Y SERIES EXP100
USER GUIDE

ADSL2+ Router

Preface

This manual provides information related to the installation and operation of this device. The individual reading this manual is presumed to have a basic understanding of telecommunications terminology and concepts.

Important Safety Instructions

With reference to unpacking, installation, use, and maintenance of your electronic device, the following basic guidelines are recommended:

- Do not use or install this product near water, to avoid fire or shock hazard. For example, near a bathtub, kitchen sink or laundry tub, or near a swimming pool. Also, do not expose the equipment to rain or damp areas (e.g., a wet basement).
- Do not connect the power supply cord on elevated surfaces. Allow it to lie freely. There should be no obstructions in its path and no heavy items should be placed on the cord. In addition, do not walk on, step on, or mistreat the cord.
- Use only the power cord and adapter that are shipped with this device.
- This product is intended to be supplied by a UL Listed Power Supply with marked with "L.P.S.", or "Limited Power Source", and output rated 12 Vdc, minimum 1.0A.
- To safeguard the equipment against overheating, make sure that all openings in the unit that offer exposure to air are not blocked.
- Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electric shock from lightening. Also, do not use the telephone to report a gas leak in the vicinity of the leak.

- Never install telephone wiring during stormy weather conditions.
- Follow the manual's instruction for wiring which should comply article 725 and article 300 in national electrical code for class 2 circuit and wiring in duct.
- All the installation should performed by qualified personnel.

CAUTION

- To reduce the risk of fire, use only No. 26 AWG or larger telecommunication line cord.
- Always disconnect all telephone lines from the wall outlet before servicing or disassembling this equipment.

WARNING

- Disconnect the power line from the device before servicing.
- Power supply specifications are clearly stated in Appendix B—Specifications.

Copyright

You should have received a copy of the GNU General Public License along with this program. If not, see http://www.gnu.org/licenses/.

NOTE: This document is subject to change without notice.

Protect Our Environment

This symbol indicates that when the equipment has reached the end of its useful life, it must be taken to a recycling centre and processed separate from domestic waste.

The cardboard box, the plastic contained in the packaging, and the parts that make up this router can be recycled in accordance with regionally established regulations. Never dispose of this electronic equipment along with your household waste; you may be subject to penalties or sanctions under the law. Instead, please be responsible and ask for disposal instructions from your local government.

Table of Contents

Chapter 1 Introduction

The EXP100 is an ADSL2+ two port router module which can be inserted to wall-mounted customized housing. Wired connections can benefit from the ADSL2+ standard, offering download speeds of up to 24 Mbps using a standard telephone connection, especially for hotel use.

The CPE module supports one ADSL2+ uplink and is powered by an external DC PSU (Power Supply Unit) or alternatively by DC current supplied through a standard punchdown block connection. There are three local LAN ports being supported in the module. One of the LAN ports is located on the rear of the module for connecting to a wireless AP module. The other two LAN ports are located on the front panel. A phone jack is also supported on the front panel for telephone line pass-through.

1.1 Features

- RADIUS client
- IP/MAC address filtering
- Static route/RIP/RIP v2 routing functions
- Dynamic IP assignment
- NAT/PAT
- IGMP Proxy
- DHCP Server/Relay/Client
- DNS Proxy
- Up to 8 VCs
- Embedded SNMP agent
- Web-based management
- Supports remote administration, automatic firmware upgrade, and configuration
- Configuration backup and restoration
- Supports TR-069/TR-098/TR-111 for remote management
- Build in Micro-Filter

1.2 Application

The following diagram depicts typical application of the EXP100.
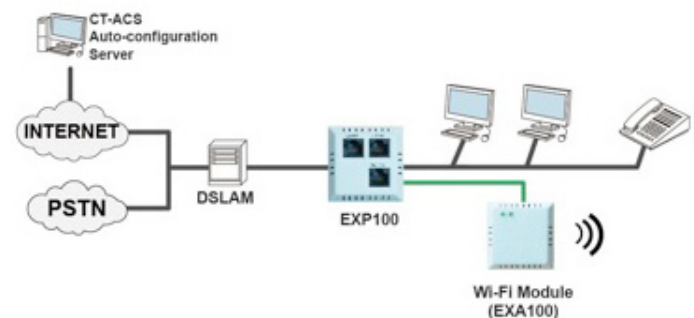
Chapter 2 Installation

2.1 Hardware Setup

2.1.1 BACK PANEL

The figure below shows the back panel of the device.

