Atrie
WireSpan
3000/3000E
MODEM
User's Manual

WireSpan 3000/3000E

USER'S MANUAL

ATRIE WireSpan 3000/3000E

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(Version 3)

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CHAPTER 1

INTRODUCTION

Overview

The WireSpan 3000/3000E is a HDSL (High-bit-rate Digital Subscriber Line) digital modem. It provides full duplex (bi-directional) 1.544Mb/s (T1) or 2.048Mb/s (E1) transmission capability over two non-loaded two-wire metallic cable pairs. Specifically, bi-directional data at a rate of 784kb/s or 1168kb/s is transmitted and received on each pair.
Figure 1-1, 1-2 illustrated a generic dual duplex HDSL system. Each of the High-bit-rate Terminal Units (HTU), at either the Central Office (HTU-C) or the Remote Distribution (HTU-R) location, consists of two pairs of digital transmitter/receiver ("transceiver"), each connected by a two-wire CSA(Carrier Serving Area) compatible loop.

WireSpan 3000 supports data rates of Nx64 Kbps up to 2.048 Mbps. The DTE interface supported are EIA RS-530/V.35/RS-449/X.21. DTE interface for data transmission support drop & insert functions. This programmable Nx64K feature accordingly makes our WireSpan 3000 E1 HDSL DSU/CSU the best choice on applications such as INTERNET access and leased lines service. But this feature does not provide in WireSapn 3000E, the difference show in Figure 1-1, 1-2 for reference.

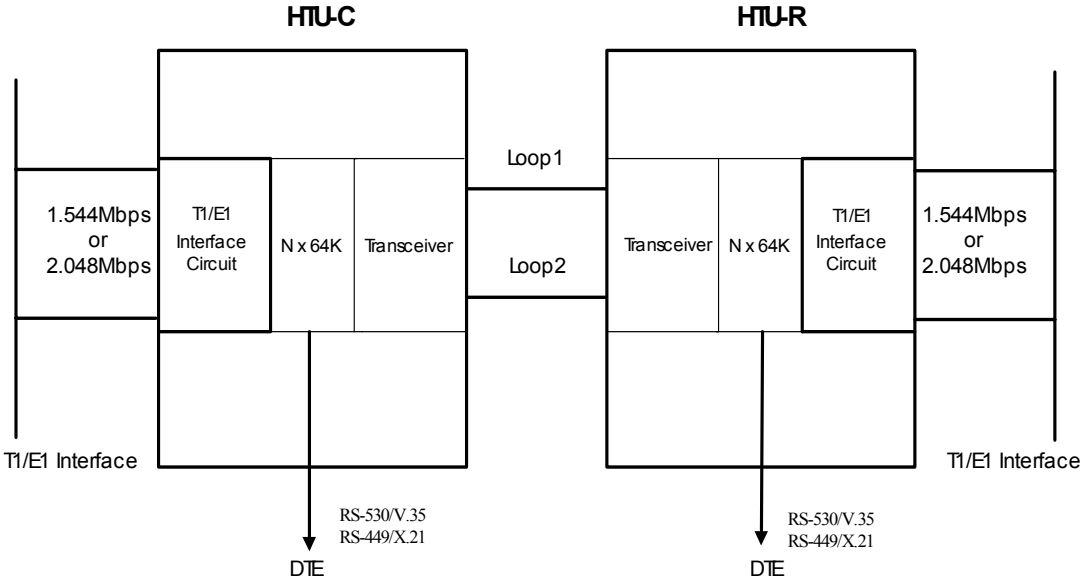


Figure 1-1 WireSpan 3000

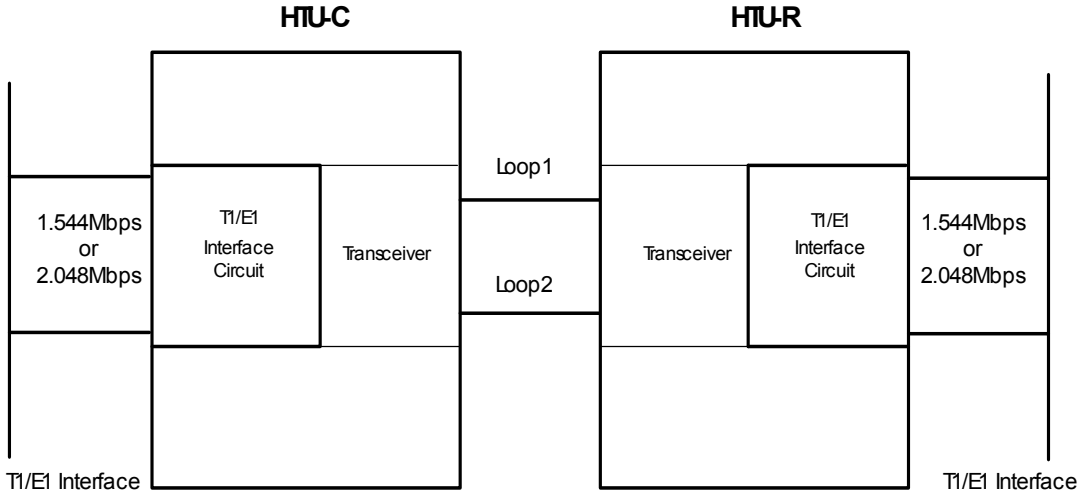


Figure 1-2 WireSpan 3000E

The HDSL technology provides a transport method that enables the transmission of data rates up to 2.320Mb/s over long distances of unconditioned, voice-grade twisted-pair wire. Although the exact distances achievable are dependent upon the exact data rate required (cable conditions and configurations, presence and length of bridge taps, and severity of external noise sources) distances of between 3.7Km(10,000 feet) and 4.5Km(14,850 feet) have been demonstrated. Please refer to Appendix A for the detail

specification of the WireSpan 3000.

Applications

- Voice Pair Gain Systems
- T1/E1 Extend
- High-Speed Digital Modems
- Personal Communication Systems (PCS)
- Wireless PBX

CHAPTER 2

INSTALLATION

This chapter describes how to install and connect your WireSpan 3000/3000E. Step-by-step instructions guide you through installing your WireSpan 3000/3000E.

Package Contain

Carefully unpacking your WireSpan 3000. The package should contain the following items:

1. The WireSpan 3000.
2. One power cable.
3. One user's manual
4. One DTE Interface cable

For WireSpan 3000E. The package should contain the following items:

1. The WireSpan 3000E.
2. One power cable.
3. One user's manual

Please contact your dealer if there are any missing or damaged parts.

Panel Description

Front panel

The front panel contains a 2 line *16 character LCD display, four keys labeled **EXIT**, **ENTER**, **LEFT** arrow "<", and **RIGHT** arrow ">" ; and eight LEDs as shown in Figure 2-1. You can access the device menu tree (see Appendix C) through this front panel. Using the menu tree and front panel control keys, you can:

- Configuration your WireSpan 3000 device

- Save and load the configuration profile
- View status information
- Execute the diagnostic

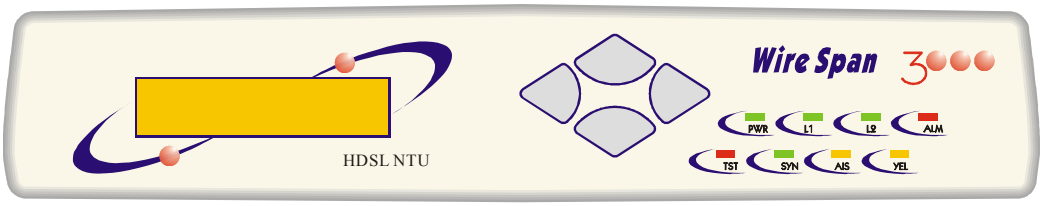


Figure 2-1 Front Panel

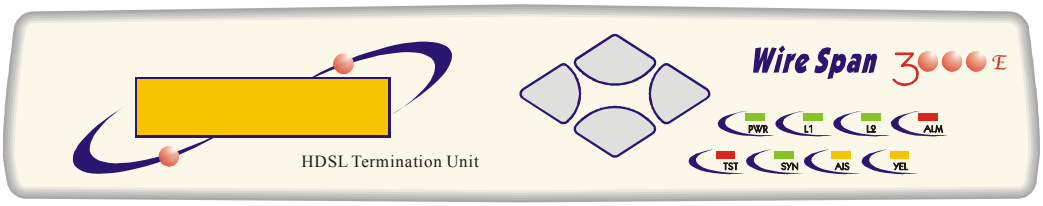


Figure 2-2 Front Panel

1. LED Indicators

There are eight LEDs on the front panel of the WireSpan 3000/3000E . These LEDs display the real-time status of the WireSpan 3000/3000E.
Table 2-1 lists the LEDs and describes their function.

