments in WT configuration file are indicated by two "slash" characters and take effect to the end of the line. i.e.:

*// This is a comment*

*This is not a comment (must be a section, a key + value or an empty line)*

### 6.I.3 Sections

Section groups the text strings. Section names are in capital letters surrounded by brackets. i.e. : [CONFIG], denotes the user configuration screen.

The order of the sections into the file is no relevant.

## 6.I.4 Keys

Keys are two digit numbers that are used to order the texts into their own section. The order of those keys **must not** be modified. You should not add or suppress keys in a section. Keys must be followed by "=" sign and the text string.

## 6.I.5 Values

The values are the text strings displayed by WTnVt. The position of the lines into the display *is not modifiable*. The strings should not be longer than the PDT display size.

# Appendix A- Escape Sequences

## A.I Control Characters

### A.I.1 C0 Control Characters (00h to 1Fh)

| Mnemonic | Code | Name | Action Taken |
|---|---|---|---|
| **NUL** | 00h | Null | Ignored, (see *CrNuIsCrLf=* WT Option) |
| **ENQ** | 05h | Enquiry | Answerback message returned. See *AnswerBack=* WT Option. |
| **BEL** | 07h | Bell | Generate Host Beep (See *HostBeeps=* WT Option). |
| **BS** | 08h | Backspace | Moves cursor to the left one character position if cursor is not at left margin. If *DestBksp=* WT Option set, erases the character. |
| **HT** | 09h | Horizontal tabulation | Moves cursor three character positions to right. |
| **LF** | 0Ah | Linefeed | Moves cursor down one line in same column. If cursor is at bottom margin, screen performs a "scroll up". Same as Index. |
| **VT** | 0Bh | Vertical tabulation | Same as LF. |
| **FF** | 0Bh | Form feed | Same as LF. |
| **CR** | 0Dh | Carriage return | Moves cursor to left margin on current line. (see *CrNuIsCrLf=* WT Option) |
| **SO (LS1)** | 0Eh | Shift out (Lock shift G1) | Invokes G1 character set in GL. G1 is designated by a select-character-set (SCS) sequence. |
| **SI (LS0)** | 0Fh | Shift in (Lock shift G0) | Invoke G0 character set in GL. G0 is designated by a select-character-set sequence (SCS). |
| **ESC** | 1Bh | Escape | Normally, Escape sequence introducer, can be configured by EscapeChar= WT Option. |

Other C0 control characters are ignored.
See "Character Table" figure.

### A.I.2 C1 Control Characters (80h to 9Fh)

C1 control character processing may be disabled by *Ignore8BCtrl=*Yes WT Option.

| Mnemonic | 8Bit Code | Equivalent 7Bit Codes | Name | Action Taken |
|---|---|---|---|---|
| **IND** | 84h | 1Bh 44h ESC D | Index | Same as LF |
| **NEL** | 85h | 1Bh 45h ESC E | Next line | Moves cursor to first position on next line. If cursor is at bottom margin, |

| | | | | |
|---|---|---|---|---|
| | | | | screen performs a scroll up. |
| **RI** | 8Dh | 1Bh 4Dh<br>ESC M | Reverse index | Moves cursor up one line in same column. If cursor is at top margin, screen performs a scroll down. |
| **SS2** | 8Eh | 1Bh 4Eh<br>ESC N | Single shift G2 | Temporarily invokes G2 character set into GL for the next character. SS2 is a single select-character-set (SCS) sequence. |
| **SS3** | 8Fh | 1Bh 4Fh<br>ESC O | Single shift G3 | Temporarily invokes G3 character set into GL for the next character. SS3 is a single select-character-set (SCS) sequence. |
| **CSI** | 9Bh | 1Bh 5Bh<br>ESC [ | Control sequence introducer | ANSI control sequence introducer. |

Other C1 control characters are ignored.
See "Character Table" figure.

# A.II VT52 Escape Sequences

**Supported**

| Sequence | Action |
|---|---|
| **ESC A** | Cursor Up |
| **ESC B** | Cursor Down |
| **ESC C** | Cursor Right |
| **ESC D** | Cursor Left (IND in VT220 Mode) |
| **ESC F** | Enter Graphics Mode (Maps '0' "Graphic" in GL) |
| **ESC G** | Exit Graphics Mode (Maps 'B' "ASCII" in GL) |
| **ESC H** | Cursor To Home |
| **ESC I** | Reverse Line Feed |
| **ESC J** | Erase To End Of Screen |
| **ESC K** | Erase To End Of Line |
| **ESC Y Row, Col** | Direct Cursor Addressing |
| **ESC Z** | (DECID), Term Id Request |
| **ESC <** | (DECANM) Enter (ANSI, VT100, VT220) Mode<br>See (*TTypePreferred=* WT Option) |
| **ESC W** | Enter Printer Controller Mode |
| **ESC X** | Exit Printer Controller Mode |

**Unsupported**

| Sequence | Action |
|---|---|
| **ESC ]** | Print Screen |
| **ESC V** | Print Cursor Line |
| **ESC ^** | Enter Auto Print Mode |

| | |
|---|---|
| **ESC _** | Exit Auto Print Mode |
| **ESC =** | Enter Alternate Keypad Mode |
| **ESC >** | Exit Alternate Keypad Mode |

# A.III ANSI / VT100 / VT220 Escape Sequences

ANSI sequences normally begins by the ANSI standard CSI sequence.

## A.III.1 Terminal Selection (DECSCL)

| Sequence | Action |
|---|---|
| **CSI 61"p** | Set WT in VT100 mode (7 bits Only) Overwrites WT *TTypePreferred=* Option and WT *Bits8Mode=* Option. |
| **CSI 62"p**<br>**CSI 62;0"p**<br>**CSI 62;2"p** | Set WT in VT200 mode, 8-bit controls (CSI=9Bh , SS3=8Fh) Overwrites WT *TTypePreferred=* Option and WT *Bits8Mode=* Option. |
| **CSI 62;1"p** | Set WT in VT200 mode, 7-bit controls (CSI=1Bh 5Bh, SS3=1Bh 4Fh). Overwrites WT *TTypePreferred=* Option and WT *Bits8Mode=* Option. |
| **ESC <** | (DECANM) Enter (ANSI, VT100, VT220) Mode following WT *TTypePreferred=* Option. |
| **CSI ?2l** | Enter VT52 Mode (DECANM). Overwrites WT *TTypePreferred=* Option and WT *Bits8Mode=* Option. |

***CSI*** *is "ESC [" ("1Bh 5Bh") OR "9Bh".*

## A.III.2 Character Set Selection (SCS)

### A.III.2.1 Designating

Each VTXXX character set are coded between 20h / 7Fh. And cant be set by different ways in GL "Graphics Left" (00h to 7Fh) or GR "Graphics Right" (80h to FFh). See "Character Table" and "Setting And Designating"

- VT52 : Only "B" or "0" sets in GL (VT52 is a 7 Bits terminal) (No G0-G3 sets).
- VT100 : "B", "0" and "<" sets, selected in G0 to G3, and designated to GL (VT100 is a 7 Bits terminal).
- VT220 : "B", "0" and "<" sets, selected in G0 to G3, and designated to GL or GR (VT220 is a 8 Bits terminal).

WT Emulates the three character sets with a single 00h to FFh "PC" Font.
The character set supported by Wireless Telnet with VTX.FNT font are:

| Name | Code | Description | Usual set |
|---|---|---|---|
| ASCII Graphics | "B" | ISO ASCII Standard | Normally in GL (20h 7Fh) |
| DEC Supplemental Graphics | "0" | ASCII Uppercase + "Line drawing" | Normally in GL (20h 7Fh) |
| DEC Special Graphics | "<" | "European Special Characters" | Normally in GR (80h FFh) |

Downloading and designation of "soft character sets" is unsupported by WT.

Using SCS sequences, character sets are located in G0, G1, G2, G3. This makes the graphic sets available to map them into GL or GR using locking shifts (LS0L, LS1L, LS2L, LS3L, LS1R, LS2R and LS3R) or temporary shifts (SS2 and SS3).

Setting other fonts (437.fnt, 850.fnt, 852.fnt...) by WT *Font=* Option, and disabling the C1 control codes by *Ignore8BCtrl=*Yes WT Option allows a "PC-Like" display.

| Character Set | Sequence | Designate to |
|---|---|---|
| ASCII "B" | ESC (B | G0 (default) |
| | ESC )B | G1 |
| | ESC *B | G2 |
| | ESC +B | G3 |
| DEC Special Graphics "<" "European Special Characters" | ESC (< | G0 |
| | ESC )< | G1 |
| | ESC *< | G2 |
| | ESC +< | G3 (default) |
| DEC Supplemental "0" "Line drawing" | ESC (0 | G0 |
| | ESC )0 | G1 (default) |
| | ESC *0 | G2 (default) |
| | ESC +0 | G3 |

See also "Setting And Designating" figure.

