USER MANUAL

SHDTU03

G.SHDSL NTU Series
(V.35 Interface)
Standalone Type

Version 1.01
Sep. 2002

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Chapter 1 Introduction

The SHDSL NTU offers two different ways to connect customers to high-speed TDM services either with a G.703 or with an EIA-530A interface. The industry standard EIA-530A interface can be configured as a V.35, X.21 or V.36 connection. The G.703 interface will carry 2.048Mbps/1.544Mbps, and the EIA-530A 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
Line Interface
• SHDSL (2-wire): RJ-48 jack
• Loop rates: 192 kbps to 2.304 Mbps Nx64 kbps (N=3 to 36)
Framing
• G.703/G.704
• CRC 4 enable/disable
• Framed
• Unframed
DSL Timing
• Network
• Internal
• DTE
DTE Interface (Digital for 5010)
• Bit Rate: 64 kbps to 2.304Mbps N x 64 kbps (N=1 to 36)

• Support: V.35, X.21 and V.36

DTE Interface (T1/E1 for 5000)

• RJ-48C for T1/E1
• BNC for E1 (option)

Performance Monitoring

• ES, SES, UAS, Alarms, Errors for T1/E1, SHDSL
• Threshold Crossing Notification

Loopback Tests

• Local Loopback
• Digital Loopback
• Remote Loopback

Physical/Electrical

• Dimensions: 19.5 x 4.8 x 16.8 cm
• Input: 90~240VAC with 50~60Hz or -48VDC
• Power Consumption: 7W Max
• Operation: 0 to 50°C
• Humidity: Up to 95% (non-condensing)

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 (refer to figure 2.1).

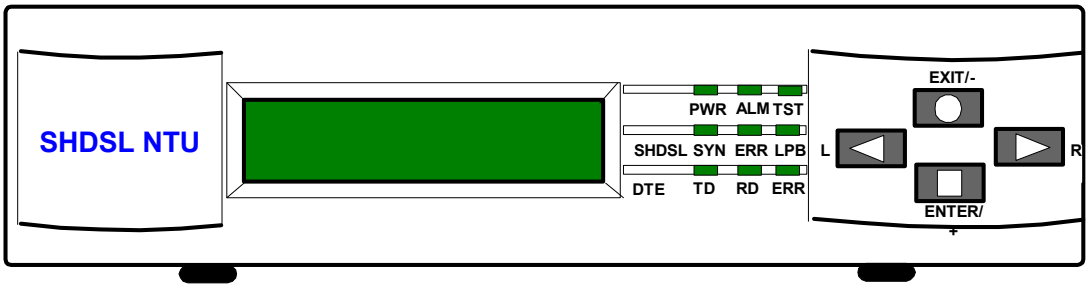


Figure 2.1

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 chapeter 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 nomarlly.
SHDSL	SYN	Green	On	SHDSL line is connected.
			Blink	Data transmit in SHDSL line.
			Off	SHDSL line is dropped.
	ERR	Red	Blink	There are error seconds.
			Off	There is not only error second.
	LPB	Yellow	On	Loopback is on.
			Off	Loopback is off.
G.703	SYN	Green	On	V.35 line is connected.
			Off	V.35 line is dropped.
	ERR	Red	Blink	There are error seconds.
			Off	There is not any error second.
	LPB	Yellow	On	Loopback is on.
			Off	Loopback is off.

2.2 Rear Panel

The rear panel of SHDSL NTU is including power switch, power socket, RJ-45 console, DB-23 G.703 and RJ-11 SHDSL from left to right (Refer to figure 2.2).

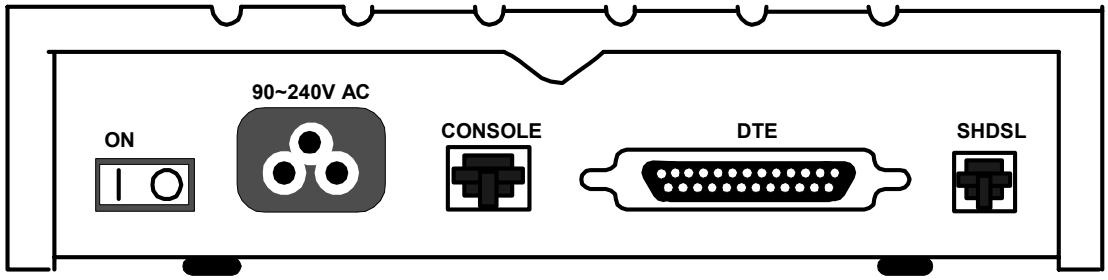


Figure 2.2

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.
G.703	DB-25 for V.35 connection with PABX (Private Automatic Branch Exchange) or Router
DTE	V.35 for T1 connection with Router
SHDSL	RJ-11 for DSL

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.