Table 2-1 WireSpan 3000 LED Description

LED	*Name*	*Description*
PWR	Power	Lights to indicate that the power is apply to the device
L1	HDSL Loop1	Lights to indicate that HDSL loop1 is in sync
L2	HDSL Loop2	Lights to indicate that HDSL loop2 is in sync
ALM	Alarm	Lights to indicate the alarm conditions in HDSL
TST	Test Mode	Lights to indicate that the device is in test mode
SYN	Frame Sync	Lights to indicate that the device has synchronized to the E1 receive signal

		framing
AIS	Alarm Indication Signal	Lights to indicate the presence of an alarm indication signal on the E1 receive signal
YEL	Yellow Alarm	Lights to indicate the presence of a yellow alarm on the E1 receive signal

2. Control Keys

The front panelís four control keys allow you to access the configuration menus, options, and settings that appear in the front panel display.
Table 2-2 lists and describes the function of each control key.

Table 2-2 Front Panel Keys

Keys	*Functions*
EXIT	Exit to upper menu or abort execution command
ENTER	Enter menu or confirm your choice
LEFT	Select next left menu
RIGHT	Select next right menu

3. LCD Display

The front panel LCD display is a 2*16 alphanumerical display. It displays the status and configurations of the WireSpan 3000. Please refer to Chapter 3 for detail operation of the LCD display.

Rear Panel

Figure 2-3 shows the rear panel of the WireSpan 3000.

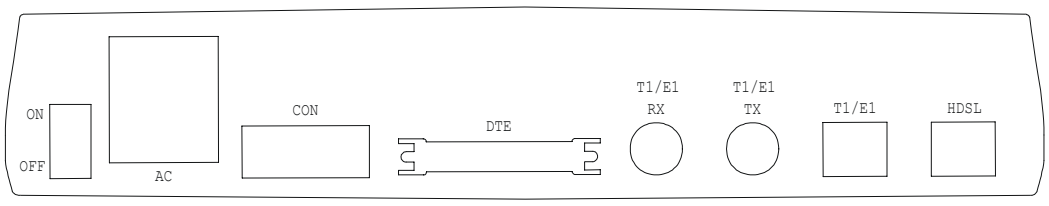


Figure 2-3 rear panel WireSpan 3000 (AC POWER)

Figure 2-4 shows the rear panel of the WireSpan 3000E.

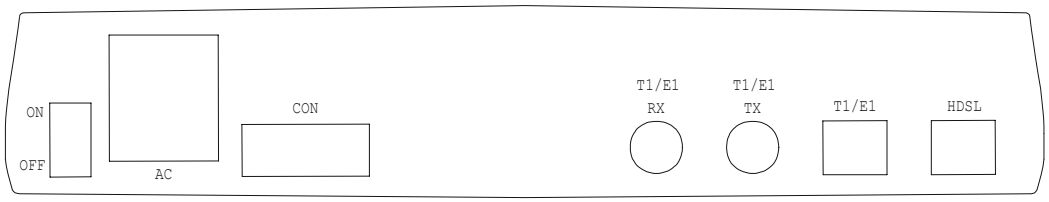


Figure 2-4 rear panel WireSpan 3000E (AC POWER)

Figure 2-5 shows the rear panel of the WireSpan 3000.

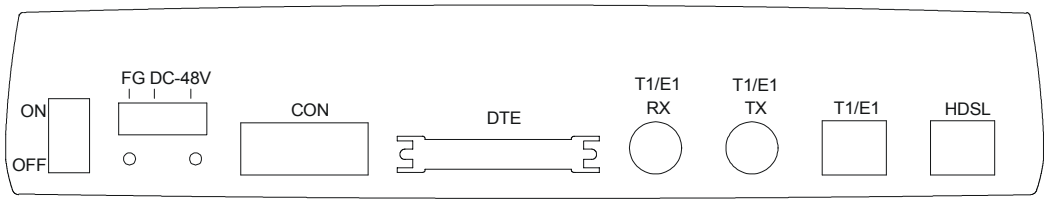


Figure 2-5 rear panel WireSpan 3000 (DC POWER)

Figure 2-6 shows the rear panel of the WireSpan 3000E

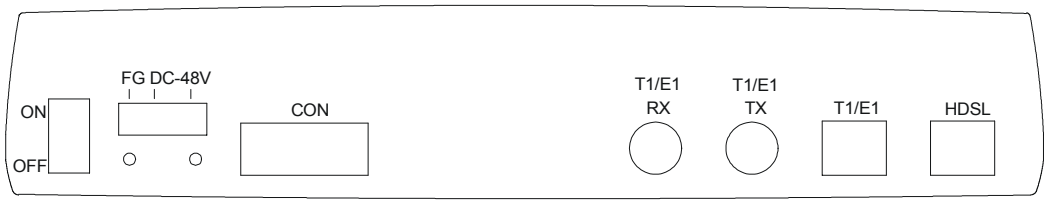
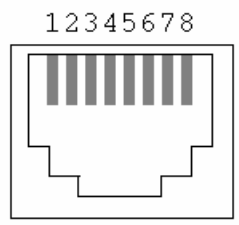


Figure 2-6 rear panel WireSpan 3000E (DC POWER)

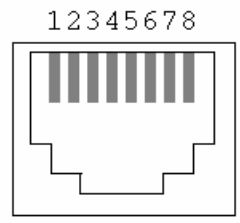
The rear panel of your WireSpan 3000/3000E contains the following connectors:

- **AC:** AC Power Input (auto-range from AC 90V to 260V)
- **DC:** DC Power Input (range from DC -36V to -72V)
- **HDSL:** HDSL Line Interface. Please refer to Figure 2-3 for pin definition.
- **E1:** E1 Line Interface. Include 75 Ohm for Coaxial Cable and 120 Ohm for Twisted Pair . Please refer to Figure 2-4 for pin definition.
- **DTE:** DTE Interface. Please refer to Appendix C for pin definition Note: this connector does not include in WireSpan 3000E.
- **CON:** Console Port



Note:
1: TIP2 for HDSL loop2
2: RING2 for HDSL loop2
4: TIP1 for HDSL loop1
5: RING1 for HDSL loop1

Figure 2-5 RJ-45 for HDSL Line Interface



Note:
1: Receive TIP1 for E1 loop
2: Receive RING1 for E1 loop
4: Transmit TIP2 for E1 loop
5: Transmit RING2 for E1 loop
7: Ground
8: Ground

Figure 2-6 RJ-48 C for E1 Line Interface

Cabling Your WireSpan 3000

This section describes how to connect your WireSpan 3000 to:
(1) A personal computer (PC) or data terminal equipment
(2) HDSL Line
(3) E1 equipment
(4) DTE Interface

Instructions for installing each cable shown in Figure2-5

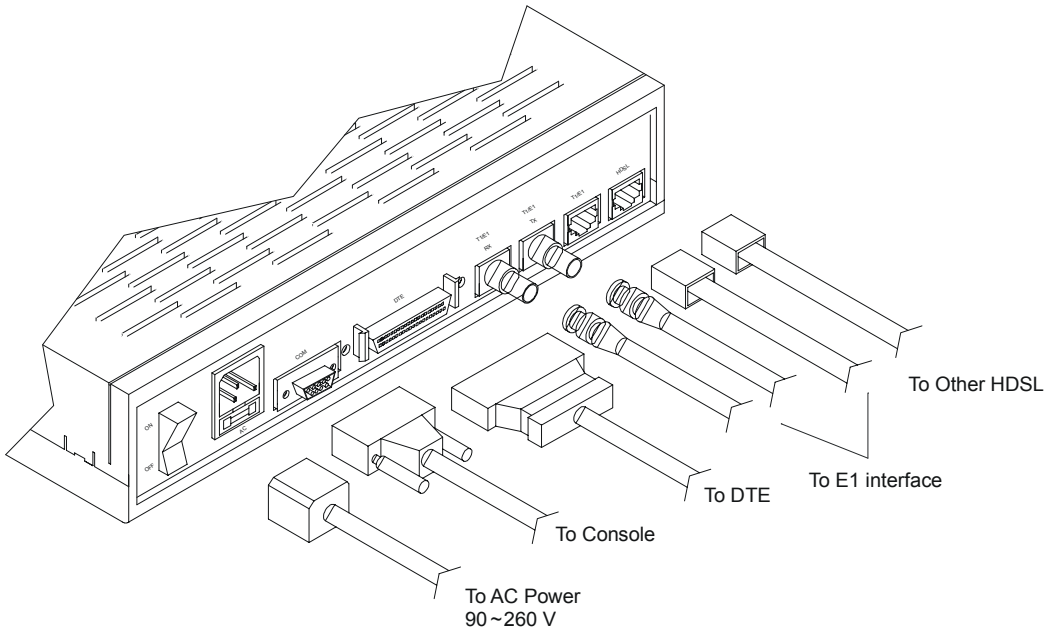


Figure 2-9 Connecting WireSpan 3000 (AC POWER)

