

***Dynamix***

# **Dynamix UM-SN/35**

**SHDSL NTU V.35/X21**



**User Manual  
V 2.01**

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## Chapter 1 Introduction

The SHDSL NTU offers customers premises to high-speed TDM services with an DB25 interface. The industry standard DB25 interface can be configured as a V.35 or X.21 connection. The DB25 connection transfers data up to 2.304Mbps.

The SHDSL NTU can be configured and managed via EOC, or menu-driven VT100 compatible Asynchronous Terminal Interface, either locally or remotely.

The SHDSL NTU is equipped with an auto rate capability that identifies the maximum line rate supported by the copper loop. This powerful automatic configuration capability makes installation and service provisioning simple and painless. Further flexibility is provided in the ability to manually set the maximum NTU speed at different levels for different customer-tailored service offerings.

### Features

- Standard G.shdsl (ITU G.991.2) supports improved reach/speed and greater interoperability
- Fast and cost-effective provisioning of traditional frame relay (FR or T-HDLC) or TDM leased line services
- User existing copper loop infrastructures
- Can operate back to back connection
- Efficient single wire pair usage
- Up to 2.3Mbps symmetric service bit rate
- Auto rate installation maximizes data rate based on loop conditions
- Local management interface with LCD display
- Remote line loopback
- SHDSL Line performance monitoring
- Raw and per time interval statistics
- Bandwidth guaranteed transmission equipment

### Specification

#### Network Interface

- Line Rate: SHDSL per ITU G.991.2
- Coding: trellis coded pulse amplitude modulation
- Support: ANSI (Annex A) and ETSI (Annex B)
- Payload rates: 64kbps to 2.304Mbps (N x 64kbps N=1 to 36)
- Connection: RJ-11 jack (2-wire)

#### DTE Interface

- Payload rates: 64kbps to 2.304Mbps (N x 64kbps N=1 to 36)
- Support: V.35

#### DSL Timing

- Network
- Internal

- DTE

**Performance Monitoring**

- ES, SES, UAS, Alarms, Errors for SHDSL

**Loopback Tests**

- Local Loopback
- Digital Loopback
- Remote Loopback
- V.54 Loopback
- Build-in  $2^{11}-1$  bit tester

**Management**

- Configuration with keypad and LCD display
- Console port
- Support firmware upgradeable

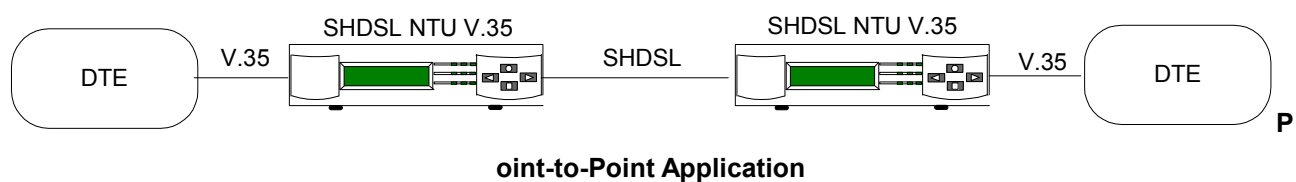
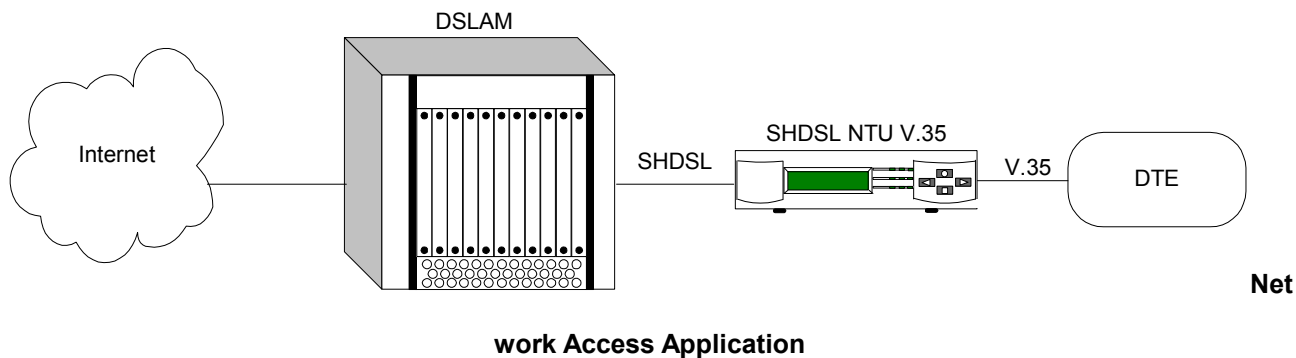
**Physical/Electrical**

- Dimensions: 19.5 x 4.8 x 16.8 cm
- Input: 90~240VAC with 50~60Hz or -48VDC
- Power Consumption: 10W Max
- Operation: 0 to 50°C
- Humidity: Up to 95% (non-condensing)



**Warning! High voltage. Do not open**

## Applications

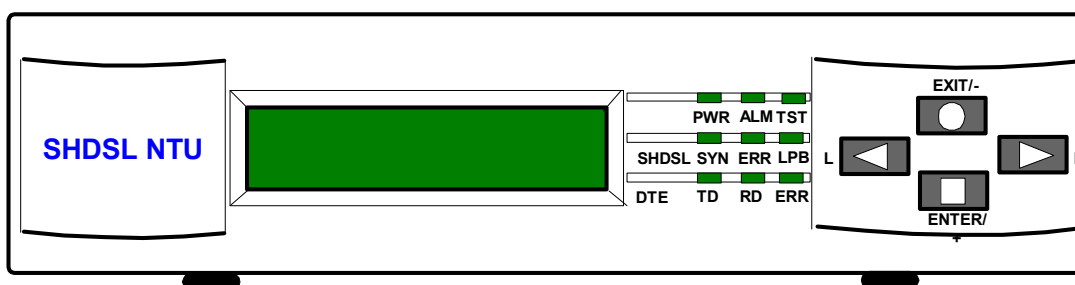


## Chapter 2 Hardware Installation

This chapter shows the front panel and how to install the hardware.

### 2.1 Front Panel

Front panel can be separated into three parts: (1) LCD (2) keypads (3) LEDs.



1. The LCD can show the status and configuration of the product. The local management interface will be done by keypads with LCD display. For more detail, refer to chapter 3: Configuration.
2. The purpose of key pad is to configure the SHDSL NTU. Review the chapter 2 for detail configuration.

Key Pad	Description
Exit/-	● Return to previous configuration menu.
Enter/+	■ Skip to next configuration menu or configure the items.
L	◀ Select other parameter in the same level menu.
R	▶ Select other parameter in the same level menu.

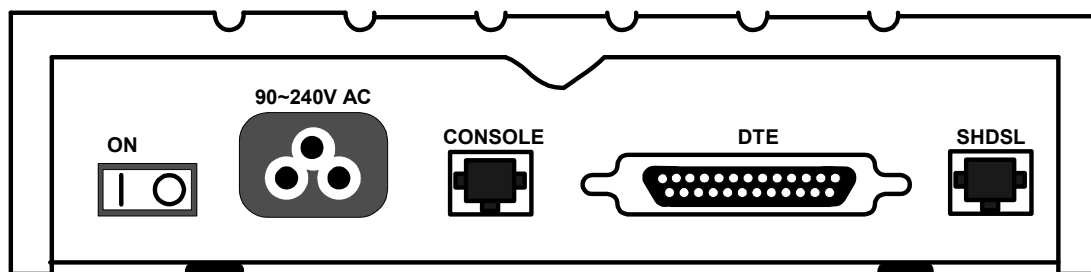
3. The following table describes the LEDs' function of the product.

LED	Color	Action	Description
PWR	Green	On	Power is on.
		Off	Power is off.
ALM	Red	On	System loss.
		Off	System is working nomarally.
TST	Yellow	On	System is testing for connection.
		Off	System is working nomarilly.
SHDSL	SYN	On	SHDSL line is connected.
		Blink	Data transmit in SHDSL line.
	ERR	Off	SHDSL line is dropped.
		Blink	Error second occurs.
	LPB	Red	No error second.
		Off	No error second.
DTE	TD	On	Loopback is on.
		Off	Loopback is off.
	RD	Green	Data transmit in V.35.
		Off	No data transmit in V.35.
ERR	Red	On	Data receive in V.35.
		Off	No data reveive in V.35.
ERR	Red	Blink	Error second occurs.
		Off	No error second.



## 2.2 Rear Panel

The rear panel of SHDSL NTU is including power switch, power socket, RJ-45 for console cable, DB-23 for V.35 cable and RJ-45 for SHDSL from left to right.