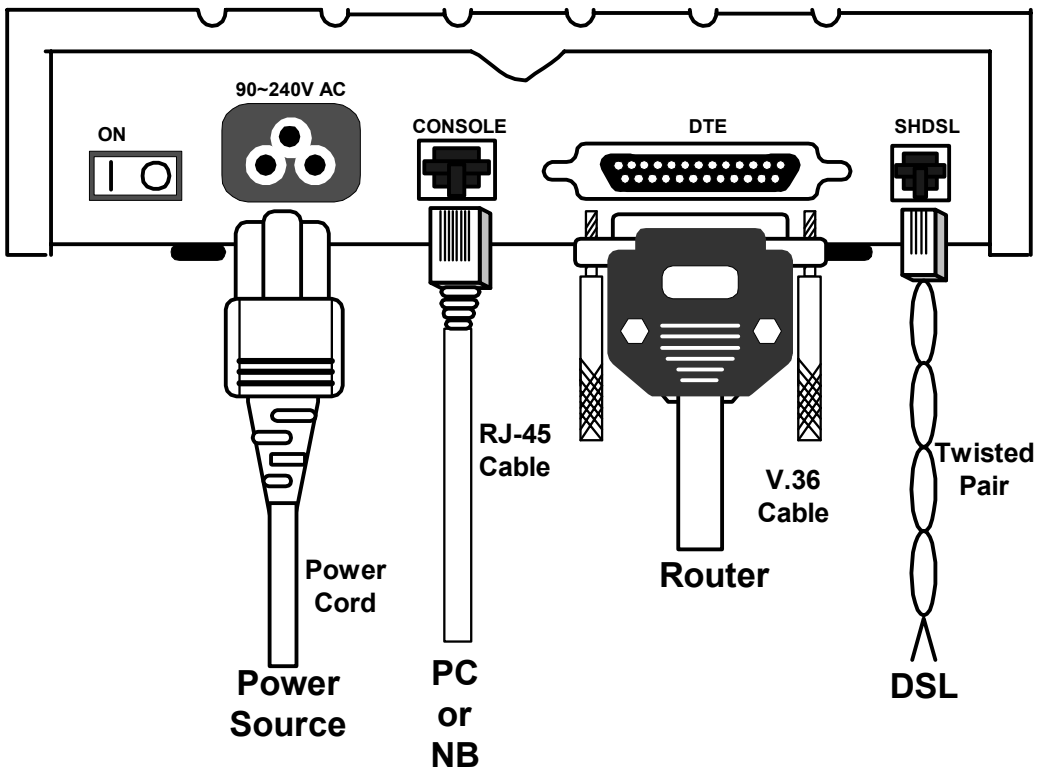

90~240V AC
ON
CONSOLE
DTE
SHDSL
RJ-45
Cable
V.36
Cable
Twisted
Pair
Power
Cord
Router
Power
Source
PC
or
NB
DSL

Figure 2.3

Chapter 3 Configuration

3.1 Purpose

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.

3.2 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/+	■	Skip 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.

3.3 Menu Tree

After turning on the product, LCD will prompt **SHDSL NTU.** Press ***Enter*** key to enter level 2. In level 2 there has three types, **SHOW** for **show status** and **statistics**, **SYSTEM SETUP** for configuring the product and **WRITE** for writing the new configuration to NVRAM Refer to figure 3.1.

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 affect of new configuration.