ADSL

LAN (Ethernet) Port

Please see Appendix A—Pin Assignments.

Power ON

Connect the power adapter to the power port. Attach the power adapter to a wall outlet or other DC source.

Reset Button

Press the reset button for 5 seconds, then release, the LED will be flashing for 10 seconds. After that, the system will reboot to factory defaults.

2.1.2 FRONT PANEL

LAN1/LAN2

Connect directly to your computer, laptop, or Internet access device.

TEL 1/2

Connect to a telephone for line pass-through.

Chapter 3 Web User Interface

This section describes how to access the device via the Web User Interface (WUI) using an Internet browser such as Internet Explorer (version 5.0 and later).

3.1 Default Settings

The factory default settings of this device are summarized below.

- LAN IP address: DHCP (no fixed default address)
- DHCP IP Address is discoverable via your DHCP Client Logs or via the Admin Server
- Administrative access (username: **root,** password: **12345**)
- User access (username: **user,** password: **user**)
- Remote (WAN) access (username: **support,** password: **support**)

3.1.1 TECHNICAL NOTE

During power on, the device initializes all settings to *default values. It will then read the configuration profile from the permanent storage section of flash memory. The default attributes are overwritten when identical attributes with different values are configured. The configuration profile in permanent storage can be created via the web user interface or telnet user interface, or other management protocols. The factory default configuration can be restored either by pushing the reset button for more than five seconds until the power indicates LED blinking or by clicking the Restore Default Configuration option in the Restore Settings screen.

*For Parameter Rules in backup settings, please see Appendix C—Parameter Rules.

3.2 IP Configuration

3.2.1 STATIC IP MODE

In static IP mode, you assign IP settings to your PC manually.

Follow these steps to configure your PC IP address to use subnet 192.168.2.x.

NOTE: The following procedure assumes you are running Windows XP. However, the general steps involved are similar for most operating systems (OS). Check your OS support documentation for further details.

STEP 1: From the Network Connections window, open Local Area Connection. *(You may also access this screen by double-clicking the Local Area Connection icon on your taskbar.)* Click the **Properties** button.

STEP 2: Select Internet Protocol (TCP/IP**) and click the** Properties button.

STEP 3: Change the IP address to the 192.168.2.x (1<x<255) subnet with subnet mask of 255.255.255.0. The screen should now display as shown below.
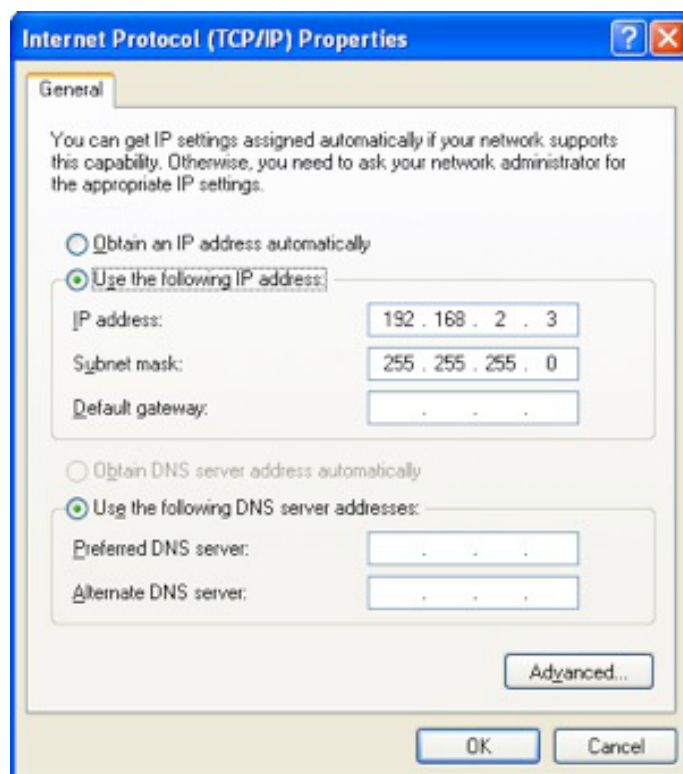
STEP 4: Click **OK** to submit these settings.

3.3 Login Procedure

Perform the following steps to login to the web user interface.

NOTE: The default settings can be found in 3.1 Default Settings.

STEP 1: Start the Internet browser and enter the DHCP awarded IP address in the Web address field. For example, if the default IP address is 192.168.2.1, type http://192.168.2.1.

