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USER'S MANUAL

G.SHDSL Termination Unit

Scorpio 1400 RL

Version: 1.2
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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 1400RL termination units. The summary of this manual is as follows:

Chapter 1: Overview

Describes Scorpio 1000 and how to use Scorpio 1400 in several applications.

Chapter 2: Specifications

Describes the features, specifications and applications of Scorpio 1400RL.

Chapter 3: Interfacing

Introduces all the interfaces, including front panel and rear pane of Scorpio 1400RL.

Chapter 4: Installation

Assist user to install and verify the Scorpio 1400RL Step-by-step.

Chapter 5: Operation of Cid

Gives a description of the CID (Craft Interface Device).

Appendix A: Order Information

Describes all the Scorpio 1400RL series products.

Appendix B: Menu Tree

Describes the LCD and VT-100 menu tree.

Appendix C: Pin Assignment

Describes all cables and connectors with pin definition.

Appendix D: Troubleshooting

Provides brief trouble shooting list.

Appendix E: Trouble Report

Trouble Report Form

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. Overview

This chapter begins with a general description of Scorpio 1000 (S1000), which is a high-density universal rack mounted system. Then, the chapter describes how to use TAINET Scorpio 1400 (S1400) in several applications and show the possible interface configurations of S1000/S1400 System. There are two types of Scorpio 1400 series, one is S1400 and the other is S1400RL. This user manual is focus on Scorpio 1400RL.

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 SHDSL System consists of 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.

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 on S1400: E1, T1, DATA (V.35, V.36 / RS449, X.21, RS-530), and S1400RL only supports Ethernet.

Figure 1-1 and Figure 1-2 show two typical applications. Figure 1-3 depicts the possible interface configurations.

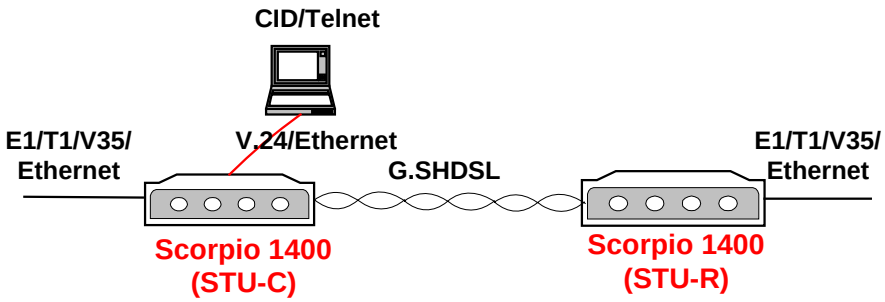


Figure 1-1 Application of Back-to-back

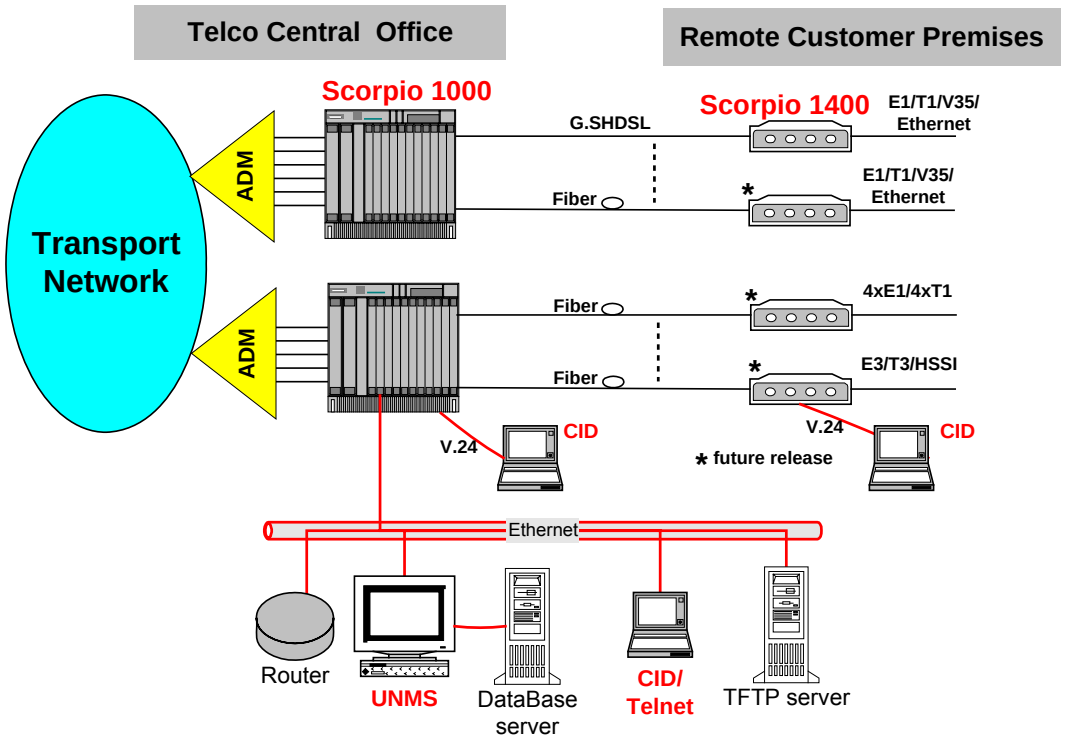


Figure 1-2 Application of S1000/S1400 System

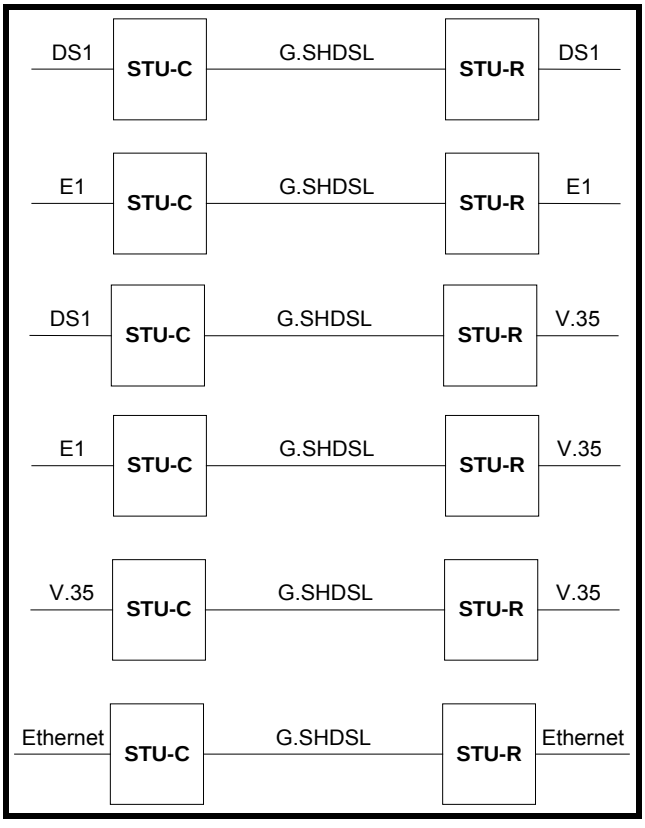


Figure 1-3 Possible Interface Configuration of S1000/S1400 System

Note that Scorpio 1400 (S1400) can be configured as STU-C or STU-R, whereas S1400 should be an STU-R when connected with S1000. There are two types of S1400 series, one is S1400 and the other is S1400RL. S1400RL only equipped with Ethernet port, it could not carry any other DTE interface (T1/E1 or DATA interface).

Chapter 2. Specification

To let the user understand the TAINET Scorpio 1400RL, 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 1400RL in campus network.

2.1 Main Features

Listed below are the main features of the Scorpio 1400RL:

- Support loop interface G.SHDSL.
- S1400RL supports Ethernet interface.
- Carrying symmetrical 2048 Kbps payload for up to 2.4 miles / 3.9 Km over 26-AWG single pair copper wire.
- Carrying symmetrical 4096 Kbps payload for two pairs copper wires.
- Automatic line rate selection.
- Supports static route, RIP and RIPv2 (future).
- Support SHDSL payload rates of n ×64Kbps, where n is 3 to 36 in 2 wires, where n is 3 to 72 in 4 wires.
- Support Timing and Synchronization: Local (internal) timing, Line timing (loop received clock) .
- For test and diagnostic purpose the S1000 / S1400 system provides various loopback paths and loopback code words for end-to-end loopback function.
- Management by 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 relative requirements
- 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 functions.
- Data rate of 64K to 2.304M bps (2 wires) or 128k to 4.624M bps (4 wires), (incrementing step: 64K bps).
- Modulation Method: 16-TCPAM (16 levels Trellis Coded Pulse Amplitude Modulation).
- Physical Connection Type: Standard RJ-45 jack, 135 ohm balanced via 2 wires or 4 wires twisted pair.
- Port enabled / disabled configurable.

2.3 Network Side Interface

2.3.1 Ethernet Interface

- Provide a 10/100 BaseTx auto sensing and half/full duplex configurable 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.

2.4 Timing and Synchronization

Table 2-1 shows three modes for S1400DL field selectable. But for S1400RL it always uses local oscillator and no necessary to select others.

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 (For 1400DL only)	Transmit data clock (DTE timing)	Received symbol clock	Main application is synchronous transport in both directions.	Synchronous
3 (For 1400DL only)	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

2.5 OAM

OAM (Operation, Administration and Maintenance) of the Scorpio 1400RL is listed below:

- UNMS manages S1000 system via SNMP interface and provides a user-friendly GUI-based operational interface under PC / Windows or HP Open-View systems.
- CID Console: user-friendly menu-driven operation
- SNMP management message interface
- Remote control / monitoring S1400RL 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 default configuration setup
- Support Alarm Surveillance function
- Support Performance Monitoring function
- For test and diagnostic purpose 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 211-1, 215-1, 220-1, 223-1.