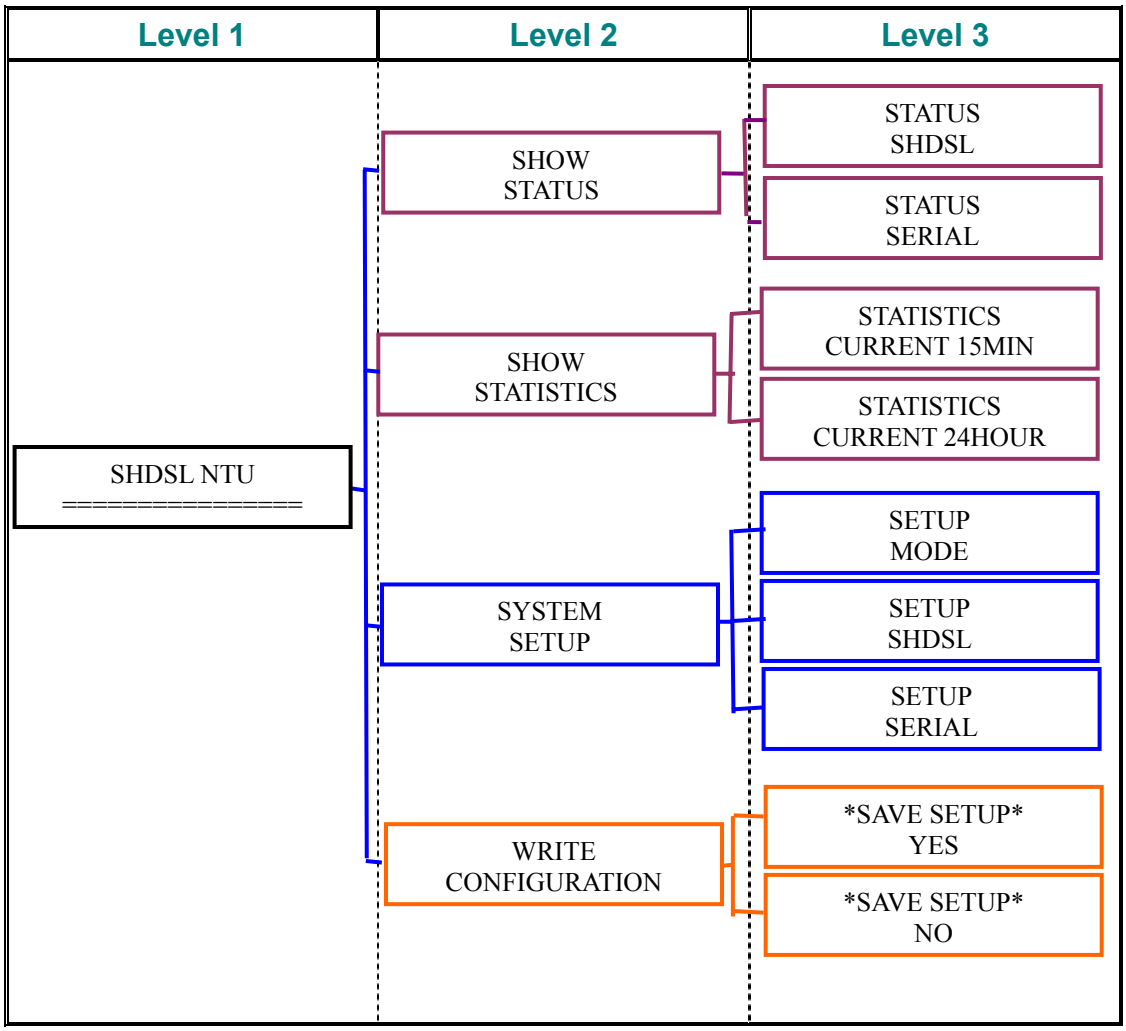
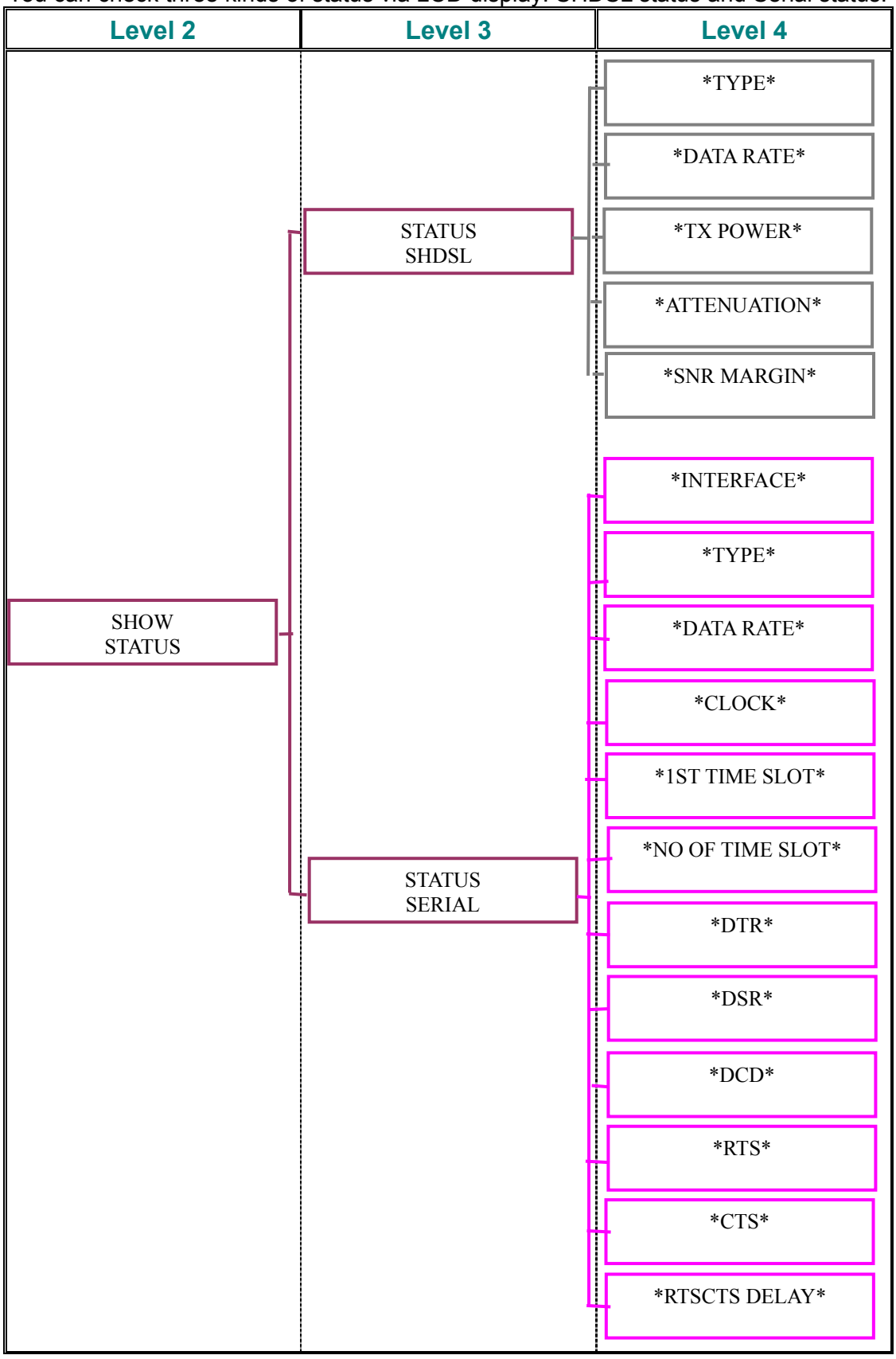