NOTE: For local administration (i.e., LAN access), the PC running the browser must be attached to the Ethernet, and not necessarily to the device. For remote access (i.e., WAN), use the IP address shown on the Chapter 4 Device Information screen and login with remote username and password.

STEP 2: A dialog box will appear, such as the one below. Enter the default username and password, as defined in section 3.1 Default Settings.

Click **OK** to continue.

NOTE: The login password can be changed later (see 6.5 Passwords).

STEP 3: After successfully logging in for the first time, you will reach this screen.
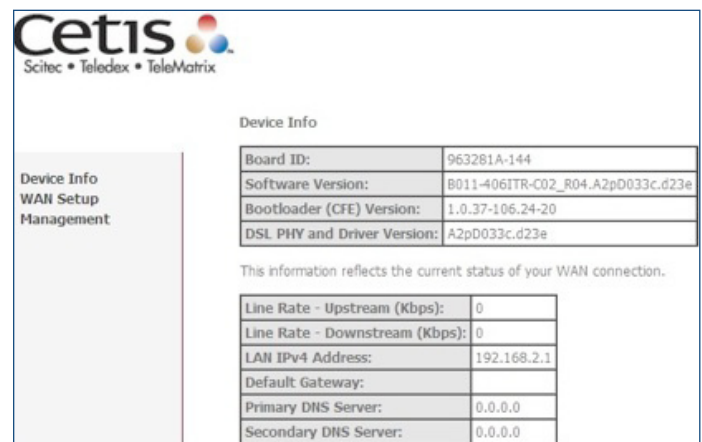
Chapter 4 Device Information

The web user interface window is divided into two frames, the main menu (at left) and the display screen (on the right). The main menu has several options and selecting each of these options opens a submenu with more selections.

NOTE: The menu items shown are based upon the configured connection(s) and user account privileges. For example, if NAT and Firewall are enabled, the main menu will display the NAT and Security submenus. If either is disabled, their corresponding menu(s) will also be disabled.

Device Info is the first selection on the main menu so it will be discussed first. Subsequent chapters will introduce the other main menu options in sequence.

The Device Info Summary screen displays at startup.

This screen shows hardware, software, IP settings, and other related information.

4.1 WAN

Select WAN from the Device Info submenu to display the configured PVC(s).

Heading	Description
Interface	Name of the interface for WAN
Description	Name of the WAN connection
Type	Shows the connection type
VlanMuxId	Shows 802.1Q VLAN ID
IGMP	Shows Internet Group Management Protocol (IGMP) status
NAT	Shows Network Address Translation (NAT) status
Firewall	Shows the status of firewall
Status	Lists the status of DSL link
IPv4 Address	Shows WAN IPv4 address
PPP Connect/ Disconnect	Shows the PPP connection status

4.2 Statistics

NOTE: These screens are updated automatically every 15 seconds. Click **Reset Statistics** to perform a manual update.

4.2.1 xDSL STATISTICS

The xDSL Statistics screen displays information corresponding to the xDSL type.

The **ADSL2+** example is shown here.

Click the **Reset Statistics** button to refresh this screen.

4.2.2 xDSL BER TEST

Click **xDSL BER Test** on the xDSL Statistics screen to test the Bit Error Rate (BER). A small pop-up window will open after the button is pressed, as shown below.
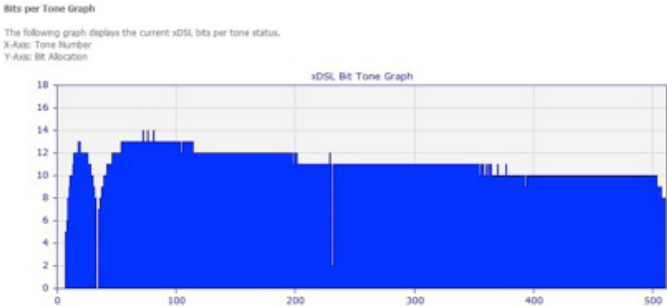
Click **Start** to start the test or click **Close** to cancel the test. After the BER testing is complete, the pop-up window will display as follows.
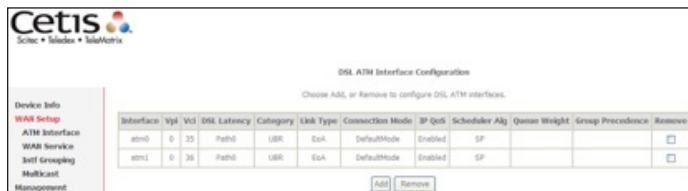