2.6 Technical Specifications

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

Table 2-2 Technical Specifications of the Scorpio 1400RL

DSL		
Modulation	PAM	
Mode	Full duplex with echo cancellation	
Number of loops	Single	
Loop rate	N*64+8K(N=1~36) up to 2320Kbit/S (2 wire), (N=2~72) 4624kbit/S (4 wire)	
Data rate	64K to 4608kbit/S	
Loop impedance	135 ohms	
Clock source	Internal clock	
Clock accuracy	± 32 ppm	
Interface		
Ethernet	10/100BaseTx Auto sensing	
	IEEE 802.3/ IEEE 802.3u	
	IEEE 802.1d full protocol transparent bridging function	
	Half and full duplex	
Diagnostics		
Loop test	**LL**	: Local loop back
	RL	: Remote Loop Back
Status Indicators	**PWR**	: Power indicator

	DSL : DSL status indicator **LINK** : Ethernet link indicator **ACK** : Packet transmitted/received indicator **ALM** : Alarm indicator **TST** : Test status indicator
Craft port	115200 BPS 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 % DC Power adapter 36~72 VDC
Power Consumption	< 12 W
Environments	
Temperature	Operating +0℃ ~ +50℃ Storage -40℃ ~ 70℃
Humidity	Operating 10% ~ 80% non-condensing Storage 5% ~ 90% non-condensing

2.7 Applications

This section describes how to apply TAINET Scorpio 1400RL in the network systems.

2.7.1 Campus network

The Scorpio 1400RL is well suited to the campus applications.

Figure 2-1 show the general campus applications where remote routers are interconnected across a campus using two Scorpio 1400RL. One unit is configured as a central office site (CO) unit and the other is the customer premise equipment (CPE) unit.

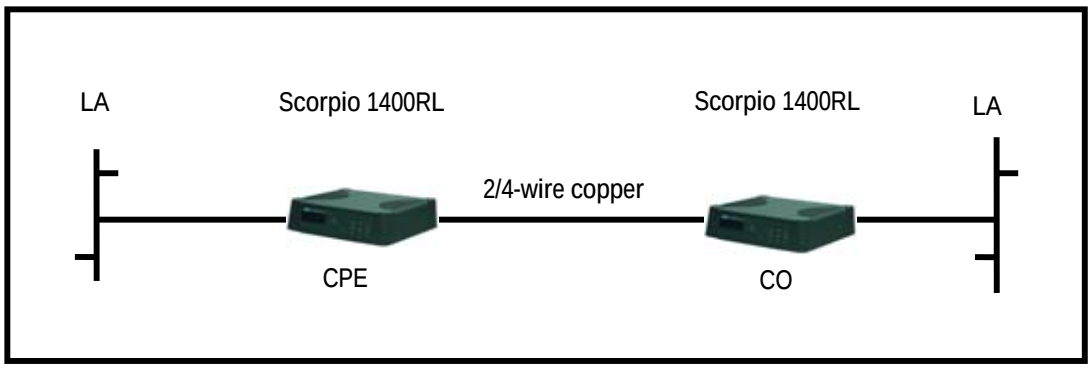


Figure 2-1 Campus Network Application of the Scorpio 1400RL with Ethernet I/F

Chapter 3. Interfacing

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

3.1 Front Panel

The front panel of Scorpio 1400RL, as illustrated in Figure 3-1, contains three main sections, i.e. the LCD displayer, status indicators and buttons. Via the front panel of Scorpio 1400RL, 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 1400RL. In addition, users can set some loopback tests by pressing the buttons on the front panel.

Figure 3-1 Front Panel of the Scorpio 1400

3.1.1 Status Indicators

The status indicators of the Scorpio 1400RL are depicted in Table 3-1. There are six LEDs, which are PWR, DSL, LINK, ACT, ALM and TST. These six LEDs

display the system status.

Table 3-1 Indicators on Front Panel

LED	Description	Color	Off	Flashing	Always On
PWR	Power	Green	No Power	N/A	Power OK
DSL	Loop	Green	Failure	Handshaking/Training	Connected
LINK	LAN connected	Green	Unequipped	N/A	Link connected
ACT	Packet transmit/receive	Green	No packet	Packets active	Packets active
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 1400RL 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.

The default password for unlocking front panel is "**14001400**" if the front panel was locking.

Rear Panel

Figure 3-2 illustrates the rear panel of the Scorpio 1400RL. Users may connect the Scorpio 1400RL to other devices or equipments via these interfaces.

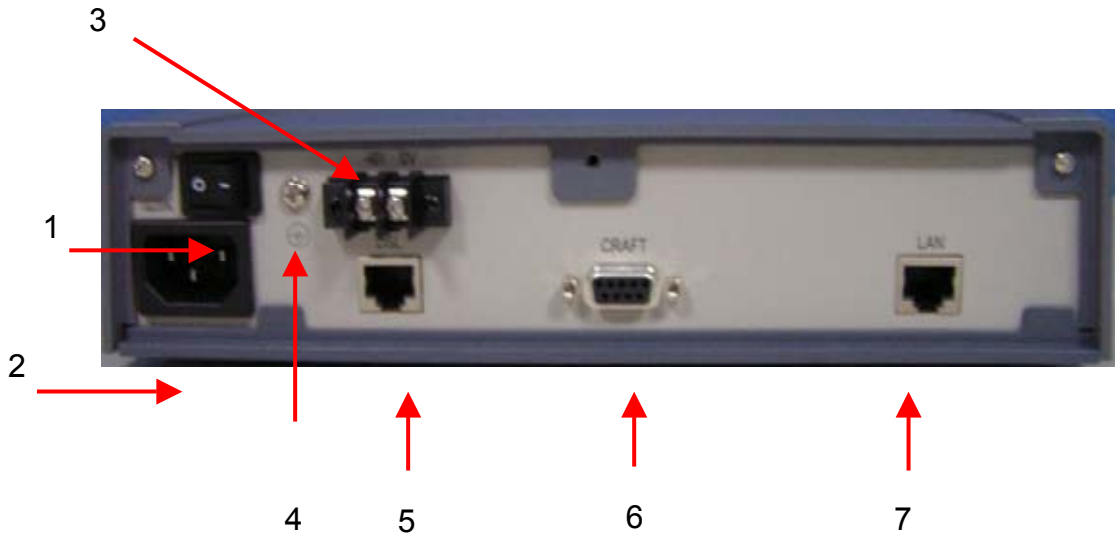


Figure 3-2 Rear Panel of the Scorpio 1400

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

- 1 Power On/Off: The Scorpio 1400RL'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 Craft Interface: 9 pin female serial D-sub connector
- 7 LAN Interface: 10/100 BASETLAN port interface

3.1.2.1 G.SHDSL RJ-45 Ping Assignment

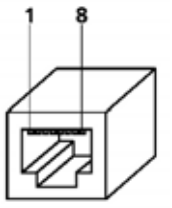


Figure 3-3 G.SHDSL RJ-45 Pin Assignment

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 3-3. The Scorpio 1400RL supports LAN interface port as shown in Figure 3-4.

3.1.2.2 LAN RJ-45 Ping Assignment

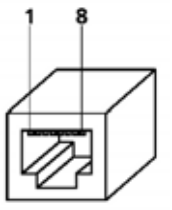


Figure 3-4 LAN RJ-45 Pin Assignment

Pin	Description
1	TD+
2	TD -
3	RD+
4	NC
5	NC
6	RD -
7	NC
8	NC

Chapter 4. Installation

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

4.1 Unpacking

The Scorpio 1400RL’s shipping package includes the following items:

- 1 Scorpio 1400RL standalone unit
- 1 User’s manual CD Pack
- 1 Power cable
- 1 24-AWG RJ-45 cable

4.2 Configuration Procedures

This section guides the user through some basic operations on the front panel and makes sure the Scorpio 1400RL unit is correctly configured. These operations include Local Loop back Test, Establish Connection, System setup and others. All detail menu tree of the system, please refer to Appendix A .

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 S1400RL 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 S1400RL 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 1400RL.
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==> system==> OpMode” (Bridge or Router), “Configuration==> Modem==> Modem Type”(CO or CPE), “Configuration==> Modem==> Rate Mode”, “Configuration==> Modem==> Max Data Rate”, “Configuration==> Interface==> LAN IP Address”, “Configuration==> Interface==> LAN NetMask”, ” Configuration ==> Interface ==> WAN==> WAN Enable”(router mode only), “Configuration==> Interface==> WAN==> WAN IP Address”

(router mode only), “Configuration==> Interface==> WAN==> Link Type” and “Configuration==> Interface==> WAN==> WAN NetMask” (router mode only) menu to set up the desirous value respectively. Please enter the “Write Config” menu and enable it after all configurations are finished. Reboot the system.

3. Configure the Scorpio 1400RL CO side by pressing button on the front panel in according to the LCD menu tree *Table B-1*. Note: One side must be configured as CO and the other side as CPE in back to back connection.
4. Configure the Scorpio 1400RL CPE side (Specify same data rate and Line Type as CO side but different LAN/WAN IP address). Note: In back-to-back connecting application, the “Modem==> Rate Mode” of one side must be set to “Adaptive” and the other side is set on “Fixed”.
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, LCD displays “Connected” and the data rate of connection, it shows SHDSL link having been established.