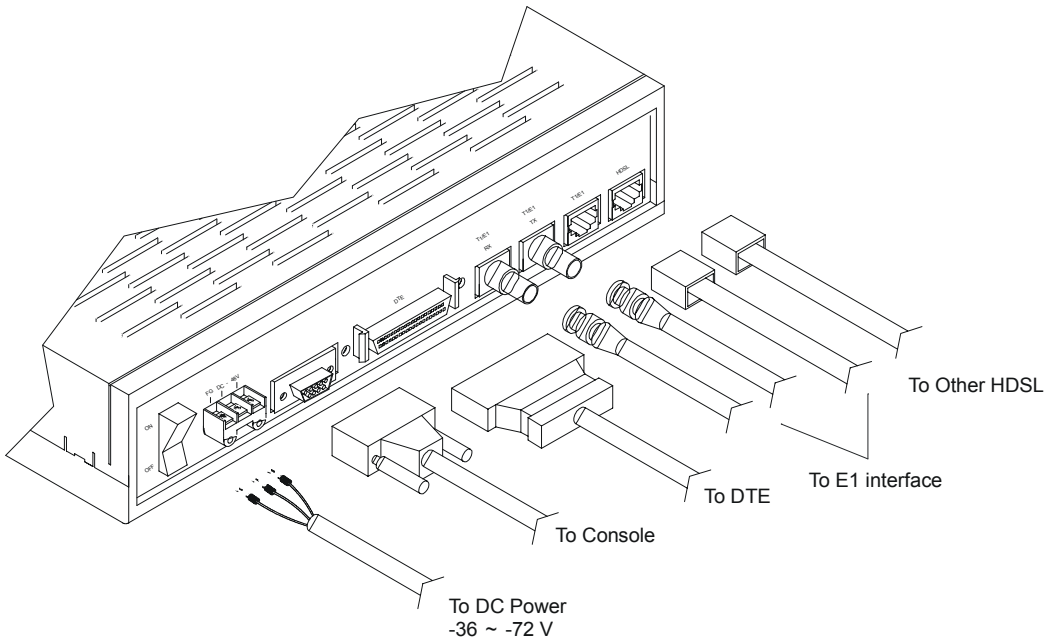


Figure 2-10 Connecting WireSpan 3000 (DC POWER)

Cabling Your WireSpan 3000E

This section describes how to connect your WireSpan 3000E to:
(1) Personal computer (PC) or data terminal equipment
(2) HDSL Line
(3) E1 equipment
Instructions for installing each cable shown in Figure2-6

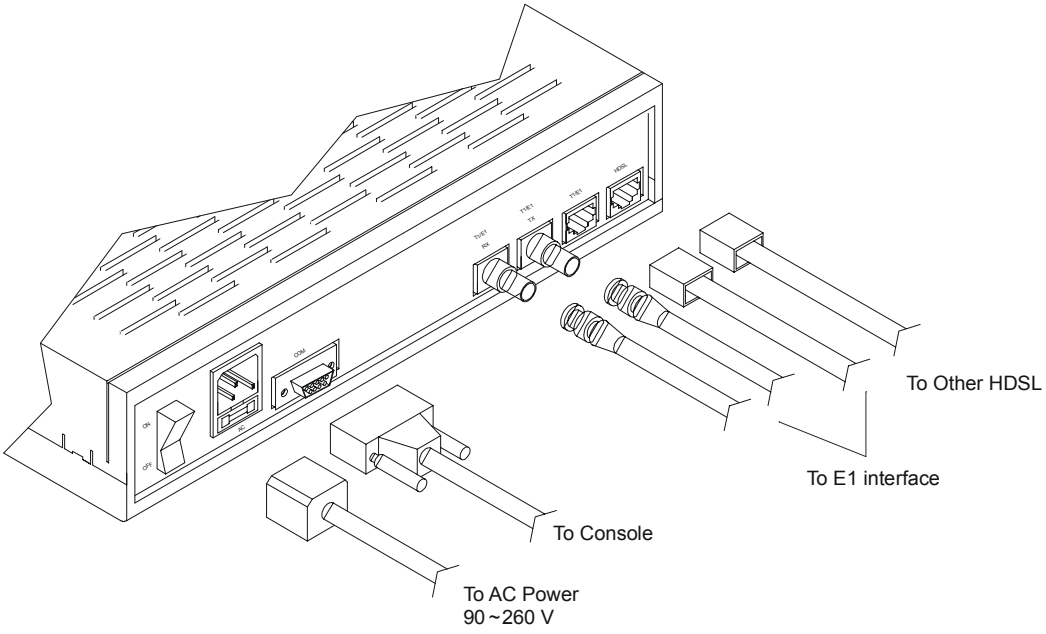


Figure 2-11 Connecting WireSpan 3000E (AC POWER)

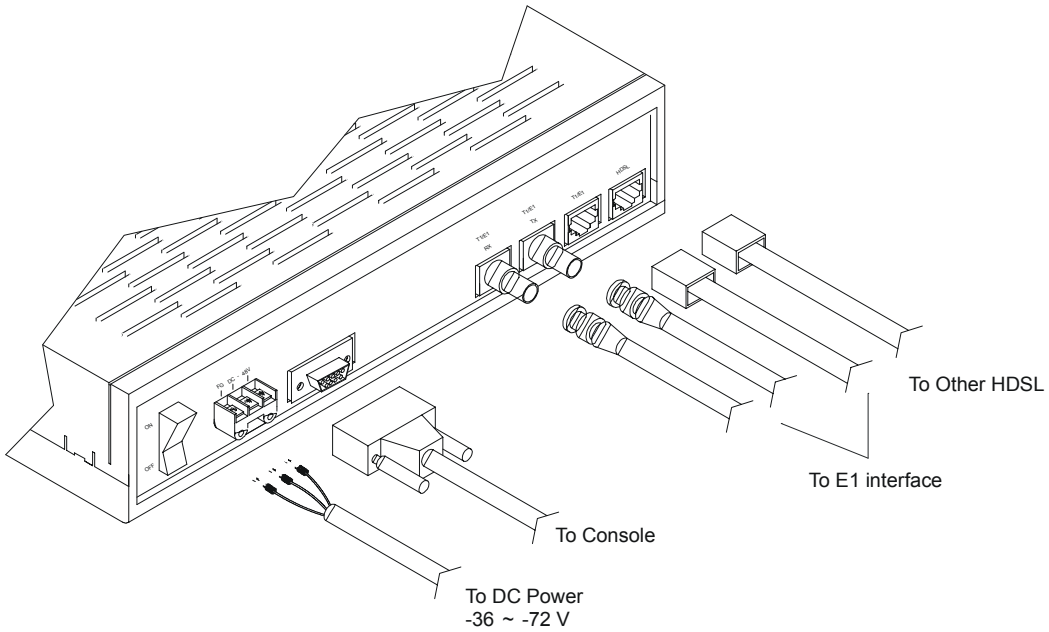


Figure 2-12 Connecting WireSpan 3000E (DC POWER)

CHAPTER 3

GETTING START

There are two methods to control the WireSpan 3000/3000E ,one is using the front panel LCD controller; the other is using the console port on the rear panel.

The Front Panel LCD Controller

The front panel LCD controller consists of the LCD display and front panel switches. The menu tree consists of several categories. Each category has several options (STATUS, CONFIGURE, DIAGNOSTIC, etc.) Many of these options are configurable, while others indicate the device status. Most options contain several selectable settings. Each of the settings affects various operating characteristics. Using the front panel control keys, you can easily access the options and settings under each category.

The following sections describe the major options of the menu tree. Please refer to Appendix C for detail structure of the menu tree.

Main Menu

The main menu shows up right after power on selftest. The main menu displays the current status of the device. The main menu shows as the following:

```
HTU-R 2E1  1 1 6 8
120 OHM    HDB3
```

HTU-C or HTU-R: To indicate current terminal type is local (HTU-C) or remote (HTU-R).
2E1: To indicate two-pair E1 operation.
1168: date rate on per pair HDSL loop.

120 OHM: To indicate E1 interface impendence such as 120 OHM or 75 OHM or DISABLE (when E1 interface unused).

HDB3: To indicate line coding method such as HDB3 or AMI when in non loop back mode .To indicate loop back mode such as LL or DL.

There are four categories under main menu: Status, Configure, Diagnostic and Profile. The function of every categories are describe below:

Status

This category shows the Loop Status, E1 Status, Monitor and Rest.

Loop Status : Displays the current HDSL loop status of the WireSpan 3000/3000E. The status includes: signal in sync/out of sync,CRC error, far end block error, input signal level, input DC offset level, far end signal attenuation, noise margin,LOS condition and LOST condition.

DTE Status : Displays the DTE interface status of the WireSpan 3000.The status includes: control signal status, timeslot status.

E1 Status : Displays the E1 loop status of the WireSpan 3000/3000E The status are: Received Loss Of Signal, Received Loss Of Frame Alignment, Received Alarm Indication Signal, Received Yellow Alarm, Framing Bit Error Counter,CRC Error Counter, Severely Error Frame Counter, Loss Of Frame Counter, Line Violation Counter, Bipolar Violation and Far End Block Error Counter

Monitor : This category monitors the performance of the E1 or HDSL line.

Cls Err Cntr : This category clears the error counter.

Configure

The configure category configures the WireSpan 3000/3000E.

DTE Setup : Configures the DTE parameters, such as: DTE act state, Clko polarity, dato polarity, DCD,DSR,

CTS option, Interface type.