Figure 3.1

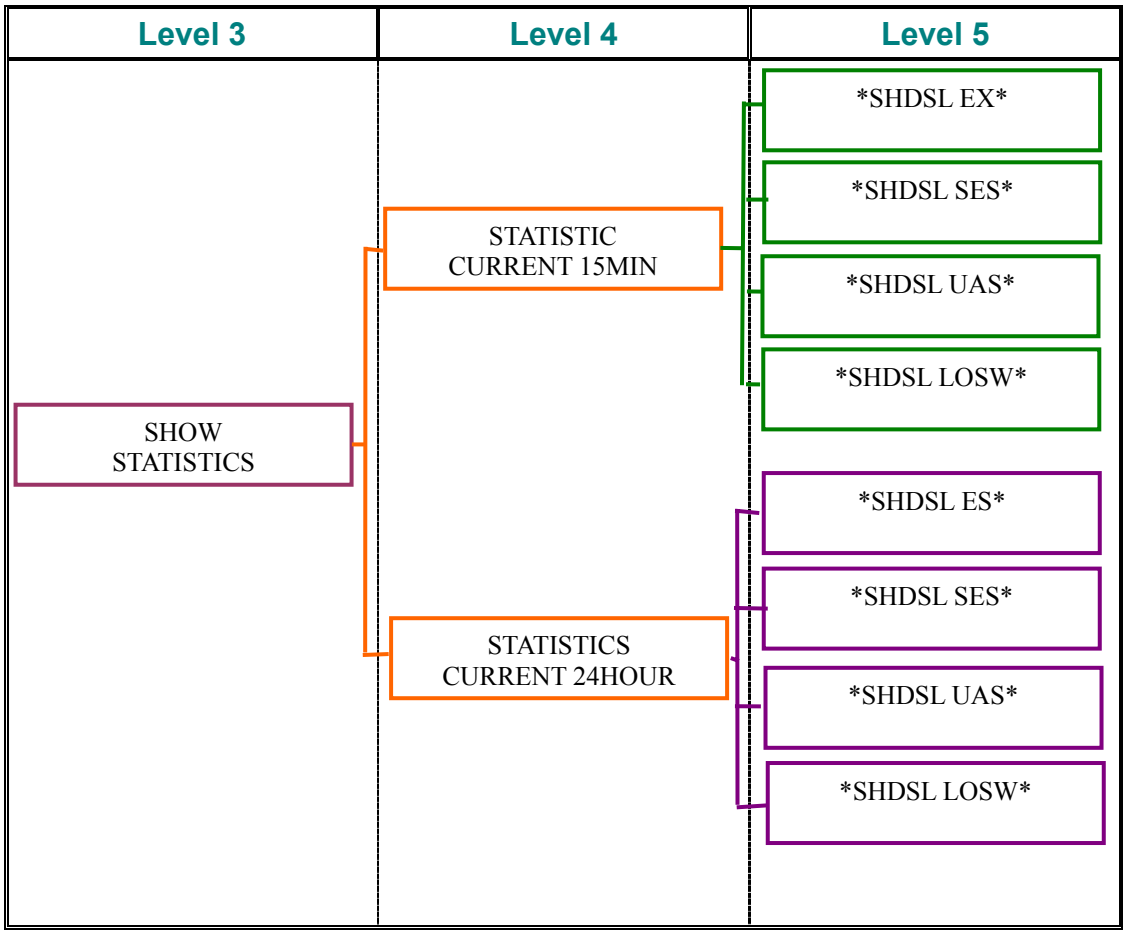
Menu tree for SHOW SHDSL , T1 and E1 status

You can check three kinds of status via LCD display: SHDSL status and Serial status.