4.2.2 Local Loopback Test

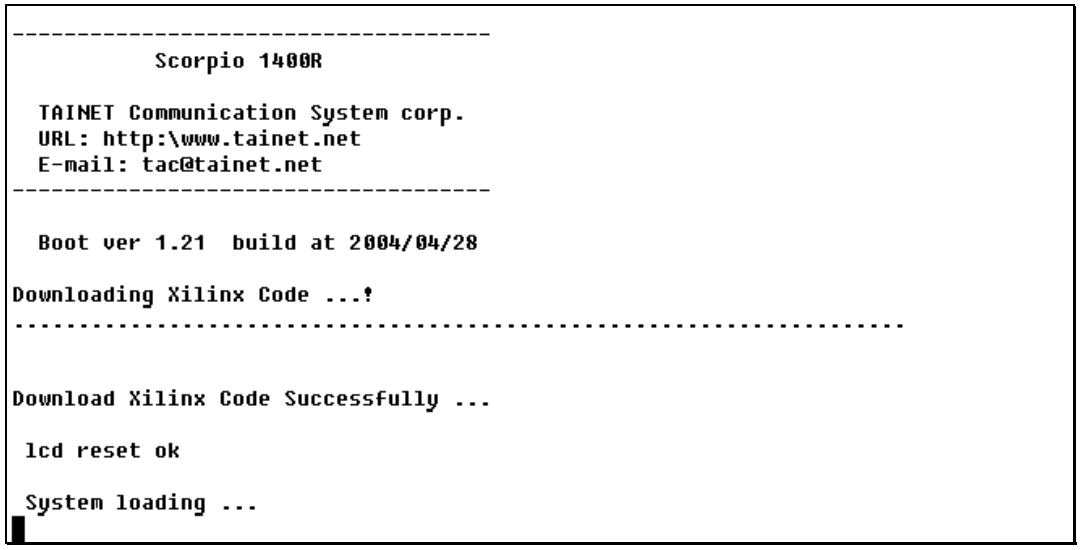
1. Go to Test ==> Loopback menu by pressing the button on front panel.
2. Press the button on front panel to configure the loop back test if users aim to do it. For running the loop back test, please refer to Utility==> Loopback in chapter 5, Figure 5-1 and Figure 5-2.
3. Wait for several seconds, the Scorpio 1400RL 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.

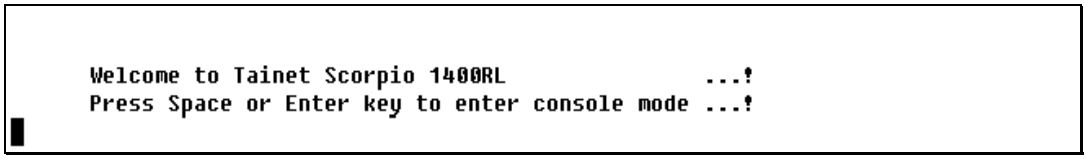
Chapter 5. Operation of CID

In this chapter, you will be introduced to the CID (Craft Interface Device) VT-100 operation of Scorpio 1400RL. The chapter starts with an overview of Scorpio 1400RL's CID. In addition, each main menu item of the Scorpio 1400RL's CID, such as Configuration, Monitor and other utility 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 S1400RL, the following messages will appear before the screen displays the Application software code.





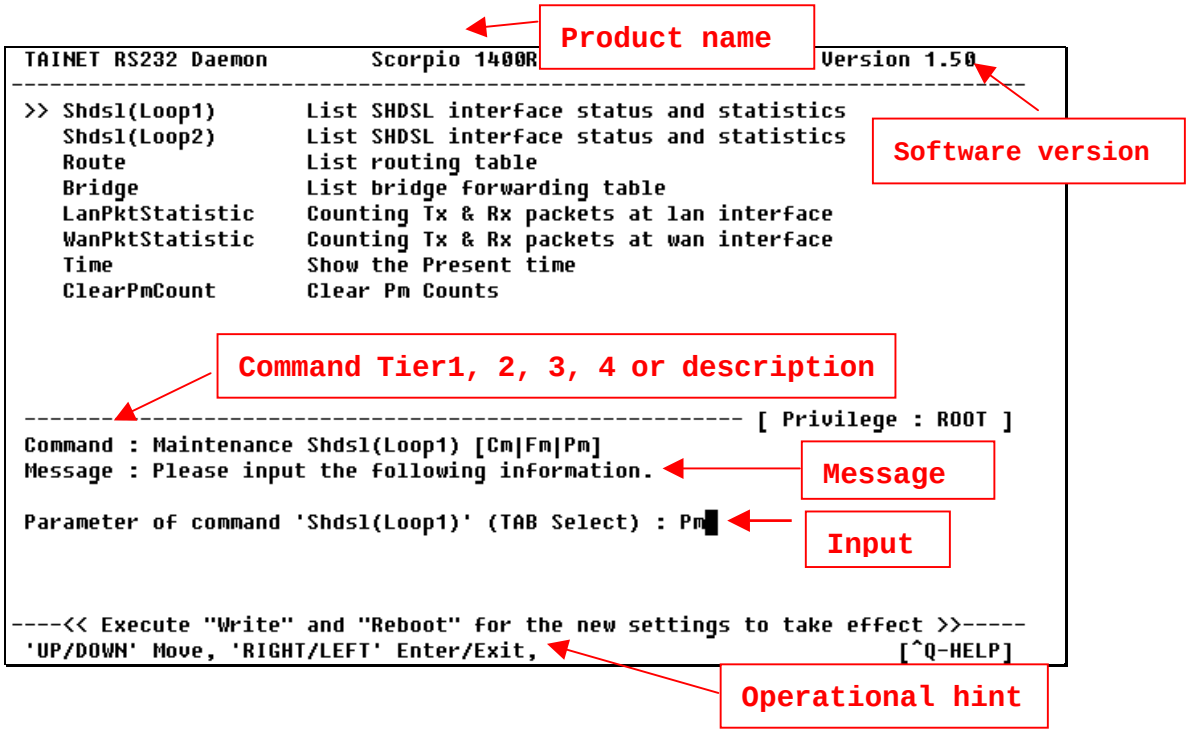
At startup of the AP, press Enter, the CID will prompt user to enter the password for access into the system. The default username and password are tainet. (Earlier version before V1.47 is root)

```
User Name : tainet
User 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 QConfig, Config, Maintenance, ShowConf, Utility, Write, Reboot and Exit.

Note:

There are some differences between LCD and CID menu tree, ex: the Utility item, but most of them are almost the same.



- **Product Name**: TAINET Scorpio 1400RL.
- **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.
- **Message**: System prompt message.

- **Input**: the values to be set by the user.
- **Operational hint**: a hint for the user during operation. Some operation asks to write the new configuration and reboot system for the new settings to take effect.

5.2 Main menu

After the password checks out, the CID will bring up the top page or the main menu. There are eight items on this page, QConfig, Config, Maintenance, ShowConf, Utility, Write, Reboot and Exit. The Qconfig is used to configure the system very roughly. Users can configure the detail parameters in Config menu. The Maintenance menu is used to monitor status and check any alarm log of system. Users can see all configurations of system through ShowConf menu. Some useful tools for diagnostic or testing in Utility menu.

5.3 Qconfig

5.3.1 Qconfig–OpMode

```
TAINET Telnet Daemon        Scorpio 1400RL                    Version 1.57
-------------------------------------------------------------------------------
>> OpMode              Setup the operation mode
   Lan                 Setup LAN interface configuration
   Wan                 Setup WAN configuration
   EndpointMode        SHDSL endpoint side
```

There are two operation mode of Scorpio 1400RL, Bridge mode and Router mode, for users can specify the network mode through the menu. And need to write the new configuration and reboot system for the new settings to take effect.

5.3.2 Qconfig–Lan

```
TAINET Telnet Daemon        Scorpio 1400RL                    Version 1.57
-------------------------------------------------------------------------------
>> Address             Setup LAN interface IP and netmask

-------------------------------------------------------- [ Privilege : ROOT ]
Command : QConfig Lan Address <ip> <netmask>
Message : Please input the following information.

IP address (ENTER for default) <192.168.008.001> : 192.168.8.1
Subnet mask (ENTER for default) <255.255.255.0> : 255.255.255.0_

-------------------------------------------------------------------------------
'UP/DOWN' Move, 'RIGHT/LEFT' Enter/Exit,                          [^Q-HELP]
```

Users can specify the IP address/subnet mask of LAN interface.

5.3.3 Qconfig–Wan

```
TAINET Telnet Daemon       Scorpio 1400RL                    Version 1.57
-------------------------------------------------------------------------------
>> State              Setup interface to be enable or not
   Address            Setup WAN interface IP address, netmask
   LinkType           Setup interface link type
```

- **State**: There are two possible values for WAN state - Enable or Disable.
- **Address**: Users can specify the IP address/subnet mask of WAN interface.
- **LinkType**: Specify the Wan link type of PPP or Ethernet.

5.3.4 Qconfig-EndpointMode

```
TAINET Telnet Daemon       Scorpio 1400RL                    Version 1.57
-------------------------------------------------------------------------------
   OpMode             Setup the operation mode
   Lan                Setup LAN interface configuration
   Wan                Setup WAN configuration
>> EndpointMode       SHDSL endpoint side
```

- Configure the system as a CO or CPE device.

5.4 Config

There are two interface types on the S1400RL, which are LAN and WAN available for the S1400RL. In addition to the interfaces of LAN and WAN, the SHDSL line interface should be configured in this menu.