### A.III.2.2 Invoking

Characters in G0 to G3 may be invoked to GL or GR by the "Locking Shift" functions.

| Mnemonic / Name | Sequence | Action |
|---|---|---|
| LS0L -- Lock Shift G0, Left | 0Fh (SI) | Invoke G0 into GL.(default) |
| LS1L -- Lock Shift G1, Left | 0Eh (SO) | Invoke G1 into GL. |
| LS1R -- Lock Shift G1, Right | ESC ~ | Invoke G1 into GR. |
| LS2L -- Lock Shift G2, Left | ESC n | Invoke G2 into GL. |
| LS2R -- Lock Shift G2, Right | ESC } | Invoke G2 into GR.(default) |
| LS3L -- Lock Shift G3, Left | ESC o | Invoke G3 into GL. |
| LS3R -- Lock Shift G3, Right | ESC \| | Invoke G3 into GR. |

Characters in G2 and G3 may be invoked into GL by the "Single Shift" functions. Single shift applies only to the next character, then returns to the normal Graphic set.

| Mnemonic / Name | Sequence | Action |
|---|---|---|
| SS2<br>Single shift G2 | 1Bh 4Eh<br>ESC N | Temporarily invokes G2 character set into GL for the next character. |
| SS3<br>Single shift G3 | 1Bh 4Fh<br>ESC O | Temporarily invokes G2 character set into GL for the next character. |

See also "Setting And Designating" figure.

## A.III.3 Select C1 Controls

See WT *Bits8Mode=* Option.

DEC Documentation says ...
*"Digital recommends that you use DECSCL sequences instead of Select C1 Controls because DECSCL performs a soft reset putting the terminal in a 'known' state in addition to setting the terminal mode and C1 control state".*

| Mnemonic | Sequence | Action |
|---|---|---|
| S7C1T | ESC sp F | Same as WT *Bits8Mode=*No Option, Overwrites WT *Bits8Mode=* Option. (By default in VT52 or VT100 modes) |
| S8C1T | ESC sp G | Same as WT *Bits8Mode=*Yes Option, Overwrites WT *Bits8Mode=* Option. (Only in VT220 mode)<br>In this case, all the keyboard sequences that start with :<br>* ESC[ (7 Bits CSI) are converted to 9Bh (8 Bits CSI)<br>* ESC0 (7 bits SS3) are converted to 8Fh (8 Bits SS3) |

## A.III.4 Terminal Modes

| Feature | "DEC" Mnemonic | Set | Reset | Description |
|---|---|---|---|---|
| Keyboard Action | KAM | Locked<br>CSI 2h | Unlocked<br>CSI 2l | Keyboard Action mode lets your program lock and unlock the keyboard |
| Insertion-Replacement | IRM | Insert<br>CSI 4 h | Replace<br>CSI 4l | The terminal displays received characters at the cursor position. Insert / Replacement mode determines how the terminal adds characters to the screen. |
| Send-Receive (Local Echo) | SRM | Off<br>CSI 12h | On<br>CSI 12l | Send-Receive Mode turns local echo on or off. Overwrites *LocalEcho=* WT Option. |
| Line Feed-New Line (Enter=CR LF) | LNM | New Line (CR+LF)<br>CSI 20h | Line Feed (CR) or (CR+NUL) (*EnterCrNu=* WT Option)<br>CSI 20l | Line feed / new line mode selects the control character(s) transmitted to the application by the ENTER key. |
| Cursor Keys | DECCKM | Application<br>CSI ?1h | Normal Cursor<br>CSI ?1l | Cursor Keys selects the sequence sent to the application by the cursor keys. (See Cursor Keys). Overrides WT *CurKeysApp=* Option. |
| ANSI/VT52 | DECANM | VTXXX<br>CSI ?2l | VT52<br>CSI ?2l | Selects VT52 or ANSI VT100, VT220 compatibility modes. (See Function Keys) |
| Origin | DECOM | Scroll Area | Absolute | Origin mode allows cursor |

| | | | | |
|---|---|---|---|---|
| mode | | CSI ?6h | CSI ?6l | addressing relative to a user-defined origin (Scroll Area) |
| Text Cursor Visible | DECTCEM | Show<br>CSI ?25h | Hide<br>CSI ?25l | Text Cursor Enable Mode determines if the text cursor is visible. |

***CSI** is "ESC [" ("1Bh 5Bh") OR 9Bh.*

**Unsupported**

| Feature | Mnemonic | Set | Reset |
|---|---|---|---|
| Column | DECCOLM | 132 Column<br>CSI ?3h | 80 Column<br>CSI ?3l |
| Scrolling | DECSCLM | Smooth<br>CSI ?4h | Jump<br>CSI ?4l |
| Keypad | DECKPAM<br>DECKPNM | Application<br>ESC = | Numeric<br>ESC > |
| Auto Wrap | DECAWN | On<br>CSI ?7h | Off<br>CSI ?7l |
| Auto Repeat | DECARM | On<br>CSI ?8h | Off<br>CSI ?8l |
| Print Form Feed | DECPFF | On<br>CSI ?18h | Off<br>CSI ?18l |
| Print Extent | DECPEX | Full Screen<br>CSI ?19h | Scrolling Region<br>CSI ?19l |
| Screen | DECSCNM | Reverse<br>CSI ?5h | Normal<br>CSI ?5l |

## A.III.5 Cursor Positioning

Pn, Pl, Pc are variable numeric parameters. If you select no parameter WT assumes the parameter equals 1.

| Name / Mnemonic | Sequence | Action |
|---|---|---|
| Cursor Up (CUU) | CSI Pn A | Moves the cursor up Pn lines in the same column. The cursor stops at the top margin. |
| Cursor Down (CUD) | CSI Pn B | Moves the cursor down Pn lines in the same column. The cursor stops at the bottom margin. |
| Cursor Forward (CUF) | CSI Pn C | Moves the cursor right Pn columns. The cursor stops at the right margin. |
| Cursor Backward (CUB) | CSI Pn D | Moves the cursor left Pn columns. The cursor stops at the left margin. |
| Cursor Position (CUP) | CSI Pl;Pc H | Moves the cursor to line Pl, column Pc. The numbering of the lines and columns depends on the state (set/reset) of origin mode (DECOM). |
| Horizontal And Vertical | CSI Pl;Pc f | Same as CUP. |

| | | |
|---|---|---|
| Position (HVP) | | |
| Index (IND) | ESC D or 84h | Moves the cursor down one line in the same column. If the cursor is at the bottom margin the screen performs a scroll-up. |
| Reverse Index (RI) | ESM M or 8Dh | Moves the cursor up one line in the same column. If the cursor is at the top margin the screen performs a scroll-down. |
| Next Line (NEL) | ESC E or 85h | NEL is an 8-bit control character (8/5). It can be expressed as an escape sequence for a 7-bit environment. NEL moves the cursor to the first position on the next line. If the cursor is at the bottom margin the screen performs a scroll-up. |
| Save Cursor (DECSC) | ESC 7 | Saves :<br>Cursor position<br>Graphic rendition (reverse, blink, etc.)<br>Character set shift state (G0-G3, GL, GR)<br>State of origin mode (DECOM). |
| Restore Cursor (DECRC) | ESC 8 | Restores the states described for (DECSC) above. If none of these characteristics were saved: the cursor moves to home position, origin mode is reset, no character attributes are assigned, and the default character set mapping is established. |

***CSI** is "ESC (" 5"1Bh 5Bh") OR 9Bh.*

## A.III.6 Character Attributes (SGR)

| Sequence | Action |
|---|---|
| CSI 0m | All attributes off |
| CSI 1m | Display bold, see WT *Bold=* option |
| CSI 4m | Display underscored, see WT *Underline=* option |
| CSI 5m | Display blinking, see WT *Blink=* option |
| CSI 7m | Display negative image (reverse) |
| CSI 22m | Display normal intensity (no Bold) |
| CSI 24m | Display not underlined |
| CSI 25m | Display not blinking |
| CSI 27m | Display positive image (normal, not reverse) |

The **Select Character Attributes (DECSCA)** sequences are unsupported.

The **Line Attribute** sequences (DECDHL, DECSHL, DECSWL and DECDWL) are unsupported.