4.2.3 xDSL TONE GRAPH

Click **Draw Tone Graph** on the xDSL Statistics screen and a pop-up window will display the xDSL bits per tone status, as shown below.
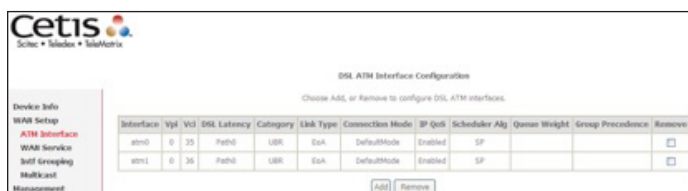
Chapter 5 WAN Setup

The following screen shows the WAN setup screen.

5.1 ATM Interface

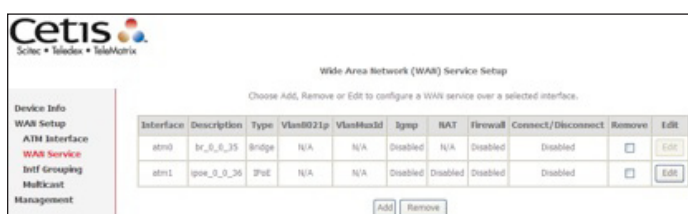Add or remove ATM interface connections here.

NOTE: Up to 8 ATM interfaces can be created and saved in flash memory.

To remove a connection, select its Remove column radio button and click **Remove.**

5.2 WAN Service

This screen allows for the configuration of WAN interfaces.

Click the **Add** button to create a new connection.

To remove a connection, select its Remove column radio button and click **Remove.**

Heading	Description
Interface	Name of the interface for WAN
Description	Name of the WAN connection

Heading	Description
Type	Shows the connection type
Vlan8021p	VLAN ID is used for VLAN Tagging (IEEE 802.1Q)
VlanMuxId	Shows 802.1Q VLAN ID
IGMP	Shows Internet Group Management Protocol (IGMP) status
NAT	Shows Network Address Translation (NAT) status
Firewall	Shows the security status
Connect/ Disconnect	Shows the connection status
Remove	Select interfaces to remove

To remove a connection, select its Remove column radio button and click **Remove.**

To **Add** a new WAN connection, click the **Add** button and follow the instructions.

NOTE: Up to 16 PVC profiles can be configured and saved in flash memory. Also, ATM and PTM service connections cannot coexist.

5.3 Interface Grouping

Interface Grouping supports multiple ports to PVC and bridging groups. Each group performs as an independent network. To use this feature, you must create mapping groups with appropriate LAN and WAN interfaces using the **Add** button.

The **Remove** button removes mapping groups, returning the ungrouped interfaces to the Default group. Only the default group has an IP interface.

To add an Interface Group, click the **Add** button. The following screen will appear. It lists the available and grouped interfaces. Follow the instructions shown onscreen.

5.3.1 AUTOMATICALLY ADD CLIENTS WITH FOLLOWING DHCP VENDOR IDS

Add support to automatically map LAN interfaces to PVC's using DHCP vendor ID (option 60). The local DHCP server will decline and send the requests to a remote DHCP server by mapping the appropriate LAN interface. This will be turned on when Interface Grouping is enabled.

For example, imagine there are 4 PVCs (0/33, 0/36, 0/37, 0/38). VPI/VCI=0/33 is for PPPoE while the other PVCs are for IP set-top box (video). The LAN interfaces are ENET1, ENET2, ENET3, and ENET4.

The Interface Grouping configuration will be:

1. Default: ENET1, ENET2, ENET3, and ENET4.
2. Video: nas_0_36, nas_0_37, and nas_0_38. The DHCP vendor ID is "Video".

If the onboard DHCP server is running on "Default" and the remote DHCP server is running on PVC 0/36 (i.e., for set-top box use only), LAN side clients can get IP addresses from the CPE's DHCP server and access the Internet via PPPoE (0/33).

If a set-top box is connected to ENET1 and sends a DHCP request with vendor ID "Video", the local DHCP server will forward this request to the remote DHCP server. The Interface Grouping configuration will automatically change to the following:

1. Default: ENET2, ENET3, and ENET4.
2. Video: nas_0_36, nas_0_37, nas_0_38, and ENET1.

5.4 Multicast

Input new IGMP protocol configuration fields if you want modify default values shown. Then click Apply/Save.