```
TAINET Telnet Daemon       Scorpio 1400RL                    Version 1.57
-------------------------------------------------------------------------------
>> System              System parameter configuration
   Interface           Interface parameter configuration
   Shdsl               Shdsl parameter configuration
   Protocol            Protocol parameter configuration
   Route               Routing parameter configuration
   Bridge              Transparent bridging parameter configuration
   AccessConf          Telnet/RS232 configure server parameter setting
   Reset2Dft           Reset system configuration to factory default
```

5.4.1 Configure-System

```
TAINET Telnet Daemon       Scorpio 1400RL                    Version 1.57
-------------------------------------------------------------------------------
   OpMode              Setup the operation mode
   HostName            Setup local hostname
>> PHYType             Setup the EtherPHY Full/Half type
```

- **OpMode**: Set up the operation mode as Router or Bridge, as Qconfig menu did.
- **HostName**: Users can specify the name of the device, which can be identified in the network.
- **PHYType**: Specify the system interface as Full or Half duplex.

5.4.2 Configure-Interface

```
TAINET Telnet Daemon       Scorpio 1400RL                    Version 1.57
-------------------------------------------------------------------------------
>> Lan                 Config LAN interface profile
   Wan                 Config WAN interface profile
```

- **Lan: Set up the IP address/subnet mask of LAN interface.**
- **Wan: Users can specify the following parameters of WAN interface.**

- State: set up the interface as *Enable* or *Disable*
- Address: Set up the IP address/Subnet mask of WAN interface.
- LinkType: Set up the link type as *PPP* or *Ethernet*.

5.4.3 Config-Shdsl

```
TAINET Telnet Daemon       Scorpio 1400RL                    Version 1.57
-------------------------------------------------------------------------------
>> EndpointMode        SHDSL endpoint side
   RateMode            Configure G.shdsl bit rate mode
   MinRate             Configure min line rate( n x 64Kbps )
   MaxRate             Configure max line rate( n x 64Kbps )
   Rate1544Enabled     Set the rate 1544
   PsdMode             Configure power spectral density mode
   TransmissionMode    Configure transmission mode
   PowerBackoff        SHDSL power backoff
   4WireMode           SHDSL 4 Wire Mode
   PmThreshold         Set PM 15-min and 1-day thresholds
```

- **EndpointMode**: Set up the SHDSL active mode as CO or CPE.
- **RateMode**: Configure the bit rate mode as Adaptive or Fixed.
- **MinRate**: Configure the minimum line rate (n*64Kbps); the possible value of n is from 1 to 72.
- **MaxRate**: Configure the maximum line rate (n*64Kbps); the possible value of n is from 1 to 72.
- **Rate1544Eabled**: Set the rate of 1544kbps to Enable or Disable.
- **PsdMode**: Set the power spectral density to Symmetrical or Asymmetric. Used to let SHDSL transceiver to use a symmetrical or asymmetrical power spectral density mask as specified in G.991.2 standard.
- **TransmissionMode**: Configure the transmission mode to Annex-A or Annex-B. Which is specified in ITU-T G.991.2 standard.
- **PowerBackoff**: The possible value is Enable or Disable. 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.
- **4WireMode**: The possible value is Enable or Disable.
- **PmThreshold**: Set the PM threshold of 15-min and 1-day
- **15minFirst**: set up the ES(0-900), SES(0-900) 15min threshold.

- **15minSecond**: Set up the UAS(0-900),LOSWS(0-900) 15min threshold.
- **1dayFirst**: set up the ES(0-86400), SES(0-86400) 1day threshold.
- **1daySecond**: Set up the UAS(0-86400),LOSWS(0-86400) 1day threshold.
- **SNM_Att_Thr**: Setup the SNR margin(0-900) and Loop Attenuation threshold(0-900).

5.4.4 Config-Protocol

```
TAINET Telnet Daemon        Scorpio 1400RL                    Version 1.57
-------------------------------------------------------------------------------
>> Dhcp                 DHCP parameter configuration
   DnsProxy             DNS proxy parameter configuration
   IpShare              NAT parameter configuration
   Rip                  Config RIP protocol module parameter
   Stp                  Config spanning tree protocol parameter
```

```
TAINET Telnet Daemon        Scorpio 1400RL                    Version 1.57
-------------------------------------------------------------------------------
>> State                Trigger DHCP service
   Generic              Config generic DHCP parameter
   Fixed                Config fixed host IP address list
```

- **Dhcp:** Set up DHCP parameters as follow:
  - State: *Enable* or *Disable* the DHCP service.
  - Generic: Set up the following parameters-
    - Gateway: Specify the default gateway to all clients.
    - Netmask: Specify the subnet mask to all clients.
    - IpRange: Specify the range of assigned IP to all clients.
    - Dns1: Specify IP address of the first DNS to all clients
    - Dns2: Specify IP address of the second DNS to all clients
    - Dns3: Specify IP address of the third DNS to all clients
  - Fixed:
    - Add: Add some fixed IP addresses to hosts. Users must enter a MAC address and associated with an IP address.
    - Delete: Delete any host of fixed IP address (the number of host is from 1 to 10).

- **DnsProxy**: Configure the IP address of DNS proxy (Dns1 to Dns3).

```
TAINET Telnet Daemon       Scorpio 1400RL                    Version 1.57
-------------------------------------------------------------------------------
   State              Trigger NAT and PAT service
>> Nat                Config network address translation
   Pat                Config port address translation
```

- **IpShare**: Configure the NAT parameters as follow:
  - State: Enable or Disable the NAT/PAT service.
  - Nat: Configure NAT parameters as follow:
    - Local:

      Range- NAT entry number<1 to 5>, Base address<IP>, number of address<1 to 253>.

      Delete- Delete entry number<1 to 5> defined in Range.

    - Global:

      Range- NAT global address entry number<1 to 5>, Base address<IP>, number of address<1 to 253>.

      Interface- NAT global address entry number<1 to 5>, Active interface number<Wan1/2>.

      Delete- Delete NAT global entry number<1 to 5>.

    - Fixed:

      Modify- fixed entry number<1 to 128>, local address<IP>, global address<IP>.

      Interface- Fixed NAT mapping entry number<1 to 128>, Active interface number<Wan1/2>.

      Delete- Delete fixed mapping entry number<1 to 128>.

    - Pat: Configure PAT parameters as follow:

    - Add:

      Name- Specify any service name<name>.

      Protocol- configure the transmit protocol<TCP or UDP>.

      Port- Specify a port number<1 to 65534>.

      Interface- Active interface number <Wan1/2>.

Server- Specify a LAN host<IP>, port number<1 to 65534>

- Modify: Modify virtual server entry number<1 to 10>:

  Name- Specify any service name<name>.

  Protocol- configure the transmit protocol<TCP or UDP>.

  Port- Specify a port number<1 to 65534>.

  Interface-Active interface number <Wan1/2>.

  Server- Specify a LAN host<IP>, port number<1 to 65534>

  Delete: Delete PAT entry number <1 to 10>.

```
TAINET Telnet Daemon       Scorpio 1400RL                    Version 1.57
-------------------------------------------------------------------------------
>> State              Config operation state
   Lan                Config LAN interface RIP parameter
   Wan                Config WAN interface RIP parameter
```

■ **Rip:** Configure parameters of RIP protocol as follow:

□ State: Enable or Disable the RIP protocol.

□ Lan: Configure RIP LAN parameters as follow:

- Version: configure the version of RIP<1 or 2 >
- Attrib: RIP attribute as:

  Rip mode- <Disable or Enable>

  Poison reserve- <Disable or Enable>

□ Wan: Configure RIP WAN parameters as follow:

- Version: configure the version of RIP<1 or 2 >
- Attrib: RIP attribute as:

  Rip mode- <Disable or Enable>

  Poison reserve-<Disable or Enable>

```
TAINET Telnet Daemon       Scorpio 1400RL                    Version 1.57
-------------------------------------------------------------------------------
>> State              Config STP module status
   Priority           Config bridging priority
   Lan                Config LAN port operation and priority
   Wan                Config WAN port operation and priority
```

■ **Stp:** Configure Spanning tree protocol parameters:

- State: Enable or Disable the STP.
- Priority: Configure bridging priority<0 to 65535>
- LAN: Configure LAN port operation and priority.
  - Port operation: <Enable or Disable >
  - Port priority: <number>
- Wan: Configure WAN port operation and priority.
  - Port operation: <Enable or Disable >
  - Port priority: <number>

5.4.5 Config-Routing

```
TAINET Telnet Daemon       Scorpio 1400RL                    Version 1.57
-------------------------------------------------------------------------------
>> Add                 Add static route entry
   Delete              Delete static route entry
```

- **Add:** Configure the static route: network<IP>, Subnet mask<mask>, default gateway<IP>.
- **Delete:** Delete the static route entry <1 to 20>

5.4.6 Config-Bridge

```
TAINET Telnet Daemon       Scorpio 1400RL                    Version 1.57
-------------------------------------------------------------------------------
>> Add                 Add static MAC entry
   Modify              Modify specific static MAC entry
   Delete              Delete static MAC entry
```

- **Add:** Add a static entry, the parameters are as follow:
  - MacAddress: Specify the MAC address.
  - Lan1Port: Specify the bridge type of LAN1<Filter, Forward, Dynamic>
  - Wan1Port: Specify the bridge type of WAN1<Filter, Forward, Dynamic>
- **Modify:** Modify one entry number <1 to 20>.
  - MacAddress: Specify the MAC address.

- Lan1Port: Specify the bridge type of LAN1<Filter, Forward, Dynamic>
- Wan1Port: Specify the bridge type of WAN1<Filter, Forward, Dynamic>

- **Delete:** Delete the entry number<1 to 20>

5.4.7 Config-AccessConf

```
TAINET Telnet Daemon       Scorpio 1400RL                    Version 1.57
-------------------------------------------------------------------------------
>> MaxUser            Maximum allow telnet access user number
   GuestName          Change guest name
   GuestPwd           Change guest password
   SuName             Change superuser name
   SuPwd              Change superuser password
```

- **MaxUser:** Configure the maximum number of telnet users<1 to 5>
- **GuestName:** Change a guest's name. The default is "guest".
- **GuestPwd:** Change a guest's password. The default is "guest"
- **SuName:** Change superuser's name. The default is "tainet".
- **SuPwd:** Change superuser's password. The default is "tainet"

5.4.8 Config-Reset2Dft

```
TAINET Telnet Daemon       Scorpio 1400RL                    Version 1.57
-------------------------------------------------------------------------------
   System             System parameter configuration
   Interface          Interface parameter configuration
   Shdsl              Shdsl parameter configuration
   Protocol           Protocol parameter configuration
   Route              Routing parameter configuration
   Bridge             Transparent bridging parameter configuration
   AccessConf         Telnet/RS232 configure server parameter setting
>> Reset2Dft          Reset system configuration to factory default




------------------------------------------------------- [ Privilege : ROOT ]
Command : Config Reset2Dft <CR>
Message : Please input the following information.