***CSI** is "ESC [" ("1Bh 5Bh") OR 9Bh.*

## A.III.7 Insertion / Deletion

Pn is a variable numeric parameter. If you select no parameter WT assumes the parameter equals 1.

| Name / Mnemonic | Sequence | Action |
|---|---|---|
| Insert Line | CSI Pn L | Inserts Pn lines at the cursor. Lines within the scroll area at and |

| | | |
|---|---|---|
| (IL) | | below the cursor move down. Lines moved past the bottom margin are lost. The cursor is reset to the first column. |
| Delete Line (DL) | CSI Pn M | Deletes Pn lines starting at the line with the cursor. Lines within the scroll area and below the cursor move up, and blank lines are added at the bottom of the scroll region. The cursor is reset to the first column. |
| Insert Characters | CSI Pn @ | Insert Pn blank characters at the cursor position, with the character attributes set to normal. The cursor does not move and remains at the same position. Data on the line is shifted forward as in character insertion. |
| Delete Character (DCH) | CSI Pn P | Deletes Pn characters starting with the character at the cursor position. When a character is deleted, all characters to the right of the cursor move to the left. |

***CSI** is "ESC [" ("1Bh 5Bh") OR 9Bh.*

## A.III.8 Erasing Characters

Pn is a variable numeric parameter. If you select no parameter WT assumes the parameter equals 0.

| Name / Mnemonic | Sequence | Action |
|---|---|---|
| Erase Character (ECH) | CSI Pn X | Erases characters at the cursor position and the next n-1 characters. The cursor remains in the same position. |
| Erase in Line (EL) | CSI K | Erases from the cursor to the end of the line, including the cursor position. |
| | CSI 1 K | Erases from the beginning of the line to the cursor, including the cursor position. |
| | CSI 2 K | Erases the complete line. |
| Erase in Display (ED) | CSI J | Erases from the cursor to the end of the screen, including the cursor position. |
| | CSI 1 J | Erases from the beginning of the screen to the cursor, including the cursor position. |
| | CSI 2 J | Erases the complete display. The cursor does not move. |

**Selective erase** sequences (DECSEL, DECSED) are unsupported. ***CSI** is "ESC [" ("1Bh 5Bh") OR 9Bh.*

## A.III.9 Set Scroll Area

| Name / Mnemonic | Sequence | Action |
|---|---|---|
| Set Top and Bottom Margins (DECSTBM) | CSI Pt ; Pb r | Selects top and bottom margins defining the scrolling area. Pt is the line number of the first line in the scrolling area. Pb is the line number of the bottom line. If either Pt or Pb is not selected, they default to top (1) and bottom (24) respectively. Lines are counted from "1". |

## A.III.10 Printing

| Name | Sequence | Action |
|---|---|---|
| Printer Controller | CSI 5 i | Turns on printer controller mode. The terminal transmits received characters to the printer without displaying them on the screen. All characters and character sequences except CSI 4 i are sent to the printer. |
| | CSI 4 i | Turns off printer controller mode. |

**Auto Print Mode, Print Cursor Line and Print Screen** are unsupported.
***CSI*** *is "ESC [" ("1Bh 5Bh") OR 9Bh.*

## A.III.11 Terminal Reports

| Communication / Mnemonic | Sequence | Action |
|---|---|---|
| Host to Terminal (DECID Request) | ESC Z | DECID Request |
| Terminal to Host (DECID Response) | VT52 = ESC / Z<br>ANSI, VT100, VT220= Primary DA response) | DECID Response |
| Host to Terminal (Primary DA Request) | CSI c | Device request |
| Terminal to Host (Primary DA Response) | CSI ? n; n; n; n; n; nc | service class terminal<br>columns<br>printer port<br>selective erase, etc |
| Host to Terminal (Secondary DA Request) | CSI > c | Type of terminal request |
| Terminal to Host (Secondary DA Response) | CSI > n; n; nc | Identification code<br>Firmware version<br>Options installed." |
| Host to Terminal (DSR Request for terminal status) | CSI 5 n | Operating status report |
| Terminal to Host (DA Response) | CSI 0 n or<br>CSI 3 n | Ok<br>Error (?) |
| Host to Terminal (Request for cursor position) | CSI 6 n | Report cursor position |
| Terminal to Host (CPR response) | CSI Pl; Pc R | Cursor positioned at<br>Pl = line<br>Pc = column |
| Host to Terminal (Device Status Report) | CSI ? 15 n | Printer Status |
| Terminal to Host (Device Status Report) | CSI ? 13 n | Printer Not seen (no port). |
| Terminal to Host | CSI ? 10 n | Printer Ready |

| | | |
|---|---|---|
| (Device Status Report) | | |
| Terminal to Host (Device Status Report) | CSI ? 11 n | Printer Not Ready |
| Host to Terminal (Device Status Report) | CSI ? 25 n | Lock Keyboard Status |
| Terminal to Host (Device Status Report) | CSI ? 20 n | Unlocked |
| Terminal to Host (Device Status Report) | CSI ? 21 n | Locked |

### A.III.12 Terminal Reset

| Name / Mnemonic | Sequence | Action |
|---|---|---|
| Soft Terminal Reset (DECSTR) | CSI ! p | Reset the program parameters to the defaults. |
| Hard Terminal Reset (RIS) | ESC c | Same as DECSTR. |

## A.IV Supplemental ANSI Escape Sequences

Pn is a variable numeric parameter. If you select no parameter WT assumes the parameter equals 1.

| Name | Sequence | Action |
|---|---|---|
| | CSI Pn E | Move cursor to beginning of line, Pn lines down. |
| | CSI Pn F | Moves cursor to beginning of line, Pn lines up. |
| | CSI Pn G or CSI Pn ' | Go to column Pn. |
| | CSI Pn T | Scrolls screen down Pn lines. |
| | CSI Pn S | Scrolls screen up Pn lines. |
| | CSI Pn b | Repeat Pn times last character (until end of line). |
| | CSI Pn d | Go to line Pn. |
| | CSI s | Save cursor position. |
| | CSI u | Restore cursor position. |

## A.V Supplemental DEC Escape Sequences

Those are VT320 and VT420 supported commands.

| Name / Mnemonic | Sequence | Action |
|---|---|---|
| Erase Rectangular Area (DECERA) | CSI Top; Left; Bottom; Right $z | Erase the characters (and their visual attributes) in the specified rectangular area. |
| Copy | CSI Top; Left; Bottom; | The first two (Top, Left) specify the upper-left |

| | | |
|---|---|---|
| Rectangular Area. (DECCRA) | Right; Page; DestTop; DestLeft; DestPage $v | corner coordinates, the next two ( Bottom, Right) the bottom-right coordinates of a rectangular area.<br>Page parameter is ignored.<br>The data is copied to a similar rectangle that starts on the coordinates DestTop and DestLeft. |

# A.VI ROI Escape Sequences

These sequences are supported if *RoiEscSeq=Yes*.

| Name | Sequence | Action |
|---|---|---|
| Disable Scanner Feature | ESC%P1;P2A | P1 = Select the option (See WT *TurnOffScan=* Option).<br>0 =Disable *TurnOffScan=* Option.<br>1, 2, 3 = Enable *TurnOffScan=* Option.<br>4= Request State<br>P2 = Scanner state<br>0=Enable Scanner<br>1=Disable Scanner |
| Request IP | ESC%1I | Request for the terminal's IP address<br>The response is :<br>ESC%?<IP Address>I |
| Control Char | ESC%nnnC | Send an ASCII C0 control character as a scan code in decimal value. Where nnn is the decimal character For example, ESC%7C sends the Bell character |
| FixedMode | ESC%Pt;PlF | Enable, disable the WT *FixedMode=* Option, where :<br>Pt - is the top edge position (=No).<br>Pl - is the left edge position (=No).<br>Both parameters a 1-based.<br>Specifying a 0 (zero) in either parameter or both sets the option (=Yes). |
| Keyboard On | ESC%nK | Enable/disable keyboard entry from the terminal, where n is:<br>0 - disables the keyboard.<br>1 - enables the keyboard. |
| Scan On | ESC%nS | Enable/disable scanner entry from the terminal, where n is:<br>0 - disables the scanner.<br>1 - enables the scanner. |
| Exit | ESC%nX | Notify the terminal emulator to terminate the connection .<br>N parameter is ignored. |
| Enable Symbology | ESC%P1;...;PnE | This sequence selectively enables symbologies. Where:<br>0 - all symbologies<br>1 - Code 39<br>2 - UPC A<br>3 - UPC E0<br>4 - EAN 13<br>5 - EAN 8<br>6 - D2 of 5<br>7 - I2 of 5 |

| | | |
|---|---|---|
| | | 8 - Codabar<br>9 - Code 128<br>10 - Code 93<br>11 - Code 11<br>12 - MSI<br>13 - UPC E1<br>14 - SUPPLEMENTALS<br>For example:<br>ESC%0E Enables all symbologies.<br>ESC%1;2E<br>enables Code 39 and UPC A. All other symbology choices remain unchanged. |
| Disable Symbology | ESC%P1;...;PnD | This sequence selectively disables symbologies. Where:<br>0 - all symbologies<br>1 - Code 39<br>2 - UPC A<br>3 - UPC E0<br>4 - EAN 13<br>5 - EAN 8<br>6 - D2 of 5<br>7 - I2 of 5<br>8 - Codabar<br>9 - Code 128<br>10 - Code 93<br>11 - Code 11<br>12 - MSI<br>13 - UPC E1<br>14 - SUPPLEMENTALS<br>For example:<br>ESC%4;6;7;9D Disables EAN 13, D2 of 5, I2 of 5, and Code 128. All other symbology choices remain unchanged. |