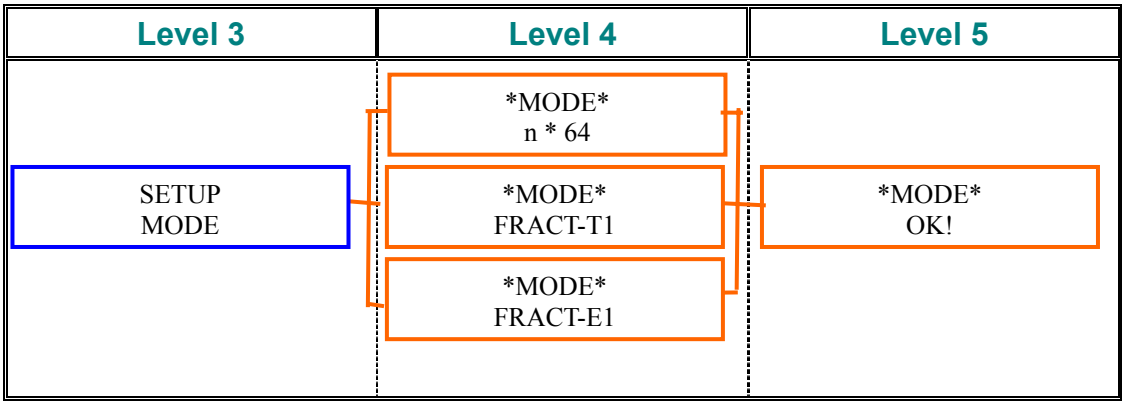
Menu tree for SHOW STATISTICS

The product can display two kinds of statistics data, the statistic data of SHDSL and T1/E1 for current 15 minutes and current 24 hour. The route will be **SHDSL NTU ➔ SHOW STATISTICS**.



Menu tree for setting mode

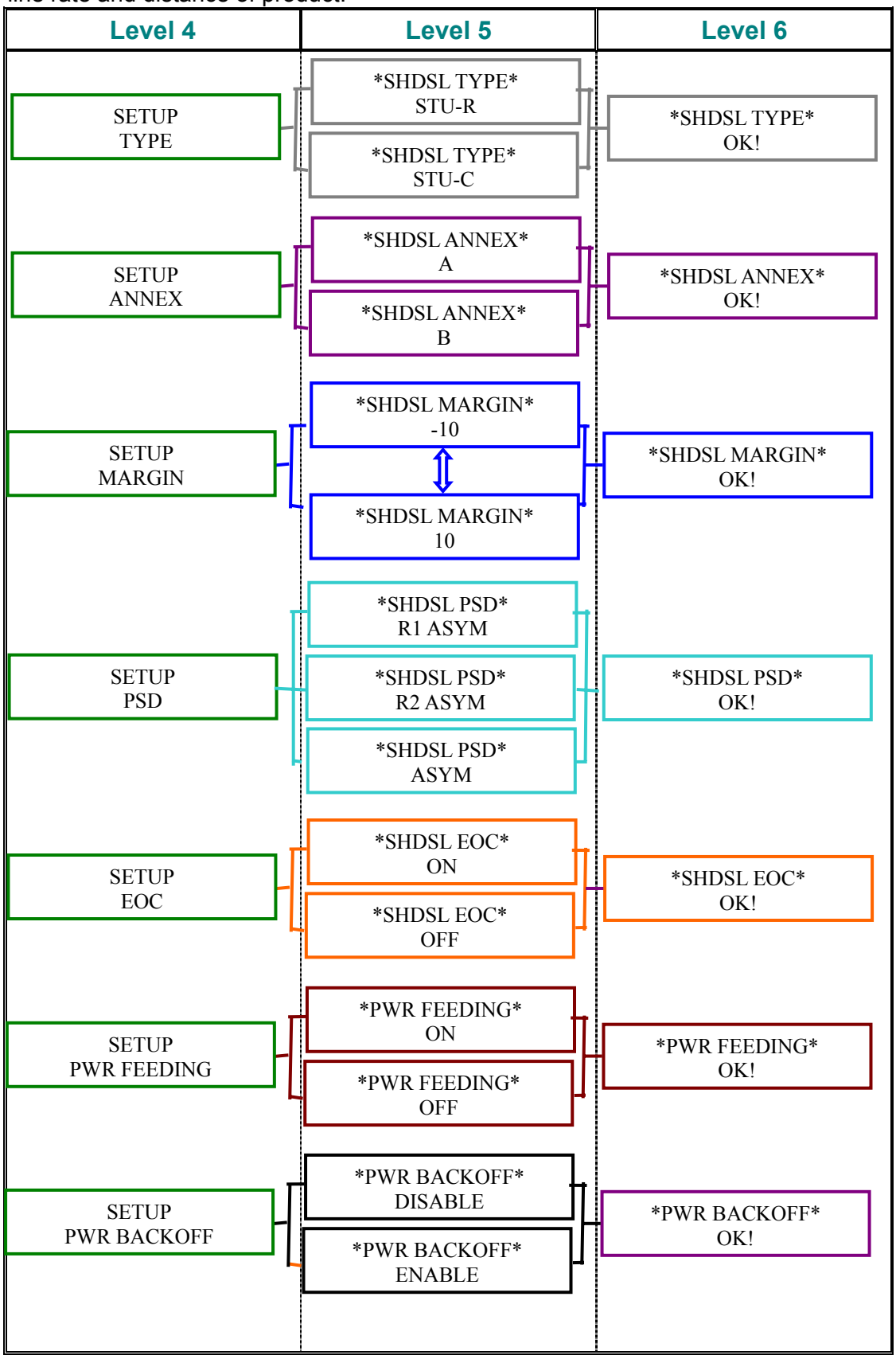
Before configuration another parameter, user have to setup the mode first. The route will be **SHDSL NTU ➔ SYSTEM SETUP**.