E1 Setup : Configures the E1 line parameters, such as: framing, cable length and terminal type.

Aux : Setup the auxiliary parameters, including: clock source, keylock enable and keylock password.

Ts Mapping : This option maps the appropriate time slots to the respective DTE port.

Sys Rst : Rests the whole WireSpan 3000/3000E.

Diagnostic

The diagnostic allows user to do variety of loop back to assist user in isolating network problem.

Note : you must choose "E1 Terminal" mode when you use DTE Port and don't use E1 port in HTU-R side

Profile

The WireSpan 3000/3000E supports 5 user profiles to save for future use. Also provide 10 factory default profiles to load.

Menu Tree Operation

STATUS MENU

This Menu shows the loop STATUS of HDSL;E1 STATUS and other status display.

CONFIGURE MENU

You can configure the WireSpan 3000/3000E through this menu, to get the best performance.

DIAGNOSTIC MENU

This menu provide self-test,helping user to find out the problem and fix it.

PROFILE MENU

This menu provides the user 5 user profile to save or load,also provide the factary setting.

STATUS MENU

Press ENTER key to enter loop status Menu.

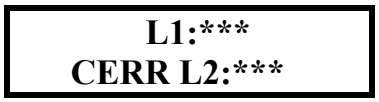
This screen shows the HDSL Loop status,press ENTER to show Loop1, Loop2 STATUS.

ON: on Line
OFF: off Line
Press Right key shows the CERR STATUS.

HDSL CRC ERROR COUNT STATUS SCREEN

Press ENTER to display the Loop1,Loop2 CRC ERROR count.

CERR: CRC ERROR COUNT



Press EXIT to return to CERR STATUS screen,Press Right key to enter FEBE STATUS screen.

FAR END BLOCK ERROR COUNT DISPLAY SCREEN

FEBE: Far-End Block Error

This screen displays the HDSL Loop1 and Loop2 Far-End Block Error count . Press Exit key to return to FEBE STATUS screen, press Right key to show the Input Signal Level screen.

INPUT SIGNAL LEVEL DISPLAY

SIGNAL LV: Input Signal Level
This screen shows the current Input Signal Level of Loop1, Loop2.
Press Right Key shows the DC OFFSET Level display.

DC OFFSET LEVEL DISPLAY

This screen shows the HDSL Loop1, Loop2 DC OFFSET level. Press Right key shows the FESA STATUS.

FAR-END SIGNAL ATTENUATION DISPLAY

FESA=Far-End Signal Attenuation
This screen shows the HDSL Loop1, Loop2 FAR-END SIGNAL ATTENUATION. Press Right key to show the NOISE MARG screen.

NOISE MARGIN DISPLAY

NOISE MARG=Norise Margin
This screen shows the HDSL Loop1, Loop2 receiving Noise Margin. Press Right key to show the LOS COND Display.

LOS CONDITION DISPLAY

LOS COND=LOS Condition

LOST CONDITION DISPLAY

LOST COND=LOST Condition

DTE STATUS MENU

```
<STATUS>
DTE
```

This screen displays WireSpan 3000's DTE interface signal status and timeslot status. Press ENTER to show the signal status.

THE DTE CONTROL SIGNAL STATUS SCREEN

```
1:CTS_  DSR_
1:RTS_  DTR_
```

This status screen shows the CTS,DSR,RTS,DTR status of the DTE interface. Press ENTER to show the timeslot status.

THE DTE TIMESLOT STATUS DISPLAY SCREEN

```
<<DTE TS>>
TIMESLOT STATUS
```

Press ENTER to show the timeslot status.

```
 *   *   *   *
00  01  02  03
```

There are 32 timeslots in the DTE interface, from 00 to 31, each timeslot with 64 kps band width * mark represents enable. Press Left or Right key to see other timeslot status.

E1 STATUS MENU

```
< STATUS>
E1  STATUS
```

In E1 status MENU, you can see the E1 signaling status. Press ENTER to show each signaling status.

E1 LOCAL RECEIVING

```
RLOS*    LOF*
AIS_     YEL_
```

RLOS = Receive Loss Signal
LOF = Loss Frame
AIS = Alarm Indication Signal
YEL = Yellow
There will be * mark shown beside each alarm if present.

LOCAL LINE STATUS

```
BPV:_
TSHORT:_
```

BPV = Bipolar Violation
TSHORT = Transmit Short
There will be * mark shown beside each alarm if present.

FRAMING ERROR AND CRC ERROR COUNTER

```
FERR:***
CERR:***
```

FERR = Framing Error count
CERR = CRC Error count

```
LOF:*
SEF:*
```

LOF = Loss of Frame count
SEF = Severely Loss of Frame count

```
LCV :***
FEBE:***
```

LCV = Line Code Violation count
FEBE = Far-End Block Error count

PERFORMANCE MONITOR

E1 OR HDSL PERFORMANCE MONITOR

The performance monitor shows the E1 and HDSL Receiving signal performance. Due to the size of the LCD display, the result will be shown on the CONSOLE port. Put the * mark on the E1 or HDSL and press the ENTER key to enter the performance screen.

HDSL PERFORMANCE MONITOR (15 MINUTES)

15M ES-CRC: 15 MINUTE ERROR SECOND-CRC
The scecond count of CRC error in each second during last 15 minutes.Press ENTER key to enter Loop1,Loop2 performance selecting screen.

Select the desire Loop1 or Loop2, press ENTER to get the performance screen from console port.

HDSL SEVERELY PERFORMANCE MONITOR (15 MINUTES)

15M ES-CRC: 15 MINUTES SEVERELY ERROR SECOND-CRC
The second count of CRC error more than 30% in each second during last 15 minutes.Press ENTER key to show Loop1,Loop2 performance selecting screen.

```
<<<<15M SES>>>>
  L1:*      L2:*
```

Select the desire Loop1 or Loop2. Press ENTER key to get the performance screen from console port.

HDSL PERFORMANCE MONITOR (24 HOURS)

```
<<<HDSL PERF>>>
  24H ES-CRC
```

24H ES-CRC: 24 HOURS ERROR SECOND-CRC
Press ENTER key to select the Loop1 or Loop2 performance monitor.

```
<<<<24H   ES>>>>
  L1:*    L2:
```

Select the desire Loop1 ot Loop2 to get the performance screen from CONSOLE port.

HDSL SEVERELY PERFORMANCE MONITOR (24 HOURS)

```
<<<HDSL PERF>>>
  24H SES-CRC
```

24H SES-CRC:24 HOURS SEVERELY ERROR SECOND
Press ENTER key to select the Loop1 or Loop2 performance monitor.

```
<<<<24H   SES>>>>
  L1:*    L2:
```

Select the desire Loop1 or Loop2 to get the performance screen from CONSOLE port.

E1 PERFORMANCE MONITOR (15 MINUTES)

15M ES-CRC:15 MINUTES ERROR SECOND-CRC

E1 SEVERELY PERFORMANCE MONITOR (15 MINUTES)

15M SES-CRC:15 MINUTES SEVERELY ERROR SECOND-E1

E1 PERFORMANCE MONITOR (24 HOURS)

24H ES-CRC: 24 HOURS ERROR SECOND-E1

E1 SEVERELY PERFORMANCE MONITOR (24 HOURS)

24H SES-CRC: 24 HOURS SEVERELY ERROR SECOND-E1

CLEAR ERROR COUNTER

This screen clears all the error counter.

Slect YES and press ENTER key will clear all the error counter.

CONFIGURE MENU

DTE CONFIGURE MENU (THIS MENU EFFECT ONLY IN WireSpan 3000 MODEL)

This Menu can activate, configure the DTE port.

DTE PORT ACTIVATE

This screen can activate the DTE port. All the configuration must activate the DTE port to in effect.

Slect ON to activate the DTE port, OFF to inactivate the DTE port.

CLOCK OUTPUT POLARITY

This screen selects the polarity of the clock output.

Select the Normal or Inverse output of clock signal.

DATA OUTPUT POLARITY

This screen selects the polarity of data output.

Select the Normal or Inverse output of data signal.

DCD OPTION

Press ENTER key to select DCD option.

Select the desire option (ON or OFF) for DCD signal.

DSR OPTION

Press ENTER key to select DSR option.

ON* OFF

Select the desire option(ON or OFF) for DSR signal.

CTS OPTION

<<SETUP DTE>> CTS OPTION

Press ENTER key to select CTS option.

<<<CTS>>> ON* OFF

Select the desire option (ON or OFF) for CTS signal.

DTE INTERFACE SELECT

<<SETUP DTE>> INF TYPE

There are EIA530 or V.35 for Interface selection.

<<<INF TYPE>>> EIA530* V.35*

Use Left or Right key to select interface.

E1 CONFIGURE MENU

<CONFIGURE> E1 SETUP

This screen can configure the E1 parameter. Press ENTER to enter E1 Framing setup screen.

E1 FRAMING SETUP SCREEN

Press ENTER to select E1 Framing.

E1 FRAMING

Press Left or Right key to select PCM31 CCS or PCM31 CCS CRC or PCM30 CAS CRC or UNFRAME.

