TAINET

Scorpio 1400

G.SHDSL Termination Unit

User's Manual

TAINET *The Professional Partner*

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ABOUT THIS MANUAL

This section guides you on how to use the manual effectively. The manual contains information needed to install, configure, and operate TAINET's Scorpio 1400 termination units. The summary of this manual is as follows:

SYMBOLS USED IN THIS MANUAL

3 types of symbols are used throughout this manual. These symbols are used to advise the users when a special condition arises, such as a safety or operational hazard, or to present extra information to the users. These symbols are explained below:

Warning:
This symbol and associated text are used when death or injury to the user may result if operating instructions are not followed properly.

Caution:
This symbol and associated text are used when damages to the equipment or impact to the operation may result if operating instructions are not followed properly.

Note:
This symbol and associated text are used to provide the users with extra information that may be helpful when following the main instructions in this manual.

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Chapter 1. Introduction

ABOUT THIS CHAPTER

This chapter begins with a general description of Scorpio 1000 (S1000) and Scorpio 1400(S1400), S1000 is a high-density universal rack mounted system. S1400 has two different models: S1400 and S1400RL (equipped with Ethernet port). Both of them have the same specifications but only different interfaces of customer. S1400 has DS1/E1, Data (V.35, V.36, RS-530 and X.21) interfaces and S1400RL has Ethernet interface only. Then, the chapter describes how to use TAINET Scorpio 1400 (S1400) in several applications and show the possible interface configurations of S1000/S1400 System.

1.1   Overview

DSL (Digital Subscriber Loop) technologies increase the bandwidth capacity of existing ubiquitous telephone line (the local copper loops). G.SHDSL is designed for business applications, where high speed is required in both transmission directions. It provides symmetrical data rates of 192Kbps to 2.304Mbps in 2-wire with a transmission distance up to 20Kft using SHDSL technology. The data rates will be increased to 4.624Mbps in 4-wire link. The speeds obtainable using DSL technologies are tied to the distance between the customer premise and the Telco central office. Performance varies with loop characteristics, such as line conditions, loop distance, wire gauge, noise, and the number and locations of bridged taps and gauge changes. The G.SHDSL bit rate can be configured (or rate adapted) to adapt to the line conditions.

The Scorpio 1000 (S1000) provides full coverage of the Last Mile with a variety of technologies, rates, interfaces and media. The system supports standard technologies such as G.SHDSL. Each card in the S1000 is in a point-to-point configuration opposite to a remote unit with no connection to the adjacent cards. This allows totally independent operation among the ports and cards on the S1000. Three types of technologies will be provided in S1000: 2-wire G.SHDSL modems, 4-wire G.SHDSL modems, and fiber optic modems.

S1000 is a high-density universal rack mounted system. The chassis has 14 slots that accommodate up to 14 modems, or 28 modems if dual-port cards are used. Using

modular interface cards, S1000 can support SHDSL or fiber in the same chassis under a single management system.

Its hot-swappable feature allows any card or cable to replaced or removed during equipment operation, without causing interference to data transmission to / from other cards in the chassis.

Modular data interfaces allow modem connectivity via a wide range of DTE interfaces. These interfaces include T1, E1, DATA (V.35, V.36 / RS449, X.21, RS-530), or Ethernet (S1400 RL).

1.2 Applications

The S1400 System can be configured as a central unit, STU-C (SHDSL Transceiver Unit - Central), at central office, and a remote unit, STU-R (SHDSL Transceiver Unit - Remote), at customer premises. SHDSL System employs full duplex transmission with one pair or two pairs.

Loop between STU-C and STU-R.

The services are extended through the ubiquitous copper wires or leased lines with the technologies of G.SHDSL or fiber. Various interface extensions are supported: E1, T1, DATA (V.35, V.36 / RS449, X.21, RS-530), and Ethernet (S1400RL).

Figure 1-1 and *Figure 1-2* show two typical applications. *Figure 1-3* depicts the possible interface configurations. The S1400 automatically activate start-up when the power of the STU-C and STU-R are enabled or after temporarily disconnecting the STU-C or STU-R.
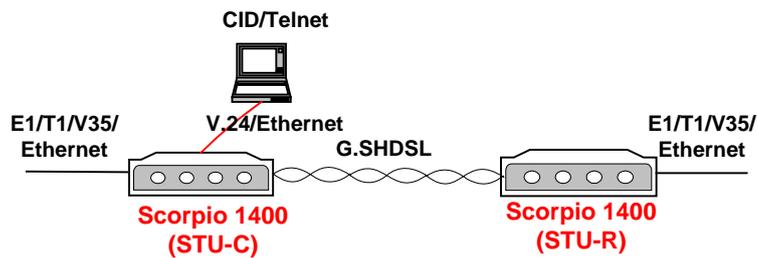
Figure 1-1 Application of Back-to-back
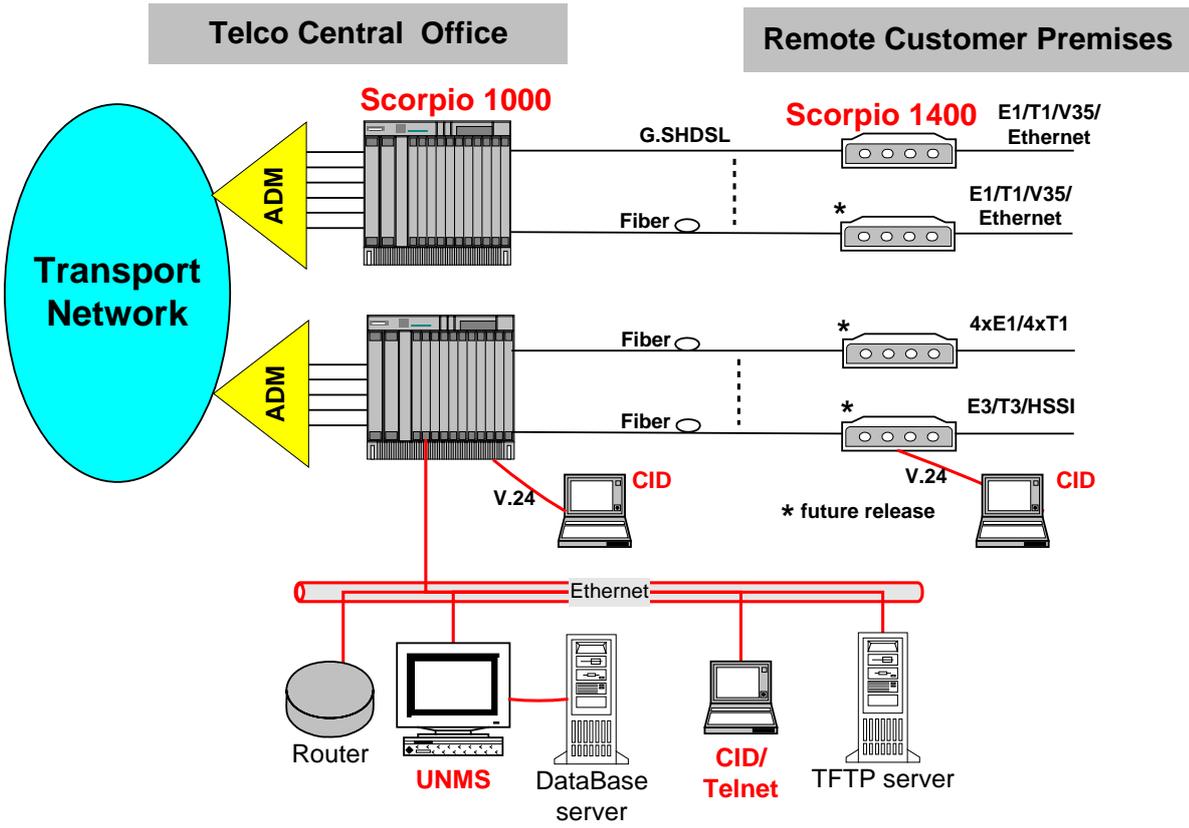
Figure 1-2 Application of S1000/S1400 System
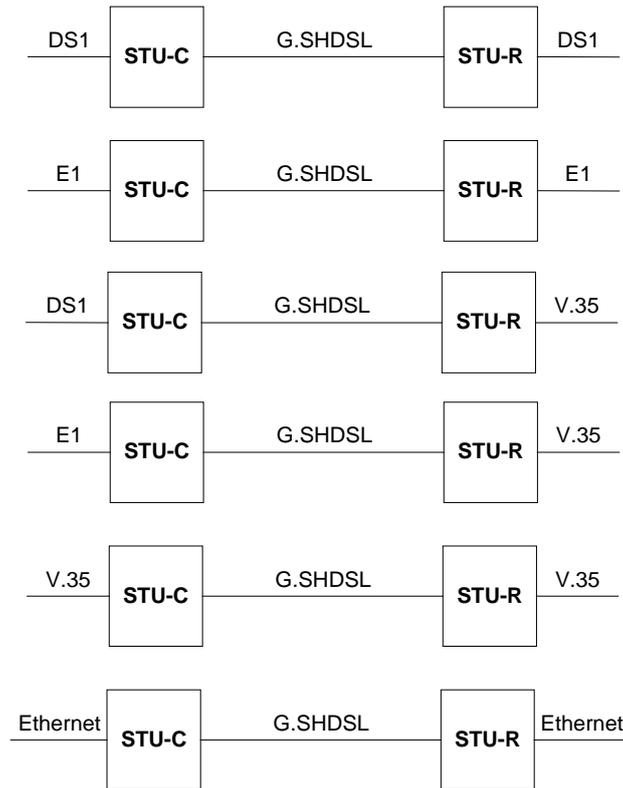
Figure 1-3 Possible Interface Configuration of S1000/S1400 System

Note that Scorpio 1400 (S1400) can be configured as a desktop standalone STU-C or STU-R via craft port, whereas S1400 should be an STU-R when connected with S1000. When a S1400 equipped with Ethernet port, it could not carry any other DTE interface (T1/E1 or DATA interface). The System will fill the unused timeslot with a fixed eight-bit byte "11111111" on DS1/E1 signal

Chapter 2. Specification

ABOUT THIS CHAPTER

To let the user understand the TAINET Scorpio 1400, this chapter begins with its main features. Then, the chapter continues to present the SHDSL interface, the network side interface, timing and synchronization, OAM (Operation, Administration and Maintenance) and technical specifications. The last part of this chapter is devoted to the applications of TAINET Scorpio 1400 family in different networks, which include cellular network, campus network and E1 network.

2.1 Main Features

Listed below are the main features of the Scorpio 1400:

- Support loop interface G.SHDSL and fiber (fiber version)
- S1400 supports DTE interface: T1, E1, DATA (V.35, X.21, RS-530, V.36 / RS449) and Ethernet.
- Carrying symmetrical 2048 Kbps payload for up to 2.4 miles / 3.9 Km over 26-AWG single pair copper wire
- The Activation Sequence and Preactivation Sequence comply with section 6.2 and 6.3 of ITU-T G.991.2.
- Both DS1 and E1 network side for STU-C and both DS1 and E1 customer side for STU-R. The DS1 or E1 interface is selectable by configuration.
- With 1 pair, both DS1 and E1 network side for STU-C and V.35 customer side for STU-R. The data rate shall be nx64 Kbit/s (n = 1 to 24 for DS1, n = 1 to 31 for E1). V.35 network side for STU-C and V.35 customer side for STU-R. The data rate is nx64 Kbit/s (n = 1 to 36). Ethernet network side for STU-C and Ethernet customer side for STU-R. The data rate is multiple, including nx64 Kbit/s (n = 1 to 36).
- With 2 pairs, both DS1 and E1 network side for STU-C and V.35 customer side for STU-R. The data rate shall be nx64 Kbit/s (n = 2 to 24 for DS1, n = 2 to 31 for E1). V.35 network side for STU-C and V.35 customer side for STU-R. The data rate is nx64 Kbit/s (n = 2 to 72). Ethernet network side for STU-C and Ethernet customer side for STU-R. The data rate is multiple, including nx64 Kbit/s (n = 2 to 72).

- System start-up procedure test, there are completed within 60 seconds (From start of initial Preactivation to entering data mode and send Data defined in ITU-T G.991.2), and the maximum duration of the start-up procedure was limited within 120 seconds.

- Support Timing and Synchronization: Local (internal) timing, Line timing (loop received clock), DTE timing

- For test and diagnostic purpose the S1000 / S1400 system provides various loopback paths including ITU-T V.54 in-band activated and deactivated loopback code words for end-to-end loopback function

- S1400 support the functions of stuffing, scrambling, keep-alive signal and out-of-service test to make the output signal of both directions meeting the application requirements and facilitate efficient section of problem.

- Management by SNMP based UNMS or CID

- Remote control / monitoring via Telnet and Ethernet

- Remote in-band control / monitoring CPE via G.SHDSL EOC

- Remote software upgrade via TFTP

2.2 SHDSL Interface

- Meet ITU-T G.991.2 Annex A relative requirements
- Frame structure comply with section 7.1.1 of ITU-T G.991.2
- Supports fixed mode operation for symmetric multiple data rates according to different network side /customer side interfaces. The data rate does not include 8 Kbit/s framing overheads.
- Support **Wetting Current** function for feeding of a low current（between 1.0 mA and 20 mA）on the pair to mitigate the effect of corrosion of contacts.
- Support power **back off**, comply with table 6-2 of ITU-T G.991.2.
- Data rate of 64K to 2.304M bps (2 wires) or 64k to 4.624M bps (4 wires), (incrementing step: 64K bps).
- Modulation Method: 16-TCPAM (16 levels Trellis Coded Pulse Amplitude Modulation).
- The symmetric PSD for data rate of 256, 512, 768, 1536, 2048 and 2304 Kbit/s comply with the PSD masks defined in Annex A of ITU-T G.991.2.
- Symbol Rate: (Data rate+8000)/3 symbol/sec
- Load Impedance: 135 ohms ±5%.
- Physical Connection Type: Standard RJ-45 jack, 135 ohm balanced via 2 wires or 4 wires twisted pair.
- Port enabled / disabled configurable.
- Network Side Interface.

2.2.1 DS1 Interface

- Bit Rate: 1,544 Kbit / s ± 32 ppm.
- Frame Format: SF (D4), ESF, ESF+CRC, or Unframed, field selectable.
- Line Code: AMI or B8ZS, field selectable.
- Impedance: Normal 100 ohms ± 5% resistive, symmetrical pair.
- Power Level: For an all-one transmitted signal, the power in a 3 kHz band centered at 772 kHz is between 12.6 and 17.9 dBm. The power in a 3 KHz band centered at 1544 kHz is at least 29 dB below that at 772 kHz.
- Jitter performance: Meet ITU-T G.824 requirements.
- The DS1 network side interface of STU-C provide the function for the cable length (from 0 to 200 meters) compensation
- Physical Connection Type: Standard RJ-48C / RJ45 jack.