Chapter 6 Management

6.1 Management IP

6.1.1 IP ADDRESS

Web LAN IP address for management.

6.1.2 CONFIG VERSION

Shows the current configuration version. The EXP100 can update the configuration automatically via TFTP server.

6.1.3 IGMP SNOOPING MODE

:: Enable by ticking the checkbox ☑.

Standard Mode: In standard mode, multicast traffic will flood to all bridge ports when no client subscribes to a multicast group—even if IGMP snooping is enabled.

Blocking Mode: In blocking mode, the multicast data traffic will be blocked and not flood to all bridge ports when there are no client subscriptions to any multicast group.

6.1.4 DISABLE LOCAL MANAGEMENT

After disabling the local management (ticking the checkbox ☑), the user can not access the web page via the LAN side.

6.2 Configuration

This includes Backup Settings, Update Settings, and Restore Default screens.

6.2.1 BACKUP SETTINGS

To save the current configuration to a file on your PC, click **Backup Settings.** You will be prompted for backup file location. This file can later be used to recover settings on the **Update Settings** screen, as described below.

6.2.2 UPDATE SETTINGS

This option recovers configuration files previously saved using **Backup Settings.** Enter the file name (including folder path) in the **Settings File Name** box, or press **Browse...** to search for the file, then click **Update Settings** to recover settings.

6.2.3 RESTORE DEFAULT

Click **Restore Default Settings** to restore factory default settings.
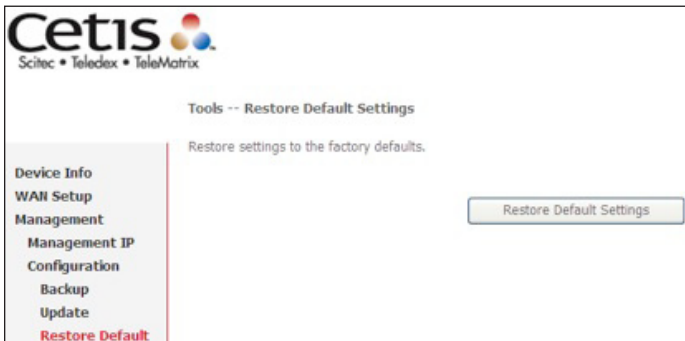
After **Restore Default Settings** is clicked, the following screen appears.
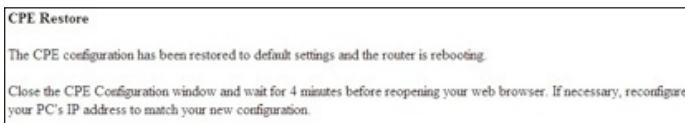
Close the browser and wait for 4 minutes before reopening it. It may also be necessary, to reconfigure your PC IP configuration to match any new settings.

NOTE: This entry has the same effect as the **Reset** button. The EXP100 board hardware and the boot loader support the reset to default. If the **Reset** button is continuously pressed for more than 5 seconds, the boot loader will erase the configuration data saved in flash memory.

6.3 SNMP Agent

Simple Network Management Protocol (SNMP) allows a management application to retrieve statistics and status from the SNMP agent in this device. Select the **Enable** radio button, configure options, and click **Save/Apply** to activate SNMP.
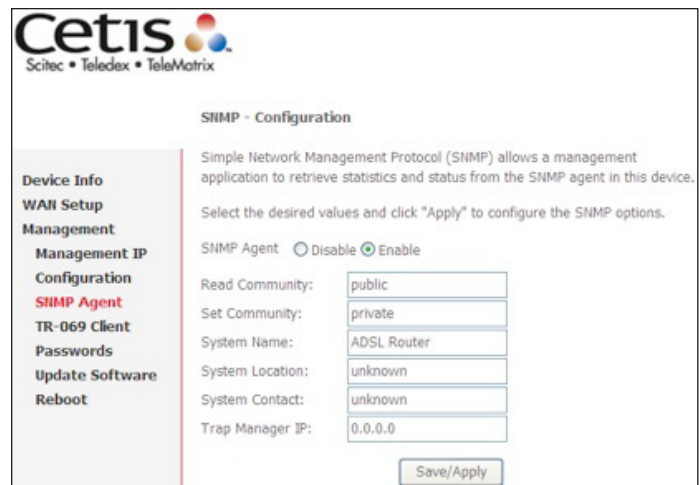
6.4 TR-069 Client