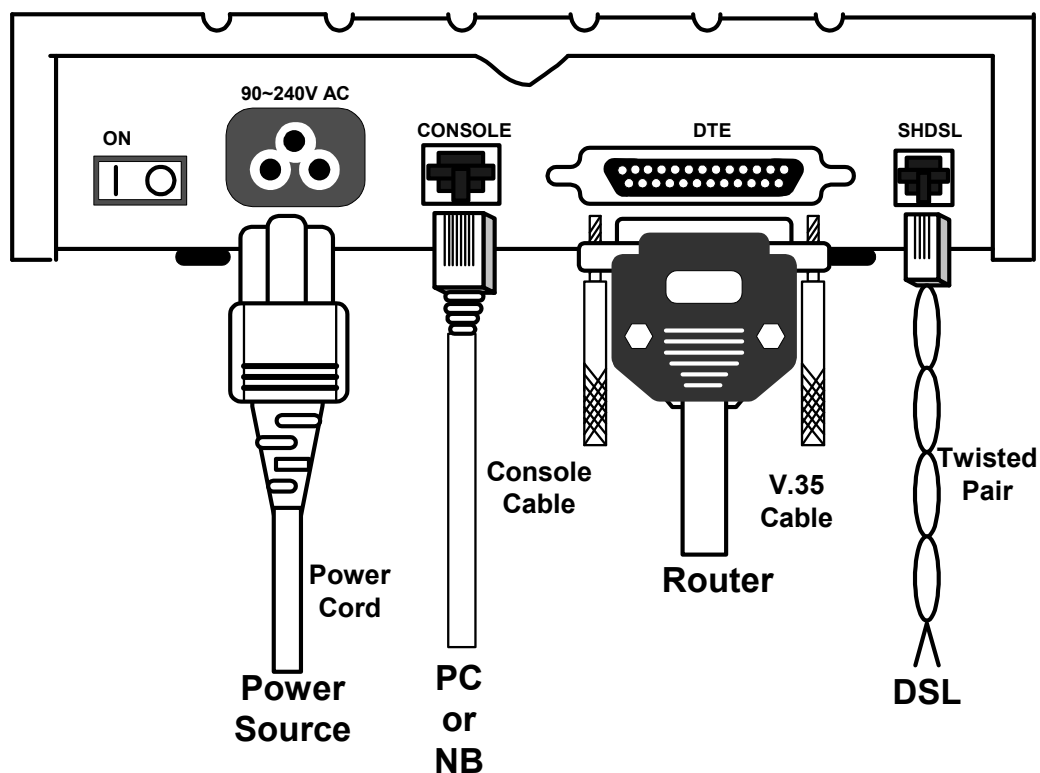
### Connector Description

ON	Power switch. Press 1 for turn on and press 0 for off.
90~240V AC	Power socket. It has power adapting function from 90V to 240V.
CONSOLE	RJ-45 for system configuration and maintenance.
DTE	DB-25 for V.35 cable
SHDSL	RJ-45 or RJ11 for SHDSL

## 2.3 Hardware Installation

**Note:** To avoid possible damage to this router, do not turn on the product before hardware installation.

- I. Plug the power cord in the power socket.
- II. Plug the console port in console if you want to configure the NTU with VT100 program of NB or PC.
- III. Plug V.35 cable
- IV. Plug SHDSL cable
- V. Power on



**Warning!** High voltage. Do not open

## Chapter 3 what's auto configuration?

Some of the embedded functions do not have a separate command to setup but some of them are auto sense with some configurations and change itself configuration. Some of them are always enable function.

### 3.1 Wetting Current

Wetting current, also known as loop sealing current, is a low-level DC current applied to a loop for the specific purpose of maintaining cable splice integrity by preventing the build-up of oxidation. The "enable" applies a relatively  $-42 \pm 2$  V DC voltage to the cables and allows 3~20 mA of current to flow at all times as STU-C type, there has the ability to source wetting current. The product will automatically enable wetting current as STU-C type. As STU-R type, it always terminates the wetting current.





## Chapter 4 Configuration

This chapter provides information about configuration your SHDSL NTU.

**Note:** After you have completed all necessary settings for your SHDSL NTU, make sure to write the new configuration to NVRAM by “write” command and reboot the system for taking effect of new configuration.

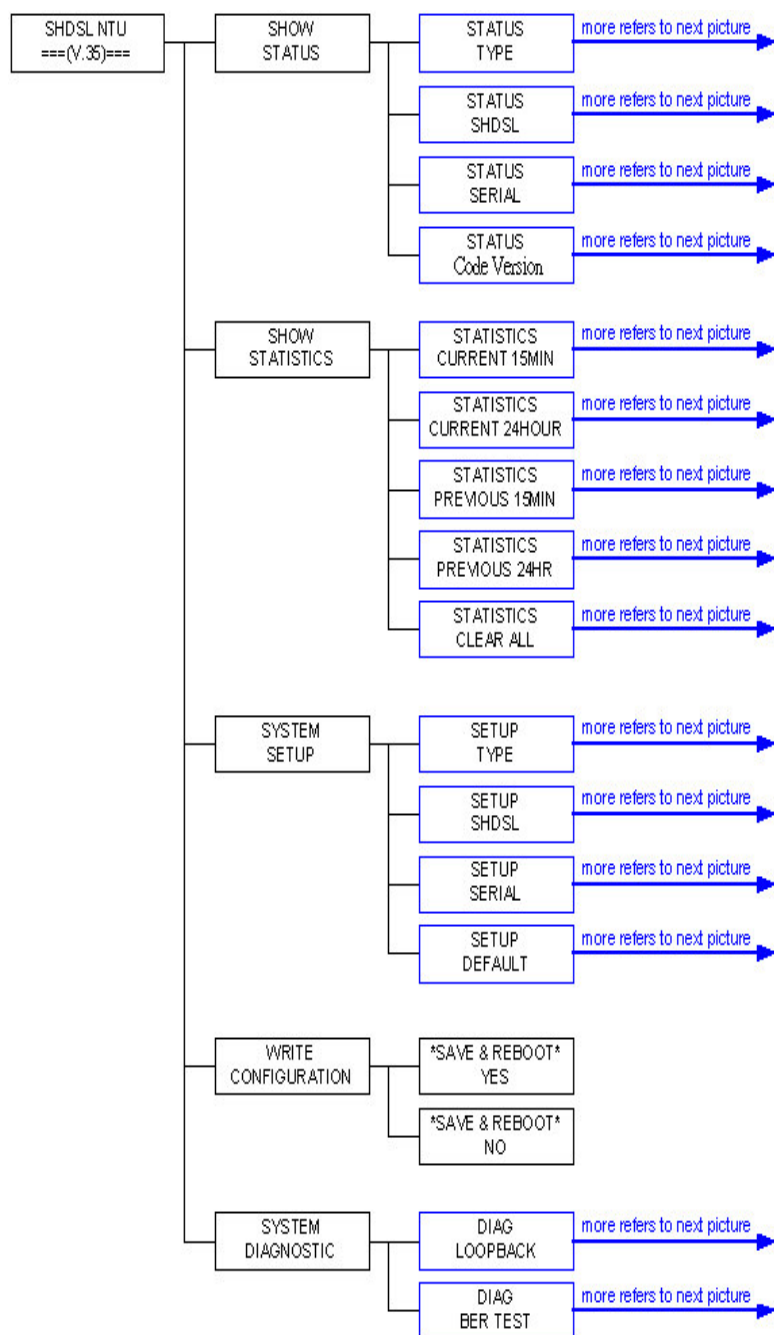
### 4.1 How to use key pads?

The product is designed for user-friendly configuration with keypads and LCD display without using PC or NB with VT100 terminal.

Key Pad	Description
Exit/-	 Return to previous configuration menu.
Enter/+	 Move to next configuration menu or configure the item.
L	 Select other parameter in the same level menu.
R	 Select other parameter in the same level menu.