Are you sure ? (y/n) : _
```

Reset all configurations to factory default value. Users can enter y or n.

5.5 Maintenance

5.5.1 Maintenance-Shdsl1(Shdsl2)

```
TAINET Telnet Daemon       Scorpio 1400RL                    Version 1.57
-------------------------------------------------------------------------------
>> Shdsl(Loop1)       List SHDSL interface status and statistics
   Shdsl(Loop2)       List SHDSL interface status and statistics
   Route              List routing table
   Bridge             List bridge forwarding table
   LanAlarmStatus     Show LAN Alarm Status
   LanPktStatistic    Counting Tx & Rx packets at lan interface
   WanPktStatistic    Counting Tx & Rx packets at wan interface
   Time               Show the Present time
   ClearPmCount       Clear Pm Counts



------------------------------------------------------- [ Privilege : ROOT ]
Command : Maintenance Shdsl(Loop1) [Cm|Fm|Pm]
Message :
```

- **None:** Monitor the circuit status, Fault and Performance.
- **Cm:** Monitor the circuit status.
- **Fm:** Fault monitor
- **Pm:** Performance monitor

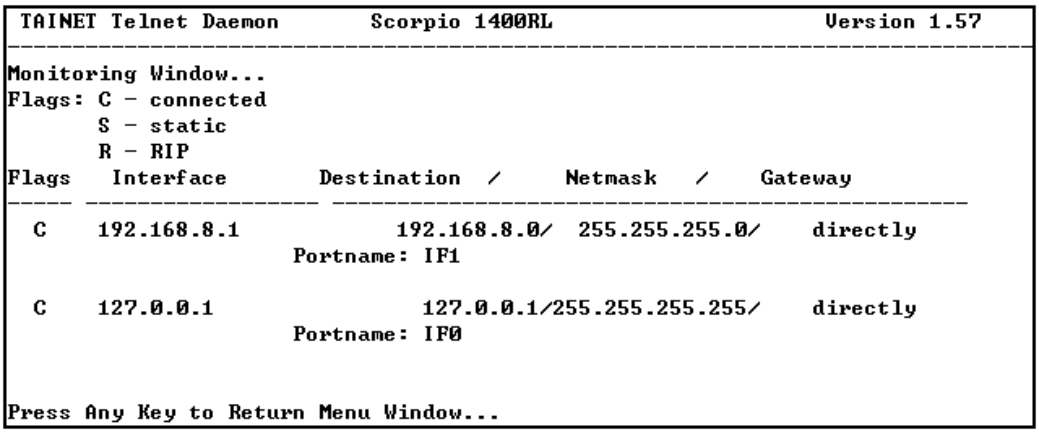
```
TAINET Telnet Daemon       Scorpio 1400RL                    Version 1.57
-------------------------------------------------------------------------------
Monitoring Window...

<SHDSL CM Information>
===============================================================================
                                  Local          Remote
                                 ----------     ----------
   Endpoint Side          :          CPE           NONE
   Link Operation Status  :   Handshaking           Idle
   Actual Line Rate       :        0 Kbps        0 Kbps
   Received Gain          :        0   db        0   db
   Transmission power     :        0   db        0   db
   Current SNR  Margin    :        0   db        0   db
   Loop Attenuation       :        0   db        0   db
   Power Backoff          :        Enable

<SHDSL FM Information>
===============================================================================
   Losw                   :   Raised
   ES_QTR_TCA             :  Cleared
--- MORE ---
-------------------------------------------------------------------------------
'UP/DOWN' Move, 'RIGHT/LEFT' Enter/Exit,                          [^Q-Help]
```

```
 TAINET Telnet Daemon        Scorpio 1400RL                    Version 1.57
-------------------------------------------------------------------------------
Monitoring Window...

<SHDSL FM Information>
===============================================================================
   Losw                      :   Raised
   ES_QTR_TCA                :  Cleared
   SES_QTR_TCA               :  Cleared
   UAS_QTR_TCA               :  Cleared
   LOSWS_QTR_TCA             :  Cleared
   CRC_QTR_TCA               :  Cleared
   ES_DAY_TCA                :  Cleared
   SES_DAY_TCA               :  Cleared
   UAS_DAY_TCA               :  Cleared
   LOSWS_DAY_TCA             :  Cleared
   CRC_DAY_TCA               :  Cleared
   SNR_MARGIN_TCA            :   Raised
   LOOP_ATTEN_TCA            :  Cleared


Press Any Key to Return Menu Window...
-------------------------------------------------------------------------------
 'UP/DOWN' Move, 'RIGHT/LEFT' Enter/Exit,                          [^Q-Help]
```

```
 TAINET Telnet Daemon        Scorpio 1400RL                    Version 1.57
-------------------------------------------------------------------------------
Monitoring Window...
<SHDSL PM Information>
===============================================================================
      current 15 minutes                  current 1 day
 ------------------------------------   ----------------------
  ES    :      0                               0
  SES   :      0                               0
  UAS   :     13                              13
  LOSWS:     13                              13
         history 15 minutes                          history 1 day
-----------------------------------------          ---------------------
  ES     :
----------
 1 ~  8 :    0    0    0    0    0    0    0    0    1:       0
 9 ~ 16 :    0    0    0    0    0    0    0    0    2:       0
17 ~ 24 :    0    0    0    0    0    0    0    0    3:       0
25 ~ 32 :    0    0    0    0    0    0    0    0    4:       0
33 ~ 40 :    0    0    0    0    0    0    0    0    5:       0
41 ~ 48 :    0    0    0    0    0    0    0    0    6:       0
--- MORE ---
-------------------------------------------------------------------------------
 'UP/DOWN' Move, 'RIGHT/LEFT' Enter/Exit,                          [^Q-Help]
```

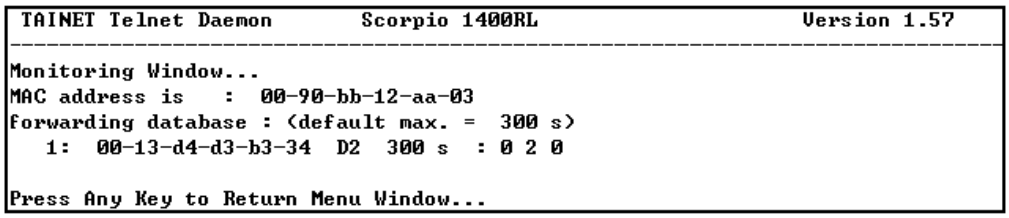
There are four types of PM parameter thresholds for combination of 15 minutes, and one day performance monitoring. A TCA will be issued whenever the monitored value has crosses the threshold setting. The PM parameter count in seconds of the current 15-minute/1 day period and stores up to the 96 of the latest 15-minute PM parameter count records.

5.5.2 Maintenance-Route



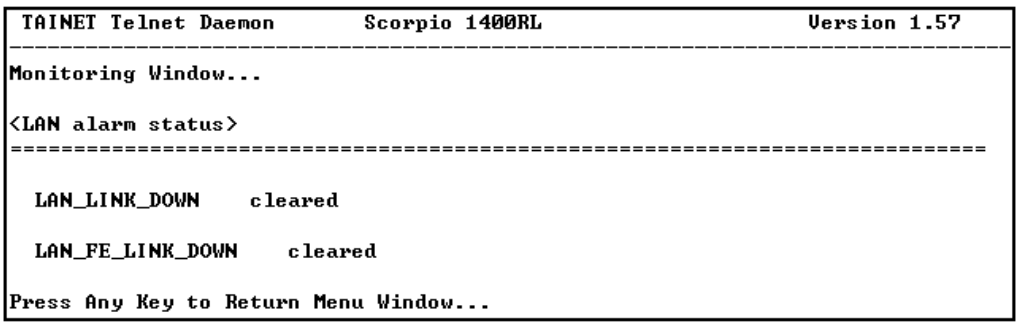
Monitor the routing table of system.

5.5.3 Maintenance-Bridge



Monitor the MAC forwarding table of system.

5.5.4 Maintenance–LanAlarmStatus



Monitor the alarm message of LAN port.

5.5.5 Maintenance–LanPktStatistic

```
TAINET Telnet Daemon       Scorpio 1400RL                    Version 1.57
------------------------------------------------------------------------------
Monitoring Window...

<Packets statistic at lan interface>
==============================================================================
   Transmitted Packets       : 4178

Press Any Key to Return Menu Window...
```

- **None:** Show the number of total transmitted and received packets on LAN interface.
- **Tx:** Show the number of total transmitted packets on LAN interface.
- **Rx:** Show the number of total received packets on LAN interface.

5.5.6 Maintenance-WanPktStatistic

```
TAINET Telnet Daemon       Scorpio 1400RL                    Version 1.57
------------------------------------------------------------------------------
Monitoring Window...

<Packets statistic at wan interface>
==============================================================================
   Transmitted Packets       : 2353
   Received Packets          : 0

Press Any Key to Return Menu Window...
```

- **None:** Show the number of total transmitted and received packets on WAN interface.
- **Tx:** Show the number of total transmitted packets on WAN interface.
- **Rx:** Show the number of total received packets on WAN interface.

5.5.7 Maintenance–Time

```
TAINET Telnet Daemon       Scorpio 1400RL                    Version 1.57
------------------------------------------------------------------------------
Monitoring Window...

<Present Time Information>
==============================================================================

   Year / Month / Day     : 2006/    7/    7
   Hour / Minute / Second      0/   41/   47

Press Any Key to Return Menu Window...
```

Monitor the time and date setting of the system.

All TCA (Threshold Crossing Alert) are classified as WARNING. Table 5-1 show all SHDSL alarms.

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

Up to 200 alarm records can be stored without the use UNMS. Many more can be logged in Database if UNMS is used.

- **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".

Users can view any historical performance by selecting ether port.

5.6 ShowConf

ShowConf menu is used to show all the configurations of entire equipment.

```
TAINET Telnet Daemon       Scorpio 1400RL                    Version 1.57
-------------------------------------------------------------------------------
>> SysInfo            Show system information
   Interface          Show interface configuration
   Shdsl              Show SHDSL configuration parameters
   Dhcp               Show DHCP configuration
   DnsProxy           Show RIP configuration
   IpShare            Show IP address sharing configuration
   Rip                Show RIP configuration
   Route              Show static routes configuration
   Bridge             Show bridging configuration
   Stp                Show STP configuration
   AccessConf         Show system information
   Bert               Show Bert configuration
------------------------------------------------------- [ Privilege : ROOT ]
Command : ShowConf SysInfo <CR>
Message :
```

5.6.1 ShowConf-SysInfo

```
 TAINET Telnet Daemon       Scorpio 1400RL                    Version 1.57
-------------------------------------------------------------------------------
Status Window...