# A.VII TELXON Escape Sequences

These sequences are supported if *TelxonEscSeq=Yes*.
Telxon escape sequences are in the following format : ESC R **nn pp** ESC \.
Where **nn** is a two-digit command number, and **pp** a two-digit command parameter.

| Name | Sequence | Action |
|---|---|---|
| Width and Height | ESCR00ppESC\ | Set display width and height, where pp:<br>00=Set display to normal wide and normal high.<br>01=Set display to double wide and normal high.<br>02=Set display to normal wide and double high.<br>03=Set display to double wide and double high.<br>See *DoubleHeight=* and *DoubleWidth=* Options. |
| Backlight On | ESCR01ppESC\ | Turn on or off the backlight, where pp:<br>00=turn off backlight.<br>01= turn on backlight. |

| | | |
|---|---|---|
| | | See *BackLight=* Option. |
| Backlight Time | ESCR02ppESC\ | Set backlight time, where:<br>pp= (Two digits 00-99) number of seconds to leave backlight on.<br>See *BackLight=* Option. |
| Scanner On | ESCR05ppESC\ | Turn on or off the scanner mode, where pp:<br>00=Turn off scanner.<br>01=Turn on scanner.<br>Overrides *Enable=* Option |
| Beeper Volume | ESCR09ppESC\ | Set beeper volume, where pp:<br>00=Beeper off.<br>01=Beeper soft.<br>02=Beeper normal<br>03=Beeper loud.<br>Overrides *HostBeeps=*Option |
| Contrast | ESCR10ppESC\ | Set display contrast in terms of dimness and brightness, where pp:<br>00 to 15=The zero value is the dimmest and fifteen is the brightest. |
| Echo | ESCR11ppESC\ | Turn on or off the local echo feature, (See WT *LocalEcho=* Option) where pp:<br>00=Turn off local echo feature.<br>01=Turn on local echo feature. |
| Scan Only | ESCR13ppESC\ | Allow only scanned data entry. |
| Scan And Keyboard | ESCR15ppESC\ | Allow scanned and keyboard data entry.<br>Overrides *Enable=*Option. |

# A.VIII Sent Escape Sequences

Keyboard keys send characters defined by terminal keyboard layout and standard translation process. (Normal translation is to sent the character represented by lower weight byte of scan code). You can see scan codes and translations in the terminal with "[F4] See Options / [F4] FN KEYS / [F1] SCAN CODES / [F2] TRANSLATED".

All scan codes between 0100h - to FF00h are "Function Keys Scan Codes" and are **always** trapped by application. If the Function Scan Code is not found in any translation routine, the key is ignored (has no action). If the Scan Code is found in any translation routine, the corresponding string is sent to the host. Strings are always supplied into their "7 Bits" format, and translation may be done if the terminal is operating in "8 Bits Mode".

## A.VII.1. Translation Routines

Translation routines are "user-defined" translation strings associated with an Scan Code. The following routines are defined:

* **User-Defined**. Following [SCANCODES] section in WT configuration file. Supplies a string associated with a scan code (Normal 0000h-00FFh or Function 0100h-FFFFh).
You can see the active translations in the terminal with "[F4] See Options / [F4] FN KEYS / [F1] SCAN CODES / [F3] TRANSLATION LIST"

*** Normal Function Keys** (Pressing [FUNC] then [n] key, with n=numeric key). The active translation keys depends of the terminal type choose by user or negotiated with Telnet server. The corresponding [FNKEYS_<*name*>] section in the WT configuration file is copied into (terminal type can be dynamically changed during connection).
You can see the active translations in the terminal with "[F4] See Options / [F4] FN KEYS / [F2] TELNET FN KEYS"
*** Shifted Function Keys** (Pressing [SHIFT] then [FUNC] then [n] key, with n=numeric key). The active translation keys depends of the terminal type choose by user or negotiated with server. The corresponding [SFNKEYS_<*name*>] section in the WT configuration file is copied into (terminal type can be dynamically changed during connection).
You can see the active translations in the terminal with "[F4] See Options / [F4] FN KEYS / [F2] TELNET FN KEYS"
*** Cursor Keys** (Pressing Up, Down, Left or Right Arrow keys). The active translation keys depends of the terminal type choose by user or negotiated with server. The corresponding [CURKEYS_<*name*>] or [CURKEYSAP_<*name*>] section in the WT configuration file is copied into (terminal type can be dynamically changed during connection).
Switching between "Normal" and "Application" cursor keys can be dynamically done in some terminal types by escape sequences (See Cursor Keys in Terminal Modes) .
Modify the WT *CurKeysApp=* Option to set by default "Normal" or "Application" cursor keys.
You can see the active translations in the terminal with "[F4] See Options / [F4] FN KEYS / [F2] TELNET FN KEYS".
WT Configuration file contains the "standard" sequences following each terminal type emulation. Those standards can be modified by user to allow application-specific keys (see Chapter 5).

## A.VII.2. 7 and 8 Bits Mode

7 Bits and 8 Bits operating mode may modify the strings sent by the Terminal to the Host.

- In "7 Bits Mode" the strings are sent "as is".
- In "8 Bits Mode" strings that **start** with CSI or SS3 are translated from the 7 Bits format (2 characters) to their 8 Bits Format (single character).

7 Bits or 8 Bits operating mode may be choose by several ways:

- By WT "*Bits8Mode=*" Option.
  *Bits8Mode*=No, operates in 7 Bits mode (No translation)
  *Bits8Mode*=Yes, operates in 8 Bits mode (Translation)
- By "Terminal Selection (DECSCL)", dynamically.
- By "Select C1 Controls", dynamically.

8 Bits Mode is automatically turned off if VT52 or VT100 terminal types are selected (those are 7 Bits only terminals).
8 Bits Mode has sense only in VT220 or ANSI WT terminal emulation modes.

# Appendix B – Character sets

## B.I ASCII Character Set

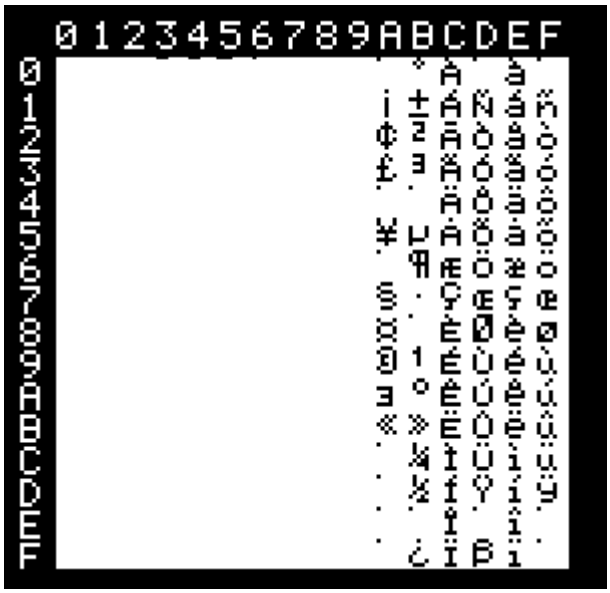
In this example, ASCII character set ("B") is in GL (Default).


## B.II "Line Graphics" Character Set

In this example, "Line Graphics" character set ("0") is in GL (Default).