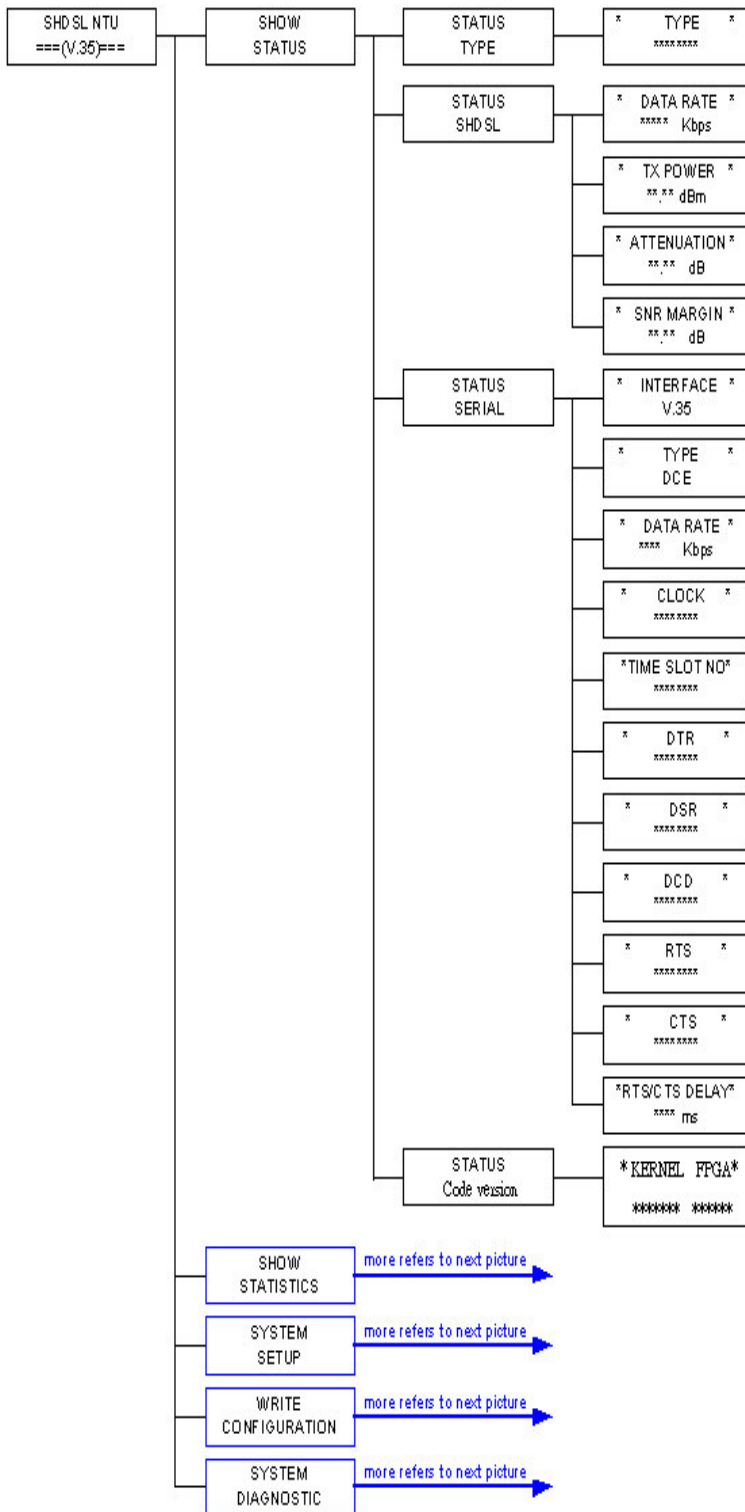
## 4.2 Menu Tree

After turning on the product, LCD will prompt SHDSL NTU. Press **Enter** key to enter. There have five main commands, show status, show statistics, system setup, write configuration and system diagnostic. For more detail information, refer to the each title.



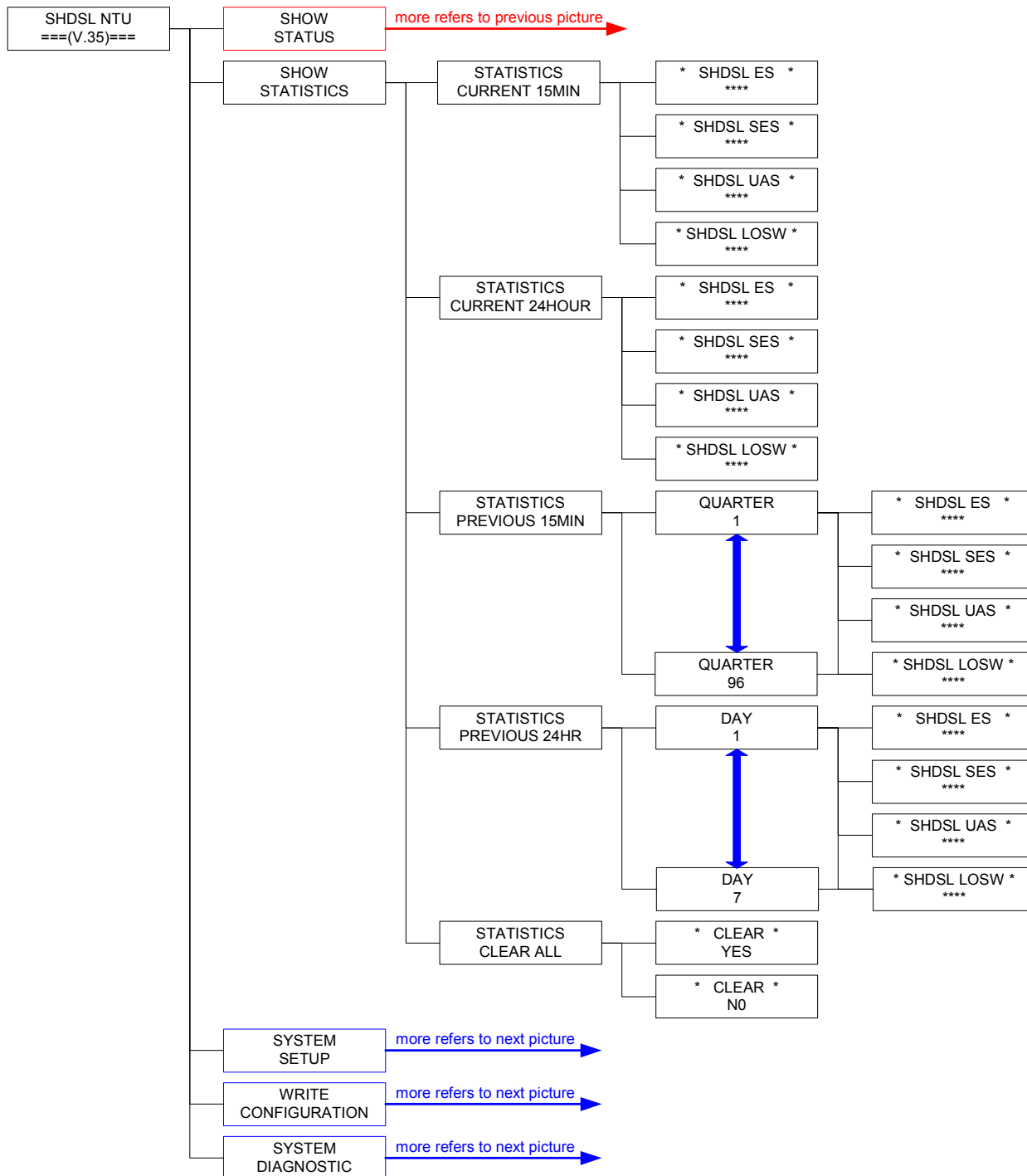
## Menu tree for SHOW STATUS

You can check four kinds of status via LCD display: TYPE, MODE SHDSL and SERIAL.



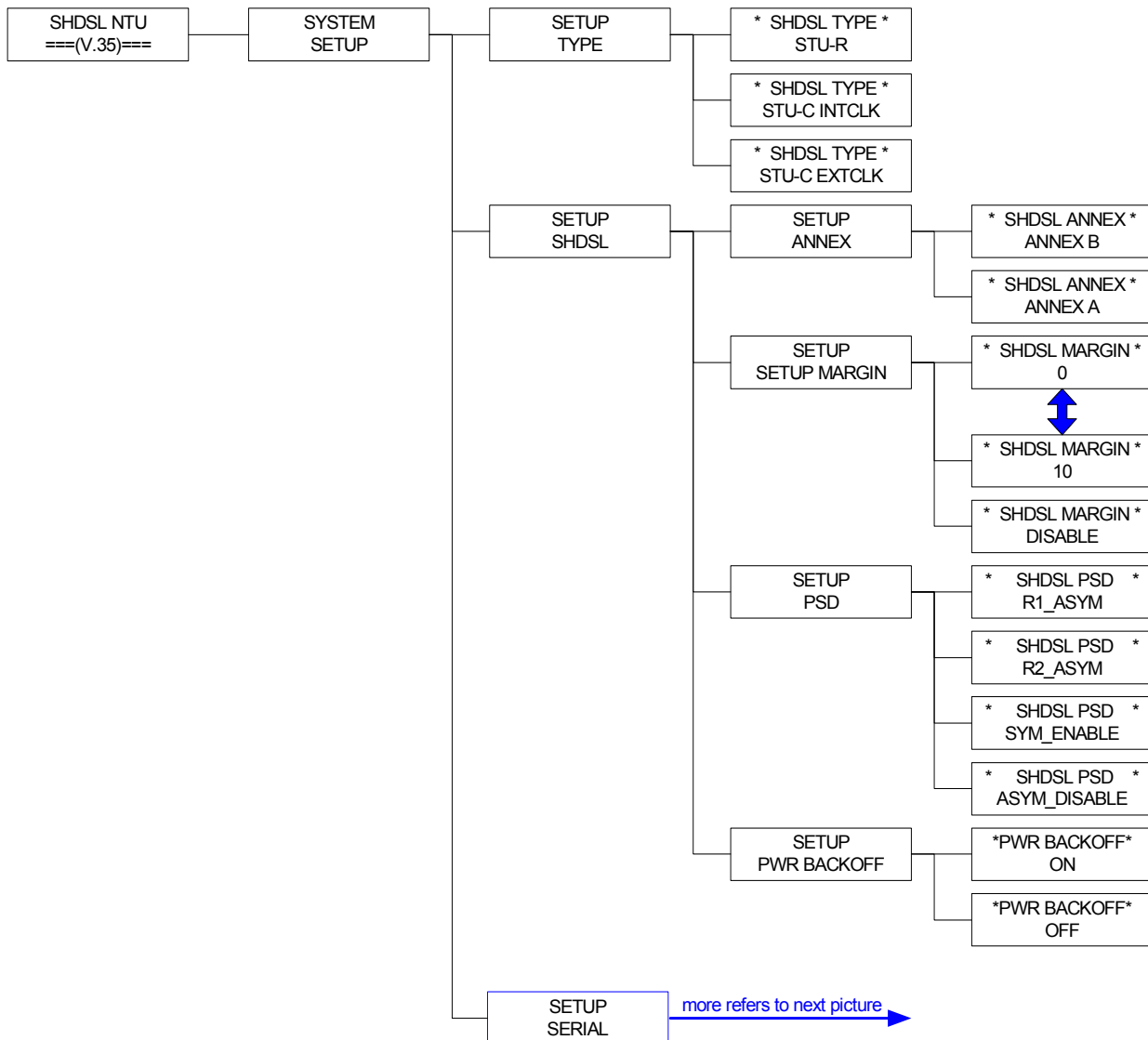
### Menu tree for SHOW STATISTICS

The product can display four kinds of statistics data, the statistic data of SHDSL for current 15 minutes, current 24 hours, previous 15minutes and previous 24 hours.