(1) General system information
 Model              : Scorpio 1400RL
 Software Version   : 2005-08-04 version 1.57
 Firmware Version   : 2.0
 Operation Mode     : Bridge
 Lan IP Address     : 192.168.8.1
 Lan Network Mask   : 255.255.255.0
 Lan Mac Address    : 00:90:bb:12:aa:03
 Hostname           : SOHO

Press Any Key to Return Menu Window...
```

Show currently H/W version and S/W version.

5.6.2 ShowConf-Interface

```
 TAINET Telnet Daemon       Scorpio 1400RL                    Version 1.57
-------------------------------------------------------------------------------
Status Window...

(1) LAN Interface Parameters
 Int.    Link    IP Address/Netmask  Admin    NAT    Bridge
 ----- -------- ------------------- ------- ------- -------
 LAN 1 Ethernet     192.168.8.1/24  Enable  Global  Enable

(2) WAN Interface Parameters
 Int.    Link    IP Address/Netmask  Admin    NAT    Bridge
 ----- -------- ------------------- ------- ------- -------
 WAN 1 Ethernet          0.0.0.0/ 0  Enable  Global  Enable

Press Any Key to Return Menu Window...
```

- **None:** Show parameters of both LAN and WAN interface.
- **LAN:** Show the parameter of LAN interface.
- **WAN:** Show the parameter of WAN interface.

5.6.3 ShowConf-Shdsl

```
 TAINET Telnet Daemon       Scorpio 1400RL                    Version 1.57
-------------------------------------------------------------------------------
Status Window...

(1) SHDSL Configuration Parameters
    Endpoint Side             : CPE
    Conf-Min-Line Rate        : 3
    Conf-Max-Line Rate        : 36
    Psd Mode                  : Symmetrical
    Transmission Mode         : Annex-A
    Power Backoff             : Enable
    4 Wire Mode               : Disable

Press Any Key to Return Menu Window...
```

5.6.4 ShowConf-Dhcp

```
TAINET Telnet Daemon       Scorpio 1400RL                    Version 1.57
------------------------------------------------------------------------------
Status Window...

(1) Generic DHCP Parameters
    Service(TAB)        : Disable
    Interface(TAB)      : LAN1
    Default Gateway     : 192.168.1.1
    Subnet Mask         : 255.255.255.0
    DHCP Start IP       : 140.92.64.130
    DHCP IP Count       : 20
    Name Server IP      : 192.168.1.1

(2) List Fixed Host Entries
  No   Ethernet  Address   Internet Address
 ---- ------------------- -----------------
   1   00:20:AF:F2:F4:22   192.168.1.88
   2   00:22:32:5d:80:01   192.168.1.2
   3   00:22:32:5d:80:02   192.168.1.3
   4              (Empty)
   5              (Empty)
--- MORE ---
------------------------------------------------------------------------------
 'UP/DOWN' Move, 'RIGHT/LEFT' Enter/Exit,                          [^Q-Help]
```

- **None:** Show parameters of both Generic and Fixed DHCP settings.
- **Generic:** Show the parameter of Generic DHCP parameter.
- **Fixed:** Show the parameter of Fixed DHCP parameter.

5.6.5 ShowConf-DnsProxy

```
 TAINET Telnet Daemon       Scorpio 1400RL                    Version 1.57
------------------------------------------------------------------------------
Status Window...

(1) Domain Name Server
  No.      Domain Name Server
-------- ---------------------------
   1      140.92.61.55
   2       140.92.1.50
   3

Press Any Key to Return Menu Window...
```

Show DNS Proxy server information.

5.6.6 ShowConf–IpShare

```
TAINET Telnet Daemon        Scorpio 1400RL                    Version 1.57
------------------------------------------------------------------------------
Status Window...

(1) Virtual Server Mapping Pool
 No    Service Name    Protocol   Port       Host IP      / Port  Interface
 ---- ---------------- ---------- ------ ------------------------ ---------
  1              FTP      TCP        21         172.16.1.8/   21    WAN 1
  2          (Empty)
  3          (Empty)
  4          (Empty)
  5          (Empty)
  6          (Empty)
  7          (Empty)
  8          (Empty)
  9          (Empty)
 10          (Empty)

(2) NAT Local Addresses Range Pool
 No     Base Address     Count
 ---- ------------------ -------
--- MORE ---
------------------------------------------------------------------------------
'UP/DOWN' Move, 'RIGHT/LEFT' Enter/Exit,                          [^Q-Help]
```

5.6.7 ShowConf–Rip

```
TAINET Telnet Daemon        Scorpio 1400RL                    Version 1.57
------------------------------------------------------------------------------
Status Window...

(1) Rip Parameters
  (Generic RIP Parameters)
    RIP mode    : Disable
    Auto summary: Disable

  (Interface RIP Parameters)
   Net     Mode     Ver  Poison Rev.
 ------- --------- ----- -------------
  LAN 1   Disable    2       Enable
  WAN 1   Disable    2       Enable

Press Any Key to Return Menu Window...
```

5.6.8 ShowConf–Route

```
TAINET Telnet Daemon        Scorpio 1400RL                    Version 1.57
------------------------------------------------------------------------------
Status Window...

(1) Static Route Parameters
    No data in the static SRT entry!!

Press Any Key to Return Menu Window...
```

5.6.9 ShowConf–Bridge

```
 TAINET Telnet Daemon       Scorpio 1400RL                    Version 1.57
-------------------------------------------------------------------------------
Status Window...

(1) Static Bridging Parameters
    No data in the static bridge entry!!

Press Any Key to Return Menu Window...
```

5.6.10 ShowConf–Stp

```
 TAINET Telnet Daemon       Scorpio 1400RL                    Version 1.57
-------------------------------------------------------------------------------
Status Window...

(1) Spanning Tree Protocol Configuration
    State           : Disable
    Bridge Priority : 32768

    Port       Operation    Priority
    -------- ------------- ------------
     LAN 1      Enable         128
     WAN 1      Enable         128


Press Any Key to Return Menu Window...
```

5.6.11 ShowConf–AccessConf

```
 TAINET Telnet Daemon       Scorpio 1400RL                    Version 1.57
-------------------------------------------------------------------------------
Status Window...

(1) Telnet/RS232 Access Configuration
   Access-User Max No : 5
   Guest Name         : user
   Guest Password     : user
   SuperUser Name     : tainet
   SuperUser Password : tainet

Press Any Key to Return Menu Window...
```

5.6.12 ShowConf–Bert

```
 TAINET Telnet Daemon       Scorpio 1400RL                    Version 1.57
-------------------------------------------------------------------------------
Status Window...

<1> Bert Test Configuration

    Bert Pattern Type        : 10E23
    Bert Test Start/Stop     : Stop
    Bert Test Period         : 100
    Bert Error Insert        : 0

Press Any Key to Return Menu Window...
```

5.7 Utility

```
TAINET Telnet Daemon       Scorpio 1400RL                    Version 1.57
-------------------------------------------------------------------------------
>> Upgrade              Upgrade system to new version
   Ping                 Ping test
   Bert                 Bert parameter configuration
   Loopback             Loopback parameter configuration
   SetTime              Set the global time
```

The Utility table is used to software upgrade and test of entire equipment.

5.7.1 Utility-Upgrade

```
TAINET Telnet Daemon       Scorpio 1400RL                    Version 1.57
-------------------------------------------------------------------------------
>> TftpServer           Default TFTP parameter configuration
   ApImage              Upgrade kernal image file
   Bootstrap2           Upgrade boot strap
```

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

- **Tftpserver:** Users must specify an IP address of TFTP server for downloading.
- **ApImage:**
  - TFTP server: <IP>.
  - Filename: <name>.
- Bootstrap2:
  - TFTP server: <IP>.
  - Filename: <name>.

```
TAINET Telnet Daemon       Scorpio 1400RL                    Version 1.57
-------------------------------------------------------------------------------
   TftpServer          Default TFTP parameter configuration
>> ApImage             Upgrade kernal image file
   Bootstrap2          Upgrade boot strap









------------------------------------------------------------ [ Privilege : ROOT ]
Command : Utility Upgrade ApImage <ip> <file>
Message : Please input the following information.

TFTP server ip address <ENTER for default> <172.16.5.33> :
Upgrade filename <ENTER for default> <SOHO.BIN> :
```

```
TAINET Telnet Daemon       Scorpio 1400RL                    Version 1.57
-------------------------------------------------------------------------------
   TftpServer          Default TFTP parameter configuration
   ApImage             Upgrade kernal image file
>> Bootstrap2          Upgrade boot strap









------------------------------------------------------------ [ Privilege : ROOT ]
Command : Utility Upgrade Bootstrap2 <ip> <file>
Message : Please input the following information.

TFTP server ip address <ENTER for default> <172.16.5.33> :
Upgrade filename <ENTER for default> <BOOT2.BIN> :
```

Users may press “Ctrl+C” to stop the download procedure if TFTP server got problem to send codes.

5.7.2 Utility-Ping

```
TAINET Telnet Daemon       Scorpio 1400RL                    Version 1.57
-------------------------------------------------------------------------------
   Upgrade             Upgrade system to new version
>> Ping                Ping test
   Bert                Bert parameter configuration
   Loopback            Loopback parameter configuration
   SetTime             Set the global time









------------------------------------------------------- [ Privilege : ROOT ]
Command : Utility Ping <ip> [1~65534|-t] [1~1399]
Message : Please input the following information.