WAN Management Protocol (TR-069) allows an Auto-Configuration Server (ACS) to perform auto-configuration, provision, collection, and diagnostics to this device. Select desired values and click **Apply/Save** to configure TR-069 client options.
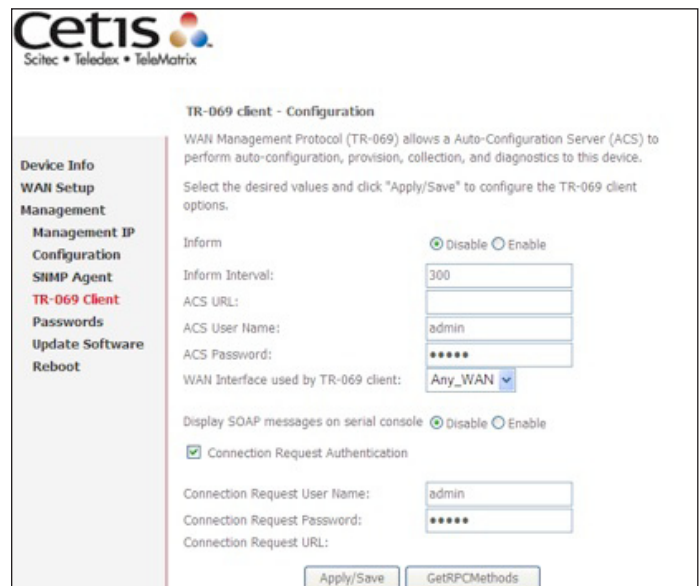
The table below is provided for ease of reference.

Option	Description
Inform	Disable/Enable TR-069 client on the CPE.
Inform Interval	The duration in seconds of the interval for which the CPE MUST attempt to connect with the ACS and call the Inform method.
ACS URL	URL for the CPE to connect to the ACS using the CPE WAN Management Protocol. This parameter MUST be in the form of a valid HTTP or HTTPS URL. An HTTPS URL indicates that the ACS supports SSL. The "host" portion of this URL is used by the CPE for validating the certificate from the ACS when using certificate-based authentication.
ACS User Name	Username used to authenticate the CPE when making a connection to the ACS using the CPE WAN management protocol. This username is used only for HTTP-based authentication of the CPE.
ACS Password	Password used to authenticate the CPE when making a connection to the ACS using the CPE WAN management protocol. This password is used only for HTTP-based authentication of the CPE.
WAN Interface Used by TR-069 Client	Choose Any_WAN, LAN, Loopback or a configured connection.

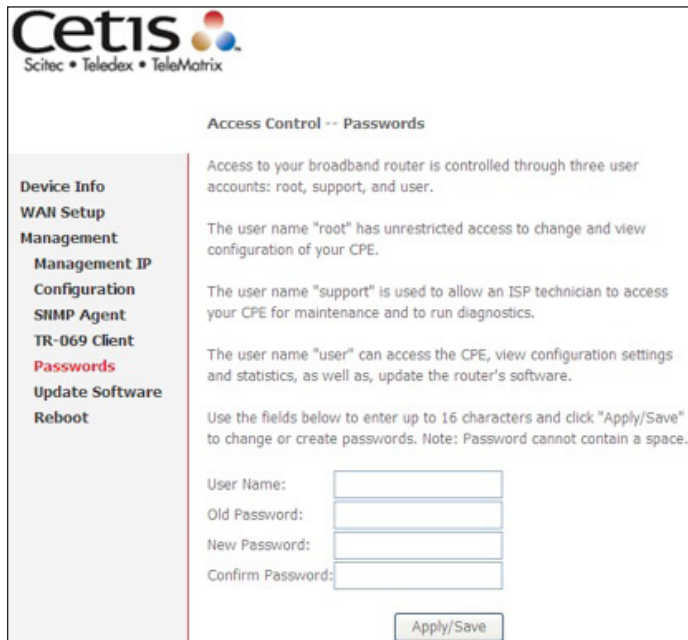| Option	Description
Display SOAP Messages on Serial Console	Enable/Disable SOAP messages on serial console. This option is used for advanced troubleshooting of the device.
Connection Request	
Authorization	Tick the checkbox ☑ to enable.
User Name	Username used to authenticate an ACS making a Connection Request to the CPE.
Password	Password used to authenticate an ACS making a Connection Request to the CPE.
URL	IP address and port the ACS uses to connect to EXP100.