## Menu tree for SETUP TYPE and SETUP SHDSL

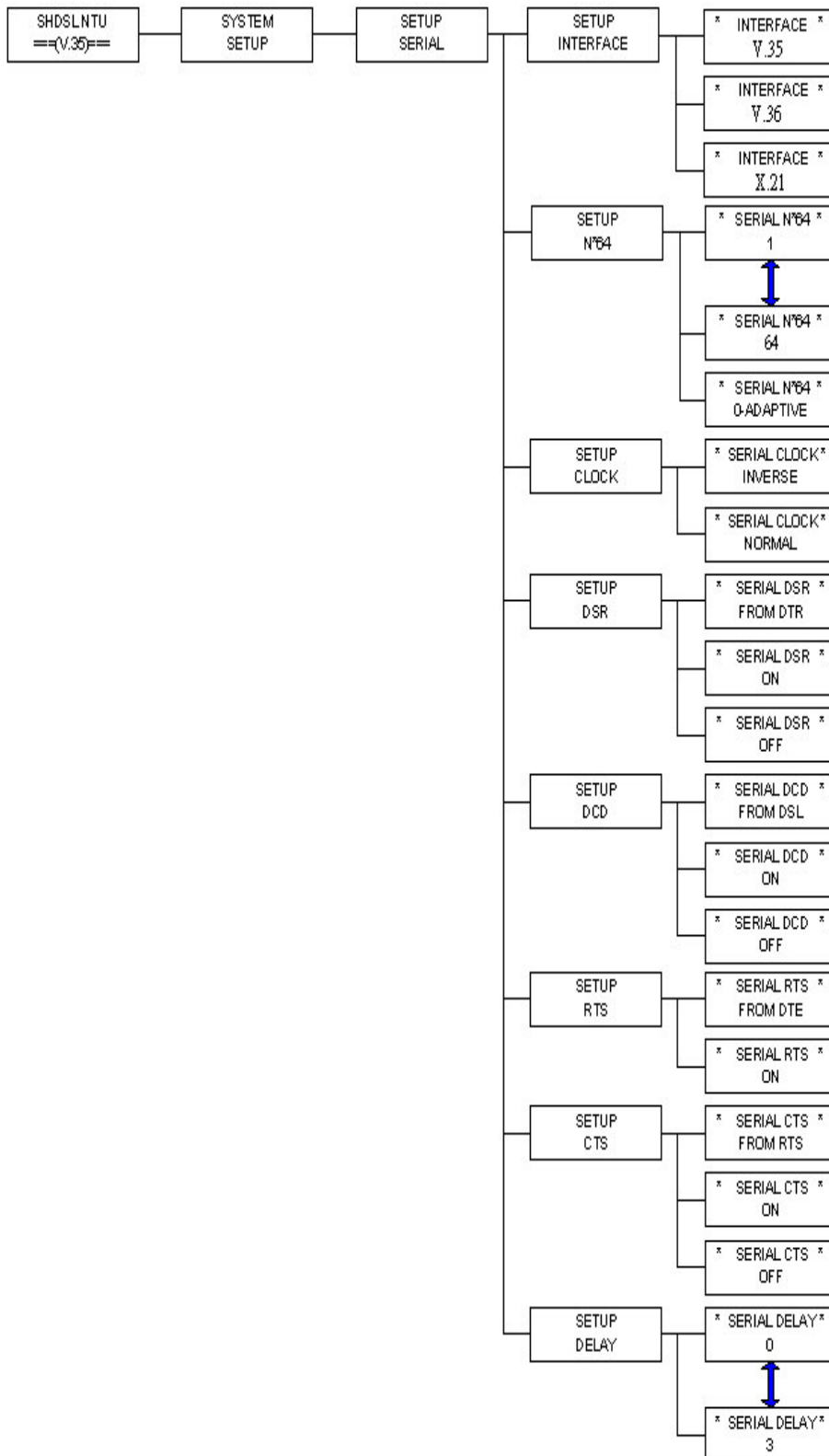
You can configure the mode and SHDSL parameters in this menu tree.





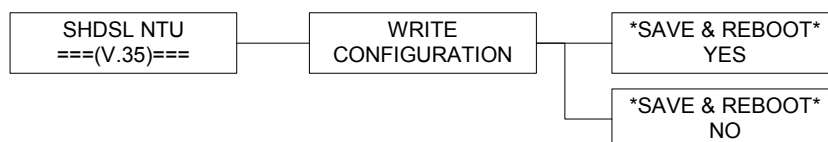
## Menu tree for SETUP SERIAL

You can configure serial interface in this menu.



### Menu tree for SAVE the configuration

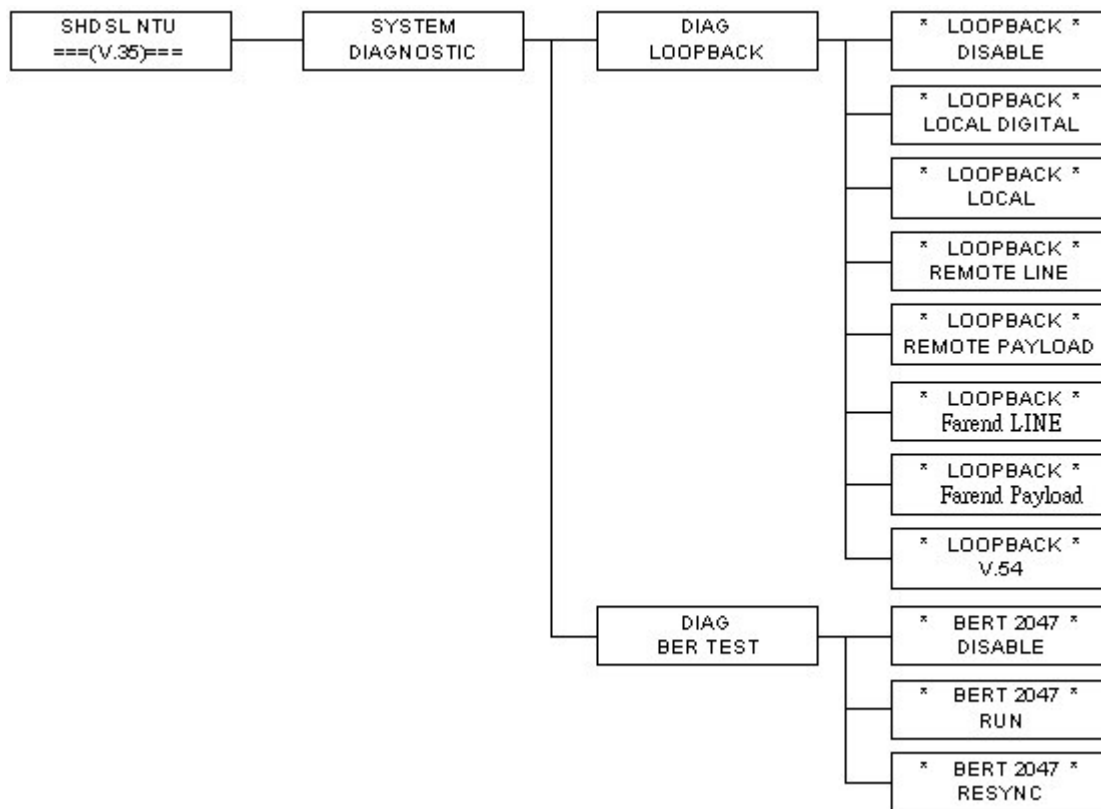
After configuration, the new parameters have to be saved in NVRAM by following the steps. Choose WRITE CONFIGURATION by using **L** or **R** key and press **Enter**. Choose SAVE & REBOOT YES and then press **Enter**. The screen will prompt SAVE & REBOOT OK then press **Enter**.