2.2.2 E1 Interface

- Comply with G.703 Standard.
- Bit Rate: 2,048 Kbit / s ± 50 ppm.
- Frame Format: Unstructured or Structured framing, field selectable
- Line Code: High Density Bipolar of Order 3 (HDB3).
- Impedance: Normal 120 ohms ± 5% resistive, symmetrical pair.
- Jitter performance: Meet ITU-T G.823 requirements.
- Normal Peak Voltage of a Mark (pulse): 3 V for 120 ohms. Peak Voltage of a Space (no pulse): 0 ± 0.3 V for 120 ohms.
- Normal Pulse Width: 244 ns.
- Ratio of the Amplitudes of Positive and Negative Pulse at the Center of Pulse Interval: 0.95 to 1.05.
- Ratio of the Widths of Positive and Negative Pulse at the Normal Half Amplitude: 0.95 to 1.05.
- Line Interface: 120 ohm (RJ-45 / RJ48C) balanced, 75 ohm (BNC).
- Physical Connection Type: Standard RJ-48C/RJ-45 jack (Balance) or BNC (Unbalance).
- Signal of input port was defined as above and can be modified by the characteristics of the interconnecting pair. The insertion loss of this pair at a frequency of 1024 kHz is in the range of 0 to 6 dB.
- Minimum Return Loss at the Input Port: 12 dB for 51 to 102 kHz, 18 dB for 102 to 2,048 kHz 14 dB for 2,048 to 3,072 kHz

2.2.3 V.35 Interface

- Electrical Characteristics: Comply with ITU-T V.35 interface.
- Software configurable for V.35, X.21, RS530, V.36/RS-449.

- Data Rate: n x 64 Kbit/ s, where n = 1~36(2 wires) or n=2~ 72(4 wires). The data rate does not include 8 Kbit/s framing overheads.
- Data inversion selectable.
- Clock inversion selectable (internal/ DTE/ line/ DTE-hybrid).
- Physical Connection Type: The pin assignment of ITU-T V.35 interface comply with 34-pin ISO 2593 connector.

2.2.4 Ethernet Interface (S1400RL)

- Provide a 10/100 Base-T half/full duplex auto sensing of Ethernet Interface.
- Comply with the IEEE 802.3/ IEEE 802.3u.
- Physical Connection Type: Standard RJ-45 connector.
- Operate as a self-learning bridge specified in the IEEE 802.1d full protocol transparent bridging function
- Supporting up to 128 MAC learning addresses.
- Supporting Bridge filter function based on source MAC addresses

2.3 Timing and Synchronization

Table 2-1 shows three modes to be field selectable.

Table 2-1 Timing and Synchronization

Mode Number	STU-C Symbol Clock Reference	STU-R Symbol Clock Reference	Example Application	Mode
1	Local oscillator (internal timing)	Received symbol clock	"Classic" HDSL	Plesiochronous
2	Transmit data clock (DTE timing)	Received symbol clock	Main application is synchronous transport in both directions.	Synchronous
3	Hybrid Transmit data clock (Hybrid DTE timing)	Received symbol clock	Synchronous downstream transport and bit-stuffed upstream is possible.	Hybrid: downstream is synchronous and upstream is plesiochronous

- Provide a 10/100 Base-T half/full duplex auto sensing Ethernet Interface.
- At all rates, the transmit symbol clock during data mode from any SHDSL device is accurate to within ±32 ppm of the normal frequency.

- When the STU-C receiver loses Transmit data clock, it will fall back and use a free-running local oscillator in the STU-C，the STU-C local oscillator will have the accuracy of ±32 ppm.
- The SHDSL transceivers will operate in a master-slave mode with STU-R (Slave) synchronized to the received signal from the STU-C (Master) (i.e. Received symbol clock).
- If the STU-R receiver loses timing, it will fall back and use a free-running local oscillator in the STU-R，the STU-R local oscillator will have the accuracy of ±32 ppm.
- The SHDSL system is an equipment of frequency transparency. The average traced frequency deviation at the DS1/E1 output port is less than ±1 x 10-11 to the frequency at the DS1/E1 input port under Mode 2 clocking architecture.

2.4　OAM

The S1400 maintain a management information database. The database is accessible separately from craft interface of standalone type STU-C and STU-R. The database includes provisioning parameters, alarm/status and Performance information. OAM (Operation, Administration and Maintenance) of the Scorpio 1400 is listed below:

- UNMS manages S1400 system via SNMP agent interface and provides a user-friendly GUI-based operational interface under PC / Windows or HP Open-View systems.
- Support standard MIB RFC 2495 for DS1 / E1, and RFC3276 for SHDSL interface.
- MIB follow the standard RFC1157, RFC1212.
- CID Console: The S1400 has an EIA-232 connector for user-friendly menu-driven CLI operation.
- SNMP management message interface V1.0.
- The provisioning parameters for each SHDSL System were provided through the CID.
- The provisioning parameters for each SHDSL System includes loop attenuation threshold, SHDSL SNR Margin threshold, performance parameter threshold, SHDSL power back off, data rate or line rate, clocking architecture, DS1/E1 interface and DS1/E1 frame format, line code, etc.
- The S1400 was provided with a nonvolatile memory stores all provisioning parameters.
- A default configuration setup option was provided. The SHDSL System can be set to this status.

- The SHDSL was provided with an EOC for OAM data and signals transmission, including configuration, fault message and performance monitoring data, and loopback control signal, etc. The EOC complies with section 9.5 of ITU-T G.991.2.
- Remote control / monitoring S1000 via Telnet and Ethernet
- Remote in-band control/monitoring CPE via G.SHDSL EOC
- Remote Software Upgrade: Remotely via Ethernet port with TFTP protocol, Locally CID console terminal with XMODEM protocol.
- Automatically and manually configuration backup and restoration to / from local nonvolatile memory
- Support Alarm Surveillance function, any event detected will be reported to Craft Interface Device (CID) and UNMS automatically. The alarm reports include managed object, alarm/event type, alarm severity, day/time occurred.
- Support Performance Monitoring function
- For test and diagnostic purpose, a simulated noise sources and test loop are built in, the S1000 / S1400 system provides various loopback paths, which are depicted in *Figure 5-1* and *Figure 5-2*.
- For each STU-C and STU-R, the built-in PRBS generation and detection are provided for loopback performance test on per channel basis. Test results are displayed. The supported PRBS patterns include 2^{11}-1, 2^{15}-1, QRSS, 2^{20}-1, 2^{23}-1
- ITU-T V.54 in-band activated and deactivated loopback code words are provided for end-to-end loopback function, the details are depicted in *Figure 5-3*.
- BER measurement is performed for both directions of transmission and the tests in each direction will be performed in full duplex mode with both STU-C and STU-R simultaneously transmitting data. The test loops defined in ITU-U G.991.2, are individually inserted between the STU-C and the STU-R.
- The noise level test procedure complies with section A.3.1 of ITU-U G.991.2.

2.5   Technical Specifications

Table 2-2 gives the technical specifications of the Scorpio 1400.

Table 2-2 Technical Specifications of the Scorpio 1400

DSL	
Modulation	16 levels TCPAM
Mode	Full duplex with echo cancellation
Number of loops	Single
Loop rate	N*64+8K(N=3~32) and 2320Kbps (2 wire), 4624kbps (4 wire)
Data rate	64K to 4096Kbit/s /4608kbit/s (4 wires)

Loop impedance	135 ohms
Clock source	Internal clock / DTE clock / Receive clock / Hybrid DTE clock
Clock accuracy	± 32 ppm

Interface	
Module	***Data***
	V.35 Nx64 Kbps interface
	RS-530 Nx64 Kbps interface
	V.36 Nx64 Kbps interface
	X.21 Nx64 Kbps interface
	E1/T1
	E1 G703 / G704 interface
	T1 interface

Diagnostics		
Loop test	**LL**	: Local loop back
	RL	: Remote Loop Back
	LPL	: Local Payload Loop Back
	RPL	: Remote payload Loop back
Status Indicators	**PWR**	: Power indicator
	CPE	: CPE or CO site indicator
	DSL	: DSL status indicator
	DTE1	: T1/E1 interface
	DTE2	: Data interface
	ALM	: Alarm indicator
	TST	: Test status indicator
Craft port	115200 & 9600 BPS (default speed is 9600)	
	8 bit data length	
	None parity	
	1 stop bit	
	9-pin/D-sub/female connector	
Ethernet port	10/100M BPS	
	RJ-45 jack	

Power Requirement	
Input	AC Power adapter 110/220 VAC ± 10 %, 60±3 Hz
	DC Power adapter -36~-72 VDC without adapter
	note: for 1400 AC+DC version, DC range between –43V~ –53V
	not –72V
Power Consumption	< 12 W

Environments	

Temperature	Operating: +0℃ ~ +50℃(indoor) , +0℃ ~ +60℃(outdoor) Storage: -40℃ ~ 70℃
Humidity	Operating: 0% ~ 90% (indoor, non-condensing), 0% ~ 95% (outdoor, non-condensing) Storage: 0% ~ 95% non-condensing
EMC	Comply with class A of 22 of the CISPR and class A of Subpart B of Part 15 of the FCC.
Vibration	FCC part 68.302
MTBF	> 30,000 hrs

2.6 Applications

This section describes how to apply TAINET Scorpio 1400 family in different network systems, which include cellular network, campus network and E1 network.

2.6.1 Cellular network

The cellular network user will need to lease larger numbers of E1 circuits in order to connect remote cell sites to mobile telephone switching offices (MTSOs). TAINET Scorpio 1400 provides an alternative to standard repeater E1 service. *Figure 2-1* shows a cellular network application.
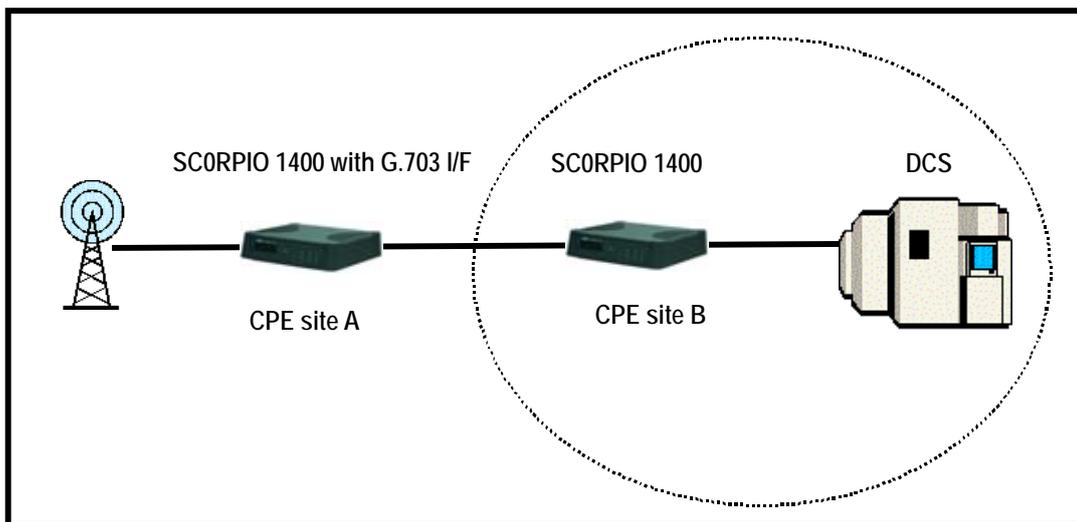
Figure 2-1 Point to point Interconnection is instead of E1

2.6.2 Campus network

The SCORPIO 1400 is well suited to the campus applications. *Figure 2-2* and *Figure 2-3* show two general campus applications where remote PBX or routers are interconnected across a campus using two SCORPIO 1400. One unit is configured as a central office site (CO) unit and the other is the customer premise equipment (CPE) unit.
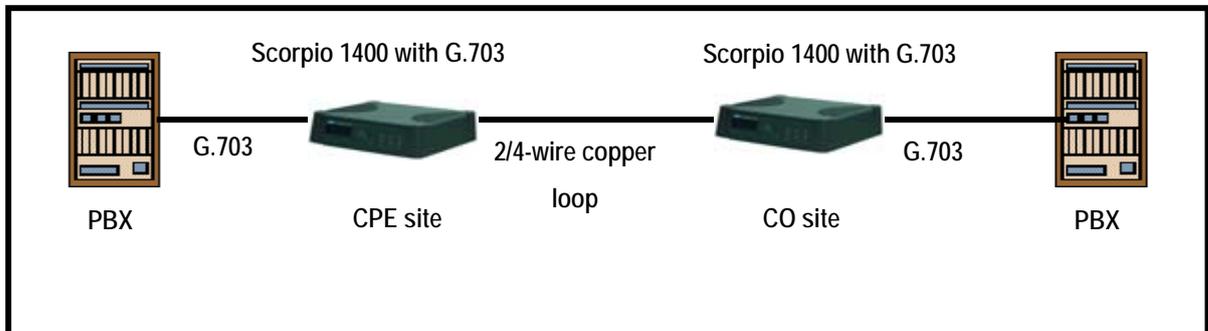
Figure 2-2 Network Application of the Scorpio 1400 with G.703 I/F
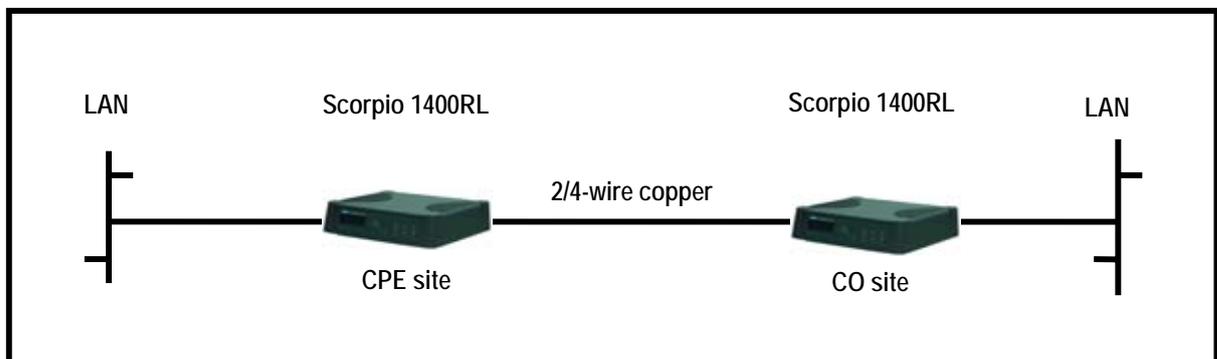
Figure 2-3 Network Application of the Scorpio 1400RL

Each Scorpio 1400 is configured at the factory to operate on the CO side of an E1 connection. However, you can easily modify settings intended for the CO into settings for CPE.