The **Get RPC Methods** button forces the CPE to establish an immediate connection to the ACS. This may be used to discover the set of methods supported by the ACS or CPE. This list may include both standard TR-069 methods (those defined in this specification or a subsequent version) and vendor-specific methods. The receiver of the response MUST ignore any unrecognized methods.

6.5 Passwords

This screen is used to configure the user account access passwords for the device. Access to the EXP100 is controlled through the following three user accounts:

- **Root**—unrestricted access to change and view the configuration.
- **Support**—used for remote maintenance and diagnostics of the router.
- **User**—can view configuration settings and statistics and update firmware.

Use the fields below to change password settings. Click **Apply/Save** to continue.

NOTE: Passwords can be up to 16 characters in length.

6.6 Update Software

This option allows for firmware upgrades from a locally stored file.

STEP 1:   Obtain an updated software image file from your ISP.
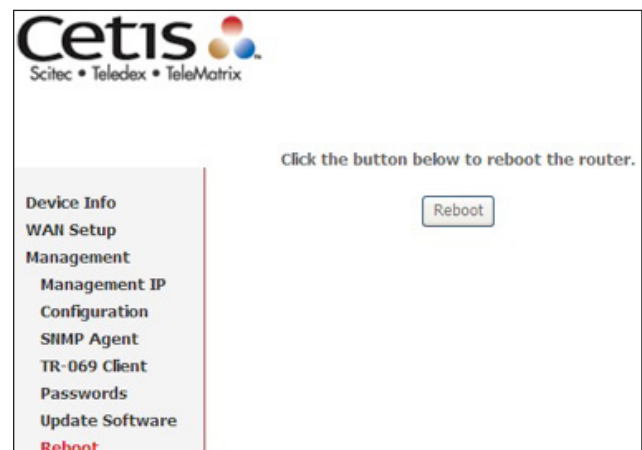
STEP 2:   Enter the path and filename of the firmware image file in the **Software File Name** field or click the Browse button to locate the image file.

STEP 3:   Click the **Update Software** button once to upload and install the file.

NOTE: The update process will take about 4 minutes to complete. The device will reboot and the browser window will refresh to the default screen upon successful installation. It is recommended that you compare the **Software Version** on the Chapter 4 Device Information screen with the firmware version installed, to confirm the installation was successful.

6.7 Reboot

To save the current configuration and reboot the router, click **Reboot.**

NOTE: You may need to close the browser window and wait for 4 minutes before reopening it. It may also be necessary, to reset your PC IP configuration.

Appendix A—Pin Assignments
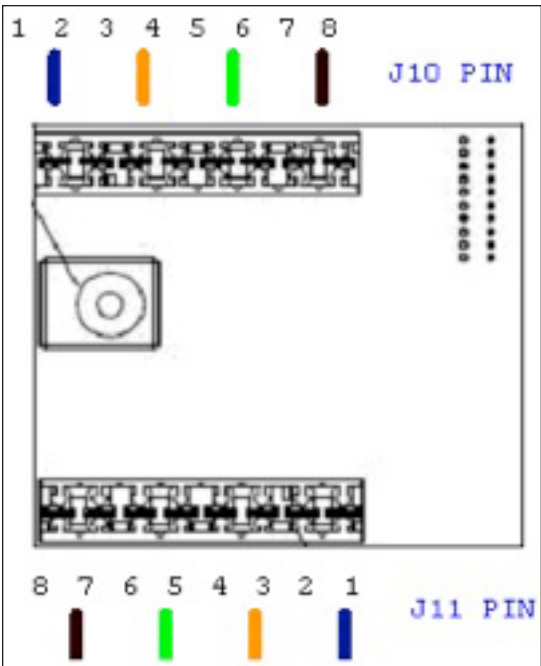
IDC Punch-Down Connectors

Connection #	PIN #	Descriptions
J10	1	+12Vdc Output
	2	+12Vdc Output
	3	Ethernet TX (+)
	4	Ethernet TX (-)
	5	Ethernet RX (+)
	6	Ethernet RX (-)
	7	Ground
	8	Ground
J11	1	ADSL Line (T)/Phone1 (T)[Bound to PIN 4 of Tel RJ45 connector on front panel through built-in microfilter]
	2	ADSL Line (R)/Phone2 (R)[Bound to PIN 5 of Tel RJ45 connector on front panel through built-in microfilter]
	3	+12Vdc Input
	4	+12Vdc Input
	5	Ground
	6	Ground
	7	Phone2(T) [Bounded to PIN 3 of Tel RJ45 connector on front panel directly]
	8	Phone2 [Bounded to PIN 6 of Tel RJ45 connector on front panel directly]