*Congratulation! You are done. The configuration is complete.*

## System Diagnostic

The route for diagnostic is SHDSL NTU → SYSTEM DIAGNOSTIC → DIAG LOOPBACK.



## Chapter 5 Configuration with Console Port

This chapter provides information about configuring the product via console port with VT100 terminal.


**Note:** After you have completed all necessary settings for your SHDSL NTU, make sure to write the new configuration to NVRAM by “write” command and reboot the system for taking effect of new configuration.

### 5.1 Login Procedure

Check the connectivity of the RS-232 cable from your computer to the console port of Product. Start your terminal access program with VT100 terminal emulation. Configure the serial link with baudrate of 9600, 8 data bits, no parity check, 1 stop bit, and no flow-control, and press the SPACE key until the login screen appears. When you see the login screen, you can logon to the product.

```
User: admin  
Password: *****
```

**Note:** If you have not set any user profile for the SHDSL NTU, enter the factory default user “admin”. When the system prompts you for a password, type “admin” to enter SHDSL NTU.



```
User: admin  
Password: *****_
```

After you type the password, the SMT displays the main menu.

```

                                SHDSL NTU
-----
>> setup          Configure system
   status         Show running system status
   show           View system configuration
   write          Update flash configuration
   reboot        Reset and boot system
   diag          Diagnostic utility
   admin          Setup management features
   upgrade        Software upgrade
   exit          Quit system

-----
Command: setup <more...>_
Message:

-----
<I/K> Move up/down, <L/J> Select/Unselect, <U/O> Move top/bottom, <~Q> Help
  
```

## 5.2 Window structure

From top to bottom, the window will be divided into four parts:

1. Product name
2. Menu field: Menu tree is prompted on this field. “>>” symbol indicates the cursor place.
3. Configuring field: You will configure the parameters in this field. **< parameters >** indicates the parameters you can choose and **< more...>** indicates that there have submenu in the title.
4. Operation command for help

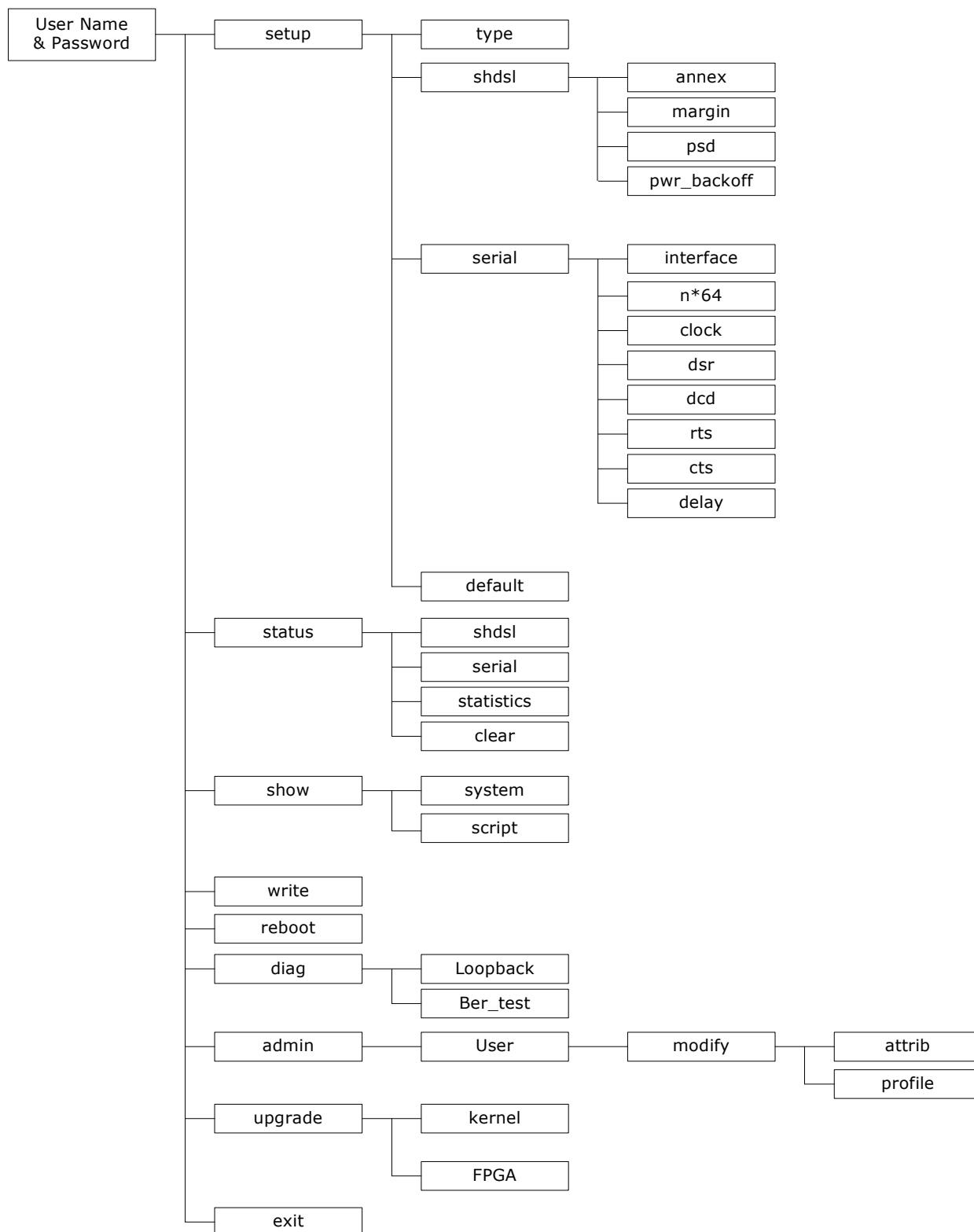
## 5.3 System Management Terminal (SMT)

Before changing the configuration, familiarize yourself with the operations list in the following table. The operation list will be shown on the window.

Keystroke	Description
[UP] or I	Move to above field in the same level menu.
[DOWN] or K	Move to below field in the same lever menu.
[LEFT] or J	Move back to previous menu.
[RIGHT] or L	Move forward to submenu.
[ENTER]	Move forward to submenu.
[TAB]	To choose another parameters.
Ctrl + C	To quit the configuring item.
Ctrl + Q	For help

## Navigating the SMT interface

Use the SMT (System Management Terminal) interface to configure the NTU. The following figure is an overview of the menu tree.



## 5.4 Main Menu Summary

The main menu is prompt as below figure.

<b>Manu Title</b>	<b>Function</b>
Setup	Use this menu to setup SHDSL type, SHDSL parameters and serial parameters or restore factory default setting.
Status	Use this menu to show SHDSL status, serial status and statistics or clear the statistics
Show	Use this menu to show general information, all configurations and all configurations in command script.
Write	Use this menu to save your configuration.
Reboot	Use this menu to reset and reboot the system
Diagn	Use this menu to setup diagnostic utility
Admin	Use this menu to manage user profile and change user password
Upgrade	Use this menu to upgrade kernel and FPGA.
Exit	Use this menu to exit STM

## 5.5 Changing the password and user profile

The SHDSL NTU comes pre-configured with user profile 1 already established, that is, user “admin” and password “admin” with menu driven interface. The maximum number of user profile is limited to 5 users. You can add, delete and modify the users in Admin menu.

For system security, suggest to change the default user name and password by performing the following steps.

**Note:** After changing the User Name and Password, strongly recommend you to save them because another time when you login, the User Name and Password have to be used the new one you changed.

**Step 1:** Move the cursor to **admin** and press [ENTER] or [RIGHT].

```
-----
setup      Configure system
status     Show running system status
show       View system configuration
write      Update flash configuration
reboot     Reset and boot the system
diag       Diagnostic utility
>> admin   Setup management features
upgrade    Software upgrade
exit       Quick system
-----
```

**Step 2:** Choose **user** and press [ENTER] or [RIGHT].

```
-----
>> user    Manage user profile
-----
```

**Step 3:** Select **modify** and press [ENTER] or [RIGHT].

```
-----
>> modify  Modify user profile
-----
```

**Step 4:** The default user name and password is pre-configured in user profile 1. For changing the default setting, type **1** to modify.

```
-----
Command: admin user modify <1~5> <more...>
Message: Please input the following information.
```

```
Legal access user profile number <1~5>: 1
-----
```



---

**Step 5:** Move the cursor to **profile** and press [ENTER] or [RIGHT]

```
-----  
  attrib      UI mode  
>> profile   User name and password  
-----
```

**Step 6:** Type the new user name, old password (admin), new password and retype the new password to confirm. For security, the passwords are prompted as star symbol.