E1 INTERFACE SELECT

Select the desire Interface for E1. The WireSpan 3000 provide RJ45 with 120 Ohm or BNC connector with 75 Ohm. Press ENTER to select. Use the Left or Right key to select then press ENRER to confirm.

<<<INTERFACE>>>
75 OHM COAXIAL

<<<INTERFACE>>>
DISABLE

E1 HTU TYPE SELECT

<<E1 SETUP>>
HTU TYPE

Use this screen to select central or remote. Two connecting modems must be set to one central and the other remote, otherwise it will not connect. Press ENTER key to select. Use the Left or Right key to select then press ENTER to confirm.

<<<HTU TYPE>>>
HTU-C* HTU-R

E1 RECEIVE LINE INTERFACE UNIT SELECT

<<E1 SETUP>>
RLIU

RLIU=RECEIVE LINE INTERFACE UNIT

<<<RLIU>>>
LH* SH

LH=LONG HAUL
SH=SHORT HAUL
According the distance of the two Unit to select LONG HAUL or SHORT HAUL. LONG HAUL will modify the distortion wave form to get better performance in long distance communcation.

E1 IDLE CODE SELECT

<<E1 SETUP>>

IDLE CODE

There are two idle codes for selection. Press ENTER to select.

<<<E1 SETUP>>>
7F* FF

Use Left or Right key to select "7F" or "FF" idle code.

E1 LINE CODING SELECT

<<E1 SETUP>>
LINE CODING

There are two methods of line coding. Press ENTER to select.

<<<CODING>>>
AMI* HDB3

Use Left or Right key to select AMI or HDB3 line coding.

AUXILIARY CONFIGURE MENU

<CONFIGURE>
AUX

This MENU configure the clock source, keylock functions.

CLOCK SOURCE SELECT

<< AUX >>
CLOCK SOURCE

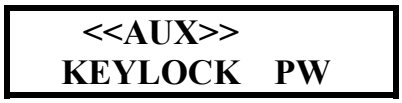
There are HDSL, E1 INTERNAL, DTE clock sources. Use Left or Right key to select desire clock source.

<<<CLK SRC>>>
HDSL

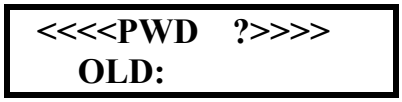
KEYLOCK SETTING

This screen allows user to lock the four front panel keys. You must key in password before activate, the keylock function. Use Left or Right key to select keylock ON/OFF.

KEYLOCK PASSWORD SETTING



The password contains ten numerical charactors. You must enter 10 digit of number. If you want to change old password, you have to enter old password first, then enter the new password.



TIMESLOT MAPPING (WireSpan 3000 ONLY)

```
<CONFIGURE>
 TS MAPPING
```

The WireSpan 3000 provides drop & insert function. In this function , it allows user to asign every 64 kpps bandwidth to be used in DTE port. Please note that each HTU-C and HTU-R to be connected must be asigned in same Timeslot Mapping.

```
  X    *
00  01    02  03
```

Select the desire timesolt and press ENTER to enter asign screen. Set to DTE to asign and set to IDL to unasign.

```
<<<TS    1>>>
 DTE *     IDL
```

ALL TIMESLOT MAPPING (WireSpan 3000 ONLY)

```
<<TS MAPPING>>
 ALL TIMESLOT
```

If you want to asign or unasign all the 32 timeslots, you can use ALL TIMESLOT function to asign or unasign all the timeslot in the same time.

```
<<ALL TS >>
 DTE*      IDL
```

SYSTEM RESET

```
<CONFIGURE>
 SYS  RST
```

Press ENTER key to enter SYSTEM RESET screen.

Use Left or Right key to select YES then press ENTER.

DIAGANOSTIC MENU

Through the diagnostic, the user can separate and fix the communication problem. There are three loopback test. Detail test description will be found on Chapter 4.

Local E1 and HDSL LOOP BACK

Press ENTER to activate the test. Press ENTER then Left or Right key to TEST MODE DISABLE screen to end test.

REMOTE E1 and HDSL LOCAL LOOP BACK

Press ENTER to activate the test. Press ENTER then Left or Right key to TEST MODE DISABLE screen to end test.

REMOTE HDSL LOOP BACK

Press ENTER to activate the test. Press ENTER then Left or Right key to TEST MODE DISABLE screen to end test.

<< TEST MODE >>
DISABLE

PROFILE MENU

[MAIN]
PROFILE

There are ten preset profiles for user to load, and five user profiles can be saved by user for later load.

LOCAL PROFILE

< PROFILE >
LOAD

<<LOAD>>
1 2 3 * 4 5

Use Left or Right key to select profile and press ENTER to load.

SAVE PROFILE

< PROFILE >
SAVE

There are five profile can be saved.

<<SAVE>>
1 2 3* 4 5

Use Left or Right key to select profile and press ENTER to save.

LOAD DEFAULT

< PROFILE >
LOAD DEFAULT

There are ten factary default for user to load. Use Left or Right key to select and ENTER to load.

The Console Port Operation

The rear panel contains a DB-9 console port, it allows user to use a VT-100 or ANSI terminal for system configuration, diagnostics,

polling status, etc.
Table 3-1 lists and describes the function of each key.

Keys	*Functions*
UP	Exit to upper menu
DOWN	Enter menu or confirm your choice
LEFT	Select next left menu
RIGHT	Select next right menu
ENTER (RETURN)	Refresh console screen and exit to upper menu

Table 3-1 the function of each key

Table 3-4 lists and describes the parameter of the console port. Please adjust familiar Terminal Emulator Software according to the Table 3-4.

Parameter	*Value*
Speed (Baud Rate)	115200
Data Bits	8
Parity	None
Stop Bits	1
Terminal Emulation	VT-100 or ANSI

Table 3-4 Console Port Setting

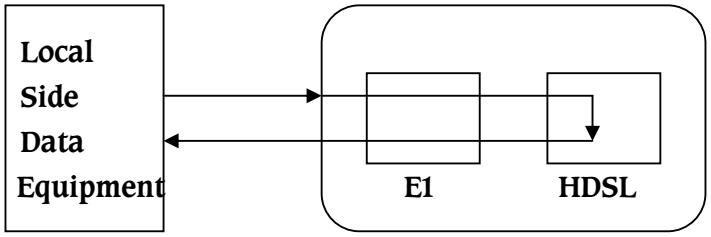
CHAPTER 4

DIAGNOSTIC

The WireSpan 3000/3000E supports a variety of loop back to assist you in isolating network problem. These tests can be used to analyze the HDSL line and the local and remote E1 HDSL performance. These tests can be initiated from the front panel.

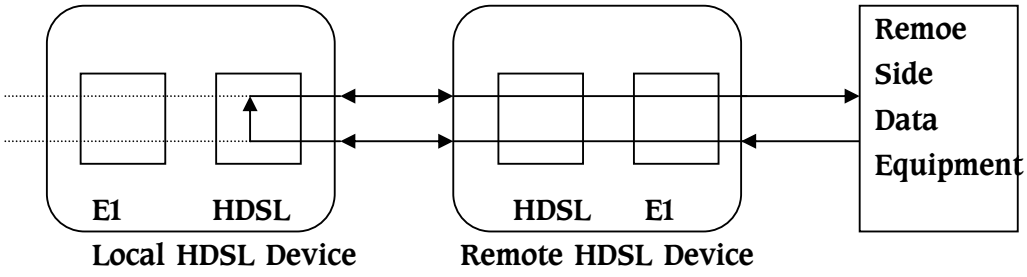
The following tests are available:

- **LLB:** Tests the local E1 and DTE loop



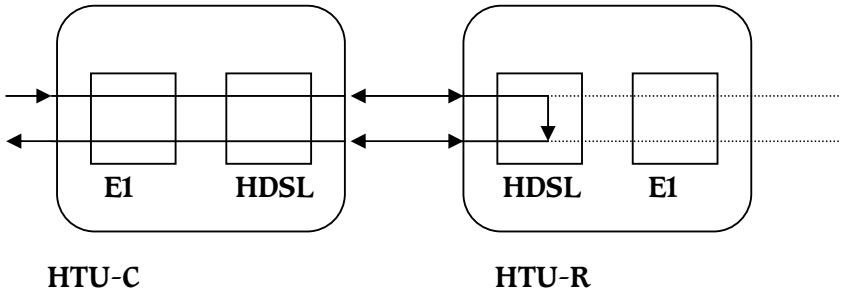
The data block will be looped back at the local HDSL end of the WireSpan 3000/3000E to Verify the local circuit (E1 and DTE).

- **DLB:** This test examines transmit and receive circuit of the HTU-C and HTU-R and the HDSL loop.



The data block will go through remote WireSpan 3000/3000E (HTU-R) and loop back at local HDSL end of the WireSpan 3000/3000E (HTU-C) to verify the remote circuit and the HDSL line.

- **HDSL RLB:** (HTU-C mode only)
  This test examines transmit and receive circuit of the HTU-C and HTU-R and the HDSL loop.