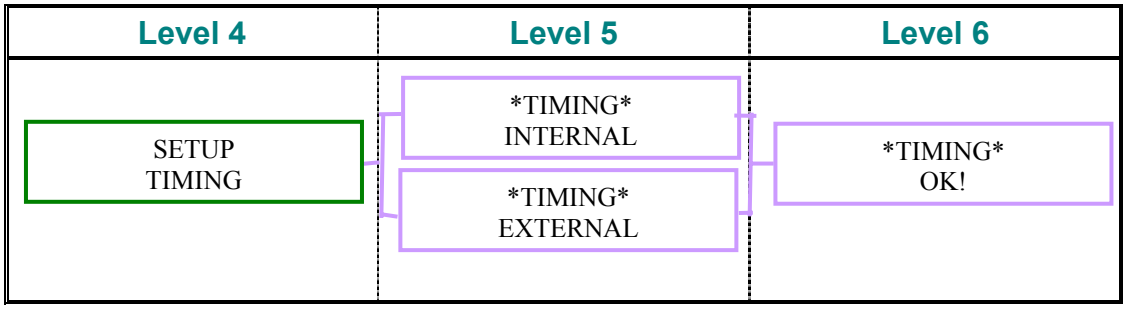


Menu tree for SETUP SHDSL

After selecting mode, SHDSL parameters have to be configured. The route is **SHDSL NTU ➔ SYSTEM SETUP ➔ SETUP SHDSL.**