IP address <ip> : 192.168.1.2
Number of ping request packets to send (TAB Select) : -t
Data size [1~1399] : 256
```

Users can do the ping test between two equipments. Specify an IP address of remote site, number of packets to send (- t means the ping test continue until users press “Ctrl-C” to stop it.) and data size.

5.7.3 Utility-Bert

```
TAINET Telnet Daemon       Scorpio 1400RL                    Version 1.57
-------------------------------------------------------------------------------
>> BertStart           Set Bert Start/Stop
   BertTP              Set Bert Pattern Type
   SetBertTimer        Configure Bert Period
   BertErrorInsert     Configure Error Rate Insert(0,1:no error,2~7:10E(-x)
   ResetErrorCount     Reset Bert Error Counts
   BertMonitor         List Status of Bert
```

- **BertStart:** Start or Stop the Bert test.
- **BertTP:** Generate test pattern. Possible values are 10E11, 10E15, 10E20 and 10E23.
- **SetBertTimer:** Set the test period. The possible value is from 1 to 1000000 seconds.
- **BertErrorInsert:** Set the error rate, the possible value are 0~7. (0,1 is no error, x=2~7: 10E-x).
- **ResetErrorCount:** Reset Bert error count. The possible value is y or n.
- **BertMonitor:** Monitor the Bert status. As shown below:

For test and diagnostic purpose the S1400RL system provides various Loopback paths, which are depicted in Figure 5-1 and Figure 5-2. They are Local Loopback and Remote Loopback.

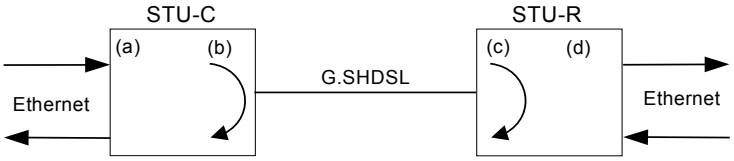


Figure 5-1 STU-C Side Activated Loopback

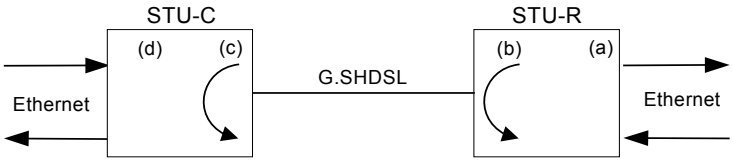


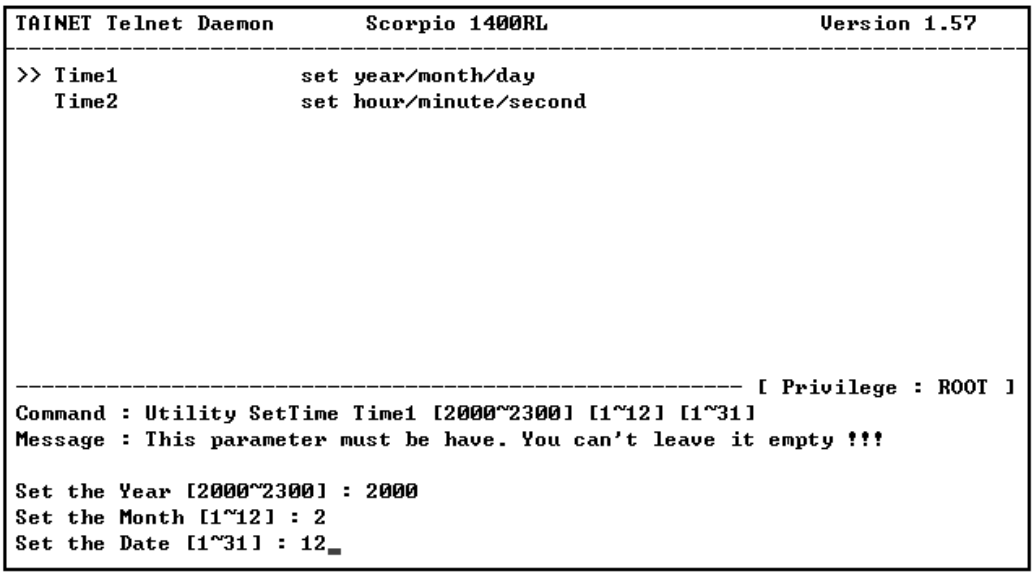
Figure 5-2 STU-R Side Activated Loopback

5.7.4 Utility-Loopback

```
TAINET Telnet Daemon        Scorpio 1400RL                    Version 1.57
-------------------------------------------------------------------------------
>> Loopback            Set the loopback mode
   Loopback_Status     Show the loopback status
```

- **Lookback:** The possible modes are Normal, Local and Remote.
- **Loopback_Status:** To start or stop the test. Possible values are START and STOP.

5.7.5 Utility-SetTime



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 2300. 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.

- **Time1:** Configure the date of the system as the time stamp:
  - Year: <2000 to 2300>.
  - Month: <1 to 12>.
  - Day: <1 to 31>.
- **Time2:** Configure the date of the system as the time stamp:
  - Hour: <0~24>.
  - Minute: <0~60>.
  - Second: <0~60>.

5.8 Write

```
TAINET Telnet Daemon       Scorpio 1400RL                    Version 1.57
-------------------------------------------------------------------------------
   QConfig             Quick system parameter configuration
   Config              All system parameter configuration
   Maintenance         Monitor the system status
   ShowConf            Show system configuration
   Utility             Some utility functions
>> Write               Write configuration to flash
   Reboot              Restart system and activate new system configuration
   Exit                Disconnect




------------------------------------------------------------ [ Privilege : ROOT ]
Command : Write <CR>
Message : Please input the following information.

Are you sure ? (y/n) :
```

Before reboot the system, any modified parameters users made must be written into flash memory through “write” or they will be invalid for next time system restart. As it wrote after several seconds, the system will show “write configuration successful!!” if the new configurations are written into memory successfully.

5.9 Reboot & Exit

```
TAINET Telnet Daemon       Scorpio 1400RL                    Version 1.57
-------------------------------------------------------------------------------
   QConfig             Quick system parameter configuration
   Config              All system parameter configuration
   Maintenance         Monitor the system status
   ShowConf            Show system configuration
   Utility             Some utility functions
   Write               Write configuration to flash
>> Reboot              Restart system and activate new system configuration
   Exit                Disconnect




------------------------------------------------------------ [ Privilege : ROOT ]
Command : Reboot <CR>
Message : Please input the following information.