The data block will go through local WireSpan 3000/3000E (HTU-C) and loop back at remote HDSL end of the WireSpan 3000/3000E (HTU-R) to verify the local circuit and the HDSL line.

APPENDIX A

SPECIFICATION

HDSL LOOP INTERFACE

- **Line Rate:** 1168Kbps +/- 32ppm
- **Line Code:** 2B1Q
- **Line Type:** unconditional twisted pair
- **Line Impedance:** 135 Ohm
- **Transmit Line:** 13.5 +/- 0.5dB
- **Range:** 3.7Km for 26AWG
  4.5Km for 24AWG
- **Bit Error Rate:** 1x10E7,or Better
- **Connect:** Rj-48C

NETWORK INTERFACE

- **Line Rate:** 2.048Mbps +/- 32ppm
- **Line Code:** HDB3
- **Line Impedance:** 75 Ohm for Coaxial Cable
  120 Ohm for Twisted Pair
- **Frame Format:** Framed G.704 and Unframed G.703
- **Connect:** RJ-48C or BNC
- **DTE Interface:** V.35, V.36/RS-449, RS-530, X.21/V.11
  (Cable Connector)
  Connector:SCSI

CLOCK OPTION

- **Clock Source:** DTE1, Loop, Internal, E1

USER INTERFACE

- **Configuration:** Use LCD Display and Keyboard Control
- **Alarm:** Use Eight LED and LCD for alarm
- **LED Indicator:** PWR, Loop1, Loop2, ALM, TST, SYN, AIS, YEL
- **Diagnostics:** LL, RL, DL, DTE Loop back
  BERT Build in QRSS

PHYSICAL DIMENSIONS

- **Physical dimensions:** 257mm in W x 266mm in L x 60mm in H

POWER REQUIREMENT

- **Input Voltage:** 90 ~ 260 VAC 47~63 HZ(AC POWER)
  -36 ~ -72 VDC (DC POWER)

ENVIRONMENT

- **Temperature:** 0°~50°
- **Humidity:** 0% ~ 95% non-condensing

APPENDIX B

DTE INTERFACE

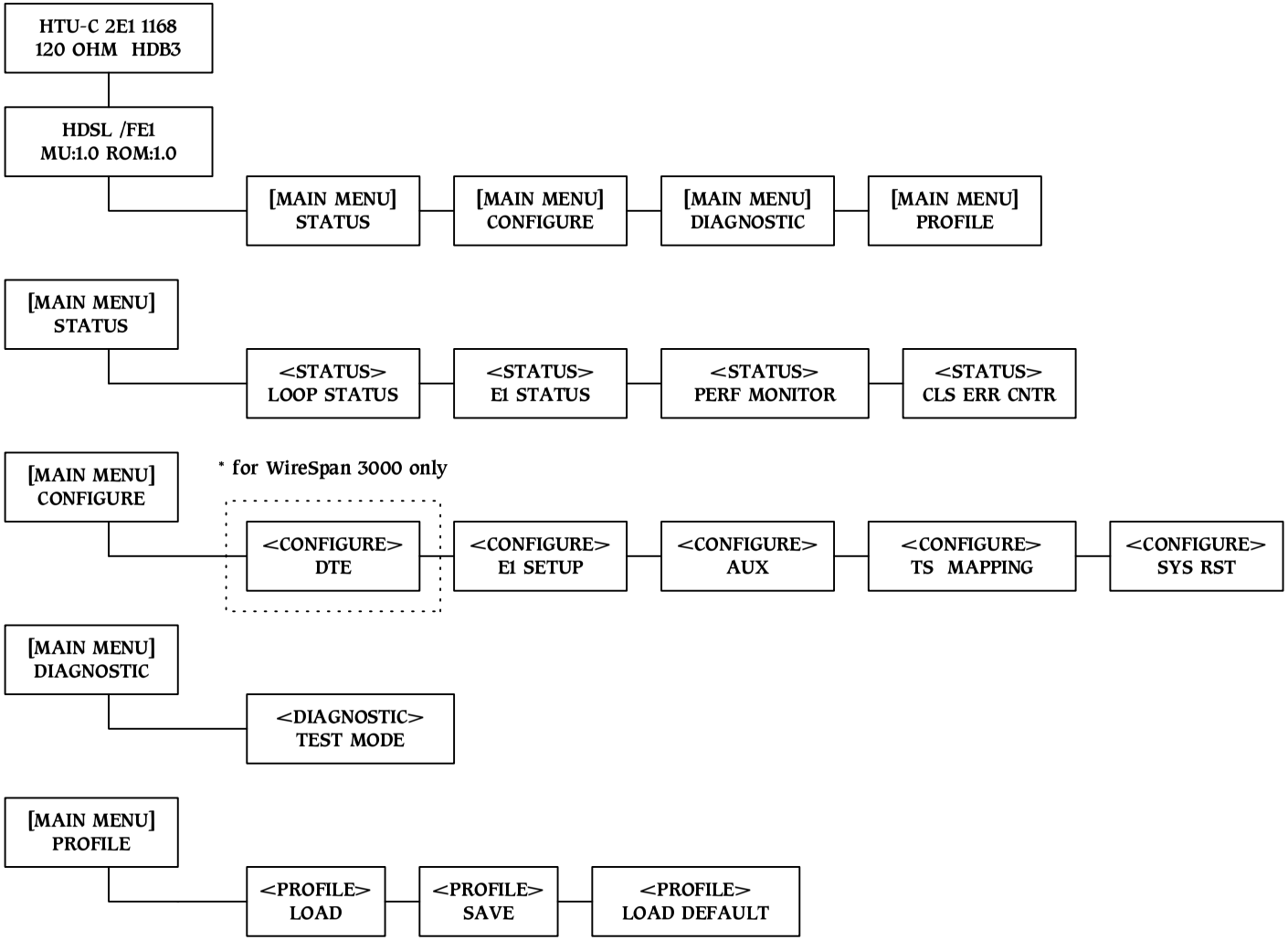
	V.24 (DB25)	V.35 (M34F)	EIA530 (DB25)	EIA449 (DB37)	X.21 (DB15)		V.24 (DB25)	V.35 (M34P)	EIA530 (DB25)	EIA449 (DB37)	X.21 (DB15)
1	SHIELD(1)	SHIELD(A)	SHIELD(1)	SHIELD(1)	SHIELD(1)	**26**			DSRB(22)	DSRB(29)	
2		RxDB(T)	RxDB(16)	RxDB(24)	RB(11)	**27**			DSRA(6)	DSRA(11)	
3		RxDA(R)	RxDA(3)	RxDA(6)	RA(4)	**28**			CTSB(13)	CTSB(27)	
4	TxC2(24)					**29**			CTSA(5)	CTSA(90	
5						**30**			DCDB(10)	DCDB(31)	IB(12)
6		RxCB(X)	RxCB(9)	RxCB(26)	SB(13)	**31**			DCDA(8)	DCDA(13)	IA(5)
7		RxCA(V)	RxCA(17)	RxCA(8)	SA(6)	**32**				TM(18)	
8						**33**					
9						**34**	GND(7)	GND(B)	GND(7)	GND(19)	GND(8)
10		TxCB(AA)	TxCB(12)	TxCB(23)		**35**	TxC1(15)				
11		TxCA(Y)	TxCA(15)	TxCA(5)		**36**	RxD(3)				
12						**37**	RxC(17)				
13						**38**	DSR(6)	DSR(E)			
14						**39**	CTS(5)	CTS(D)			
15	TM(15)	TM(K)	TM(25)			**40**	DCD(8)	DCD(F)			
16						**41**			DTRB(23)	DTRB(30)	
17	DTR(20)	DTR(H)				**42**			DTRA(20)	DTRA(12)	
18	RTS(4)	RTS(C)				**43**				TxDB(23)	TB(9)
19	RL(21)	RL(BB)	RLB(21)			**44**				TxDA(5)	TA(2)
20	LL(18)	LL(J)	LL(18)			**45**			RTSB(19)	RTSB(250	CB(10)
21	TxD(2)					**46**			RTSA(4)	RTSA(7)	CA(3)
22		XTCB(W)	XTCB(11)			**47**				RL(14)	
23		XTCA(U)	XTCA(24)			**48**		TxDB(S)	TxDB(14)		
24						**49**		TxDA(P)	TxDA(2)		
25				LL(10)		**50**	GND	GND	GND	GND(37)	GND