2.6.3 E1 Network

The Scorpio 1400 can be deployed to replace traditional E1 network, without the repeater in the E1 network and effectively the utilization of the existing twisted copper pair.

Chapter 3. Interfacing

ABOUT THIS CHAPTER

In this chapter, we will focus our attention on the interfaces of the Scorpio 1400. First, the front panel of the Scorpio 1400 will be discussed. After that, we will examine in more detail the rear panel of the Scorpio 1400.

3.1 Front Panel

The front panel of Scorpio 1400, as illustrated in Figure 3-1, contains three main sections, i.e. the LCD display, status indicators and buttons. Via the front panel of Scorpio 1400, users can perform the functions as listed below:

- Configuring system
- Displaying system status
- Setting loopback test

From the status indicators of front panel, users can obtain useful information to monitor the status of the Scorpio 1400. In addition, users can set some loopback tests by pressing the buttons on front panel.

Figure 3-1 Front Panel of the Scorpio 1400

3.1.1 Status Indicators

The status indicators of the Scorpio 1400 are depicted in Figure 3-2. There are seven LEDs, which are PWR, CPE, DSL, DTE1, DTE2, ALM and TST. These seven LEDs display the system status.

The default unlocking password for the front panel is "**14001400**" if it was locking.
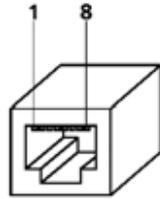
Figure 3-2 Ethernet RJ-45 Pin Assignment

Pin	Description
1	TX+
2	TX-
3	RX+
4	NC
5	NC
6	RX-
7	NC
8	NC

Table 3-1 Indicators on Front Panel

LED	Description	Color	Off	Flashing 0,5 sec	Always On
PWR	Power	Green	No Power	N/A	Power OK
CPE	CPE	Green	CO	N/A	CPE
DSL	Loop	Green	Failure	Handshaking/ Training	Connecting
					Idle
DTE1 DTE2	Data/E1/T1	Green	Unequipped or Failure	N/A	Traffic OK
ALM	Alarm	Red	Normal	Major Alarm	Minor Alarm
TST	Testing	Amber	Normal	N/A	Loopback activated

3.1.2 The Buttons

The buttons of Scorpio 1400 are depicted. There are six keys, including HOME, REM/LOC, ▲, ▼, ◄, and ►. By pressing these buttons, users may perform configuration, testing for setting up and diagnostic purpose.

3.2 Rear Panel

Figure 3-3 illustrates the rear panel of the Scorpio 1400. Users may connect the Scorpio 1400 to other devices or equipments via these interfaces.
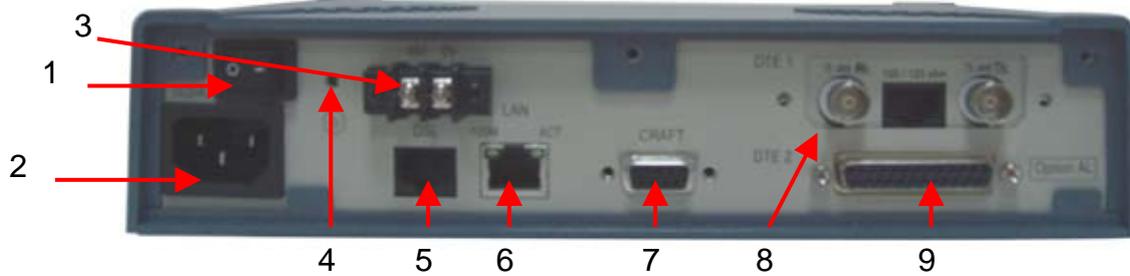
Figure 3-3 Rear Panel of the Scorpio 1400

The following connectors/ devices appear on the rear panel of the Scorpio 1400.

- ■ 1 Power On / Off   : The Scorpio 1400's power switch.
- ■ 2 Power Receptacle   : Power plug for a AC power cable.
- ■ 3 DC power connector : Power connector for –48V DC power.
- ■ 4 Ground Terminal   : Ground output terminal, connect to earth.
- ■ 5 DSL Jack   : RJ-45 jack for SHDSL link.
- ■ 6 Management port   : SNMP management LAN port.
- ■ 7 Craft Interface   : 9 pin female serial D-sub connector.
- ■ 8 DTE1 Interface   : E1/T1 G.703 / G.704 balanced interface.
- ■ 9 DTE2 Interface   : Data terminal equipment port
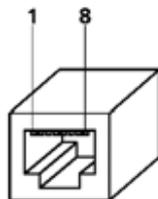
Figure 3-4 G.SHDSL RJ-45 Pin Assignment

Pin	Description
1	-
2	-
3	Tip(2)-
4	Tip(1)-
5	Ring(1)-
6	Ring(2)-
7	-
8	-

The pin assignment of G.SHDSL line is shown in Figure 3-4. The Scorpio 1400 supports various DTE (Data Terminal Equipment) interfaces depending on user requirements. Connector types include ITU-T G.703 E1 balanced interface and DB-25 female connector for V.35, X.21, RS-530, and V.36 / RS449 as shown in Figure 3-5 and Figure 3-6.
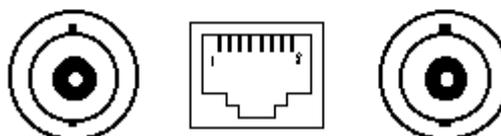
Figure 3-5 G.703 /RJ-45 for Unbalanced Interface
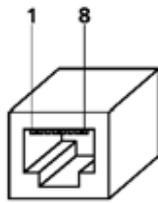
Figure 3-6 Balanced E1 / T1 RJ-45 / 48C Pin Assignment

Pin	Description
1	RX_ring
2	RX_tip
3	NC
4	Tx_ring
5	Tx_tip
6	NC
7	NC
8	NC
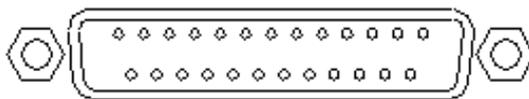
Figure 3-7 DB-25 for V.35 and RS-530 Interface

The indication of front panel is as follow:

Table 3-2 Indication of front panel on S1400

LED		Color	Mode	Function
PWR		Green	on	Power input is supplied to this unit
			off	Power is not connected
ALM		Red	off	Normal status
			on	An alarm occurs
			blink	Software downloading or self-testing
TST		Yellow	on/off	on: indicates it is in Test mode
LAN	**ACT**	Green	on/off	on: when data transmit or receive over the LAN
	LINK	Yellow	on/off	on: collision detected
DSL		Green	on/off	on: when the physical link through RJ-11 connection cable is established
			blink	SHDSL line is training

Chapter 4.   Installation

ABOUT THIS CHAPTER

In this chapter, we will present the installation guide for the Scorpio 1400. It begins with a checklist for unpacking the shipping package. The chapter continues with the configuration procedures, which includes "Loop Back Test", "Circuit Diagnose" and "Establish Connection".

4.1   Unpacking

The Scorpio 1400's shipping package includes the following items:

- Scorpio 1400 standalone unit
- User's manual CD pack
- Power cable
- 24-AWG RJ-45 cable
- RJ-45 cable box
- Optional items
  - G.703 E1 Balanced interface
    - 24 AWG RJ-45 cable
    - RJ-45 cable box
  - ITU-T V.35 / RS530 / X.21 n x 64Kbps interface
    - V.35 cable
    - X.21 cable

4.2   Configuration Procedures

This section guides the user through some basic operations on the front panel and makes sure the Scorpio 1400 unit is correctly configured. These operations include Local Loop back Test, Establish Connection, System setup and others.

There are six buttons on the front panel- REM/LOC, HOME, ▲ up arrow, ▼ down arrow, ◄ left arrow and ► right arrow.

The LCD will display the current S/W version of S1400 in the beginning. Users can enter the LCD configuration menu by pressing ▼ button.

Users can go to previous or next page by pressing ◄ or ► button respectively.

When the value is selected, users can press ▼ (it represents enter) button. If users aim to escape current screen and return to previous screen, just press the ▲ button.

The HOME button is used to return to main menu screen.

Users may configure the S1400 in remote side or local side by toggling the REM/LOC button. Once it is set for remote side, an R character will be displayed on the LCD screen. It will return to local configuration by pressing the REM/LOC button again.

4.2.1   Establish Connection

1. Connect all the necessary wires and turn on the Scorpio 1400.
2. Wait for few seconds, press ▼ to enter the menu tree. Keep pressing ◄ or ► until LCD displayed "Configuration" then press ▼ to enter the configuration menu. Repeat the same steps to enter the "Configuration ==> Modem ==> Modem Type", "Configuration ==> Modem ==>RM Modem Type", "Configuration ==> Modem ==> Data Rate", "Configuration ==> Modem ==> Timing", "Configuration ==> Interface" menu to set up the desire value respectively.
3. Configure the Scorpio 1400 CO site by pressing button on the front panel in according to the LCD menu tree *Table B-1* (Specify the Modem type, RM modem type, Data Rate, Line Type and Timing, for example, CO-SHDSL-E1, CPE-SHDSL-E1, 32, E1 framer _CRC, Internal clock)
4. Configure the Scorpio 1400 CPE side (Specify same data rate and Line Type as CO side but different Modem type, RM modem type and Timing, for example, CPE-SHDSL-E1, CO-SHDSL-E1, 32, E1 framer _CRC, Line clock)
5. Any user specified configurations are different from descriptions as above; please configure them by pressing button on the front panel.
6. Wait for several seconds, DSL LED will be ON and LCD displays Connected and the data rate of connection, it shows SHDSL link has been established.

4.2.2   Local Loop back Test

1. Go to *Test –Loop-back* menu by pressing the button on front panel.
2. Press the button on front panel to configure the loop back test if users aim to do it. For running the loop back test, please refer to *Maintenance-Test-loopback* in chapter 5, *Fig 5-1* and *Fig 5-2*.
3. Wait for several seconds, the Scorpio 1400 will complete the test and the TST LED will turn on.
4. Return the setting value of loop back to *normal* by pressing the key button on the front panel.

Chapter 5.   Operation of CID

ABOUT THIS CHAPTER

In this chapter, you will be introduced to the CID (Craft Interface Device) VT-100 operation of Scorpio 1400. The chapter starts with an overview of Scorpio 1400's CID. In addition, each main menu item of the Scorpio 1400's CID, such as Configuration, Maintenance and Software Download, will be discussed.

5.1   Overview

The craft port for configuration is set to Speed: 115200, Data bit: 8, Parity: n, Stop bit: 1, Flow control: n. When startup the S1400, the following messages will appear before the screen displays the Application software code.

```
RAM test OK!!SelfTest1 OK!
SelfTest2 OK!
SelfTest3 OK!
Select 'a' in 1 second-->into Diagnostic mode, or to AP:
dwHeaderCheckSum=0xe9369793 11:59:31
code checksum OK = 0x5766979
```

At startup of the AP, press Enter, the CID will prompt user to enter the password for access into the system. The default password is tainet. (Earlier version before V2.77 is admin)

```
        !!! Welcome to Access TAINET SCORPIO 1400 !!!
            Please Enter Password :   ******
```

The CID offers user-friendly menu-driven user interface. The following figure depicts the structure of the interface. The top tier command options include **Configuration**, **Maintenance**, **Software Download** and **Diagnosis**.

```
MAIN                    TAINET SCORPIO 1400-DL           Version 3.09c
=============================================================================
[Configuration]   Maintenance    Software Download    Diagnosis
 System     Interface    Shdsl     Security
```

> **Note:**
> There are some differences between LCD and CID menu tree,
> ex: the Software Download item, but most of them are almost
> the same.

```
System  —Tire2           TAINET SCORPIO 1400-DL          Version 3.09c
=============================================================================
[IP]    Trap IP    DateTime    Default    Reboot      Product Name
IP Configuration                                         Software Version

        IP Configuration
        IP Address        [172.16.5.150    ]           Tier 3
        NetMask           [255.255.0.0     ]
        Default Gateway   [172.16.0.254    ]

    Tier4 or description


                                                    Ooperational hint

                          Input


Press: '0' - '9', '.', SPACE, BS, DEL
TAB,ENTER:next field  '<':left  '>':right   ESC:abort
```

- **Product Name**: TAINET Scorpio 1400 Series.
- **Software Version**: the software version number.
- **Tier 2**: The second tier of the current screen.
- **Tier 3**: The next tier of the current screen.
- **Tier 4 or description**: The fourth tier of the current screen and / or its description.
- **Input**: the values to be set by the user.
- **Operational hint**: a hint for the user during operation.

5.2 Configuration

After the pressed the "**configuration**" item on the top of main menu, there are four items on this configuration page, *System*, *Interface*, *SHDSL* and *Security*.

5.2.1 Configuration–System

```
Configuration              TAINET SCORPIO 1400-DL          Version 3.09c
========================================================================
[System]   Interface    Shdsl    Security
IP    Trap IP    DateTime    Default    Reboot
```

```
System                     TAINET SCORPIO 1400-DL          Version 3.09c
========================================================================
[IP]    Trap IP    DateTime    Default    Reboot
 IP Configuration

         IP Configuration
         IP Address            [172.16.5.150   ]
         NetMask               [255.255.0.0    ]
         Default Gateway       [172.16.0.254   ]
```

Above step sets the IP address. Setting IP address is required for managing the system via the Ethernet port. This is a must for SNMP, Telnet and TFTP management.

```
System                     TAINET SCORPIO 1400-DL          Version 3.09c
========================================================================
 IP   [Trap IP]   DateTime    Default    Reboot
 Trap IP Configuration

         TrapIP Configuration
         Trap IP0 Address      [210.65.231.120 ]
         Trap IP0 Status       [Inactive]
         Trap IP1 Address      [0.0.0.0        ]
         Trap IP1 Status       [Inactive]
         Trap IP2 Address      [0.0.0.0        ]
         Trap IP2 Status       [Inactive]
         Trap IP3 Address      [0.0.0.0        ]
         Trap IP3 Status       [Inactive]
         Trap IP4 Address      [0.0.0.0        ]
         Trap IP4 Status       [Inactive]
```

```
System                     TAINET SCORPIO 1400-DL          Version 3.09c
========================================================================
 IP    Trap IP   [DateTime]   Default    Reboot
 Date and Time Setup

         Date & Time Setup
         Year                  [2005 ]
         Month                 [11 ]
         Day                   [15 ]
         Hour                  [15 ]
         Minute                [30 ]
         Second                [00_]
```

- ■ **Date-Time**: The system provides RTC (Real Time Clock) and supports BCD coded century, year, month, date, day, hours, minutes, and seconds with automatic leap year compensation valid up to the year 2100. Set the Date / Time to correctly time-stamping the alarm or PM data report. The date/time will be stored in non-volatile memory, so data will not be lost even when powering off the system (MPU).

- ■ **Default**: Reset the configuration data of the device to default values.