## B.III "European" Character Set

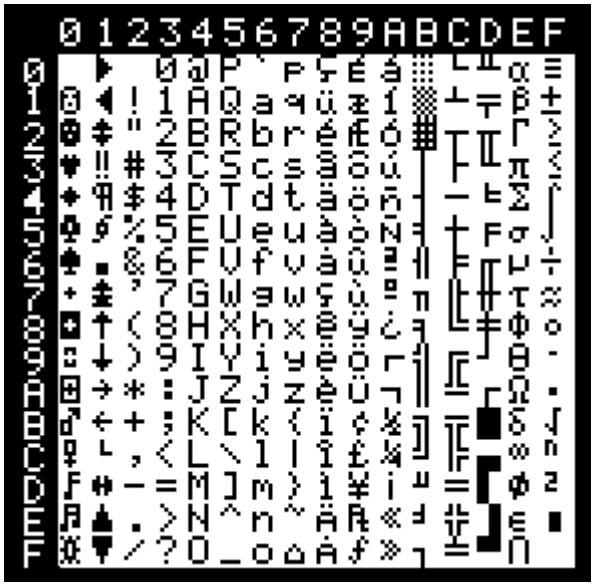
In this example, "European" character set ("<") is in GR (Default).



# B.IV Other character sets

- When using other fonts than DEC-VTxxx fonts, you need:
- Select the font with the WT Font= option.
- Disable C1 control codes processing by WT Ignore8BCtrl=Yes Option.
- Do not use "designate" and "shift" DEC sequences.

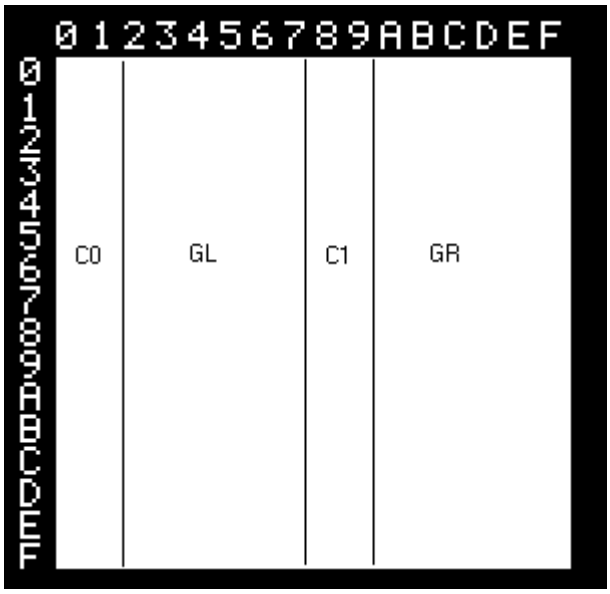
## 1. "PC-Like" 437 Font



## 2. "PC-Like" 850 Font

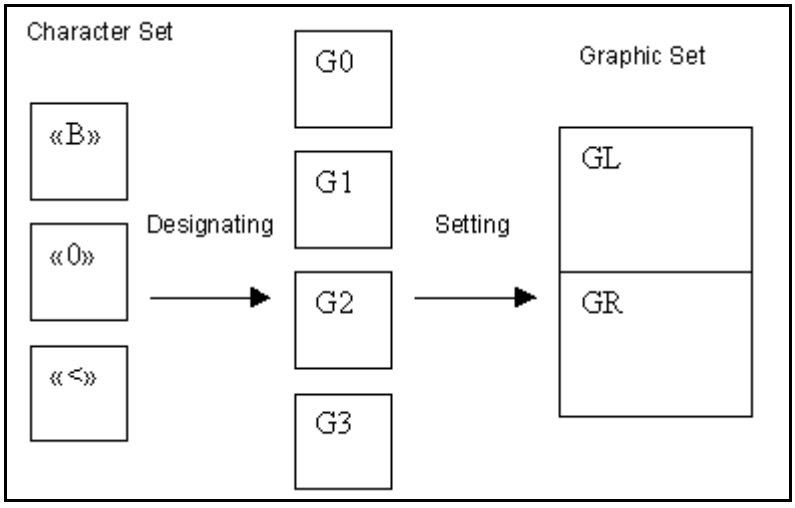
## 3. "PC-Like" 852 Font

# B.V Character Table




**C0** is "CO Control codes" 00h to 1Fh.
**GL** is "DEC Graphic left" 20h to 7Fh.
**C1** is "C1 Control Codes" 80h to F9h.
**GR** is "DEC Graphic Right" A0h to FFh.

# B.VI Setting And Designating




The designating sequences places a character set (ASCII, Graphics or European) into G0 to G3.

See also "Character Set Selection / designating".

The setting sequences, invokes the G0 to G3 character sets into Graphic left or right (locking or single shift).

See also "Character Set Selection / Invoking".

# Appendix C – Downloading Configuration File

The configuration files are :

- **_WTnVt.Cfg** that contains the program parameters (Chapter 5).
- **_Msg*XX*.Cfg** that contains the user messages texts (Chapter 6).

## C.I Download by RsLink

Install RsLinkOne or RslinkPlus in the PC.
Create a folder that contains the configuration files to download.
Start RsLink. In the "File" menu, select the "Settings" option.

In the "Communication settings" dialog box:

- Select the path **"PC > PDT"** by browsing the folder that contains the configuration files.
- Select the appropriate COM: port.
- Select *2000* packet size.
- Select Baudrate *9600*.
- Select protocol *RsLink*.

At boot time, the terminal asks for "configuration download", choose "[F2] By RsLink" option. The terminal downloads the **_WTnVt.Cfg** file, **and** the **_MsgXX.Cfg** associated file (be sure that the TWO files are in the right place). After successful download, the terminal saves the files into the "Flash Memory" and prompts the main menu.

## C.II Download by "print"

ANSI, VT52, VT100 and VT200 terminals may have printers attached and have escape sequences that routes the data to printer instead the screen.

WTnVt emulation program has a feature that allows to route the stream to a memory file instead the printer. This feature allows to download the configuration files from a host to the terminal by standard programs.

If WTnVt recognizes in the data sent by host a "printer header" (**%%FILE**=xxxx**%%**) the data is stored into the file indicated by the "printer header".

If the file name is **"_WTnVT.Cfg"** the terminal disconnects and reloads the configuration. You should send the "user message" text file _MsgVtXX.cfg **before** the configuration file.

The printer mode commands are:

- ESC [ 5 i (Starts)
- ESC [ 4 i (Stops)

Sample program (in C) to "print" a file to WTnVt:

```
/* To send configuration file */
/* The terminal is attached to the console */
void SendByPrint(void)
```

```
{
int iFd;
int iLen;
char sBuff[31];

printf("\x1B[5i");
iFd=open("_MsgFr.Cfg", O_RDONLY | O_BINARY);
while ( (iLen=_read( iFd, sBuff, 30) )>0)
   {
   fwrite(sBuff, 1, iLen, stdout);
   }
_close(iFd);
printf("\x1B[4i");
}
```

# C.III Download by WTDnl

Install WTDnl in the PC.
Create a folder that contains the configuration files to download.
Start WTDnl. In the "Edit Profile" menu, select the "Settings" option.

In the "settings" dialog box:

- Let the default IP address 0.0.0.0 (use all the IP interfaces in the host) and port (3001) if WTDnl is not a conflict with other protocols.
- Select the folder where the "DOT-CFG" files are, giving the path or browsing the folders.
- Accept by "OK" button.

Save the configuration by the "File" menu, selecting the "Save" option. A ".wtdnl" file is created in a user selected folder that contains the present configuration. For further use, this file is in the MRU list or you can start WTDnl program by selecting the ".wtdnl" file in the windows explorer.

At boot time, the terminal asks for "configuration download", choose "[F1] By Radio" option. Supply the IP address of the host that have the WTDnl program running, and the port (3001 by default).

The terminal downloads the **_WTnVt.Cfg** file, **and** the **_MsgXX.Cfg** associated file (be sure that the TWO files are in the right place). After successful download, the terminal saves the files into the "Flash Memory" and prompts the main menu.

# Appendix D – Downloading Terminal Program

To load **WTnVt** in a Symbol Technologies series 3000 PDT, it is necessary to download to the PDT NVM **two** "DOT.HEX" files:

- **WS24_xxx.HEX** Drivers Spectrum24 2Mb FH for PDTxx42.

- OR -

- **WS11_xxx.HEX** Drivers Spectrum24 11Mb DS for PDTxx46.

- AND -

- **WTnVTxx.HEX** Wireless Telnet VT Emulator Version x.x.