Do you want to reboot system to activate new configuration(y/n) ? :
```

Reboot: Part of new parameters users configured will be effective after system reboot. Especially for LAN, WAN and routing configuration. A “Write” action should be done before reboot, otherwise it will loose current configuration.

Exit: The operator can log out through “Exit” menu. And console port also support automatic logout ability (auto-exit) if user did not operate any key in 5 minutes.

Appendix A Ordering Information

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

Table A-1 Order Information

Ordering No.	Product Code	Description
Scorpio 1400 SHDSL Modem/ NTU/ Router with LCD Panel		
000-101-0061	Scorpio 1400RL /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 /DC	2-wire SHDSL standalone unit with LCD and keypad operation panel, with Ethernet interface, with built-in DC power module;
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;
000-101-0049	Scorpio 1400RL/4W /AC+DC/?	4-wire SHDSL standalone unit with LCD and keypad operation panel, with Ethernet interface, with built-in AC and DC power module;
	/?	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	OpMode	Bridge		**<**
		Router		
	LCD Backlight	Enable		**<**
		Disable		
	Set2Dft	Disable		**<**
		Enable		
Configuration/Modem	Modem Type	CPE		**<**
		CO		
	Rate Mode	Adaptive		**<**
		Fixed		
	MAX Data Rate	<1,72>		**36**
	MIN Data Rate	<1,72>		**3**
	1544 Mode	Disable		**<**
		Enable		
Configuration/Interface	SHDSL	Power Backoff	Enable	**<**
			Disable	
		PSD	Sym	**<**

Tier 1/ Tier 2	Tier 3	Tier 4	Tier 5	Default Value
			Asym	
		4 WIRE	Off	<
			On	
		TransmisMode	Annex_A	<
			Bnnrx_B	
	LAN	LAN IP Address		**0.0.0.0**
		LAN NetMask		**0.0.0.0**
	WAN	WAN Enable	Enable	<
			Disable	
		WAN IP Address		**0.0.0.0**
		Link Type	Ethernet	<
			PPP	
		WAN Netmask		**0.0.0.0**
Status/SW Version				**V1.50**
Status/Modem Status	DSL1 Snr Margin			**0**
	DSL2 Snr Margin			**0**
Test/Loopback	Normal			<
	CO LL			
	CO RL			
	CPE LL			
	CPE RL			
Test/ Pattern test	Test Patten	2E23		<
		2E11		

Tier 1/ Tier 2	Tier 3	Tier 4	Tier 5	Default Value
		2E15		
		2E20		
	Test Start	Stop		<
		Start		
	Test Times	10		
		100		<
		1000		
		10000		
		100000		
	Insert error	<0~7>		**0**
	Reset Error	Disable		<
		Enable		
	Test Status	Error Count		**0**
		Bit Count		**0**
		Elapse Time		**0**
Security/ Password Edit				**14001400**
Security/ Front Lock	Enable			<
	Disable			
Write Config	Disable			<
	Enable			
Reboot	Disable			<
	Enable			

In addition to LCD menu tree, there is a VT-100 menu tree for CID port used, as *Table B-2*. 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 VT-100 Menu Tree

Tier 1 / Tier 2	Tier 3	Tier 4	Tier 5	Tier 6	Tier 7	Default Value
QConfig/OpMode	Bridge					**<**
	Router					
QConfig/ Lan	Address	IP Address				**0.0.0.0**
		net Mask				**0.0.0.0**
QConfig/ Wan	State	Disable				**<**
		Enable				
	Address	IP Address				**0.0.0.0**
		net Mask				**0.0.0.0**
	LinkType	Ethernet				**<**
		PPP				
QConfig/ EndpointMode	CPE					**<**
	CO					
Config/ System	OpMode	Bridge				**<**
		Router				
	HostName	(name)				**SOHO**
	PHYType	Ful				**<**
		Half				
Config/ Interface	Lan <1~1>	Lan1	Address	IP Address		**0.0.0.0**
				Subnet Mask		**0.0.0.0**

Tier 1 / Tier 2	Tier 3	Tier 4	Tier 5	Tier 6	Tier 7	Default Value
	Wan<1~1>	Wan1	State	Enable		<
				Disable		
			Address	IP Address		**0.0.0.0**
				Subnet Mask		**0.0.0.0**
		LinkType	Ethernet			<
			PPP			
Config/ Shdsl	EndpointMode	CPE				<
		CO				
	RateMode	Adaptive				<
		Fixed				
	MinRate	<1~36>				**3 (2Wire mode)**
		<2~72>				**6 (4Wire mode)**
	MaxRate	<1~36>				**6 (2Wire mode)**
		<2~72>				**72 (4Wire mode)**
	Rate1544Enable	Disable				<
		Enable				
	PsdMode	Symmetrical				<
		Asymmetrical				
	TransmissionMode	Annex-A				<

Tier 1 / Tier 2	Tier 3	Tier 4	Tier 5	Tier 6	Tier 7	Default Value
		Annex-B				
	PowerBackoff	Enable				<
		Disable				
	4WireMode	Disable				<
		Enable				
	PmThreshold	15minFirst	(ES)	<0~900>		**60**
			(SES)	<0~900>		**60**
		15minSecond	(UAS)	<0~900>		**60**
			(LOSWS)	<0~900>		**60**
		1dayFirst	(ES 1 day)	<0~86400>		**300**
			(SES 1 day)	<0~86400>		**300**
		1daySecond	(UAS 1 day)	<0~86400>		**300**
			(LOSWS 1 day)	<0~86400>		**300**
		SNM_Att_Thr	(SNR Margin)	<0~900>		**0**
			(Attenuator)	<0~900>		**35**
Config/ Protocol	Dhcp	State	Disable			<
			Enable			

Tier 1 / Tier 2	Tier 3	Tier 4	Tier 5	Tier 6	Tier 7	Default Value
		Generic	Gateway	(IP Address)		**192.168.1.1**
			Netmask	(net mask)		**255.255.255.0**
			IpRange	(IP Address)		**140.92.64.130**
				(number)		**20**
			Dns1	(IP Address)		**192.168.1.1**
			Dns2	(IP Address)		
			Dns3	(IP Address)		
		Fixed	Add	(MAC)		
				(IP Address)		
			Delete	<1~10>		
	DnsProxy	Dns1	(IP Address)			**140.92.61.55**
		Dns2	(IP Address)			**140.92.1.50**
		Dns3	(IP Address)			
	IpShare	State	Disable			
			Enable			
		Nat	Local	Range	<1~5>	

Tier 1 / Tier 2	Tier 3	Tier 4	Tier 5	Tier 6	Tier 7	Default Value
					(IP Address)	**172.16.1.10**
					<1~253>	**10**
				Delete	<1~5>	
			Global	Range	<1~5>	
					(IP Address)	**10.1.1.10**
					<1~253>	
				Interface	<1~5>	
					<2>	**2**
				Delete	<1~5>	
			Fixed	Modify	<1~128>	
					(IP Address)	**172.16.1.120**
					(IP Address)	**10.1.1.120**
				Interface	<1~128>	
					<2>	**2**
				Delete	<1~128>	
		Pat	Add	Name	(name)	
				Protocol	TCP	**<**
					UDP	
				Port	<1~65534>	
				Interface	<2>	
				Server	(IP Address)	

Tier 1 / Tier 2	Tier 3	Tier 4	Tier 5	Tier 6	Tier 7	Default Value
					<1~65534>	
			Modify	<1~10>		
				<more…>		
			Delete	<1~10>		
	Rip	State	Disable			<
			Enable			
		Lan	Version	<1,2>		**2**
			Attrib	RIP Mode	Disable	<
					Enable	
				Poison Reserve	Enable	<
					Disable	<
		Wan<1~1>	Version	<1,2>		**2**
			Attrib	RIP Mode	Disable	<
					Enable	
				Poison Reserve	Enable	<
					Disable	<
	Stp	State	Disable			<
			Enable			
		Priority	<0~65535>			**32768**
		Lan<1~1>	Port Operation	Enable		<

Tier 1 / Tier 2	Tier 3	Tier 4	Tier 5	Tier 6	Tier 7	Default Value
				Disable		
			Port Priority	<numbe r>		**128**
		Wan<1~1>	Port Operation	Enable		**<**
				Disable		
			Port Priority	<numbe r>		**128**
Config/ Route	Add	(net mask)				
		(IP address)				
		(Gateway)				
	Delete	<1~20>				
Config/ Bridge	Add	MacAddress	(MAC)			**00:00:00:00:0 0:00**
		Lan1Port	Filter			**<**
			Forward			
			Dynamic			
		Wan1Port	Filter			**<**
			Forward			
			Dynamic			
	Modify	<1~20>	MacAddres s	(MAC)		
			Lan1Port	Filter		
				Forward		
				Dynamic		
			Wan1Port	Filter		

Tier 1 / Tier 2	Tier 3	Tier 4	Tier 5	Tier 6	Tier 7	Default Value
				Forward		
				Dynamic		
	Delete	<1~20>				
Config/ AccessConf	MaxUser	<1~5>				**5**
	GuestName	(name)				**user**
	GuestPwd	(pass_conf)				**user**
	SuName	(name)				**tainet**
	SuPwd	(pass_conf)				**tainet**
Config/ Reset2Dft	Disable					**<**
	Enable					
Maintenance/ Shdsl<loop1>	None					**<**
	Cm					
	Fm					
	Pm					
Maintenance / Shdsl<loop2>	None					**<**
	Cm					
	Fm					
	Pm					
Maintenance / Route	<CR>					
Maintenance / Bridge	<CR>					
Maintenance / AlarmStatus	None					

Tier 1 / Tier 2	Tier 3	Tier 4	Tier 5	Tier 6	Tier 7	Default Value
Maintenance / LanPktStatistic	None					<
	Tx					
	Rx					
Maintenance / WanPktStatistic	None					<
	Tx					
	Rx					
Maintenance / Time	<CR>					
Maintenance / ClearPmCount	<CR>					
ShowConf/ SysInfo	<CR>					
ShowConf/ Interface	None					<
	Lan					
	Wan					
ShowConf/ Shdsl	<CR>					
ShowConf/ Dhcp	None					<
	Generic					
	Fixed					
ShowConf/ DnsProxy	<CR>					
ShowConf/ Ipshare	None					<
	PAT					

Tier 1 / Tier 2	Tier 3	Tier 4	Tier 5	Tier 6	Tier 7	Default Value
	Local					
	Global					
	Fixed					
ShowConf/ Rip	<CR>					
ShowConf/ Route	<CR>					
ShowConf/ Bridge	<CR>					
ShowConf/ Stp	<CR>					
ShowConf/ AccessConf	<CR>					
ShowConf/ Bert	<CR>					
Utility/ Upgrade	TftpServer	(IP address)				**172.16.5.33**
	ApImage	(IP address)				**172.16.5.33**
		(File name)				
	BootStrap2	(IP address)				**172.16.5.33**
		(File name)				
Utility/ Ping	(IP address)	No. of ping	<1~65534,-t>			**None**
		Data Size	<1~1399>			
Utility/ Bert	Bertstart	Stop				**<**
		Start				
	BertTP	2E23				**2E23-1**

Tier 1 / Tier 2	Tier 3	Tier 4	Tier 5	Tier 6	Tier 7	Default Value
		2E11				
		2E15				
		2E20				
	SetBertTimer	<1~1000000>				**100**
	BertErrorInsert	<0~7>				**0**
	ResetErrorCount	Yes/No				
	BertMonitor	<CR>				
Utility/ Loopback	Loopback	Normal				**<**
		Local				
		Remote				
	Loopback_status	<CR>				
Utility/ SetTime	Timer1	<2000~2300>				
		<1~12>				
		<1~31>				
	Timer2	<0~24>				
		<0~60>				
		<0~60>				
Write	<Yes,No>					
Reboot	<Yes,No>					
Exit	<Yes,No>					

Appendix C Pins Assignment

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

C.1 DB-9 Interface

The DB-9 connector interface is shown as *Figure C-1*.

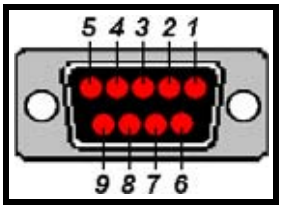


Figure C-1 DB-9 Interface

For the pin definition of DB-9 interface, see *Table C-1.*

Table C-1 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.2 RJ-45 Interface

Figure C-2 illustrates the RJ-45 interface.

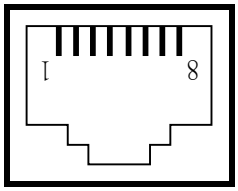


Figure C-2 RJ-45 Interface

Refer to *Table C-2*, *Table C-3*, see the pin definition of DSL RJ-45 connector and LAN RJ-45 connector respectively.

Table C-2 DSL RJ-45 Connector Pin Definition

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

Table C-3 LAN RJ-45 Connector Pin Definition

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

Appendix D Troubleshooting

<table>
<tr><th colspan="3">Trouble Shooting Table</th></tr>
<tr><td>1</td><td colspan="2">Configured parameter values are lost after equipment restart</td></tr>
<tr><td></td><td colspan="2">When user modifies or changes the parameters, the user should “write” the configurations into the flash memory by entering the “Enable” menu, and then reboot the system by entering the “Reboot--Enable” menu.</td></tr>
<tr><td>2</td><td colspan="2">Console / Telnet / Web User Name and Password</td></tr>
<tr><td></td><td colspan="2">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” (or “root”) and password “tainet” (or “root”) to login.</td></tr>
<tr><td>3</td><td colspan="2">Access denied</td></tr>
<tr><td></td><td colspan="2">There are several conditions that will disable user’s access to the device via Console, Telnet or the Web.</td></tr>
<tr><td></td><td>Message</td><td>Solution</td></tr>
<tr><td></td><td>Incorrect user</td><td>The password entered is incorrect. Check the user name and password again.</td></tr>
</table>

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***