- ■ **Reboot**: Reboot (restart) the device.

```
System                  TAINET SCORPIO 1400-DL          Version 3.09c
=====================================================================
IP    Trap IP   DateTime   [Default]   Reboot
Set To Default



                        ·Set To Default·
                        |<YES> NO      |
                        +--------------+
```

5.2.2   Configuration–Interface

There are four DTE interface types, which are *SHDSL*, *E1*, *T1* and *DATA*, available for the S1400. In addition, the DATA interface also includes V.35, X.21, V36 / RS499, and RS530.

■ SHDSL Performance Monitoring:

The S1400 separately monitor the following performance parameters for the SHDSL loop for each direction of transmission.

(1) Errored Second (ES-crc).
(2) Severely Errored Second (SES-crc).
(3) Loss of Synchronization Second (LOSWS).
(4) Unavailable Second (UAS).

The S1400 separately store the following accumulated performance data for each direction of transmission.

(1) Current 15-minute and at least 32 previous 15-minute periods of parameters as described as above.
(2) Current 24-hour period and at least 7 previous-24 hour periods of parameters as above.

■   T1 (DS1) Performance Monitoring:

The STU-C monitors the T1, as same as DS1, signal from the network side and the customer side separately. The STU-C will maintain separate counts of the following performance parameters for the DS1 line to STU-C and the DS1 line to STU-R such as:

(1) Error Second (ES-DS1).
(2) Severely Error Second (SES-DS1).
(3) Unavailable Second (UAS-DS1).

The S1400 provide a certain number of registers for separately storing the following accumulated performance data for each DS1 line to the STU-C and to the STU-R.

(1) Current 15-minute period and at least 96 previous 15-minute periods of parameters –ES, SES and UAS

(2) Current 24-hour period and at least 7 previous 24-hour periods of parameters as described in ES, SES and UAS.

■ E1 Performance Monitoring:

The S1400 will also monitor the E1 signal from the network side and the customer side separately. The STU-C will maintain separate counts of the following performance parameters for the E1 line to STU-C and the E1 line to STU-R.

(1) Error Second (ES-E1).

(2) Severely Error Second (SES-E1).

(3) Unavailable Second (UAS-E1).

The S1400 provide a certain number of registers for separately storing the following accumulated performance data for each E1 line to the STU-C and to the STU-R.

(1) Current 15-minute period and at least 96 previous 15-minute periods of parameters as above - ES, SES and UAS.

(2) Current 24-hour period and at least 7 previous 24-hour periods of parameters as above - ES, SES and UAS.

5.2.2.1 Configuration–Interface–SHDSL

```
Interface                    TAINET SCORPIO 1400-DL            Version 3.09c
================================================================================
[SHDSL]   T1    E1     DATA
 Param    Far End    Near End      Threshold
```

```
SHDSL                        TAINET SCORPIO 1400-DL            Version 3.09c
================================================================================
[Param]   Far End    Near End      Threshold
 Set Power Parameter


                 Port 1
                 Power Backoff      [Enable ]
                 Power Scale        [0     ]
                 PSD                [Sym ]
                 4 Wire             [Off]
                 ANNEX_A_B          [A]
                 Unaligned mode      Disable
```

■ **Power Back-off:** When enabled, the transmit power from the other end of STU will be reduced in 1-dB step from 0 to 6dBs according to the received power. The configurable values are Enable or Disable.

■ **Power Scale:** The value of this argument adjusts power in small increments (fractions of a dB) to compensate for minor differences in power between testing units.

- **PSD:** Possible values are *Sym* and *Asym*. Used to let SHDSL transceiver to use a symmetrical or asymmetrical power spectral density mask as specified in G.991.2 standard.

- **4 Wire**: Used to enable or disable 4-wire framing.

- **ANNEX_A_B:** Used to select the local STU supporting G.991.2 Annex *A* or *B*.

- **Unaligned Mode:** Disable or Enable the Unaligned mode (*special version to compatible with **Alcatel** Mainstream 3600, this mode should be turned to disable).

```
SHDSL                    TAINET SCORPIO 1400-DL           Version 3.09c
====================================================================
Param    Far End   [Near End]   Threshold
Configure Near End Thresholds


                  SnrMgn Threshold    [3          ]
                  Atn Threshold       [38         ]
```

A TCA (Threshold Crossing Alert) will be reported if the SNR margin is lower, or if the Attenuation is higher than the set value. The TCA will be time-stamped and logged into local memory and in UNMS database. Users can configure the values of Far End and/or Near End.

- Threshold Crossing Notification

Threshold values of registers for current 15-minute and current 24-hour performance parameters of ES, SES and UAS that described in, as below, are settable. When the S1400 recognizes a threshold crossing for a given parameter, a threshold crossing notification will be generated and reported to CID and UNMS. All stored performance data will be accessible and cleared from the CID and UNMS.

```
SHDSL                    TAINET SCORPIO 1400-DL           Version 3.09c
====================================================================
Param     Far End    Near End   [Threshold]
Near End     Far End
```

```
Threshold                TAINET SCORPIO 1400-DL           Version 3.09c
====================================================================
[Near End]   Far End
Near End of SHDSL



                  15-minutes mode
                  LOSWS              [60        ]
                  ES                 [60        ]
                  SES                [60        ]
                  UAS                [60        ]
                  One-day mode
                  LOSWS              [300       ]
                  ES                 [300       ]
                  SES                [300       ]
                  UAS                [300       ]
```

There are four types of PM parameter thresholds for each combination of near end, far end, 15 minutes, and one day performance monitoring. A TCA will be issued whenever the monitored value has crosses the threshold setting.

The PM count of SHDSL can be cleared whenever desired. Please refer to section 5.3 for more detail operation.

5.2.2.2   Configuration–Interface–T1

```
T1                      TAINET SCORPIO 1400-DL         Version 3.09c
===================================================================
[Parameters]   Threshold
 Near End     Far End
```

```
Parameters              TAINET SCORPIO 1400-DL         Version 3.09c
===================================================================
[Near End]   Far End
 Configure T1 Near End Parameters




                  Configure T1 Parameters
                  LineType                [Framed(ESF)+CRC]
                  LineCoding              [B8ZS]
                  Idle Pattern            [0xff]
                  Cable Length            [Short Haul]
```

■   **LineType**: Possible values are *Framed (ESF)+CRC*, *Framed (ESF), Framed (SF)(D4)* and *Unframed*.

■   **LineCoding**: *AMI* or *B8ZS*

■   **Idle Pattern:** Sending pattern on the unused time slots. The possible values are *0x7f* and *0xff*.

■   **Cable Length**: Possible values are *Short Haul* and *Long Haul*. The T1 circuit provides the function of cable length (from 0 to 200 meters) compensation.

```
T1                      TAINET SCORPIO 1400-DL         Version 3.09c
===================================================================
 Parameters    [Threshold]
 Near End     Far End
```

```
Threshold               TAINET SCORPIO 1400-DL         Version 3.09c
===================================================================
[Near End]   Far End
 Near End of T1




                  15-minutes mode
                  ES                 [60        ]
                  SES                [60        ]
                  UAS                [60        ]
                  One-day mode
                  ES                 [300       ]
                  SES                [300       ]
                  UAS                [300       ]
```

The PM count of T1 can be cleared whenever desired. Please refer to section 5.3 for more detail operation.

5.2.2.3 Configuration–Interface–E1

```
E1                        TAINET SCORPIO 1400-DL          Version 3.09c
========================================================================
[Parameters]   Threshold
 Near End     Far End
```

```
Parameters                TAINET SCORPIO 1400-DL          Version 3.09c
========================================================================
[Near End]   Far End
 Near End of E1




                    Configure E1 Parameters
                    LineType                 [Framed_CRC   ]
                    Impedance                [Balance    ]
                    Idle Pattern             [0xff]
```

- **LineType**: Possible values are *Framed_CRC*, *Framed* (no CRC) and *Unframed*.
- **Impedance**: Normal 120 ohms resistive symmetrical (*Balance*) pair.
- **Idle Pattern:** Bit sending pattern in the unused time slots. The possible values are *0x7f* and *0xff*.

```
E1                        TAINET SCORPIO 1400-DL          Version 3.09c
========================================================================
 Parameters    [Threshold]
 Near End     Far End
```

```
Threshold                 TAINET SCORPIO 1400-DL          Version 3.09c
========================================================================
[Near End]   Far End
 Near End of E1




                    15-minutes mode
                    ES                       [60          ]
                    SES                      [60          ]
                    UAS                      [60          ]
                    One-day mode
                    ES                       [300         ]
                    SES                      [300         ]
                    UAS                      [300         ]
```

The PM count of E1 can be cleared whenever desired. Please refer to section 5.3 for more detail operation.

5.2.2.4   Configuration–Interface–DATA

```
DATA                   TAINET SCORPIO 1400-DL         Version 3.09c
==================================================================
[Parameters]
 Near End    Far End
```

```
Parameters             TAINET SCORPIO 1400-DL         Version 3.09c
==================================================================
[Near End]   Far End
 Near End of DATA




              Configure DATA Parameters
              DTEType                    [X21      ]
              exc-pin detect             [Enable ]
              Tx data inversion          [normal ]
              Rx data inversion          [normal ]
              Rx sample edge             [Rising ]
              CTS                        [Always On ]
```

- **DTE Type**: *V35, V36 / RS449, X21*, or *RS530.*

- **Exc-pin detect**: *enable* or *disable* the external clock pin detection of V.35 interface.

- **Tx/Rx data inversion**: *normal* or *inverse*. The V.35 interface of STU-R provides data inversion capability used to protect against the occurrence of low pulse density.

- **Rx sample edge**: *Rising* or *Falling*.

- **CTS**: Always ON (default) or Follow RTS of V.35 interface.

5.2.3   Configuration–Shdsl

5.2.3.1   Configuration–Shdsl–Parameters

```
Shdsl                  TAINET SCORPIO 1400-DL         Version 3.09c
==================================================================
[Parameters]   Timing
 Configure Modem Parameters




      Set Required Modem Type
      Required Modem Type of Near End          [CO-SHDSL-DATA ]
      Required Modem Type of Far End           [CPE-SHDSL-DATA]
      Required Modem Data Rate:Input(1~32 or 36)*64kbps  [32    ]
```

- **Required Modem Type:** To select the DTE interface type for near-end and far-end. The possible values are listed below:
  - CO-SHDSL-DATA
  - CO-SHDSL-E1
  - CO-SHDSL-T1
  - CPE-SHDSL-DATA

- CPE-SHDSL-E1
- CPE-SHDSL-T1.

■ **Required Modem Data Rate:** Configure the GSHDSL loop data rate (n*64Kbps), Select n=1~36 for 2 wires, n=1~72 for 4 wires.

5.2.3.2   Configuration-Shdsl-Timing

```
Shdsl                    TAINET SCORPIO 1400-DL          Version 3.09c
===============================================================================
Parameters   [Timing]
Set Timing Source


                      Timing Source of Near End    [line      ]
                      Timing Source of Far End     [dte       ]
```

There are four timing modes that can be selected from: *internal*, *line*, *dte* and *dte-hybrid*.

5.2.4   Configuration-Security

```
Configuration            TAINET SCORPIO 1400-DL          Version 3.09c
===============================================================================
System    Interface    Shdsl    [Security]
Security Configuration

          Console Port Password    [tainet ]
          Telnet Username          [tainet ]
          Telnet Password          [tainet ]
```

For security, users can define the password for console or telnet login.

5.3   Maintenance

After the pressed the "**Maintenance**" item on the top of main menu, there are four items on this maintenance page, *Alarm*, *Interface*, *SHDSL,* and *Test*.

```
Maintenance              TAINET SCORPIO 1400-DL          Version 3.09c
===============================================================================
[Alarm]    Interface    SHDSL    Test
 Alarm     Alarm Log    Clear Alarm Log
```

5.3.1   Maintenance-Alarm

```
Alarm                    TAINET SCORPIO 1400-DL           Version 3.09c
======================================================================
[Alarm]   Alarm Log    Clear Alarm Log
 View Real Time Alarm

    TYPE                     Class

1   DATA_LOS                 MAJOR
2   SHDSL(1)_FE_SNM_TRHD     WARNING
3   SHDSL(1)_SNM_TRHD        WARNING
4   SHDSL(1)_FE_ATN_TRHD     WARNING
5   SHDSL(1)_UAS_DAY_TRHD    WARNING
6   SHDSL(1)_UAS_QTR_TRHD    WARNING
7   SHDSL(1)_LOSWS_DAY_TRHD  WARNING
8   SHDSL(1)_LOSWS_QTR_TRHD  WARNING
9   SHDSL(1)_LOSW            MAJOR
```

■   **Alarm severity class:** Major, Minor, Warning or Clear

All TCA (Threshold Crossing Alert) are classified as WARNING. *Table 5-1* and *Table 5-2* show all SHDSL alarms and T1/E1 alarms, respectively. The Ds1/E1 alarm surveillance:

When "Loss of Signal Failure" is detected by either the STU-C, or the STU-R, a "loss of signal" alarm will be generated immediately, and the DS1/E1 signal will be replaced by the AIS signal towards the downstream locations and the RAI signal towards the upstream locations.

When the "loss of signal" of DS1/E1 status is occurred, an alarm will be generated.

When "Loss of Sync Defect (LOSW Defect)" or "Loss of Sync Word Failure (LOSW failure)" which defined in ITU-T G.991.2 section 9.2 is detected by either the STU-C or the STU-R, an "LOSW" alarm will be generated immediately.

When "LOSW" alarm occurs at the STU-C/STU-R locations, the STU-C/STU-R will replace the outgoing DS1/E1 signal towards the network/the customer by the AIS signal, respectively.

An SHDSL Loop Attenuation Defect or SNR Margin Defect alarm will be generated when the observed SHDSL Loop Attenuation Defect/ SNR Margin Defect is a level worse than the configured threshold.