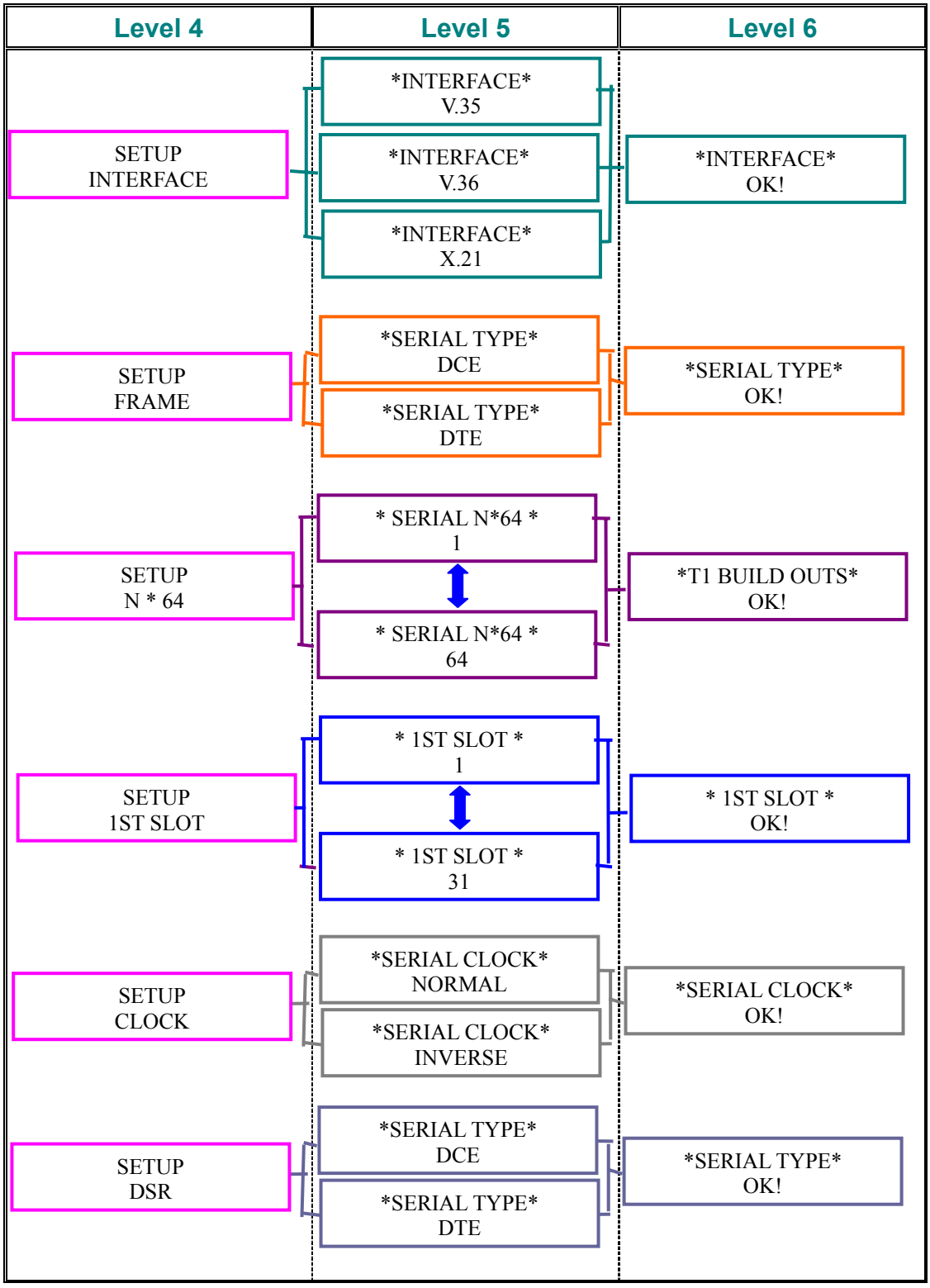
The default **SHDSL MARGIN** is 0. Suggest not to change it. The margin will affect the line rate and distance of product.




Level 4
Level 5
Level 6
SETUP
TIMING
TIMING
INTERNAL
TIMING
EXTERNAL
TIMING
OK!