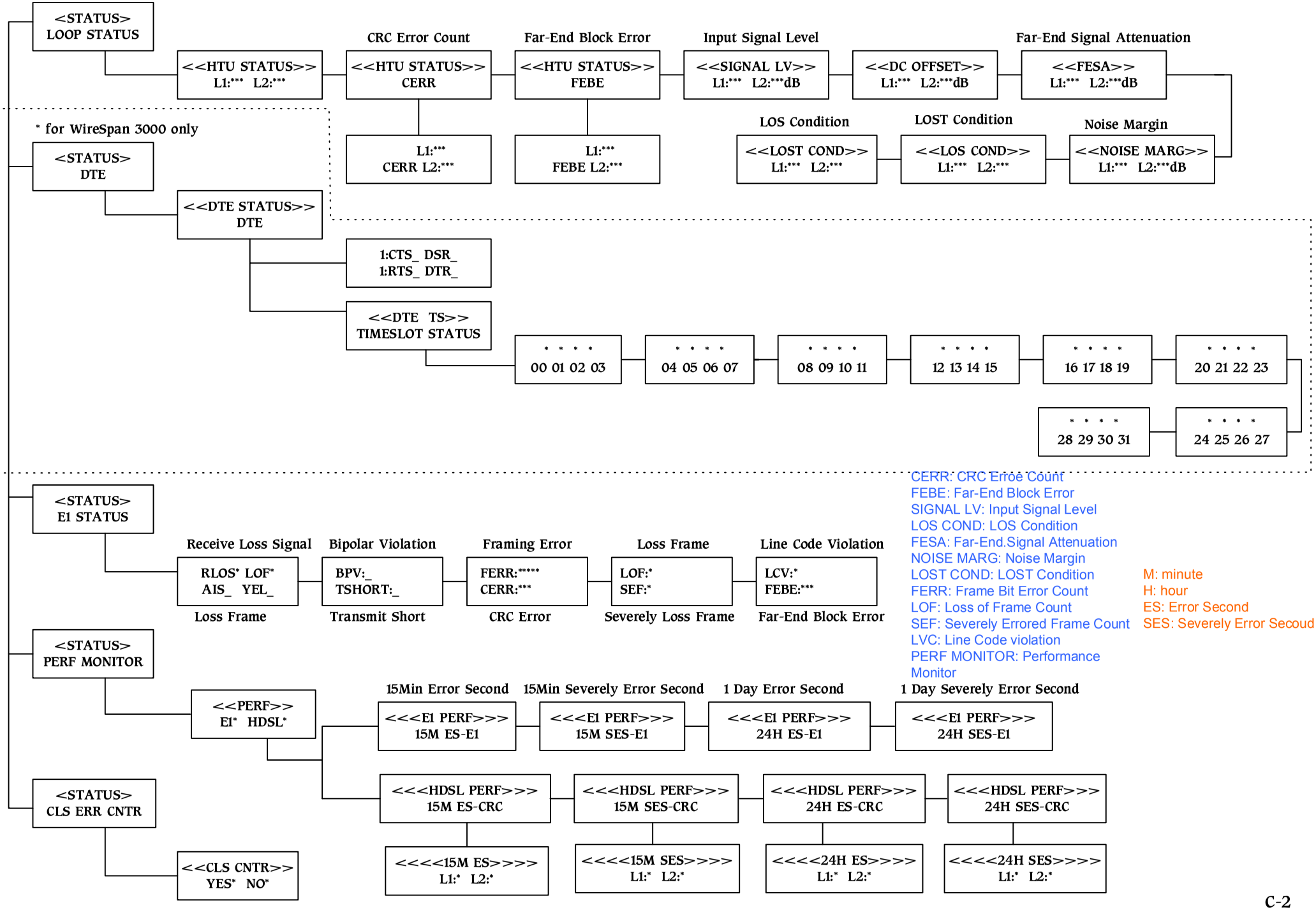
DTE CABLE (M:Male F:Female):

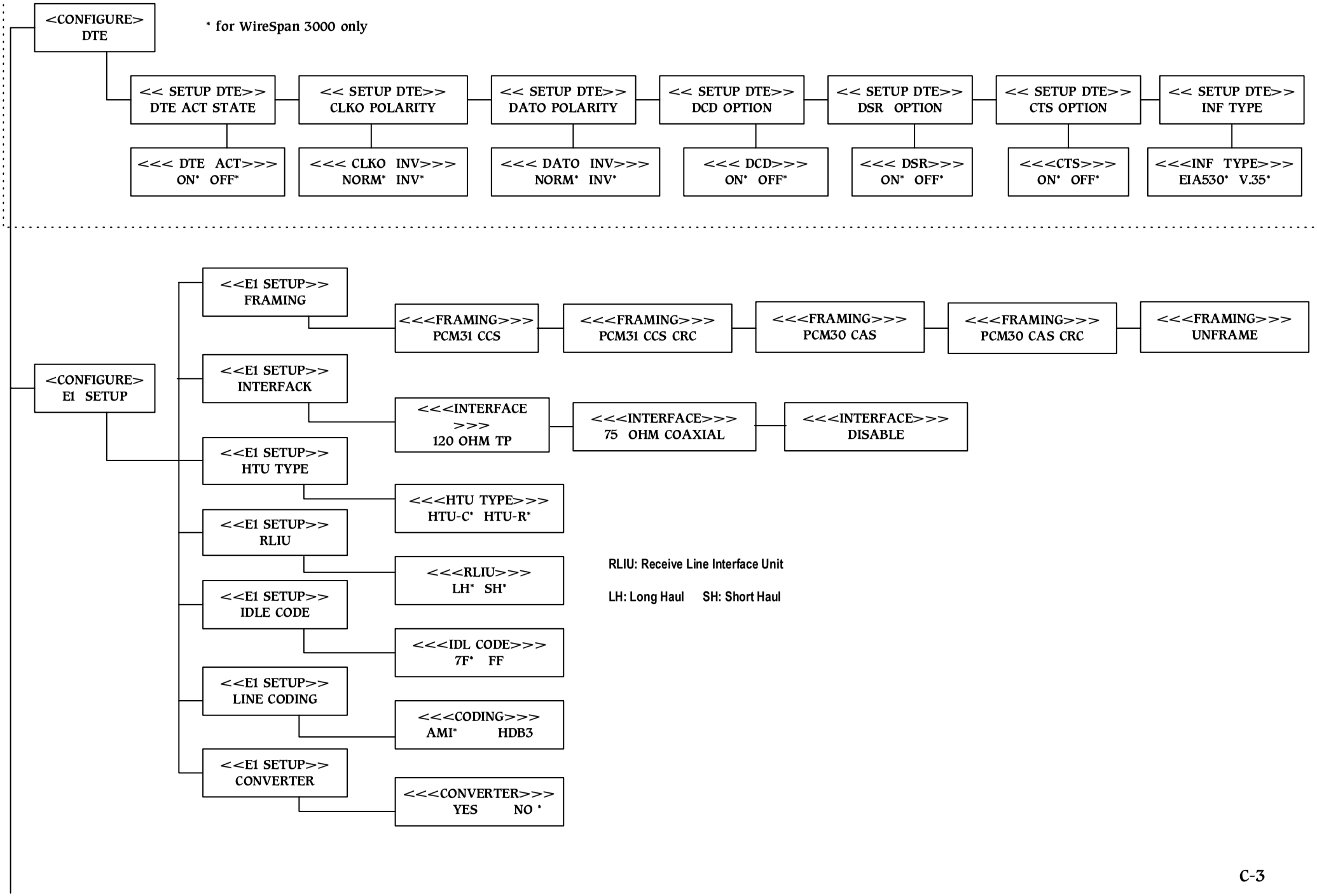
(1)SCSI(M) →V.24(F):1&7,2&3,4&5,6&20,8&24,15&17.
(2)SCSI(M)→V.35(F):A&B,P&S,R&T,C&D,E&H,F&K,X&V,
W&U,AA&Y,J&BB.
(3)SCSI(M)→EIA530(F):1&7,3&16,2&14,12&15,9&17,4&19,
5&13,11&24,20&23,6&22,8&10,18&21,25.
(4)SCSI(M)→EIA449(F):1&19,6&24,4&22,5&23,8&26,7&25,
9&27,17&35,12&30,11&29,13&31,10&14,18
(5)SCSI(M)→X.21(F):1&8,4&11,2&9,6&13,3&10,5&12