Table 5-1 SHDSL Alarms Description

Alarm Type	*Severity Class*	*Description*
SHDSL_LOSW	MAJOR	Failure of LOSW
SHDSL_LOSWS_QTR_TRHD	WARNING	15-minute LOSW TCA
SHDSL_LOSWS_DAY_TRHD	WARNING	1-day LOSW TCA
SHDSL_ES_QTR_TRHD	WARNING	15-minute ES TCA

SHDSL_ES_DAY_TRHD	WARNING	1-day ES TCA
SHDSL_SES_QTR_TRHD	WARNING	15-minute SES TCA
SHDSL_SES_DAY_TRHD	WARNING	1-day SES TCA
SHDSL_UAS_QTR_TRHD	WARNING	15-minute UAS TCA
SHDSL_UAS_DAY_TRHD	WARNING	1-day UAS TCA
SHDSL_LOSWS_FE_QTR_TRHD	WARNING	15-minute FE LOSW TCA
SHDSL_LOSWS_FE_DAY_TRHD	WARNING	1-day FE LOSW TCA
SHDSL_ES_FE_QTR_TRHD	WARNING	15-minute FE ES TCA
SHDSL_ES_FE_DAY_TRHD	WARNING	1-day FE ES TCA
SHDSL_SES_FE_QTR_TRHD	WARNING	15-minute FE SES TCA
SHDSL_SES_FE_DAY_TRHD	WARNING	1-day FE SES TCA
SHDSL_UAS_FE_QTR_TRHD	WARNING	15-minute FE UAS TCA
SHDSL_UAS_FE_DAY_TRHD	WARNING	1-day FE UAS TCA
SHDSL_ATN_TRHD	WARNING	Attenuation TCA
SHDSL_FE_ATN_TRHD	WARNING	FE Attenuation TCA
SHDSL_SNM_TRHD	WARNING	SNR Margin TCA
SHDSL_FE_SNM_TRHD	WARNING	FE SNR Margin TCA

Table 5-2 T1/E1 Alarms Description

Alarm Type	*Severity Class*	*Description*
DSX1_LOS	MAJOR	Failure of LOS
DSX1_LOF	MAJOR	Failure of LOF
DSX1_AIS	MAJOR	Failure of AIS
DSX1_RAI	MINOR	Failure of RAI
DSX1_LOS_FE	MAJOR	Failure of FE LOS
DSX1_LOF_FE	MAJOR	Failure of FE LOF
DSX1_AIS_FE	MAJOR	Failure of FE AIS
DSX1_RAI_FE	MINOR	Failure of FE RAI
DSX1_ES_QTR_TRHD	WARNING	15-minute ES TCA
DSX1_ES_DAY_TRHD	WARNING	1-day ES TCA
DSX1_SES_QTR_TRHD	WARNING	15-minute SES TCA
DSX1_SES_DAY_TRHD	WARNING	1-day SES TCA
DSX1_UAS_QTR_TRHD	WARNING	15-minute UAS TCA
DSX1_UAS_DAY_TRHD	WARNING	1-day UAS TCA
DSX1_ES_FE_QTR_TRHD	WARNING	15-minute FE ES TCA
DSX1_ES_FE_DAY_TRHD	WARNING	1-day FE ES TCA
DSX1_SES_FE_QTR_TRHD	WARNING	15-minute FE SES TCA

DSX1_SES_FE_DAY_TRHD	WARNING	1-day FE SES TCA
DSX1_UAS_FE_QTR_TRHD	WARNING	15-minute FE UAS TCA
DSX1_UAS_FE_DAY_TRHD	WARNING	1-day FE UAS TCA

```
Alarm                       TAINET SCORPIO 1400-DL            Version 3.09c
==========================================================================
 Alarm   [Alarm Log]   Clear Alarm Log
 View Alarm Log

    TYPE                       PortNO. Class    Status  Date       Time

1   SHDSL(1)_UAS_QTR_TRHD      PORT1   WARNING  RAISED  20/40/4160  40:80:80
2   SHDSL(1)_LOSWS_QTR_TRHD    PORT1   WARNING  RAISED  20/40/4160  40:80:80
3   SHDSL(1)_UAS_QTR_TRHD      PORT1   WARNING  CLR     20/40/4160  40:80:80
4   SHDSL(1)_LOSWS_QTR_TRHD    PORT1   WARNING  CLR     20/40/4160  40:80:80
5   SHDSL(1)_UAS_DAY_TRHD      PORT1   WARNING  RAISED  20/40/4160  40:80:80
6   SHDSL(1)_LOSWS_DAY_TRHD    PORT1   WARNING  RAISED  20/40/4160  40:80:80
7   SHDSL(1)_UAS_QTR_TRHD      PORT1   WARNING  RAISED  20/40/4160  40:80:80
8   SHDSL(1)_LOSWS_QTR_TRHD    PORT1   WARNING  RAISED  20/40/4160  40:80:80
9   DATA_LOS                   PORT1   MAJOR    RAISED  20/40/4160  40:80:80
10  SHDSL(1)_FE_SNM_TRHD       PORT1   WARNING  RAISED  20/40/4160  40:80:80
11  SHDSL(1)_SNM_TRHD          PORT1   WARNING  RAISED  20/40/4160  40:80:80
12  SHDSL(1)_FE_ATN_TRHD       PORT1   WARNING  RAISED  20/40/4160  40:80:80
```

Up to 200 alarm historical records can be stored without the use UNMS. Many more can be logged in Database if UNMS is used. Wherever the "Clear Alarm Log" item can clear all alarm logs that exists.

```
Alarm                       TAINET SCORPIO 1400-DL            Version 3.09c
==========================================================================
 Alarm    Alarm Log   [Clear Alarm Log]
 Clear System Alarm Log




                      +-Clear ?--+
                      |<YES> NO  |
                      +----------+
```

5.3.2   Maintenance-Interface

```
Maintenance                 TAINET SCORPIO 1400-DL            Version 3.09c
==========================================================================
 Alarm   [Interface]   SHDSL    Test
 SHDSL    T1    E1
```

5.3.2.1　Maintenance-Interface-SHDSL

```
Interface                  TAINET SCORPIO 1400-DL           Version 3.09c
========================================================================
[SHDSL]   T1    E1
 Common    Far End    Near End    Performance
```

```
SHDSL                      TAINET SCORPIO 1400-DL           Version 3.09c
========================================================================
[Common]   Far End    Near End     Performance
 View Commom Status


                     Line Status(Port 1)    Handshaking
                     Line Status(Port 2)    Disconnect
                     Power Backoff          Enable
                     Power Scale            0
                     PSD                    Sym
                     4 Wire                 Off
                     ANNEX                  A
                     Unaligned mode         Disable_
```

The Common item of SHDSL in maintenance menu shows the current line status and configuration of SHDSL interface includes: Please refer to previous Section *Configuration-Interface-SHDSL* for the other parameters.

■　**Line Status:** The possible SHDSL operational states are "Idle_State", "Handshaking", "Training", "Sync Hunting", "Connected", "Disconnect", "Analog_Loopback", "Remote_Digital_Loopback", "Digital_Loopback", "Analog_Loopback_fail", "Remote_Digital_Loopback_fail", "Digital_Loopback_fail", "Port_disable", "Port_Has_Been_Reset", "Unknown_State".

```
SHDSL                      TAINET SCORPIO 1400-DL           Version 3.09c
========================================================================
 Common    Far End    [Near End]    Performance
 View Near End Line Status


                     DSL1
                     Current Atn            0
                     Current Snr Margin     0
                     Current Output Power   0
                     Receiver Gain          0
                     DSL2
                     Current Atn            0
                     Current Snr Margin     0
                     Current Output Power   0
                     Receiver Gain          0    _
```

```
Performance                TAINET SCORPIO 1400-DL           Version 3.09c
========================================================================
[Current 15Min]   Current Day    Last 96 Quarters   Last 7 Days    PM Clear
 Near End    Far End
```

```
Last 96 Quarters              TAINET SCORPIO 1400-DL              Version 3.09c
================================================================================
[Near End]    Far End
 View History of 15min Records


                      +-----Port-----+
                      |<PORT1> PORT2 |
                      +--------------+
```

Users can view any historical performance by selecting either port1 or port2 no matter near end or far end.

```
Last 96 Quarters              TAINET SCORPIO 1400-DL              Version 3.09c
================================================================================
[Near End]    Far End
 View History of 15min Records

      PortNO  ES          SES         UAS         LOSW

1     PORT1   0           0           900         900
2     PORT1   0           0           900         900
3     PORT1   0           0           900         900
4     PORT1   0           0           900         900
5     PORT1   0           0           900         900
6     PORT1   0           0           900         900
7     PORT1   0           0           900         900
8     PORT1   0           0           900         900
9     PORT1   0           0           900         900
10    PORT1   0           0           900         900
11    PORT1   0           0           900         900
12    PORT1   0           0           900         900
```

The PM count can be cleared whenever desired. By PM Clear item, selects ether near or far end and select time interval by current quarter, current day, history quarter or history day. Then select ports with confirmation "YES" to clear PM counts.

```
Performance                   TAINET SCORPIO 1400-DL              Version 3.09c
================================================================================
 Current 15Min    Current Day    Last 96 Quarters    Last 7 Days    [PM Clear]
 Near End     Far End
```

```
PM Clear                      TAINET SCORPIO 1400-DL              Version 3.09c
================================================================================
[Near End]    Far End
 Current Quarter    Current Day    History Quarter    History Day
```

```
Near End                      TAINET SCORPIO 1400-DL              Version 3.09c
================================================================================
[Current Quarter]   Current Day    History Quarter    History Day
 Clear Performance Data of Current Quarter




                      Clear Performance Data of Quarter
                      NEAR END
                      Clear Port 1:                    [Yes]
                      Clear Port 2:                    [Yes]
```

■ **Current Quarter**: The PM parameter count in seconds of the current 15-minute period.

- **Current Day**: The PM parameter count in seconds of current 1-day period.
- **History Quarter**: Stores up to the 96 of the latest 15-minute PM parameter count records.
- **History Day:** Store up to the 7 of the latest one-day PM parameter count records.

5.3.2.2   Maintenance-Interface-T1

```
T1                      TAINET SCORPIO 1400-DL             Version 3.09c
==============================================================================
[Performance]
 Current 15Min    Current Day    Last 96 Quarters    Last 7 Days    PM Clear
```

The Maintenance-interface-T1 and Maintenance-interface-E1 have similar description as Maintenance-interface-SHDSL. Please refer to previous topic Maintenance-interface-SHDSL for detail.

5.3.2.3   Maintenance-Interface-E1

```
E1                      TAINET SCORPIO 1400-DL             Version 3.09c
==============================================================================
[Performance]
 Current 15Min    Current Day    Last 96 Quarters    Last 7 Days    PM Clear
```

5.3.3   Maintenance-SHDSL

The Maintenance-SHDSL items help user to check the device version information, Modem status and the front panel LED status.

```
SHDSL                   TAINET SCORPIO 1400-DL             Version 3.09c
==============================================================================
[Version Info]    Modem Status     Led Status
 Version Information
```

```
SHDSL                   TAINET SCORPIO 1400-DL             Version 3.09c
==============================================================================
[Version Info]    Modem Status     Led Status
 Version Information


                    Software Version    3.09c
                    FPGA Version        2.00
```

```
SHDSL                   TAINET SCORPIO 1400-DL                 Version 3.09c
===============================================================================
 Version Info    [Modem Status]   Led Status
 Modem Status


                    Actual Near End Modem Type      CO-SHDSL-DATA
                    Actual Far End Modem Type        CPE-SHDSL-DATA
                    Near End Timing Source          line
                    Far End Timing Source           dte
                    Data Rate                       2048 _
```

```
SHDSL                   TAINET SCORPIO 1400-DL                 Version 3.09c
===============================================================================
 Version Info    Modem Status    [Led Status]
 Led Status


                    LED Status: DSL         Green-Flash
                    LED Status: DTE1        Inactive
                    LED Status: DTE2        Green-Flash
                    LED Status: ALARM       Red-Flash
                    LED Status: TEST        Inactive     _
```

5.3.4   Maintenance-test

5.3.4.1   Maintenance-Test-Loopback

For test and diagnostic purpose the S1400 system provides various Loopback paths,
which are depicted in *Figure 5-1* and *Figure 5-2*. They are Near End Loopback, Local
Loopback, Remote Loopback and Remote Payload Loopback.

The NLB(Near End Loopback) capability will be set up inside STU-C/STU-R as close
as possible to the network side /customer side interfaces. The NLB is capable of control
(activation and deactivation) by UNMS and CID. An all one' signal, or AIS, or the
received signal will be sent to the loop during the NLB is activated.

The local loopback capability will be set up inside STU-C/STU-R as close as possible
to the loop interfaces. The local loopback is capable of control (activation and
deactivation) by UNMS and CID. A framed all ones pattern, other codes, or the
received signal will be sent to the loop during local loopback.

The RLB(Remote Loopback) is able to be activated and deactivated through EOC via
CID and UNMS interfaces. This loopback is used for checking the loop and transceiver
units of STU-C/STU-R. A suitable signal will be sent towards the customer side
/network side interface during the RLB loopback.

The PLB (Remote Payload Loopback) is able to be activated and deactivated through
EOC via CID and UNMS, and be set up inside STU-C/STU-R as close as possible to
the network side customer side interfaces. A suitable signal will be sent towards the
customer side/network side during the PLB loopback. The PLB of V.35 interface can

also be activated and deactivated by in band signal and the procedure and codewords will comply with ITU-T V.54.

For V.35 interface STU-R, the ITU-T V.54 in band activated and deactivated loopback codewords provided by S1400 for end-to-end loopback function.

For each STU-C and STU-R, the built-in PRBS (11-stage or higher) generation and detection will be provided for loopback performance test on a per channel basis. Test results will be displayed.

The S1400 has push buttons that provide interface for control loopback defined as above and display the historical log of alarm, performance information, provisioning parameters and loopback test status on front panel LCD.