Using NvmHex or RsLink utilities. These utilities send the ".HEX" file to the PDT by writing the Non Volatile Memory.

1. Erase the PDT NVM (EEPROM).
2. Load **WS24_xxx.HEX** (2Mb FH - PDTxx42) OR **WS11_xxx.HEX** (11Mb DS - PDTxx46) first, ***and cold boot the terminal***.
3. To the "Flash Erase" question, respond **[Y]** (Yes) to format the Flash disk. When boot, NVM (or EEPROM, or **B:**) contents is transferred to Flash Memory (or **E:** drive ), the network and TCP/IP drivers are installed
4. Erase the PDT NVM (EEPROM) (Yes, yes …).
5. Load **WTnVtxx.HEX** and cold boot the terminal.
6. After boot, the PDT Network configuration utility (CFG24 or CFG11) allows to set the appropriate values.

You may load other configuration files (_WTnVt.Cfg, _MsgVtXX.Cfg ) by RsLink utility, or use those included into standard **WTnVt** NVM.

# D.I Downloading program by NVMHEX

This method needs to install NvmHex into the PC.
NvmHex has on-line help to download "HEX" files and PDT boot sequences.

In the PC:

- Search the file by "Windows explorer', and "double-click" the "HEX" file (NvmHex starts).
- Select the baud rate if necessary (38400 by default).

In PDT :

- Do a "Command Boot"
- Erase NVM by "Program loader'"
- Select speed (usually 38400)
- Select default data bits (7) and parity (Odd)
- Select flow control "Xon/Xoff"
- Start download
- After good download boot the terminal (Bios Boot).

# D.II Downloading program by RSLINK

This method needs to install RsLink into the PC.
RsLink has on-line help to download "HEX" files and PDT boot sequences.

In the PC:

- Start RdsLinkOne or RsLinkPlus.
- Select the "Tools" Menu. Select the "Nvm Loader" Option in the Tools Menu.
- Select the ".HEX" file to download by the "select file" dialog box.

In PDT:

- Do a "Command Boot"
- Erase NVM by "Program loader'"
- Select speed (usually 38400)
- Select default data bits (7) and parity (Odd)
- Select flow control "Xon/Xoff"
- Start download
- After a successful download boot the terminal (Bios Boot).

# Appendix E - CFG11 / CFG24 Utility

## E.I Purpose

The main purpose of this utility program is to enable the terminal operator to configure certain essential parameters for radio communications. This program must be run after the radio driver has been loaded as the configuration parameters are saved in the radio card flash memory which is accessed using radio driver services.

This program uses the text message file MSG.MSG which is read from the same drive and directory that the system found the executable, CFG24.COM (Or CFG11.COM).

Changing some parameters, e.g. terminals IP address, will have no effect until the stack is reloaded. Other parameters, e.g. Diversity, will have no effect until the radio driver is reloaded. The safest course is to re-initialize (warmboot) the terminal after changing any parameters by running CFG24 or CFG11 manually from a DOS prompt.

CFG24 is used for 2Mb FH terminals (PDTxx42), and CFG11 is used for 11Mb DS terminals (PDTxx46). There is some minor differences between those configurators.

Syntax:

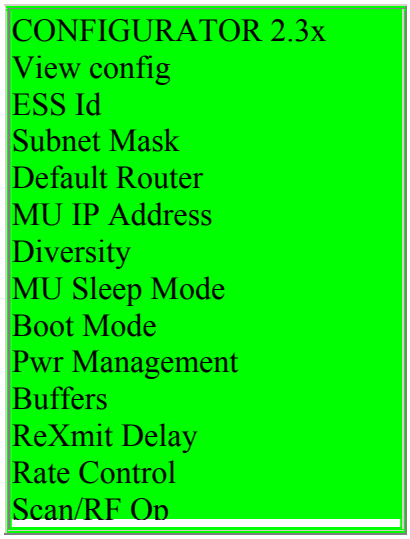
CFG24 [ENTER]
CFG11 [ENTER]

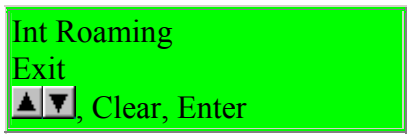
## E.II Description

The program provides menus for editing many of the radio configuration parameters used to communicate in a Spectrum24 network. The values are saved in a buffer in the flash memory of the radio card. The current parameters are set in a text file, NET.CFG, on the RAMdisk. NET.CFG is used both by the radio driver and the TCP/IP stack to obtain their configuration parameters.

### E.II.1 Menu

Initially, the program presents a menu as shown below.

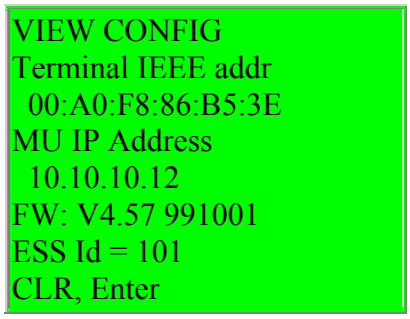





The up and down cursor keys are used to select an option from the menu. The current selectable option is indicated by reverse video. To return to the menu above use the Clear key and to select an option use the Enter key. Using the Clear key in this menu has the same effect as selecting Exit, the configurator terminates execution.

On terminals with small display screens, the top and bottom lines of the above menu are shown and the menu items scroll using the remaining lines of the display.

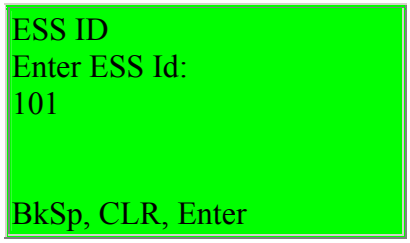
## E.II.2 VIEW CONFIG




If "View config params" is selected, the terminal IEEE address (also known as the MAC address), the terminal IP address, the radio firmware version number and date, and the net id, or ESS Id, are displayed. This is NOT a data entry screen. It is provided to display information frequently required in diagnostic situations. Clear or Enter returns to the main configuration menu.

## E.II.3 ESS ID

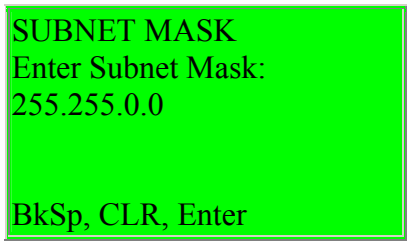
If the configurator is executing over a radio driver that uses the IEEE 802.11 protocol then this screen has the following format.




If "ESS Id" is selected from the main configuration menu, the above screen is displayed. The current setting of the ESS Id is shown in up to 32 ASCII characters and may be changed by backspacing over the current value and typing a new value. Alternatively the current setting can be deleted using Ctrl-D and the new ESS Id entered in its entirity. Enter must be pressed to effect any changes typed.

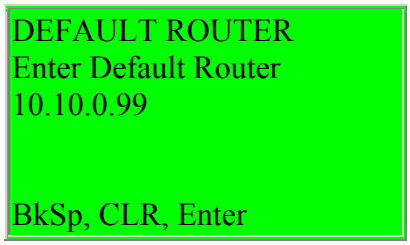
The ESS Id identifies the radio network and differentiates between different radio networks. All equipment on one 802.11 network must use the same ESS Id.

## E.II.4 SUBNET MASK




If "Subnet Mask" is selected from the main configuration menu, the above screen is displayed. The current setting of the Subnet Mask is shown and may be changed by backspacing over the current value and typing a new value. Enter must be pressed to effect any changes typed. A new value is entered in decimal form and each part of the four part address must be in the range from 0 to 255.

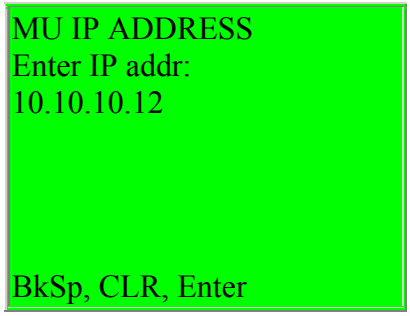
## E.II.5 DEFAULT ROUTER




If "Default Router" is selected from the main configuration menu, the above screen is displayed. The current setting of the Default Router is shown and may be changed by backspacing over the current value and typing a new value. Enter must be pressed to effect any changes typed. A new value is entered in decimal form and each part of the four part address must be in the range from 0 to 255.

The default router address is the address of the node to which all packets, destined for remote networks, will be sent.