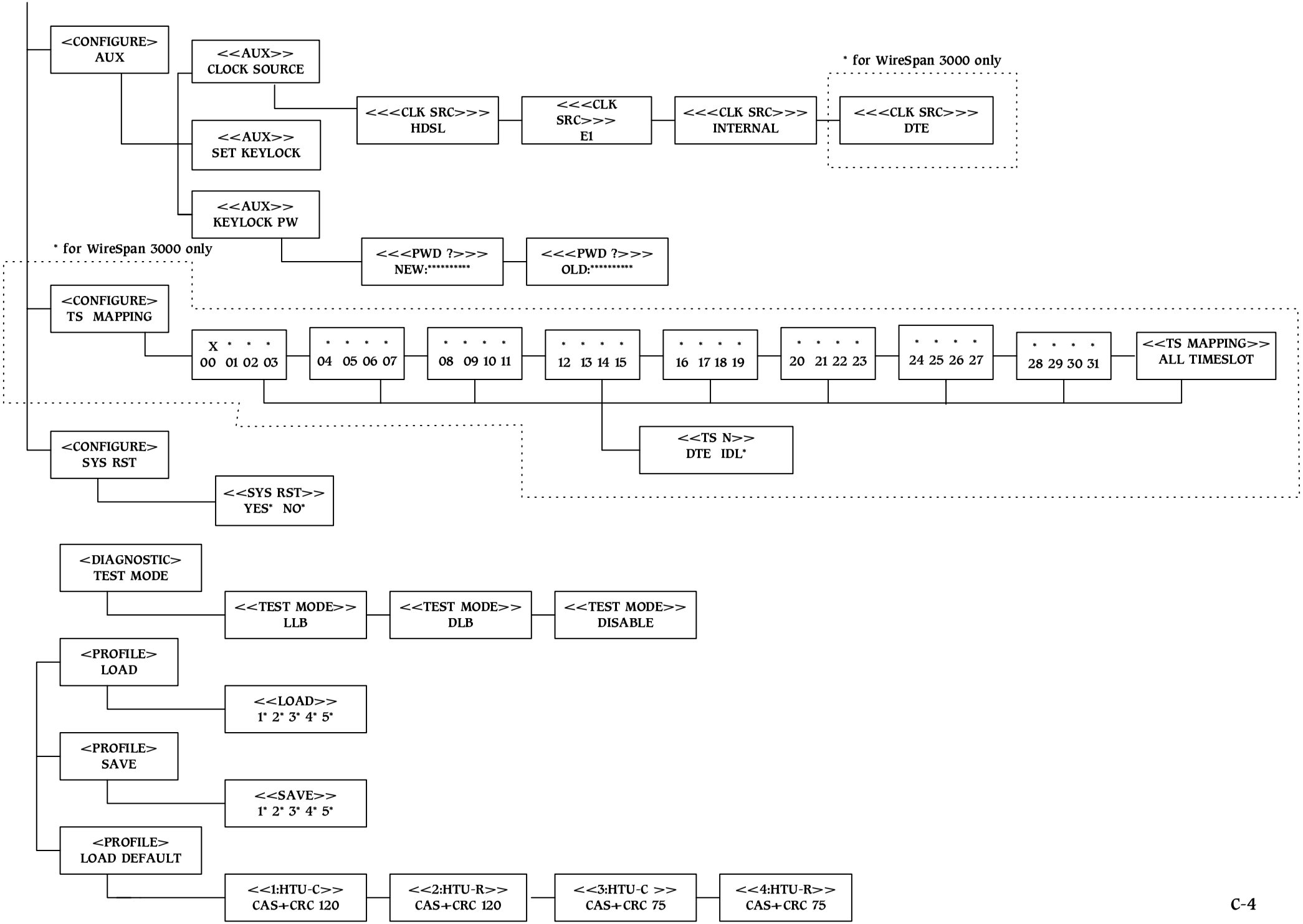
***CABLE:28AWG,Braid and foil shielding,500mm**

APPENDIX C
MENU TREE




<STATUS>
LOOP STATUS
<<HTU STATUS>>
L1:*** L2:***
CRC Error Count
<<HTU STATUS>>
CERR
L1:***
CERR L2:***
Far-End Block Error
<<HTU STATUS>>
FEBE
L1:***
FEBE L2:***
Input Signal Level
<<SIGNAL LV>>
L1:*** L2:***dB
<<DC OFFSET>>
L1:*** L2:***dB
Far-End Signal Attenuation
<<FESA>>
L1:*** L2:***dB
* for WireSpan 3000 only
<STATUS>
DTE
<<DTE STATUS>>
DTE
1:CTS_ DSR_
1:RTS_ DTR_
<<DTE TS>>
TIMESLOT STATUS
* * * *
00 01 02 03
* * * *
04 05 06 07
* * * *
08 09 10 11
* * * *
12 13 14 15
* * * *
16 17 18 19
* * * *
20 21 22 23
* * * *
28 29 30 31
* * * *
24 25 26 27
LOS Condition
<<LOST COND>>
L1:*** L2:***
LOST Condition
<<LOS COND>>
L1:*** L2:***
Noise Margin
<<NOISE MARG>>
L1:*** L2:***dB
<STATUS>
E1 STATUS
Receive Loss Signal
RLOS* LOF*
AIS_ YEL_
Loss Frame
Bipolar Violation
BPV:_
TSHORT:_
Transmit Short
Framing Error
FERR:*****
CERR:***
CRC Error
Loss Frame
LOF:*
SEF:*
Severely Loss Frame
Line Code Violation
LCV:*
FEBE:***
Far-End Block Error
CERR: CRC Error Count
FEBE: Far-End Block Error
SIGNAL LV: Input Signal Level
LOS COND: LOS Condition
FESA: Far-End.Signal Attenuation
NOISE MARG: Noise Margin
LOST COND: LOST Condition
FERR: Frame Bit Error Count
LOF: Loss of Frame Count
SEF: Severely Errored Frame Count
LVC: Line Code violation
PERF MONITOR: Performance Monitor
M: minute
H: hour
ES: Error Second
SES: Severely Error Secoud
<STATUS>
PERF MONITOR
<<PERF>>
E1* HDSL*
15Min Error Second
<<<E1 PERF>>>
15M ES-E1
15Min Severely Error Second
<<<E1 PERF>>>
15M SES-E1
1 Day Error Second
<<<E1 PERF>>>
24H ES-E1
1 Day Severely Error Second
<<<E1 PERF>>>
24H SES-E1
<<<HDSL PERF>>>
15M ES-CRC
<<<<15M ES>>>>
L1:* L2:*
<<<HDSL PERF>>>
15M SES-CRC
<<<<15M SES>>>>
L1:* L2:*
<<<HDSL PERF>>>
24H ES-CRC
<<<<24H ES>>>>
L1:* L2:*
<<<HDSL PERF>>>
24H SES-CRC
<<<<24H SES>>>>
L1:* L2:*
<STATUS>
CLS ERR CNTR
<<CLS CNTR>>
YES* NO*


<CONFIGURE>
DTE
* for WireSpan 3000 only
<< SETUP DTE>>
DTE ACT STATE
<<< DTE ACT>>>
ON* OFF*
<< SETUP DTE>>
CLKO POLARITY
<<< CLKO INV>>>
NORM* INV*
<< SETUP DTE>>
DATO POLARITY
<<< DATO INV>>>
NORM* INV*
<< SETUP DTE>>
DCD OPTION
<<< DCD>>>
ON* OFF*
<< SETUP DTE>>
DSR OPTION
<<< DSR>>>
ON* OFF*
<< SETUP DTE>>
CTS OPTION
<<<CTS>>>
ON* OFF*
<< SETUP DTE>>
INF TYPE
<<<INF TYPE>>>
EIA530* V.35*
<CONFIGURE>
E1 SETUP
<<E1 SETUP>>
FRAMING
<<<FRAMING>>>
PCM31 CCS
<<<FRAMING>>>
PCM31 CCS CRC
<<<FRAMING>>>
PCM30 CAS
<<<FRAMING>>>
PCM30 CAS CRC
<<<FRAMING>>>
UNFRAME
<<E1 SETUP>>
INTERFACK
<<<INTERFACE
>>>
120 OHM TP
<<<INTERFACE>>>
75 OHM COAXIAL
<<<INTERFACE>>>
DISABLE
<<E1 SETUP>>
HTU TYPE
<<<HTU TYPE>>>
HTU-C* HTU-R*
<<E1 SETUP>>
RLIU
<<<RLIU>>>
LH* SH*
RLIU: Receive Line Interface Unit
LH: Long Haul SH: Short Haul
<<E1 SETUP>>
IDLE CODE
<<<IDL CODE>>>
7F* FF
<<E1 SETUP>>
LINE CODING
<<<CODING>>>
AMI* HDB3
<<E1 SETUP>>
CONVERTER
<<<CONVERTER>>>
YES NO *


<CONFIGURE>
AUX
<<AUX>>
CLOCK SOURCE
<<<CLK SRC>>>
HDSL
<<<CLK
SRC>>>
E1
<<<CLK SRC>>>
INTERNAL
* for WireSpan 3000 only
<<<CLK SRC>>>
DTE
<<AUX>>
SET KEYLOCK
<<AUX>>
KEYLOCK PW
<<<PWD ?>>>
NEW:**********
<<<PWD ?>>>
OLD:**********
* for WireSpan 3000 only
<CONFIGURE>
TS MAPPING
X * * *
00 01 02 03
* * * *
04 05 06 07
* * * *
08 09 10 11
* * * *
12 13 14 15
* * * *
16 17 18 19
* * * *
20 21 22 23
* * * *
24 25 26 27
* * * *
28 29 30 31
<<TS MAPPING>>
ALL TIMESLOT
<<TS N>>
DTE IDL*
<CONFIGURE>
SYS RST
<<SYS RST>>
YES* NO*
<DIAGNOSTIC>
TEST MODE
<<TEST MODE>>
LLB
<<TEST MODE>>
DLB
<<TEST MODE>>
DISABLE
<PROFILE>
LOAD
<<LOAD>>
1* 2* 3* 4* 5*
<PROFILE>
SAVE
<<SAVE>>
1* 2* 3* 4* 5*
<PROFILE>
LOAD DEFAULT
<<1:HTU-C>>
CAS+CRC 120
<<2:HTU-R>>
CAS+CRC 120
<<3:HTU-C >>
CAS+CRC 75
<<4:HTU-R>>
CAS+CRC 75