Note:

Since S1400can be set as CO or CPE, in different type playing, there are different loopback type could be configured. When it is set as CO, all remote loopback types will display the (N/A). It means the item can't be applied, vice versa. When it is set as CPE, all CO loopback types will display the (N/A). It means the item can't be applied. "RT" is represented as remote。
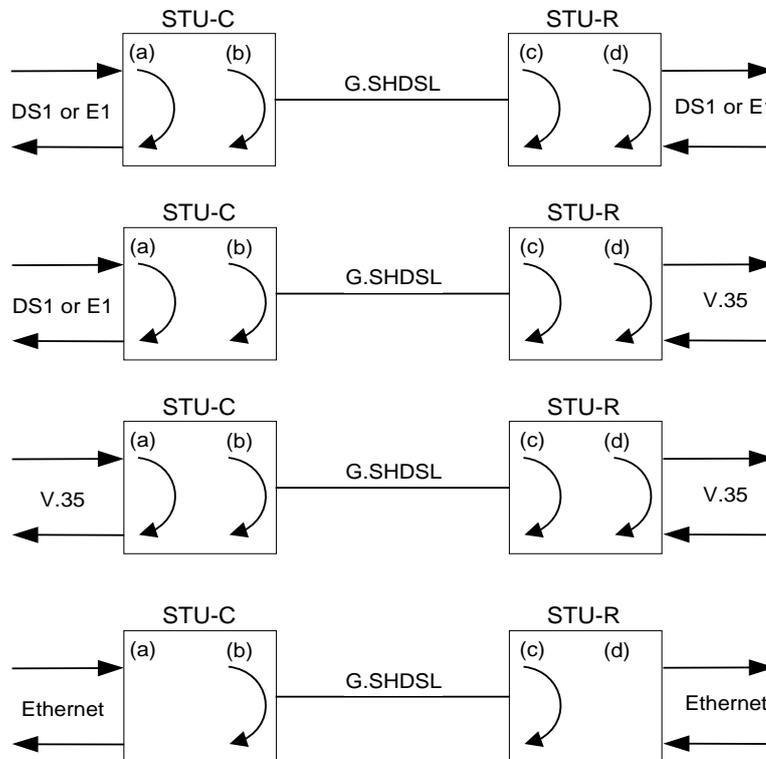
Figure 5-1 STU-C Side Activated Loopback
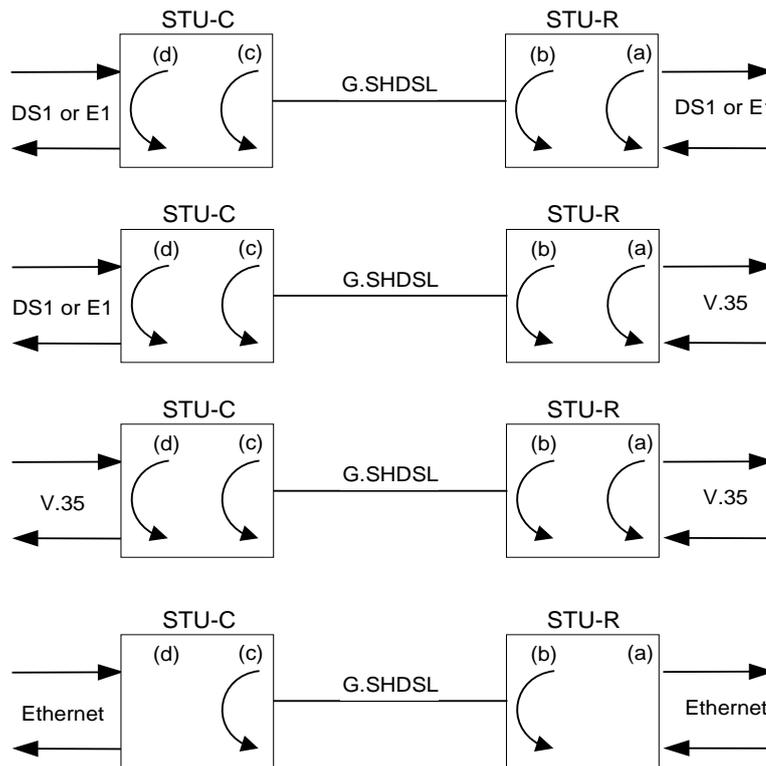
Figure 5-2 STU-R Side Activated Loopback

```
Test                        TAINET SCORPIO 1400-DL            Version 3.09c
===========================================================================
[Pattern test]   V.54 Test
 Pattern test


           Port1
      Loopback Test     [Normal                              ]
      Test Pattern      [None  ]
      Test Direction    [SHDSL    ]
      Test Period       [100      ]
      Test Start        [STOP ]
```

■   **Loopback Test**:

Possible values on CO device are:	Possible values on CPE device are:
• Normal	• Normal
• 1. CO Local Loopback	• 1. (N/A) CO Local Loopback
• 2. CO Local PayLoad Loopback	• 2. (N/A) CO Local PayLoad Loopback
• 3. (N/A) RT Remote Loopback	• 3. RT Remote Loopback
• 4. (N/A) RT Remote PayLoad Loopback	• 4. RT Remote PayLoad Loopback
• 5. (N/A) RT Local Loopback	• 5. RT Local Loopback
• 6. (N/A) RT Local PayLoad Loopback	• 6. RT Local PayLoad Loopback
• 7. CO Remote Loopback	• 7. (N/A) CO Remote Loopback
• 8. CO Remote PayLoad Loopback	• 8. (N/A) CO Remote PayLoad Loopback

** Where the "(N/A)" items are not selectable when device stands for CO or CPE.

5.3.4.2   Maintenance-Test-pattern test

```
Test                          TAINET SCORPIO 1400-DL            Version 3.09c
===============================================================================
[Pattern test]   V.54 Test
 Pattern test



            Port1
         Loopback Test      [Normal                            ]
         Test Pattern       [None  ]
         Test Direction     [SHDSL    ]
         Test Period        [100       ]
         Test Start         [STOP ]
```

■   **Test Pattern**: Generate test pattern. Possible values are *2E11-1*, *2E15-1*, *QRSS*, *2E20-1* and *2E23-1*.

■   **Test Direction:** The direction the pattern is sent to. Possible values are *SHDSL* and *Interface*.

■   **Test Period:** The period unit is second, User can set to 99999999 sec.

■   **Test Start:** To start or stop sending the test pattern. Possible values are *START* and *STOP*.

5.3.4.3   Maintenance-Test-V.54 Test

```
Test                          TAINET SCORPIO 1400-DL            Version 3.09c
===============================================================================
 Pattern test    [V.54 Test]
 V.54 Parameters     V.54 Generator
```

In addition to loopback test function described in *Figure 5-1* and *Figure 5-2* the S1000 / S1400 supports V.54 in-band signal to activate and deactivate PLB. The sophisticated addressing capability enables network operator to isolate trouble node by node and from end to end. The procedure and code words comply with ITU-T V.54.

There are various testing methods supported by the S1000 / 1400 as depicted in *Figure 5-3*. Each node in the T1/E1 traffic path has a unique address, which is configured by the system operator, so the node to be looped back can be identified. Testing pattern can be generated after the loopback is activated. The test result can be notified on the CID or UNMS as "V54 Loopback Test (Address 0x03) OK!!" or "V54 Loopback Test (Address 0x03) FAIL!!"
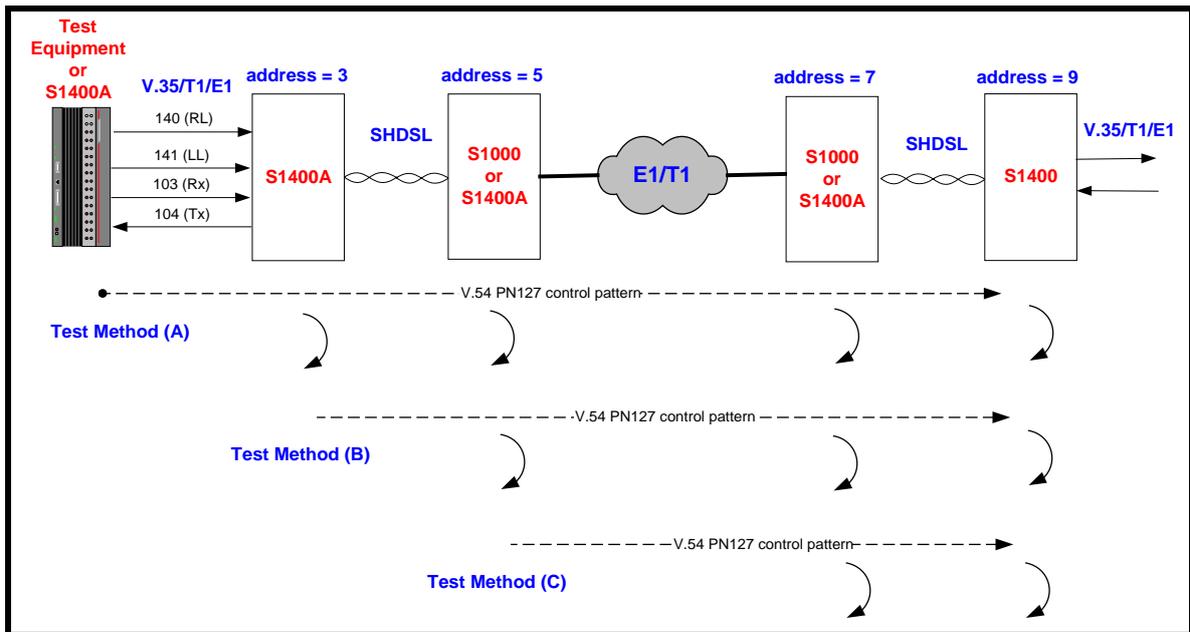
Figure 5-3 Testing Methods of V.54 Loopback Control

```
V.54 Test                  TAINET SCORPIO 1400-DL        Version 3.09c
===============================================================================
[V.54 Parameters]   V.54 Generator
 Configure V.54 Parameters


                 V.54 Enable           [V54 PATTERN Enable ]
                 V.54 address mode      [Disable]
                 V.54 Near End Address  [0x03]
                 V.54 Far End Address   [0x03]
```

```
V.54 Test                  TAINET SCORPIO 1400-DL        Version 3.09c
===============================================================================
 V.54 Parameters   [V.54 Generator]
 V.54 Start/Stop Test


                 V.54 Mode        [STOP V54 LOOPBACK ]
                 V.54 Direction   [SHDSL     ]
                 V.54 Address     [0x03]
```

- ■ **V.54 Mode**: *START V54 LOOPBACK* or *STOP V54 LOOPBACK*

- ■ **V.54 Direction**: *SHDSL* or *Interface*

- ■ **V.54 Address**: Possible addresses as defined by standard:
  "0x01","0x03","0x05","0x07","0x09","0x0B","0x0D","0x0F","0x11",
  "0x13","0x15","0x17","0x19","0x1B","0x1D","0x1F","0x25","0x27",
  "0x2B","0x2D","0x2F","0x33","0x35","0x37","0x3B","0x3D",
  "0x3F","0x55","0x57","0x5B","0x5F","0x6F","0x77","0x7F"

5.4   Software Download

```
MAIN                      TAINET SCORPIO 1400-DL             Version 3.09c
==========================================================================
 Configuration    Maintenance   [Software Download]   Diagnosis
 Download Software From TFTP Server


                    Server IP Address    [172.16.1.108   ]
                    File Name            [1400DL.img          ]
                    Start Downloading    [Yes]
                          +-confirm?-+
                          |<YES> NO  |
                          +----------+
```

TFTP software upgrade is supported. Users can specify the IP address of TFTP server and file name for downloading.

5.5   Diagnosis

```
MAIN                      TAINET SCORPIO 1400-DL             Version 3.09c
==========================================================================
 Configuration    Maintenance    Software Download    [Diagnosis]
 Trouble Shooting Menu

```

```
Diagnosis                 TAINET SCORPIO 1400-DL             Version 3.09c
==========================================================================
[Trouble Shooting Menu]
 View System Debug Messages
debug>_
```

The "Diagnosis" is used by expert engineer for the purpose of troubleshooting. To press the "Q" key can help user to quit the debug mode. Users may ignore it if users are not so familiar with it.

Appendix A Ordering Information

Table A-1 is the order information for your reference.

Table A-1 Order Information

Product Code	*Ordering No.*	*Description*
		Scorpio 1400 SHDSL Modem/ NTU/ Router with LCD Panel
000-101-0048	Scorpio 1400DL/4W /AC+DC/$/?	4-wire SHDSL standalone unit with LCD and keypad operation panel, with built-in AC and DC power module, with software configurable on-board data circuit supporting V.35 / V.36 / RS-530 /X.21 interfaces (DTE2); additional optional DTE1 interface can be ordered separately;
000-101-0049	Scorpio 1400RL/4W /AC+DC/?	4-wire SHDSL standalone unit with LCD and keypad operation panel, with built-in AC and DC power module, with Ethernet interface.
000-101-0053	Scorpio 1400/4W /AC/&/?	4-wire SHDSL standalone unit with LCD and keypad operation panel, with built-in AC power module, support various DTE interface module (DTE1 or DTE2) to be specified separately;
000-101-0054	Scorpio 1400/4W /DC/&	4-wire SHDSL standalone unit with LCD and keypad operation panel, with built-in DC power module, support various DTE interface module (DTE1 or DTE2) to be specified separately;
000-101-0055	Scorpio 1400/4W /AC+DC/&/?	4-wire SHDSL standalone unit with LCD and keypad operation panel, with built-in AC and DC power module, support various DTE interface module (DTE1 or DTE2) to be specified separately;
000-101-0056	Scorpio 1400 /AC+DC/&/?	2-wire SHDSL standalone unit with LCD and keypad operation panel, with built-in AC and DC power module, support various DTE interface module (DTE1 or DTE2) to be specified separately;
000-101-0057	Scorpio 1400 /AC/&/?	2-wire SHDSL standalone unit with LCD and keypad operation panel, with built-in AC power module, support various DTE interface module (DTE1 or DTE2) to be specified separately;
000-101-0058	Scorpio 1400 /DC/&	2-wire SHDSL standalone unit with LCD and keypad operation panel, with built-in DC power module, support various DTE interface module (DTE1 or DTE2) to be specified separately;
000-101-0059	Scorpio 1400RL/4W /AC/?	4-wire SHDSL standalone unit with LCD and keypad operation panel, with Ethernet interface, with built-in AC power module;

000-101-0060	Scorpio 1400RL/4W /DC	4-wire SHDSL standalone unit with LCD and keypad operation panel, with Ethernet interface, with built-in DC power module;
000-101-0061	Scorpio 1400RL/4W /AC/?	2-wire SHDSL standalone unit with LCD and keypad operation panel, with Ethernet interface, with built-in AC power module;
000-101-0062	Scorpio 1400RL/4W /DC	2-wire SHDSL standalone unit with LCD and keypad operation panel, with Ethernet interface, with built-in DC power module;
000-101-0084	Scorpio 1400 /AC/F/&/?	2-wire SHDSL standalone unit with LCD and keypad operation panel, with build-in -36 ~ -72VDC power module, support various DTE interface module (DTE1 or DTE2) to be specified separately. (for Alcatel), F：FPGA gate count XC2S10 that help S1400 compatible with Alcatel Mainstream 3600.
000-101-0085	Scorpio 1400 /DC/F/&/?	2-wire SHDSL standalone unit with LCD and keypad operation panel, with build-in -36 ~ -72VDC power module, support various DTE interface module (DTE1 or DTE2) to be specified separately. (for Alcatel), F：FPGA gate count XC2S100 that help S1400 compatible with Alcatel Mainstream 3600.
000-101-0086	Scorpio 1400 /AC+DC/F/&/?	2-wire SHDSL standalone unit with LCD and keypad operation panel, with built-in AC and DC power module, support variable interfaces (DTE1 or DTE2)(for ALCATEL), F: FPGA gate count XC2S100 that help S1400 compatible with Alcatel Mainstream 3600.