## E.II.6 MU IP ADDRESS

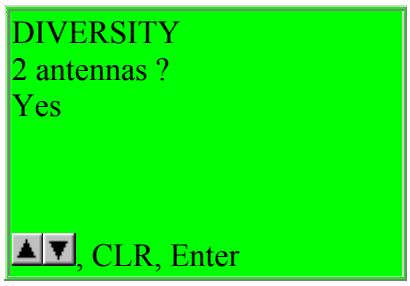



If "MU IP Address" is selected from the main configuration menu, the above screen is displayed. The current setting of the MU IP Address is shown and may be changed by backspacing over the current value and typing a new value. Enter must be pressed to effect

any changes typed. A new value is entered in decimal form and each part of the four part address must be in the range 0 to 255.

**NOTE:** It is only necessary to enter an IP address if the terminal is not going to be allocated an IP address by a boot server or DHCP server. Allocation of an IP address is part of the BOOTP and Dynamic Host Configuration Protocol (DHCP) process.

## E.II.7 DIVERSITY

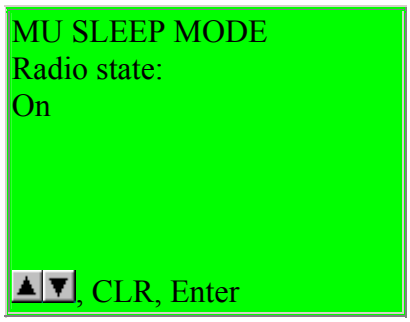



If "Diversity" is selected from the main configuration menu, the above screen is displayed. The current setting of the Diversity is shown and may be changed by using the up and down arrow keys to toggle between the two valid settings. Enter must be pressed to effect any change made.

If diversity is set "Yes", the radio firmware will attempt to use both antenna ports for communications. This setting will give better communications if two antennas are used with the radio and distinctly worse communications if only one antenna is used. It is important to match the diversity setting with the number of antennas in use. The LRT3840, PDT3140 and PDT3540 are each equipped with two antennas.

The wearable, PDT6140 and PDT6840 have only one antenna and the vehicle mount is frequently used with a single antenna. If there is only one antenna make sure that diversity is set to "No". When using the standard start-up files the diversity is defaulted on terminal type to the expected value as implied by the above hardware antenna configurations.

## E.II.8 MU SLEEP MODE



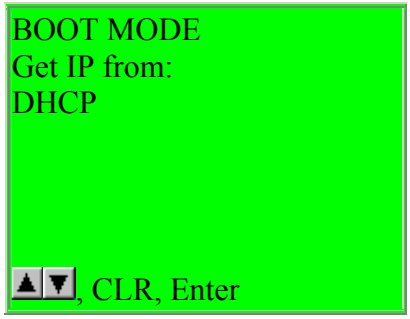

If "MU sleep mode" is selected from the main configuration menu, the above screen is displayed. The current setting of the sleep mode is shown and may be changed by using the up and down arrow keys to toggle between the two valid settings. Enter must be pressed to effect any change made.

If this switch is set ON, the radio is not powered off when an application powers down the terminal due to inactivity. This permits the terminal to be woken-up by a message being directed to the terminal. Broadcast messages will not wake-up the terminal.

If this switch is set to OFF, the radio is powered off when an application powers down the terminal due to inactivity.

The default value for this parameter is ON.

## E.II.9 BOOT MODE




If "Boot Mode" is selected from the main configuration menu, the above screen is displayed. The current setting of the Boot Mode is shown and may be changed by using the up and down arrow keys to toggle between the three valid settings. Enter must be pressed to effect any change made.

If boot mode is set to "Boot", when the terminal is being initialized, a TCP/IP BOOTP request message will be broadcast to the network. Any boot servers on the network should respond if configured to do so. The terminal will accept the first valid response that it receives. The response contains an IP address to be used by the terminal and, optionally, other network parameters. Parameters received in a BOOTP response over-ride any that may have been entered using this configurator.

If boot mode is set to "DHCP", when the terminal is being initialized, a similar process is performed as described above for BOOT mode, except that Dynamic Host Configuration Protocol is used.

Symbol's BOOTP program, which supports the obtaining of network parameters depending on the setting of this configuration parameter, supports the setting of the following network parameters from the BOOTP and DHCP responses:

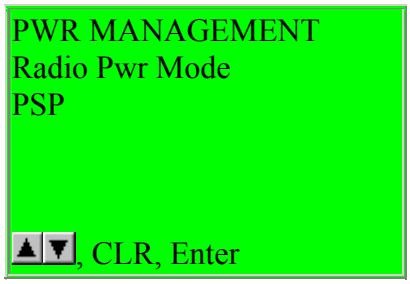
Sub-net mask
Default router - the first address from the router list.
Terminal IP address

Additionally in DHCP, if both domain name (option 15) and domain name servers (option 6) are returned in the DHCP ACK then a RESOLV.CFG file will be generated which permits the stack to attempt to resolve network names from the domain servers offered.

If the boot mode is set to "Manual entry", then no configuration messages are broadcast to the network and the current values of the network parameters, saved in the radio flash, are used to connect to the network.

"Manual entry" is the default setting of this parameter.

## E.II.10 PWR MANAGEMENT

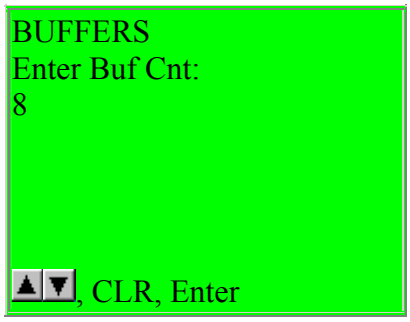



If "Pwr Management" is selected from the main configuration menu, the above screen is displayed. The current setting of power management is shown and may be changed by using the up and down arrow keys to toggle between the two valid settings. Enter must be pressed to effect any change made.

If power management is set to PSP, the default, the radio is powered up only when there is traffic on the network. This mode adapts to the radio activity to decide how long the radio will be powered down. Because the radio will not always be in a ready state when a message is available to be sent to it, this mode does slow response times.

If power management is set to CAM, the radio is always ready to receive. In this mode, battery life is dramatically reduced. This mode is not recommended for any terminal that runs on integral nickel cadmium, metal hydride or alkaline batteries. Vehicle mount terminals should be set to CAM mode.

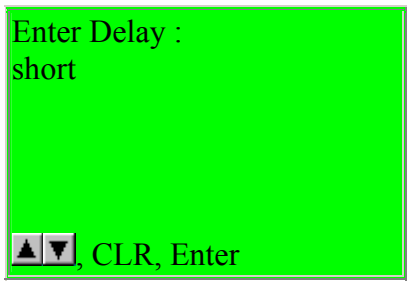
## E.II.11 BUFFERS




If "Buffers" is selected from the main configuration menu, the above screen is displayed. The current setting of the input buffer count is shown and may be changed by using the up and down arrow keys to toggle between the three valid settings. Enter must be pressed to effect any change made.

This parameter is the number of buffers allocated for frames from the radio. It is recommended that this parameter be left at the default value (currently 8). Two other settings are allowed, 4 or 12. Increase the count to 12 to overcome performance issues if your application can bear this use of memory resources. Reduce the count to 4 if your application has memory resource problems.

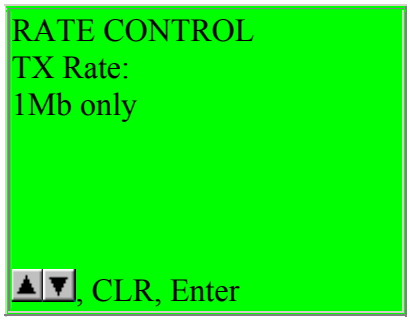
## E.II.12 REXMIT DELAY




If “ReXmit Delay” is selected from the main configuration menu, the above screen is displayed. The current setting of the retransmission delay is shown and may be changed by using the up and down arrow keys to toggle between the two valid settings. Enter must be pressed to effect any change made.

This parameter is the minimum delay that the TCP/IP stack software will wait before retrying unacknowledged frames. There are two possible values “short” that equates to half a second and “long” that equates to a full second. These values are set high to allow for the radio technology. To preserve battery life, the radio is powered down as much as possible. These timeout values minimize spurious retries due to wireless responses being delayed until the terminal radio is powered up.

## E.II.13 RATE CONTROL




If “Rate Control” is selected from the main configuration menu, the above screen is displayed. The current setting of the transmission rate is shown and may be changed by using the up and down arrow keys to toggle between the three valid settings. Enter must be pressed to effect any change made.