**Note:** After setting the user name and password, strongly suggest you to save them. In the next time when you login, you have to use the new user name and password.

```
-----  
Command: admin user modify 1 profile <name> <pass-conf>  
Message: Please input the following information.
```

```
Legal user name (Enter for default) <admin>: test  
Input the old Access password: *****  
Input the new Access password: *****  
Re-type Access password: *****  
-----
```

There are two UI modes, command mode and menu mode, used for setting the product. User can determine one kind for configuration the product in the **attrib** command.

```
-----  
>> attrib      UI mode  
  profile      User name and password  
-----
```

```
Command: admin user modify 1 attrib <Command|Menu>  
Message: Please input the following information.
```

```
User interface (Tab select) <Menu>: Menu  
-----
```

---

## 5.6 Setup the SHDSL NTU

This section provides information about configuration the SHDSL NTU. Follow the procedures:

In main menu, select **setup** and press [ENTER] or [RIGHT]

```
-----  
>> Setup      Configure system  
   status     Show running system status  
   show       View system configuration  
   write      Update flash configuration  
   reboot     Reset and boot the system  
   diag       Diagnostic utility  
   admin      Setup management features  
   upgrade    Software upgrade  
   exit       Quick system  
-----
```

The screen will prompt as follow

```
-----  
>> type       Configure shdsl type  
   shdsl      Configure shdsl parameters  
   serial     Setup serial parameters  
   default    Restore factory default setting  
-----
```

---

## Configure SHDSL type

This section will introduce the configuring of SHDSL type: STU-R and STU-C-INTCLK. The default operation type is STU-R.

Select **type** and press [ENTER] or [RIGHT] to setup SHDSL type. Press [TAB] to select the operating type and press enter to finish setting.

```
-----  
>> type      Configure shdsl type  
   shdsl     Configure shdsl parameters  
   serial    Setup serial parameters  
   default   Restore factory default setting
```

```
-----  
Command: setup type <STU-R, STU-C-INTCLK>  
Message: Please input the following information.
```

```
SHDSL operation type (TAB Select) <STU-R>: STU-C-INTCLK
```

```
-----
```

INTCLK: The device will generate the appropriate clock speed defined by the speed setting of the interface.

## Configure SHDSL parameters

This section provides to setup SHDSL parameters: Annex type, margin, psd and power back off.

Select SHDSL and press [ENTER] or [RIGHT].

```
-----
type          Configure shdsl type
>> shdsl      Configure shdsl parameters
serial        Setup serial parameters
default       Restore factory default setting
-----
```

For setting the SHDSL Annex type, move the cursor to **annex** and press [ENTER]. Select the annex type by using [TAB] key.

```
-----
>> annex      Configure shdsl annex
margin         Configure shdsl margin
psd            Configure shdsl psd
pwr_backoff    Configure shdsl power back-off
-----
```

```
-----
Command: setup shdsl annex <Annex_A|Annex_B>
Message: Please input the following information.
-----
```

Annex Type (TAB Select) <Annex\_A>: **Annex\_B**

For setting SHDSL Margin, move the cursor to **margin** and press [ENTER]. Select the Stratup margin via [TAB] key and key in the Next margin

```
-----
annex          Configure shdsl annex
>> margin      Configure shdsl margin
psd            Configure shdsl psd
Wetting current Configure power feeding
pwr_backoff    Configure shdsl power back-off
-----
```

```
-----
Command: setup shdsl margin <0~10|(Disable)>
Message: Please input the following information.
-----
```

Set Startup Margin (TAB Select) <0~10|99(Disable)>: **0~10**  
 Set Next Margin (Enter for default): **0**

For configuring SHDSL PSD, move the cursor to **psd** and press [ENTER]. Select the

---

parameter via [TAB] key.

```
-----  
annex          Configure shdsl annex  
margin         Configure shdsl margin  
>> psd         Configure shdsl psd  
wetting current Configure power feeding  
pwr_backoff    Configure shdsl power back-off  
-----
```

```
Command: setup shdsl psd <r1_asym|r2_asym|sym_enable|asym_disable>  
Message: Please input the following information.
```

```
SHDSL PSD (TAB Select) <r1_asym>: r2_asym  
-----
```

The SHDSL PSD will enable the transceiver to use an asymmetric power spectral density, as specified in the G.991.2 standard.

Possible values for PSD are:

- r1\_asym: 786kbps for Annex A, 2312kbps for Annex B
- r2\_asym: 1552kbps for Annex A, 2056kbps for Annex B
- sym\_enable: Symmetric and Asymmetric enable.
- asym\_disable: Symmetric enable and asymmetric disable.

For configuring SHDSL power backoff, move the cursor to **pwr\_backoff** and press [ENTER]. Select enable or disable via [TAB] key.

```
-----  
annex          Configure shdsl annex  
margin         Configure shdsl margin  
psd           Configure shdsl psd  
>> pwr_backoff Configure shdsl power back-off  
-----
```

```
Command: setup shdsl pwr_backoff <disable|enable>  
Message: Please input the following information.
```

```
SHDSL Power Backoff (TAB Select) <disable>: disable  
-----
```

The power backoff of SHDSL is a transmit power negotiation mechanism applied between STU-C and STU-R to limit the power transmitted on the SHDSL line to the minimum necessary for a clear signal to be received at the STU-C.

## Configure Serial parameters

This section introduce the setting of serial interface, data rate, clock, dsr, dcd, rts, cts and delay. Select **serial** and press [ENTER] or [RIGHT].

```
-----
type      Configure shdsl type
shdsl     Configure shdsl parameters
>> serial Setup serial parameters
default   Restore factory default setting
-----
```

For configuring interface, move the cursor to **interface** and press [ENTER]. Select the parameter via [TAB] key.

```
-----
>> Interface Configure serial interface
n*64      Configure serial n*64
clock     Configure serial clock
dsr       Configure serial dsr
dcd       Configure serial dcd
rts       Configure serial rts
cts       Configure serial cts
delay     Configure serial delay
-----
```

```
Command: setup serial interface <v.35|v.36|x.21>
Message: Please input the following information.

SHDSL serial interface (TAB Select) <v.35>: v.35
-----
```

For configuring the data rate, move the cursor to **n\*64** and press [ENTER]. Select the parameter via [TAB] key. Setting of n is equal to 0 indicates adaptive mode.

```
-----
Interface Configure serial interface
>> n*64      Configure serial n*64
clock     Configure serial clock
dsr       Configure serial dsr
dcd       Configure serial dcd
rts       Configure serial rts
cts       Configure serial cts
delay     Configure serial delay
-----
Command: setup serial n*64 <0~36>
Message: Please input the following information.

SHDSL SERIAL n*64 (Enter for default) <36>: 13
-----
```

For configuring clock, move the cursor to **clock** and press [ENTER]. Select the

---

parameter via [TAB] key.

```
-----  
Interface Configure serial interface  
n*64      Configure serial n*64  
>> clock  Configure serial clock  
dsr       Configure serial dsr  
dcd       Configure serial dcd  
rts       Configure serial rts  
cts       Configure serial cts  
delay     Configure serial delay  
-----
```

```
Command: setup serial clock <normal|reverse>  
Message: Please input the following information.
```

```
SHDSL SERIAL clock (TAB Select) <normal>: reverse  
-----
```

For configuring dsr, move the cursor to **dsr** and press [ENTER]. Select the parameter via [TAB] key.

```
-----  
Interface Configure serial interface  
n*64      Configure serial n*64  
clock     Configure serial clock  
>> dsr    Configure serial dsr  
dcd       Configure serial dcd  
rts       Configure serial rts  
cts       Configure serial cts  
delay     Configure serial delay  
-----
```

```
Command: setup serial dsr <on|off|from_dtr>  
Message: Please input the following information.
```

```
SHDSL SERIAL dsr (TAB Select) <from_dtr>: on  
-----
```

---

For configuring dcd, move the cursor to **dcd** and press [ENTER]. Select the

---

parameter via [TAB] key.

```
-----  
Interface Configure serial interface  
n*64      Configure serial n*64  
clock     Configure serial clock  
dsr       Configure serial dsr  
>> dcd    Configure serial dcd  
rts       Configure serial rts  
cts       Configure serial cts  
delay     Configure serial delay  
-----
```

```
Command: setup serial dcd <on|off|from_dsl>  
Message: Please input the following information.
```

```
SHDSL SERIAL dcd (TAB Select) <from_dsl>: on  
-----
```

For configuring rts, move the cursor to **rts** and press [ENTER]. Select the parameter via [TAB] key.

```
-----  
Interface Configure serial interface  
n*64      Configure serial n*64  
clock     Configure serial clock  
dsr       Configure serial dsr  
dcd       Configure serial dcd  
>> rts    Configure serial rts  
cts       Configure serial cts  
delay     Configure serial delay  
-----
```

```
Command: setup serial rts <on|form_dte>  
Message: Please input the following information.
```

```
SHDSL SERIAL rts (TAB Select) <from_dte>: on  
-----
```

---

For configuring cts, move the cursor to **cts** and press [ENTER]. Select the parameter



---

via [TAB] key.

```
-----  
Interface Configure serial interface  
n*64      Configure serial n*64  
clock     Configure serial clock  
dsr       Configure serial dsr  
dcd       Configure serial dcd  
rts       Configure serial rts  
>> cts    Configure serial cts  
delay     Configure serial delay
```

```
-----  
Command: setup serial cts <on|off|from_rts>  
Message: Please input the following information.
```

```
SHDSL SERIAL cts (TAB Select) <from_rts>: on
```

For configuring delay, move the cursor to **delay** and press [ENTER]. Type the number.

```
-----  
Interface Configure serial interface  
n*64      Configure serial n*64  
clock     Configure serial clock  
dsr       Configure serial dsr  
dcd       Configure serial dcd  
rts       Configure serial rts  
cts       Configure serial cts  
>> delay  Configure serial delay
```

```
-----  
Command: setup serial delay <0~3>  
Message: Please input the following information.
```

```
SHDSL SERIAL delay (Enter for default) <3>: 2
```

## Restore factory default

If you want to restore factory default setting in setup, select **default** and press [ENTER] or [RIGHT].

```
-----  
type      Configure shdsl type  
shdsl     Configure shdsl parameters  
serial    Setup serial parameters  
>> default Restore factory default setting  
-----
```

```
Command: setup default
```

```
Message: Please input the following information.
```

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

If you enter “y” the setup field will be automatically configured to factory default setting.