	/>	Specify adapt cable
330-100-0002	/DB25M-M34F	DB-25 to M34 adapt cable, it is included in the S1400A and S1400D;
330-100-0004	/DB25M-DB37F	EIA530~RS449, DB25(Male)~DB37(Female) 35cm 26AWG
330-100-0023	/DB25M-15F	V.24~X.21, DB25(M) ~ DB15(F) 20cm 26AWG

	/&	Specify DTE1 or DTE2 interface module
000-075-0089	/V35-1G	V.35 w/ FIFO, w/ DB25-male to M34-female adaptor cable, for DTE2
000-075-0010	/RS530-1F	RS-530 w/ FIFO, female, for DTE2
000-075-0011	/X21-1F	X.21 w/ FIFO; w/ DB25-male to DB15-female adaptor cable, for DTE2
000-101-0052	/E1T1	E1/T1 interface card, for DTE1

	/$	Specify DTE1 interface

000-101-0052	/E1T1	E1/T1 interface card, for DTE1

	/?	Specify power cord
330-010-0001	/A	North American power cord, 3-pin, 10A/125V, 6 feet
330-010-0002	/E	European power cord, 3-pin (round pin), 10A/250V, 1.83M
330-010-0003	/B	British power cord, 3-pin, 10A/250V, 13A fuse
330-010-0006	/I	India power cord, 3-pin, 6A/250V, 1.83M
330-010-0007	/C	China power cord, 3-pin, 10A/250V, 1.83M

Appendix B   Menu Tree

The menu tree of LCD screen is shown in *Table B-1*. The default value of each parameter is also listed for users' reference.

Table B-1 LCD Menu Tree

Tier 1 / Tier 2	Tier 3	Tier 4	Tier 5	Default Value
Configuration/System	IP			**192.168.1.1**
	NetMask			**255.255.255.0**
	Default Gateway			**192.168.1.254**
	Trap IP			**210.65.231.120**
	LCD Backlight	Enable		<
		Disable		
	Reboot	Enable		
		Disable		<
Configuration/Modem	Modem Type	CPE-SHDSL-E1		<
		CPE-SHDSL-T1		
		CO-SHDSL-DATA		
		CO-SHDSL-E1		
		CO-SHDSL-T1		
		CPE-SHDSL-DATA		
	RM Modem Type	CPE-SHDSL-DATA		<
		CPE-SHDSL-E1		
		CPE-SHDSL-T1		
		CO-SHDSL-LAN		
		CPE-SHDSL-LAN		
		CO-MERCURY		
		CPE-MERCURY		
		CO-SHDSL-DATA		
		CO-SHDSL-E1		
		CO-SHDSL-T1		
	Data Rate	1,2,3,4…..72		**31**
	Timing	Internal		<
		dte		

Tier 1 / Tier 2	Tier 3	Tier 4	Tier 5	Default Value
		Dte-hybrid		
		Line		
Configuration/Interface	SHDSL	Power Back-off	Enable	<
			Disable	
		Power Scale	0,1,2,3…10	**0**
		PSD	Sym	<
			Asym	
		4 WIRE	On	
			Off	<
		ANNEX_A_B	A	<
			B	
	T1	Line Type	Unframed	
			Framed(ESF)+CRC	
			Framed(ESF)	<
			Framed(SF)(D4)	
		Line Coding	B8zs	<
			AMI	
		Idle pattern	0xff	<
			0x7f	
		Cable Length	Short Haul	<
			Long Haul	
	E1	Line Type	Unframed	
			Framed(CRC)	<
			Framed(no CRC)	
		Impedance	Balance	<
			Unbalance	
		Idle pattern	0xff	<
			0x7f	
	DATA	DTE Type	V35	<
			V36/RS449	
			Rs530	
			X21	
		Exc-pin detect	Enable	<
			Disable	

Tier 1 / Tier 2	Tier 3	Tier 4	Tier 5	Default Value
		Tx data inver	normal	<
			inverse	
		Rx data inver	normal	<
			inverse	
		Rx sample edge	Rising	<
			Falling	
Status/SW Version				**3.09c**
Status/FPGA				**2.00**
Status/Modem Status	DSL1 Atn			
	DSL1 Snr Marg			
	DSL1 Power			
	DSL1 Rec. Gain			
	DSL2 Atn			
	DSL2 Snr Marg			
	DSL2 Power			
	DSL2 Rec. Gain			
Status/Alarm	*All the alarm descriptions, Please refer to Table 5-1 and Table 5-2*			1 DATA_LOS MA 2 DSL1_ATN_FT W 3 DSL1_UAS_FDTW 4 DSL1_LOS_FDTW 5 DSL1_UAS_DT W 6 DSL1_UAS_QT W 7 DSL1_LSW_DT W 8 DSL1_LOS_QT W 9 DSL1_LOSW MA
Status/ Performance	DSL 15 MIN ES			**0**
	DSL 15 MIN SES			**0**
	DSL 15 MIN UAS			**0**
	DSL 1 Day ES			**0**
	DSL 1 Day SES			**0**
	DSL 1 Day UAS			**0**
	E1 15 MIN ES			**0**

Tier 1 / Tier 2	Tier 3	Tier 4	Tier 5	Default Value
	E1 15 MIN SES			**0**
	E1 15 MIN UAS			**0**
	E1 1 Day ES			**0**
	E1 1 Day SES			**0**
	E1 1 Day UAS			**0**
	T1 15 MIN ES			**0**
	T1 15 MIN SES			**0**
	T1 15 MIN UAS			**0**
	T1 1 Day ES			**0**
	T1 1 Day SES			**0**
	T1 1 Day UAS			**0**
Test/Loopback	Normal			<
	1. CO LL	It will display (N/A)	If it is set as CPE	
	2. CO LPL	It will display (N/A)	If it is set as CPE	
	3. RT RL	It will display (N/A)	If it is set as CO	
	4. RT RPL	It will display (N/A)	If it is set as CO	
	5. RT LL	It will display (N/A)	If it is set as CO	
	6. RT LPL	It will display (N/A)	If it is set as CO	
	7. CO RL	It will display (N/A)	If it is set as CPE	
	8. CO RPL	It will display (N/A)	If it is set as CPE	
Test/ Pattern test	None			<
	Test Patten	2E11-1		
		2E15-1		
		QRSS		
		2E20-1		
		2E23-1		
	Test Direction	SHDSL		<
		Interface	(Except Ethernet)	

Tier 1 / Tier 2	Tier 3	Tier 4	Tier 5	Default Value
	Test Start	Start		
		Stop		<
	Test Status	Error Count		**0**
		Elapsed Time		**0**
		Bit Count		**0**
		Error Time		**0**
Security/ Password Edit	14001400			**14001400**
Security/ Front Lock	Enable			<
	Disable			

In addition to LCD menu tree, there is a VT-100 menu tree for CID port used. Both of them are almost the same but a little bit different. As the detail descriptions for each menu, please refer to the chapter 5. The tree structure is as follow for reference:

Table B-2 Scorpio 1400 VT-100 Menu Tree

Tier 1 / Tier 2	Tier 3	Tier 4	Tier 5	Tier 6	Tier 7	Default Value
Configuration /System	IP	IP Address				**192.168.1.1**
		Netmask				**255.255.255.0**
		Default Gateway				**192.168.1.254**
	Trap Ip	Trap IP address				**210.65.231.120**
		Trap IP Status				**Inactive**
	Date Time	Year				**4160**
		Month				**20**
		Day				**40**
		Hour				**40**
		Minute				**80**
		Second				**80**
	Default	Yes				**<**
		No				
	Reboot	Yes				**<**
		No				
Configuration /Interface	SHDSL	Param	Power Backoff	Enable		**<**
				Disable		
			Power Scale	0,1,2,…..10		**0**
			PSD	Sym		**<**
				Asym		
			4 WIRE	Off		**<**
				On		
			ANNEX_A_B	A		**<**
				B		
			Unaligned mode	Disable		**<**
				Enable		
		Far End	SnrMgn Threshold			**0**
			Atn Threshold			**35db**
		Near End	SnrMgn Threshold			**3**
			Atn Threshold			**38db**
		Threshold	Near End	(LOSW)	<mode>	**Mode:15min 60** **Mode:day 300**
				(ES)		**Mode: 15min 60** **Mode: day 300**
				(SES)		**Mode: 15min 60** **Mode: day 300**
				(UAS)		**Mode: 15min 60** **Mode: day 300**

Tier 1 / Tier 2	Tier 3	Tier 4	Tier 5	Tier 6	Tier 7	Default Value
			Far End	(LOSW)		**Mode:15min 60** **Mode:day 300**
				(ES)		**Mode:15min 60** **Mode: day 300**
				(SES)		**Mode: 15min 60** **Mode: day 300**
				(UAS)		**Mode: 15min 60** **Mode: day 300**
	T1	Parameter	Near End	(Line Type)	Unframed Framed (ESF) + CRC Framed (noCRC) Framed (SF) (D4)	**Unframed**
				(Line Coding)	AMI,B8ZS	**B8ZS**
				(Idle Patten)	0x7f, 0xff	**0xff**
				(Cable Length)	Short haul, long haul	**Short haul**
			Far End	(Line Type)	Unframed Framed (ESF) + CRC Framed (noCRC) Framed (SF) (D4)	**Unframed**
				(Line Coding)	AMI,B8ZS	**B8ZS**
				(Idle Patten)	0x7f, 0xff	**0xff**
				(Cable Length)	Short haul, long haul	**Short haul**
		Threshold	Near End	(ES)		**Mode: 15min 60** **Mode: day 300**
				(SES)		**Mode: 15min 60** **Mode: day 300**
				(UAS)		**Mode: 15min 60** **Mode: day 300**
			Far End	(ES)		**Mode:15min 60** **Mode: day 300**
				(SES)		**Mode: 15min 60** **Mode: day 300**
				(UAS)		**Mode: 15min 60** **Mode: day 300**

Tier 1 / Tier 2	Tier 3	Tier 4	Tier 5	Tier 6	Tier 7	Default Value
	E1	Parameter	Near End	(Line Type)	Unframed Framed_CRC Framed (no CRC)	**Unframed**
				(Impedance)	Unbalance Balance	**Balance**
				(IDLE PATTEN)	0xff, 0x7f	**0xff,**
			Far End	(Line Type)	Unframed Framed_CRC Framed (no CRC)	**Unframed**
				(Impedance)	Unbalance Balance	**Balance**
				(IDLE PATTEN)	0xff, 0x7f	**0xff**
		Threshold	Near End	(ES)	<slot>	**Mode: 15min 60** **Mode: day 300**
				(SES)		**Mode: 15min 60** **Mode: day 300**
				(UAS)		**Mode: 15min 60** **Mode: day 300**
			Far End	(ES)	<slot>	**Mode: 15min 60** **Mode: day 300**
				(SES)		**Mode: 15min 60** **Mode: day 300**
				(UAS)		**Mode: 15min 60** **Mode: day 300**
	DATA	Parameters	Near End	(DTE Type) <slot, port>	V35, V36/RS449, RS530 X21	**V35**
				(exc-pin detect)	Enable, Disable	**Enable**
				(Tx data inversion)	Normal, Inverter	**Normal**
				(Rx data inversion)	Normal, Inverter	**Normal**
				(Rx sample edge)	Rising, Falling	**Rising**
				(CTS)	Always ON, Follow RTS	**Always ON**
			Far End	(DTE Type) <slot, port>	V35, V36/RS449, RS530 X21	**X.21**
				(exc-pin detect)	Enable, Disable	**Enable**
				(Tx data inversion)	Normal, Inverter	**Normal**

Tier 1 / Tier 2	Tier 3	Tier 4	Tier 5	Tier 6	Tier 7	Default Value
				(Rx data inversion)	Normal, Inverter	**Normal**
				(Rx sample edge)	Rising, Falling	**Rising**
				(CTS)	Always On, Follow RTS	**Always ON**
Configuration /Shdsl	Parameter	(Required Modem Type of Near End)	CO-SHDSL-DATA CO-SHDSL-E1 CO-SHDSL-T1 CPE-SHDSL-DATA CPE-SHDSL-E1 CPE-SHDSL-T1			**CPE-SHDSL-E1**
		(Required Modem Type of Far End)	CO-SHDSL-DATA CO-SHDSL-E1 CO-SHDSL-T1 CPE-SHDSL-DATA CPE-SHDSL-E1 CPE-SHDSL-T1			**CPE-SHDSL-Data**
		(Required Modem Data Rate: Input(1~32 or 36)*64Kbps)				**31**
	Timing	(Time source of Near End)	<line, internal, dte, dte-hybrid>			**Internal**
		(Timer source of Far End)	<line, internal, dte, dte-hybrid>			**DTE**
Configuration /Security	(Console: Password) (Telnet: User Name, Password)					**<"tainet">** **<"tainet", "tainet">**
Maintenance /Alarm	Alarm					
	AlarmLog					
	Clean Alarm Log	Yes				**<**
		No				
Maintenance /Interface	SHDSL	Common	(LineStatus (Port1))			
			(LineStatus (Port2))			
			(PowerBackoff)			
			(PowerScale)			
			(PSD)			
			(4 WIRE)			
			(ANNEX_A_B)			
			(Unaligned mode)			
		Far End	Port1(Current Atn)			
			Port1 (CurrentSnrMgn)			
			Port1 (CurrentOutputPower)			

Tier 1 / Tier 2	Tier 3	Tier 4	Tier 5	Tier 6	Tier 7	Default Value
			Port1 (ReceiverGain)			
			Port2 (Current Atn)			
			Port2 (CurrentSnrMgn)			
			Port2 (CurrentOutputPower)			
			Port2 (ReceiverGain)			
		Near End	Port1 (CurrentAtn)			
			Port1 (CurrentSnrMgn)			
			Port1 (CurrentOutputPower)			
			Port1 (ReceiverGain)			
			Port2 (CurrentAtn)			
			Port2 (CurrentSnrMgn)			
			Port2 (CurrentOutputPower)			
			Port2 (ReceiverGain)			
		Performance	Current 15Min	Near End	(PortNo)	
					(Time Elapsed)	
					(ES)	
					(SES)	
					(UAS)	
					(LOSW)	
				Far End	(PortNO)	
					(Time Elapsed)	
					(ES)	
					(SES)	
					(UAS)	
					(LOSW)	
			Current Day	Near End	(TimeElapsed)	
					(ES)	
					(SES)	
					(UAS)	
					(LOSW)	
				Far End	(TimeElapsed)	
					(ES)	
					(SES)	
					(UAS)	
					(LOSW)	

Tier 1 / Tier 2	Tier 3	Tier 4	Tier 5	Tier 6	Tier 7	Default Value
			Last 96 Quarters	Port1		
				Near End	(ES)	
					(SES)	
					(UAS)	
					(LOSW)	
				Far End	(ES)	
					(SES)	
					(UAS)	
					(LOSW)	
				Port2		
				Near End	(ES)	
					(SES)	
					(UAS)	
					(LOSW)	
				Far End	(ES)	
					(SES)	
					(UAS)	
					(LOSW)	
			Last 7 Day	Port1		
				Near End	(ES)	
					(SES)	
					(UAS)	
					(LOSW)	
				Far End	(ES)	
					(SES)	
					(UAS)	
					(LOSW)	
				Port2		
				Near End	(ES)	
					(SES)	
					(UAS)	
					(LOSW)	
				Far End	(ES)	
					(SES)	
					(UAS)	
					(LOSW)	
			PM Clear	Near End	Current Quarter	**Clear Port 1 (No)** **Clear Port 2 (No)**
					Current Day	**Clear Port 1 (No)** **Clear Port 2 (No)**
					History Quarter	**Clear Port 1 (No)** **Clear Port 2 (No)**
					History Day	**Clear Port 1 (No)** **Clear Port 2 (No)**