With the new radio, there is potential for either fixing the radio transfer rate at 1Mbps or at 2Mbps. There is an adaptive setting that will use 2Mbps until it experiences difficulties when it will automatically back-off to 1Mbps.

If the configurator senses that the radio is only capable of 1Mbps transmission, this parameter will display as “1Mb only” and will not permit any change.

## E.II.14 SCAN / RF OP


If “Scan/RF Op” is selected from the main configuration menu, the above screen is displayed. The current setting of the Scan/RF operating mode is shown and may be changed by using the up and down arrow keys to toggle between the two valid settings. Enter must be pressed to effect any change made.

The two options are concurrent operation and “Scan stops RF”. In this second mode the radio is locked out of transmitting while the scanner is being used. This has previously been the manner in which the 300 series terminals have worked. The concurrent operating mode is new and the default. The concurrent mode should be more convenient for aggressive scanning applications where previously it was possible to lock out the radio for long enough to lose association with the AP.

# Appendix F – Keyboard Reference

## F.I Keyboard Reference

The shape of the blinking cursor reflects the keyboard state See also Chapter 3, "Keyboard Operation".

### F.I.1 ANSI Keys

| ANSI Emulated Keys | |
|---|---|
| **PDT** | **ANSI TERMINAL** |
| [FUNC]+[1] | F1 |
| [FUNC]+[2] | F2 |
| [FUNC]+[3] | F3 |
| [FUNC]+[4] | F4 |
| [FUNC]+[5] | F5 |
| [FUNC]+[6] | F6 |
| [FUNC]+[7] | F7 |
| [FUNC]+[8] | F8 |
| [FUNC]+[9] | F9 |
| [FUNC]+[0] | F10 |
| [SHIFT]+[FUNC]+[1] | Shift + F1 |
| [SHIFT]+[FUNC]+[2] | Shift + F2 |
| [SHIFT]+[FUNC]+[3] | Shift + F3 |
| [SHIFT]+[FUNC]+[4] | Shift + F4 |
| [SHIFT]+[FUNC]+[5] | Shift + F5 |
| [SHIFT]+[FUNC]+[6] | Shift + F6 |
| [SHIFT]+[FUNC]+[7] | Shift + F7 |
| [SHIFT]+[FUNC]+[8] | Shift + F8 |
| [SHIFT]+[FUNC]+[9] | Shift + F9 |
| [SHIFT]+[FUNC]+[0] | Shift + F10 |
| Cursor Keys<br>(Up, Down, Left and Right) | Cursor Keys (Normal and Application)<br>(Up, Down, Left and Right) |

### F.I.2 VT52 keys

| VT52 Emulated Keys | |
|---|---|
| **PDT** | **VT52 TERMINAL** |
| [FUNC]+[1] | PF1 |
| [FUNC]+[2] | PF2 |
| [FUNC]+[3] | PF3 |
| [FUNC]+[4] | PF4 |
| [FUNC]+[5] | Keypad Minus |
| [FUNC]+[6] | Keypad Comma |
| [FUNC]+[7] | Keypad Period |
| [FUNC]+[8] | Keypad Enter |

| | |
|---|---|
| [SHIFT]+[FUNC]+[1] | Keypad Application 1 |
| SHIFT]+[FUNC]+[2] | Keypad Application 2 |
| [SHIFT]+[FUNC]+[3] | Keypad Application 3 |
| [SHIFT]+[FUNC]+[4] | Keypad Application 4 |
| [SHIFT]+[FUNC]+[5] | Keypad Application 5 |
| [SHIFT]+[FUNC]+[6] | Keypad Application 6 |
| [SHIFT]+[FUNC]+[7] | Keypad Application 7 |
| [SHIFT]+[FUNC]+[8] | Keypad Application 8 |
| [SHIFT]+[FUNC]+[9] | Keypad Application 9 |
| [SHIFT]+[FUNC]+[0] | Keypad Application 0 |
| Cursor Keys<br>(Up, Down, Left and Right) | Cursor Keys<br>(Up, Down, Left and Right) |

## F.I.3 VT100 / VT220 keys

| **VT100/VT220 Emulated Keys** | |
|---|---|
| **PDT** | **VT220 TERMINAL** |
| [FUNC]+[1] | PF1 |
| [FUNC]+[2] | PF2 |
| [FUNC]+[3] | PF3 |
| [FUNC]+[4] | PF4 |
| [FUNC]+[6] | F6 |
| [FUNC]+[7] | F7 |
| [FUNC]+[8] | F8 |
| [FUNC]+[9] | F9 |
| [FUNC]+[0] | F10 |
| [SHIFT]+[FUNC]+[1] | F11 |
| SHIFT]+[FUNC]+[2] | F12 |
| [SHIFT]+[FUNC]+[3] | F13 |
| [SHIFT]+[FUNC]+[4] | F14 |
| [SHIFT]+[FUNC]+[5] | F15 |
| [SHIFT]+[FUNC]+[6] | F16 |
| [SHIFT]+[FUNC]+[7] | F17 |
| [SHIFT]+[FUNC]+[8] | F18 |
| [SHIFT]+[FUNC]+[9] | F19 |
| [SHIFT]+[FUNC]+[0] | F20 |
| Cursor Keys<br>(Up, Down, Left and Right) | Cursor Keys (Normal and Application)<br>(Up, Down, Left and Right) |

## F.I.4 Translation

| **Translation** | |
|---|---|
| **PDT** | **Terminal** |
| [CTRL]+[ENTER] | Tab |
| [FUNC]+[BKSP] | Del |

## F.I.5 Local Functions

| Local Functions | |
|---|---|
| **KEYS** | **Function** |
| [CTRL]+[X] | End Session |
| [FUNC]+[CTRL]+[G] | Unlock Keyboard |
| [FUNC]+[CTRL]+[Up_Arrow] | Logical Scroll Up |
| [FUNC]+[CTRL]+[Down_Arrow] | Logical Scroll Down |
| [FUNC]+[CTRL]+[Left_Arrow] | Logical Scroll Left |
| [FUNC]+[CTRL]+[Right_Arrow] | Logical Scroll Right |
| [FUNC]+[0] | Return to DOS<br>(In Main Menu) |

# F.II Boot Sequences

## F.II.1 "Command" boot

1) Put the terminal in **OFF** state by the [PWR] (or [ON / OFF]) key. If the terminal is already OFF by timeout, please put it ON and OFF by keyboard.

***If the terminal is "hang" (do not respond to the [PWR] key, displays unknown characters, etc.) press and hold the [PWR] key 40 seconds to force an power off.***

2) **Hold** at same time the following keys (according to the PDT model).

| Terminal Model | Sequence |
|---|---|
| PDT314x 46 Keys<br>PDT 354x 47 Keys<br>LRT 384x 46 Keys<br>PDT 614x 46 Keys<br>LRT 684x 46 Keys | Hold<br>[F] + [I] |
| PDT314x 35 Keys<br>LRT 384x 35 Keys<br>PDT 614x 35 Keys<br>LRT 684x 35 Keys | Hold<br>[SHIFT] + [BKSP] |
| WSS 104x 27 Keys | Hold<br>[FUNC] + \|[ENTER] |
| VRC 394x 54 Keys<br>VRC 694x 54 Keys | Hold<br>[A] + [D] |

3) **Press** and **release** [PWR] (or [ON/OFF]).
4) **Release** the previous keys.

## F.II.2 "Bios" boot (Cold Boot)

1) Put the terminal in **OFF** state by the [PWR] (or [ON / OFF]) key. If the terminal is already OFF by timeout, please put it ON and OFF *by the keyboard*.

***If the terminal is "hang" (do not respond to the [PWR] key, displays unknown characters, etc.) press and hold the [PWR] key 40 seconds to force a power off.***

2) **Hold** *at same time* the following keys (according to the PDT model).

| Terminal Model | Sequence |
|---|---|
| PDT 314x 46 Keys<br>PDT 354x 47 Keys<br>LRT 384x 46 Keys<br>PDT 614x 46 Keys<br>LRT 684x 46 Keys | Hold<br>[A] + [B] + [D] |
| PDT 314x 35 Keys<br>LRT 384x 35 Keys<br>PDT 614x 35 Keys<br>LRT 684x 35 Keys | Hold<br>[SPACE] + [FUNC] + [Up_Arrow] |
| WSS 104x 27 Keys | Hold<br>[Right_Arrow] + |[ENTER] |
| VRC 394x 54 Keys<br>VRC 694x 54 Keys | Hold<br>[F1] + [F4] + [ENTER] |

3) **Press** and **release** [PWR] (or [ON / OFF]) key.
4) **Release** the *previous* keys.