Appendix B—Specifications

Hardware Interface

- RJ-45 x 2 for LAN
- RJ-45 x 1 for Tel Phone
- Two Punch Connector (IDC Connector) for LAN/DSL/Power
- Active LED x 1
- Reset Button x 1
- Power Jack x 1

ADSL

- ADSL Standard ITU-T G.992.5, ITU-T G.992.3, ITU-T G.992.1, ANSI T1.413 Issue 2
- G.992.5 (ADSL2+)
- G.992.3 (ADSL2)
- G.DMT

LAN Interface

- IEEE 802.3, IEEE 802.3u
- 10/100 BaseT Auto-Sense
- Support MDI/MDX

ATM Attributes

- Support 8 PVCs
- Service Class: UBR/CBR/VBR

Management

- SNMP, Telnet, Web-Based Management, Configuration Backup and Restoration
- Software Upgrade via HTTP, TFTP Server, or FTP Server
- Supports TR-069 for Remote Management
- CLI Command

Bridge Functions

- IEEE 802.1d
- VLAN Support

- RFC 1483/2684 Multi-Protocol Encapsulation Over AAL5
- GMP Proxy
- IGMP snooping

Routing Functions

- Static route, RIP, and RIPv2, NAT/PAT, DHCP Server/DHCP Relay/DHCP Client, DNS Proxy, ARP

Security Functions

- PAP, CHAP, TCP/IP/Port Filtering Rules, Port Triggering/Forwarding, Packet and MAC Address Filtering, Access Control, SSH

Power Supply

- Input:100 - 240 Vac
- Output: 12 Vdc/1 A

Environment Condition

- Operating Temperature 0–35 Degrees Celsius
- Relative Humidity 5–95% (Non-Condensing)

Certifications

- TBR-21
- EN - 60950 -1

Packing Accessories:

- Module x 3
- Quarter Blank Spec x 2
- Power Adaptor x 1 (Optional)
- QIG for Troubleshooting
- Water-Proof Sealed PE Bag (for ATU-R&QIG) x 1

NOTE: Specifications are subject to change without notice.

Appendix C—Parameter Rules

	Setting Parameters in Web GUI	Settings Parameters in Config File
Management IP	IP Address	<IPInterfaceIPAddress>192.168.2.1</IPInterfaceIPAddress>
	Config Version	<ConfigVersion>0100</ConfigVersion>
	Enable IGMP Snooping	<X_BROADCOM_COM_IgmpSnoopingConfig><Enable>TRUE</Enable>
	Standard Mode/ Blocking Mode	<Mode>Standard</Mode></X_BROADCOM_COM_IgmpSnoopingConfig>
	Disable Local Management	<Disable_Local_Management>FALSE</Disable_Local_Management>
SNMP Agent	SNMP Agent	<Status>Enabled</Status>
	Read Community	<ROCommunity>public</ROCommunity>
	Set Community	<RWCommunity>private</RWCommunity>
	System Name	<SysName>ADSL Router</SysName>
	System Location	<SysLocation>unknown</SysLocation>
	System Contact	<SysContact>unknown</SysContact>
	Trap Manager IP	<TrapIPAddress>0.0.0.0</TrapIPAddress>
TR-069 Client Configuration	Inform	<PeriodicInformEnable>FALSE</PeriodicInformEnable>
	Inform Interval	<PeriodicInformInterval>300</PeriodicInformInterval>
	ACS URL	<URL></URL>
	ACS User Name	<Username>admin</Username>
	ACS Password	<Password>admin</Password>
	WAN Interface Used by TR-069 Client	<X_BROADCOM_COM_BoundIfName>Any_WAN</X_BROADCOM_COM_BoundIfName>
	Display SOAP Messages on Serial Console	<LoggingSOAP>FALSE</LoggingSOAP>
	Connection Request Authentication	<ConnectionRequestAuthentication>TRUE</ConnectionRequestAuthentication>
	Connection Request User Name	<ConnectionRequestUsername>admin</ConnectionRequestUsername>
	Connection Request Password	<ConnectionRequestPassword>admin</ConnectionRequestPassword>

Toll Free: +1.800.462.9446
Tel: +1.719.638.8821

Email: info@teledex.com
www.teledex.com