Tier 1 / Tier 2	Tier 3	Tier 4	Tier 5	Tier 6	Tier 7	Default Value
				Far End	Current Quarter	**Clear Port 1 (No)** **Clear Port 2 (No)**
					Current Day	**Clear Port 1 (No)** **Clear Port 2 (No)**
					History Quarter	**Clear Port 1 (No)** **Clear Port 2 (No)**
					History Day	**Clear Port 1 (No)** **Clear Port 2 (No)**
	T1	Performance	Current 15Min	NearEnd	(TimeElapsed)	
					(ES)	
					(SES)	
					(UAS)	
				FarEnd	(TimeElapsed)	
					(ES)	
					(SES)	
					(UAS)	
			Current Day	Near End	(Time Elapsed)	
					(ES)	
					(SES)	
					(UAS)	
				Far End	(Time Elapsed)	
					(ES)	
					(SES)	
					(UAS)	
			Last 96 Quarters	Near End	(ES)	
					(SES)	
					(UAS)	
				Far End	(ES)	
					(SES)	
					(UAS)	
			Last 7 day	Near End	(ES)	
					(SES)	
					(UAS)	
				Far End	(ES)	
					(SES)	
					(UAS)	
			PM Clear	Near End	Current Quarter	**Clear (No)**
					Current Day	**Clear (No)**
					History Quarter	**Clear (No)**
					History Day	**Clear (No)**

Tier 1 / Tier 2	Tier 3	Tier 4	Tier 5	Tier 6	Tier 7	Default Value
				Far End	Current Quarter	**Clear (No)**
					Current Day	**Clear (No)**
					History Quarter	**Clear (No)**
					History Day	**Clear (No)**
	E1	Performance	Current 15 Min	Near End	(TimeElapsed)	
					(ES)	
					(SES)	
					(UAS)	
				Far End	(TimeElapsed)	
					(ES)	
					(SES)	
					(UAS)	
			Current Day	Near End	(Time Elapsed)	
					(ES)	
					(SES)	
					(UAS)	
				Far End	(Time Elapsed)	
					(ES)	
					(SES)	
					(UAS)	
			Last 96 Quarters	Near End	(ES)	
					(SES)	
					(UAS)	
				Far End	(ES)	
					(SES)	
					(UAS)	
			Last 7 Day	Near End	(ES)	
					(SES)	
					(UAS)	
				Far End	(ES)	
					(SES)	
					(UAS)	
			PM Clear	Near End	Current Quarter	**Clear (No)**
					Current Day	**Clear (No)**
					History Quarter	**Clear (No)**
					History Day	**Clear (No)**
				Far End	Current Quarter	**Clear (No)**

Tier 1 / Tier 2	Tier 3	Tier 4	Tier 5	Tier 6	Tier 7	Default Value
					Current Day	**Clear (No)**
					History Quarter	**Clear (No)**
					History Day	**Clear (No)**
Maintenance /SHDSL	Version Info	(Sw Version)				**3.09c**
		(fpga Version)				**2.00**
	modem Status	(Actual Near End modem Type)				
		(Actual Far End Modem Type)				
		(Near End Timing Source)				
		(Far End timing Source)				
		(Data Rate)				
	Led Status	(DSL)				
		(DTE1)(DTE2)				
		(ALARM)				
		(TEST)				
Maintenance /Test	Patten Test	Loopback	Normal CO Local CO Local Payload RT Remote RT Remote Payload RT Local RT Local Payload CO Remote CO Remote payload			**Nornal**
		Test Patten	2e11-1 2e15-1 QRSS 2e20-1 2e23-1			**2e11-1**
		Test Direction	Shdsl Interface			**Shdsl**
		Test Period				**100**
		Test Start	Start Stop			**Stop**
	V54 Test	V54 Parameters	V54 Enable	Disable Enable		**Disable**
			V.54 address mode	Disable Enable		**Disable**
			V.54 Near End Address			**0x03**
			V.54 Far End Address			**0x01**
		V54 Generator	V.54 Mode	Start Stop		**Stop**
			V.54 Direction	SHDSL Interface		

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Tier 1 / Tier 2	Tier 3	Tier 4	Tier 5	Tier 6	Tier 7	Default Value
			V.54 Address			**0x03**
Software Download	**Sever IP address**					**0.0.0.0**
	File name					
	Start downloading	Yes No				**No**
Diagnosis	**Trouble Shooting Menu**					

Appendix C Pins Assignment

The pin assignment for different interface of Scorpio 1400 is depicted in the following sections.

A Conversion Cable is enclosed for converting DB-25 to V.35, V.36, or X.21 interface, as shown in *Figure C-1*. There are three types of Conversion Cables, depending on the customer's order; the cable is enclosed in the shipping package.

DB-25(M)   **V.35(F)**

20cm
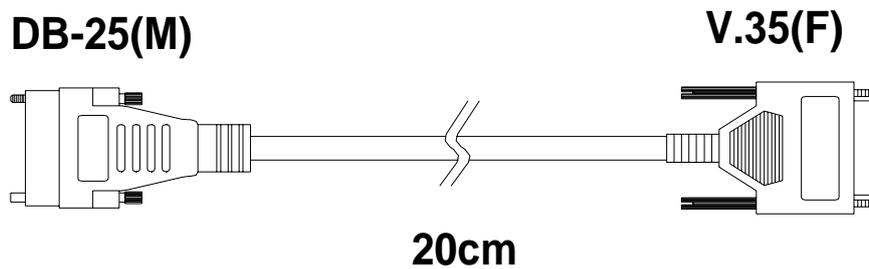
Figure C-1 The Conversion Cable of DB-25(M) to V.35(F)

C.1   V.35 Interface

Figure C-2 and *Figure C-3* respectively illustrate the DB-25M and V.35 interfaces. Refer to *Table C-1* to see the pin definition of V.35 cable.
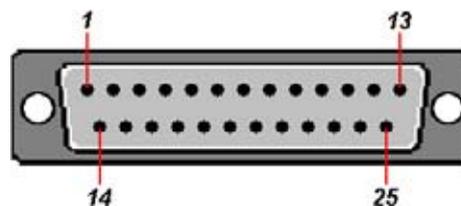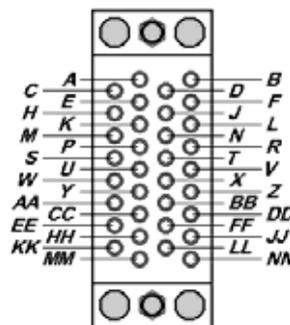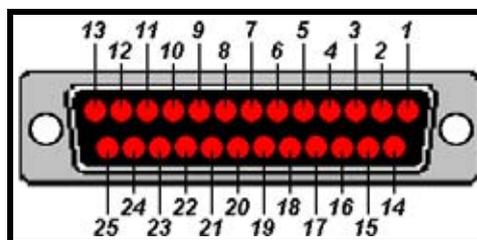
Figure C-2 DB-25M Interface

Figure C-3 V.35 Interface

Table C-1 V.35 Cable Pin Definition

DB-25 Male	Signal	V.35 Female	Source
1	Frame Ground	A	Common
7	Signal Ground	B	Common
4	Request to Send	C	DTE
5	Clear to Send	D	DCE
6	Data Set Ready	E	DCE
8	Data Carrier Detect	F	DCE
20	Data Terminal Ready	H	DTE
2	Transmit Data (A)	P	DTE
3	Receive Data (A)	R	DCE
14	Transmit Data (B)	S	DTE
16	Receive Data (B)	T	DCE
24	Terminal Timing (A)	U	DTE
17	Receive Timing (A)	V	DCE
11	Terminal Timing (B)	W	DTE
9	Receive Timing (B)	X	DCE
15	Terminal Timing (A)	Y	DCE
12	Terminal Timing (B)	AA	DCE

C.2 RS-530 Interface

*Figure C-4* illustrates the RS-530 Interface.

Figure C-4 RS-530 Interface

Refer to *Table C-2* to see the pin definition of RS-530 Connector.

Table C-2 RS-530 Connector Pin Definition

DB-25 Male	Signal	rce
1	Frame Ground	Common
2	Transmit Data (A)	DTE
3	Receive Data (A)	DCE
4	Request to Send (A)	DTE
5	Clear to Send (A)	DCE
6	DCE Ready (A)	DCE
7	Signal Ground	Common
8	Receive line Signal Detector (A)	DCE
9	Receive Signal Element Timing (B)	DCE
10	Receive line Signal Detector (B)	DCE
11	EXT. Transmit Signal Element Timing (B)	DTE
12	Transmit Signal Element Timing (B)	DCE
13	Clear to Send (B)	DCE
14	Transmit Data (B)	DTE
15	Transmit Signal Element Timing (A)	DCE
16	Receive Data (B)	DCE
17	Receive Signal Element Timing (A)	DCE
18		
19	Request to Send (B)	DTE
20	DTE Ready (A)	DTE
21		
22	DCE Ready (B)	DCE
23	DTE Ready (B)	DTE
24	EXT. Transmit Signal Element Timing (A)	DTE

C.3   V.36/RS-449 Interface

The DB-37F interface is shown in *Figure C-5*.
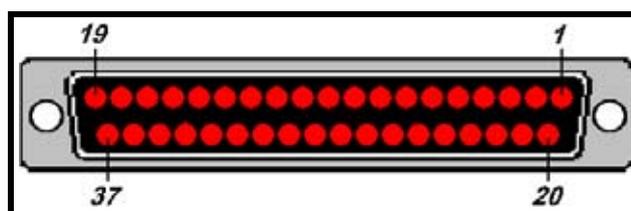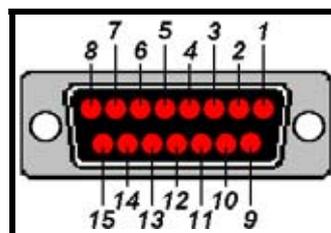

Figure C-5 DB-37F Interface

Refer to *Table C-3* to see the pin definition of V.36/RS-449 cable.

Table C-3 V.36/RS-449 Cable Pin Definition

DB-25 Male	*Signal*	*V.36/RS-449 Female*	*Source*
1	Shield	1	Common
2	Send Data (A)	4	DTE
15	Send Timing (A)	5	DCE
3	Receive Data (A)	6	DCE
4	Request to Send (A)	7	DTE
17	Receive Timing (A)	8	DCE
5	Clear to Send (A)	9	DCE
6	Data Mode (A)	11	DCE
20	Terminal ready (A)	12	DTE
8	Receive Ready (A)	13	DCE
24	Terminal Timing (A)	17	DTE
7	Signal Ground	19,20,37	Common
14	Send Data (B)	22	DTE
12	Send Timing (B)	23	DCE
16	Receive Data (B)	24	DCE
19	Request to Send (B)	25	DTE
9	Receive Timing (B)	26	DCE
13	Clear to Send (B)	27	DCE
22	Data Mode (B)	29	DCE
23	Terminal Ready (B)	30	DTE
10	Receive Ready (B)	31	DCE
11	Terminal Timing (B)	35	DTE

C.4   X.21 Interface

Figure C-6 illustrates the X.21 Interface. For the DB-25 interface, refer to *Figure C-2*.

Figure C-6 X.21 Interface

Refer to *Table C-4* to see the pin definition of V.36/RS-449 cable.

Table C-4 X.21 Cable Pin Definition

DB25 Male	Signal	X.21 Female
1	Shield Ground	1
2	Signal Ground	2
4	TXD(a)	3
3	CTRL(a)	4
8	RXD(a)	5
17	Indication	6
24	RXC(a)	7
7	Signal Ground	8
14	TXD(b)	9
19	CTRL(b)	10
16	RXD(b)	11
10	Indication	12
9	RXC(b)	13
11	EXC(b)	14
G		G

C.5   DB-9 Interface

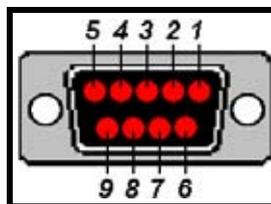The DB-9 connector interface is shown as *Figure C-7*.

Figure C-7 DB-9 Interface

For the pin definition of DB-9 interface, see *Table C-5*.

Table C-5 DB-9 Connector Pin Definition

DB9 Female	Signal	Source
2	TXD	DCE
3	RXD	DTE
5	Signal Ground	
7	CTS	DTE
8	RTS	DCE

C.6   RJ-45 Interface

Figure C-8 illustrates the RJ-45 interface.

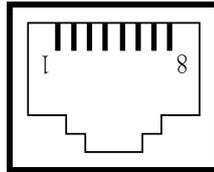**Figure C-8 RJ-45 Interface**

Refer to *Table C-6*, *Table C-7* and *Table C-8* to see the pin definition of DSL RJ-45 connector, LAN RJ-45 connector and E1/T1 port RJ-45 connector, respectively.

Table C-6 DSL RJ-45 Connector Pin Definition

RJ-45	Signal
3	Tip(2)
4	Tip(1)
5	Ring(1)
6	Ring(2)

Table C-7 LAN RJ-45 Connector Pin Definition

RJ-45	10/100 Base-T Signal
1	TxD Twist Pair +
2	TxD Twist Pair -
3	RxD Twist Pair +
6	RxD Twist Pair -

Table C-8 G703 Balance port RJ-45 / 48C Connector Pin definition

RJ-45	port description
1	RxD Twist Pair +
2	RxD Twist Pair -
3	NC
4	TxD Twist Pair +
5	TxD Twist Pair -
6	NC
7	NC
8	NC

Appendix D Troubleshooting

Troubleshooting Table

1	Configured parameter values are lost after equipment restart
	When user modifies or changes the parameters, the user should save the configurations in the flash memory by entering the **Confirm- "YES"** menu, and then reboot the system by entering the **"Configuration-System-Reset"** menu.
2	Console / Telnet / Web User Name and Password
	When accessing the device through Telnet or the Web, the user will be prompted to enter the password. User can try the default user name "**tainet**" and password "**tainet**" to log in.
3	Access denied
	There are several conditions that will disable user's access to the device via Console, Telnet or the Web.

Message	Solution
Incorrect user	The password entered is incorrect. Check the user name and password again.

Appendix E Trouble Report

Company	
Local Representation	
Purchase Order No	
Equipment Serial No	
Software Version	

Please describe: 1. Testing Network Structure   2. Configuration 3. Testing Network Equipment   4. Trouble Description
E-MAIL:

TEL:	**FAX:**
Signature:	**Date:** / /

TAINET COMMUNICATION SYSTEM CORP.   **FAX: 886-2-2658-3232**

E-MAIL: *sales@tainet.net*