---

## 5.7 Write the setup parameters

After configuration, write the new configured parameters into NVRAM and reboot the SHDSL NTU to work with new parameters. Follow the procedure;

**Step 1:** In main menu, move the cursor to **write** and press [ENTER].

```
-----  
  setup      Configure system  
  status     Show running system status  
  show       View system configuration  
>> write     Update flash configuration  
  reboot     Reset and boot the system  
  diag       Diagnostic utility  
  admin      Setup management features  
  upgrade    Software upgrade  
  exit       Quick system  
-----
```

**Step 2:** Type "y" to write the new parameters

```
-----  
Command: write <CR>
```

```
Message: Please input the following information.
```

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

## 5.8 Reboot the SHDSL NTU

To work the SHDSL NTU with new parameters, you have to reboot it after writing the parameters into NVRAM. Follow the procedure;

**Step 1:** In main menu, move the cursor to **reboot** and press [ENTER].

```
-----  
setup      Configure system  
status     Show running system status  
show       View system configuration  
write      Update flash configuration  
>> reboot  Reset and boot the system  
diag       Diagnostic utility  
admin      Setup management features  
upgrade    Software upgrade  
exit       Quick system  
-----
```

**Step 2:** Type “y” to reboot the SHDSL NTU.

```
-----  
Command: reboot <CR>  
Message: Please input the following information.  
  
Do you want to reboot? (y/n): y  
-----
```

---

## 5.9 View the system status, statistic data and clear data

You can use the status command to view the status of SHDSL, E1 as well as statistic and clear the statistic log. Select **status** and press [ENTER].

```
-----  
  setup      Configure system  
>> status    Show running system status  
  show       View system configuration  
  write      Update flash configuration  
  reboot     Reset and boot the system  
  diag       Diagnostic utility  
  admin      Setup management features  
  upgrade    Software upgrade  
  exit       Quick system  
-----
```

Select **SHDSL** command to show the status of SHDSL.

```
-----  
>> shdsl     Show shdsl status  
  serial     Show serial status  
  statistic  Show statistic  
  clear     Clear statistic  
-----
```

Select **serial** command to show the status of DTE.

```
-----  
  shdsl     Show shdsl status  
>> serial    Show serial status  
  statistic Show statistic  
  clear     Clear statistic  
-----
```

Select **statistic** command to show the statistic information in 15 minutes or 24 hour via [TAB] to choose.

```
-----  
  shdsl     Show shdsl status  
  serial    Show serial status  
>> statistic Show statistic  
  clear     Clear statistic  
-----
```

```
Command: status statistic <15m|24h>  
Message: Please input the following information.
```

```
SHDSL Statistic (TAB Select): 15m  
-----
```

---

To clear the statistic log file, select **clear** and press [ENTER].

-----  
shdsl        Show shdsl status  
serial      Show serial status  
statistic   Show statistic  
>> clear     Clear statistic  
-----

---

## 5.10 View System Configuration

By using show command, you can view the system configuring. Select **show** and press [ENTER] or [RIGHT].

```
-----  
  setup      Configure system  
  status     Show running system status  
>> show     View system configuration  
  write      Update flash configuration  
  reboot     Reset and boot the system  
  diag       Diagnostic utility  
  admin      Setup management features  
  upgrade    Software upgrade  
  exit       Quick system  
-----
```

To show system information, select **system** and press [ENTER] or [RIGHT]. The screen will prompt the system information.

```
-----  
>> system    Show general information  
  script     Show all configuration in command script  
-----
```

To show the configuration in command script, select **script** and press [ENTER] or [RIGHT]. The screen will prompt the configuration in script form.

```
-----  
  system     Show general information  
>> script    Show all configuration in command script  
-----
```

## 5.11 Upgrade the SHDSL NTU

This section will introduce how to upgrade the kernel and FPGA of SHDSL NTU. Select **upgrade** in main menu and press [ENTER] or [RIGHT].

```
-----  
setup      Configure system  
status     Show running system status  
show       View system configuration  
write      Update flash configuration  
reboot     Reset and boot the system  
diag       Diagnostic utility  
admin      Setup management features  
>> upgrade Software upgrade  
exit       Quick system  
-----
```

Before upgrading the NTU you must have the main software or FPGA code in your computer.

If you want to upgrade the kernel:

1. Select **kernel** and press [ENTER] or [RIGHT].

```
-----  
>> kernel  Upgrade main software  
    FPGA   Upgrade FPGA code  
-----
```

2. Confirm the process via pressing “y”

```
-----  
Command: upgrade kernel <CR>
```

```
Message: Please input the following information.
```

```
Are you sure (y/n)?: (Note: this will erase flash) y  
-----
```

3. After entering “y”, the SMT will show

```
-----  
Utility running window...  
Starting XModem download...CCC  
-----
```

4. Click Send file in terminal access program, hyper terminal, to send the file.

5. Select the source file in window and press OK.

6. After upgrading the product, press “y” to write in flash.



---

If you want to upgrade the FPGA code:

1. Select **FPGA** and press [ENTER] or [RIGHT].

```
-----  
kernel      Upgrade main software  
>> FPGA     Upgrade FPGA code  
-----
```

```
-----  
Command: upgrade FPGA <CR>
```

```
Message: Please input the following information.
```

```
Are you sure (y/n)?: (Note: this will erase flash) y  
-----
```

2. After entering “**y**”, the SMT will show

```
-----  
Utility running window...  
Starting XModem download...CCC  
-----
```

3. Click Send file in terminal access program, hyper terminal, to send the file.
4. Select the source file in window and press OK.
5. After upgrading the product, press “**y**” to write in flash.

## 5.12 Diagnostic

The diagnostic facility allows you to test the different aspects of your SHDSL NTU to determine if it is working properly. Select **diag** and press [ENTER] or [RIGHT].

```
-----
Setup      Configure system
status     Show running system status
show       View system configuration
write      Update flash configuration
reboot     Reset and boot the system
>> diag   Diagnostic utility
admin      Setup management features
upgrade    Software upgrade
exit       Quick system
-----
```

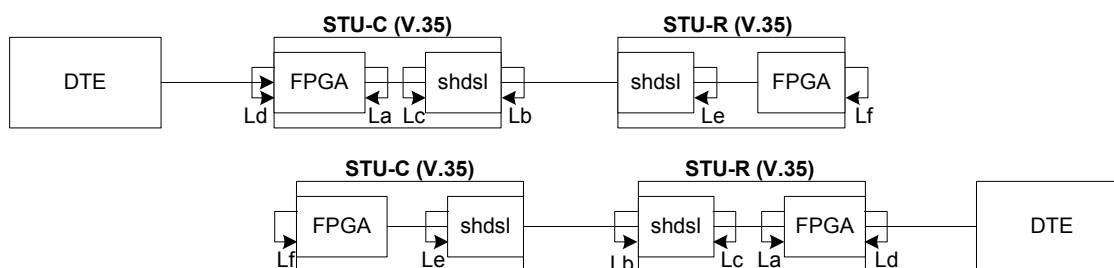
Loopback can test whether the NTU is properly worked with the connection device. Press [ENTER] or [RIGHT] to setup the loopback.

```
-----
>> loopback Loopback
ber_test Ber_test
-----
```

```
-----
Command:... <disable|local_digital|local|remote_line|remote_payload|v.54>
Message: Please input the following information.
```

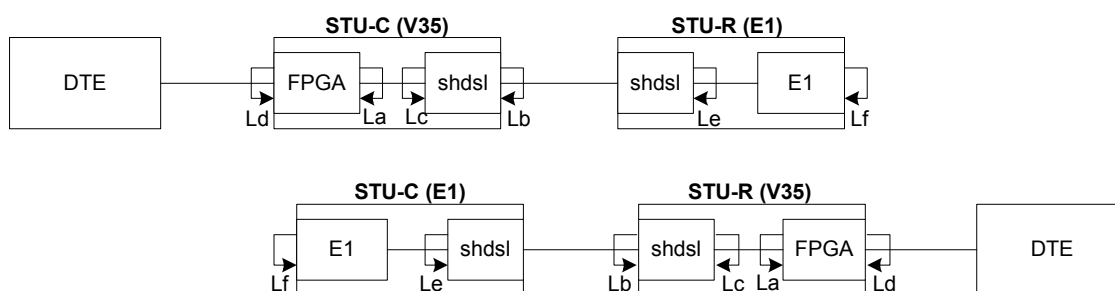
```
SHDSL Loopback Type (TAB Select) <disable>: local_digital
-----
```