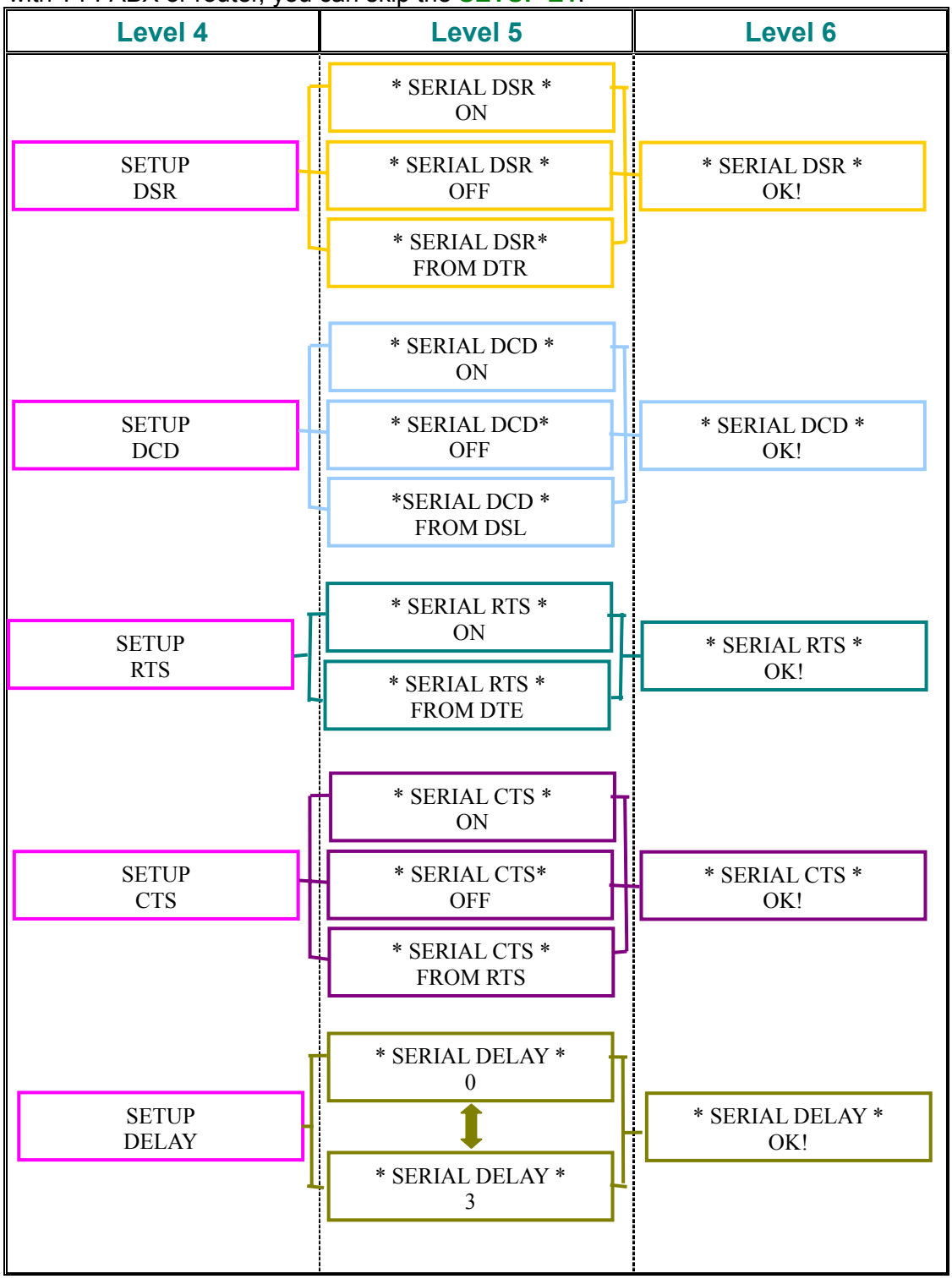
Menu tree for SETUP Serial

The T1 or E1 connection is chosen in previous SETUP MODE If you choose **SETUP Serial**.



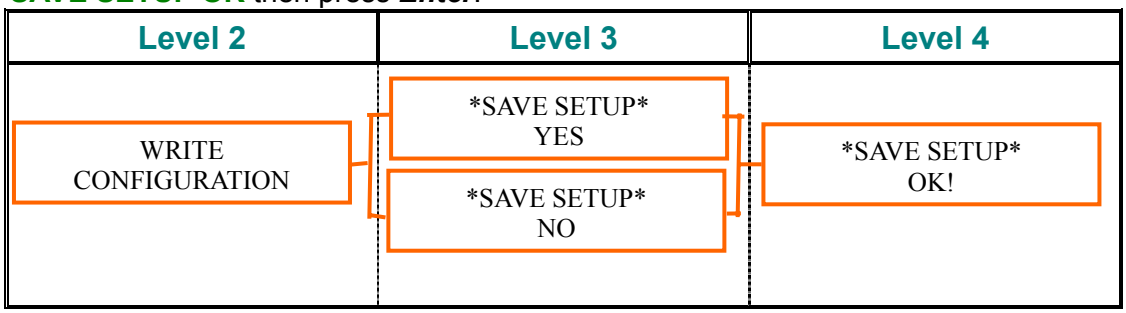
Menu tree for SETUP E1

The T1 or E1 connection is chosen in previous SETUP MODE. If the connection is with T1 PABX or router, you can skip the **SETUP E1**.



Menu tree for SAVE the configuration

After configuration, the new parameters have to be saved in NVRAM by following the steps. In level 2, choose **WRITE CONFIGURATION** by using ***L*** or ***R*** key and press ***Enter.*** Choose **SAVE SETUP YES** and then press ***Enter.*** The screen will prompt **SAVE SETUP OK** then press ***Enter***.



Congratulation! You are done. The configuration is complete.

Appendix

AMI	Alternate mark inversion
B8ZS	Bipolar 8 zero substitution
CRC4	Cyclic redundancy check 4 bit
CTS	Clear to send
DCD	Data carrier detect
DCE	Data communication equipment
DSR	Data set ready
DTR	Data terminal ready
E BIT GEN	E bit generation
EOC	Embedded operations channel
ES	Error second
ESF	Extended super frame
FAS	Frame alignment signal
FRACT_T1	Fractional T1
FRACT_E1	Fractional E1
LINE BUILD OUTS	Distance of cable between NTU and Router or PABX
LOSW	Loss of synchronization word
PSD	Power spectral density
RAI	Remote alarm indication
RTS	Request to send
R1 ASYM	Symmetric speed, 784kbps for Annex A or 2312kbps for Annex B
R2 ASYM	Symmetric speed, 1552kbps for Annex A or 2056kbps for Annex B
SES	Severe error second
SF	Super Frame
SNR MARGIN	Signal to noise ration margin
SYNC	Synchronization
TX POWER	Transmission power
UAS	Unavailable second