### Loopback define V.35 vs V.35



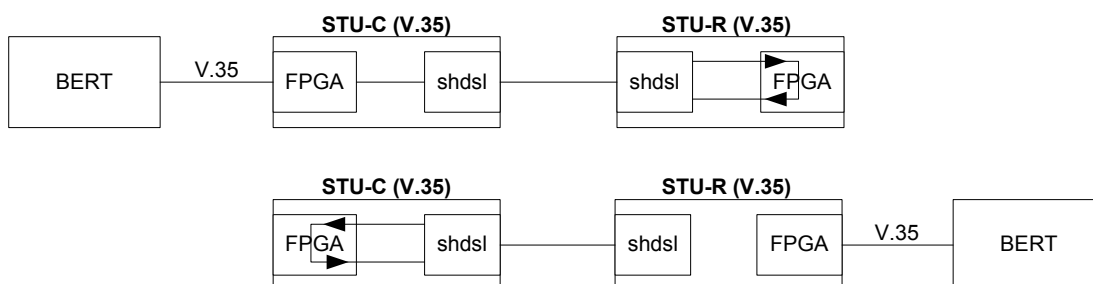
Local Digital	La
Local	Lb
Remote Line	Lc
Remote Payload	Ld
Far End SHDSL	Le
Far End Payload	Lf

### Loopback Define V.35 vs E1



Local Digital	La
Local	Lb
Remote Line	Lc
Remote Payload	Ld
Far End SHDSL	Le
Far End Payload	Lf

### Loopback Define V.54



For Ber\_test, move the cursor to **ber\_test** and press [ENTER] or [RIGHT].

```
-----
loopback Loopback
>> ber_test Ber_test
```

```
-----
Command: diag ber_test <disable|2047|resync>
Message: Please input the following information.
```

```
SHDSL Ber_test Type (TAB Select) <disable>: 2047
-----
```

## 5.13 Exit SMT

For exiting SMT without saving any configuration, you can use **exit** command to exit the SMT. Select **exit** and press [ENTER] or [RIGHT].

```
-----  
setup      Configure system  
status     Show running system status  
show       View system configuration  
write      Update flash configuration  
reboot     Reset and boot the system  
diag       Diagnostic utility  
admin      Setup management features  
upgrade    Software upgrade  
>> exit    Quick system  
-----
```

```
-----  
Command: exit <CR>
```

```
Message: Please input the following information.
```

```
Do you want to disconnect? (y/n) : y  
-----
```

After press [ENTER], the SMT will be disconnected.

## Appendix I

### Abbreviation

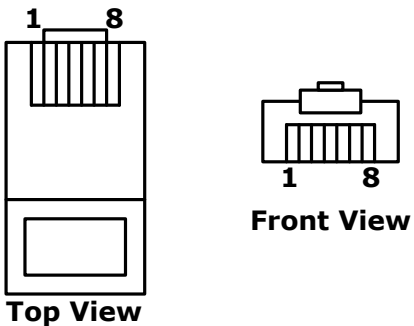
<b>ASYM</b>	Asymmetric
<b>BER</b>	Bit error rate
<b>CTS</b>	Clear to send
<b>DCD</b>	Data carrier detect
<b>DCE</b>	Data communication equipment
<b>DSL</b>	Digital subscriber loop
<b>DSR</b>	Data set ready
<b>DTE</b>	Data terminal equipment
<b>DTR</b>	Data terminal ready
<b>E BIT GEN</b>	E bit generation
<b>EOC</b>	Embedded operations channel
<b>ES</b>	Error second
<b>ESF</b>	Extended super frame
<b>FAS</b>	Frame alignment signal
<b>LINE BUILD OUTS</b>	Distance of cable between NTU and Router or PABX
<b>LOSW</b>	Loss of synchronization word
<b>PSD</b>	Power spectral density
<b>RAI</b>	Remote alarm indication
<b>RESYNC</b>	Resynchronization
<b>RTS</b>	Request to send
<b>R1 ASYM</b>	Symmetric speed, 784kbps for Annex A or 2312kbps for Annex B
<b>R2 ASYM</b>	Symmetric speed, 1552kbps for Annex A or 2056kbps for Annex B
<b>SES</b>	Sever error second
<b>SF</b>	Super Frame
<b>SNR MARGIN</b>	Signal to noise ration margin
<b>STU-C-INTCLK</b>	STU-C internal clock
<b>STU-R-EXTCLK</b>	STU-R external clock
<b>SYM</b>	Symmetric
<b>SYNC</b>	Synchronization
<b>TX POWER</b>	Transmission power
<b>UAS</b>	Unavailable second
<b>UI</b>	User interface

## Appendix II

### Connector Architecture

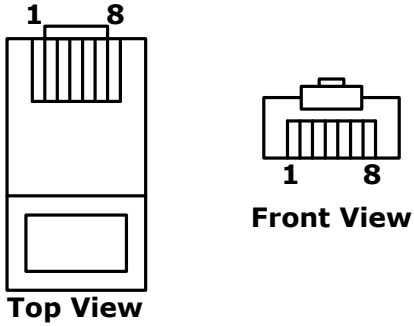
#### SHDSL Interface Pin Assignments (RJ-45)

The SHDSL interface is standard eight-pin modular jack. The table below displays the pin out assignments.

Pin Number	Description	Figure
1	No connection	 <p><b>Top View</b></p> <p><b>Front View</b></p>
2	No connection	
3	No connection	
4	ANALOG Input/Output	
5	ANALOG Input/Output	
6	No connection	
7	No connection	
8	No connection	

#### Console Port Pin Assignments (RJ-45 DCE Mode)

The Console Port interface is a 8 position Modular Jack. The table below displays the pin out assignments.

Pin Number	Description	Figure
1	No connection	 <p><b>Top View</b></p> <p><b>Front View</b></p>
2	No connection	
3	No connection	
4	GND	
5	RXD	
6	TXD	
7	No connection	
8	No connection	

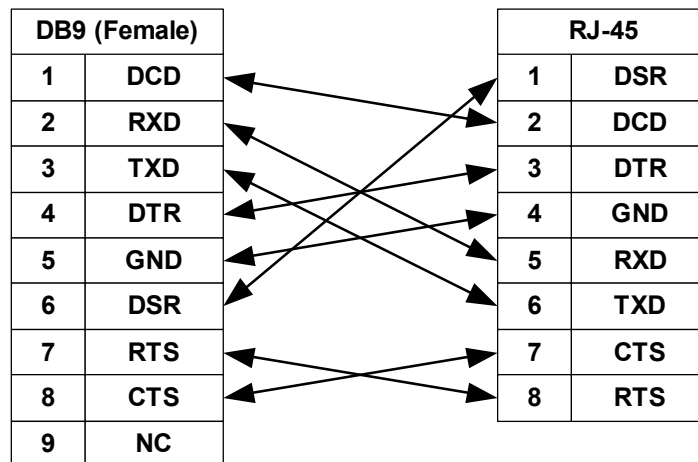
## Serial Interface Pin Assignments

The table below displays Serial Interface Pin Assignments for the DCE Mode.

Function	Abbrev.	Direction	DB-25*	V.35	V.36	X.21
Frame Ground	FG	N/A	1	A	20	1
Transmit Data	TD	Input	2	P	4	2
Receive Data	RD	Output	3	R	6	4
Request to Send	RTS	Input	4	C	7	3
Clear to Send	CTS	Output	5	D	9	
Data Set Ready	DSR	Output	6	E	11	
Signal Ground	SG	N/A	7	B	19	8
Data Carrier Detect	DCD	Output	8	F	13	5
Secondary Receiver Clock	(S)RC	Output	9	X	26	13
Secondary Data Carrier Detect	(S)DCD	Output	10		31	12
Secondary External Transmitter Clock	(S)ETC	Input	11	W	35	7
Secondary Transmitter Clock	(S)TC	Output	12	AA	23	
Secondary Clear to Send	(S)CTS	Output	13		27	
Secondary Transmit Data	(S)TD	Input	14	S	22	9
Transmitter Clock	TC	Output	15	Y	5	
Secondary Receive Data	(S)RD	Output	16	T	24	11
Receiver Clock	RC	Output	17	V	8	6
Local Loopback			18			
Secondary Request to Send	(S)RTS	Input	19		25	10
Data Terminal Ready	DTR	Input	20	H	12	
Remote Loopback			21			
Secondary Data Set Ready	(S)DSR	Output	22		29	
Secondary Data Terminal Ready	(S)DTR	Input	23		30	
External Transmitter Clock	ETC	Input	24	U	17	14
Test Indicator			25			

## Cable Connection

### DB9 vs. RJ45 Cable (Console)



### DB25 (M) vs. M.34 (M) Cable (V.35)

