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Scope of Document:

This document provides detailed procedures for replacing the Executive firmware in all Qualstar RLS models. There is only one firmware set for the entire RLS and it is the Executive firmware (700118). This set contains the firmware sets for all satellite processors within the RLS except for the Q-Link Web Interface and the Fibre Channel bridge. The Executive firmware does not contain any firmware for the Tape Drives.

If the Executive processor is functioning, its firmware may be uploaded through the Medium changer's interface (SCSI or optional Fibre Channel), the Q-Conn RS-232 interface (using XMODEM file transfer) or the optional Q-Link Web Interface. The Q-Link Web Interface firmware can only be uploaded through its LAN or Internet connection.

NOTE

Firmware should only be updated after consulting with Qualstar's Technical Support Department. They can be reached at 805-583-7744 or E-mail them at support@qualstar.com

Determining the Current Firmware Revision:

The current Executive firmware part number and revision can be determined by viewing the Display Revision status screen under the Maintenance menu. Follow the steps in Table 1.

Service Technician Action:	Display:
Press the MENU key followed by the ▼ key.	Top Menu •Configuration →•Maintenance
Press the ENTER key followed by the ▼ key.	•••••Maintenance •Display Log •Display Prevents •Display Reservs. →•Display Revision
Press the ENTER key. In this example, the firmware part number is 700118 and the revision is 0.42.	M•••Display Revision Date: mm/dd/yy Part Number:700118 Revision: 0.42 Checksum: xxxx Id: xxxxxxxx
Press the MENU key to return to the top menu.	

Table 1 Steps to View the Display Revision Status Screen



Executive Firmware Updating via the SCSI or Fibre Channel Interface:

A working SCSI or fibre channel interface to the RLS' Medium changer is required. To update via the SCSI interface a PC compatible computer running DOS, Windows 95, 98, XP, NT, or 2000 is required. To update via the fibre channel interface a PC compatible computer running Windows XP, NT or 2000 is required.

NOTE

Using a DOS system requires the use of Adaptec's ASPI interface for SCSI.

1. The RLS must be powered on and connected to the host computer prior to booting the host computer.
2. The Windows console program `upload.exe` is used to upload firmware to the library. These files are contained in a self-extracting zip file `upload.zip`. Contact [Technical Support](#) for access to the update tools and firmware files.
3. Unzip the file to extract the following files:
 - `Upload.exe` - Qualstar's RLS Library firmware upload program.
 - `Scanscsi.exe` - Utility to search the bus for SCSI devices.
4. Execute the program `scanscsi.exe` from a Windows command prompt or "DOS box". This program will perform a SCSI Inquiry operation on Ids (0-15), Luns (0-15) and Hosts (0-15). If a device is found, it will display the general information obtained from the inquiry response.

Example of `scanscsi` execution and response.

```
>scanscsi *,*,*
```

Id,Lun,Host	Device Type	Vendor	Product	Revision
0, 0, 1	Medium-changer	QUALSTAR	RLS-4222	042A
1, 0, 1	Sequential-access	SONY	SDX-700C	0102
2, 0, 1	Sequential-access	SONY	SDX-700C	0102

In this example, the SCSI bus scan found three devices. The first device is a Qualstar RLS-4222, followed by two Sony Tape Drives.

NOTE

Upload.exe will not work if the Id is greater than 15, or the Lun is greater than 15 when updating the firmware in a fibre channel environment.

5. The `upload` console program is executed from a Windows command prompt or "DOS box". The program's command syntax is as follows:

`Upload Id,[Lun[,Host]] f:<filename>`

Command Parameters:

`Id,Lun,Host` - RLS Library SCSI address. This address can be found using the `scanscsi` utility program. The default `Id`, `Lun` and `Host` is 0.

`Filename` - Filename of the new firmware update. This file is provided by Qualstar Technical Support.



Upload program example:

6. Update the RLS Library with firmware file 700118.000.00042. The `scanscsi` program was used to locate the RLS Library is on SCSI Address : Id 0, Lun 0, and Host 1.

Upload 0,0,1 f:700118.000.00042

The program will display the upload transfers:

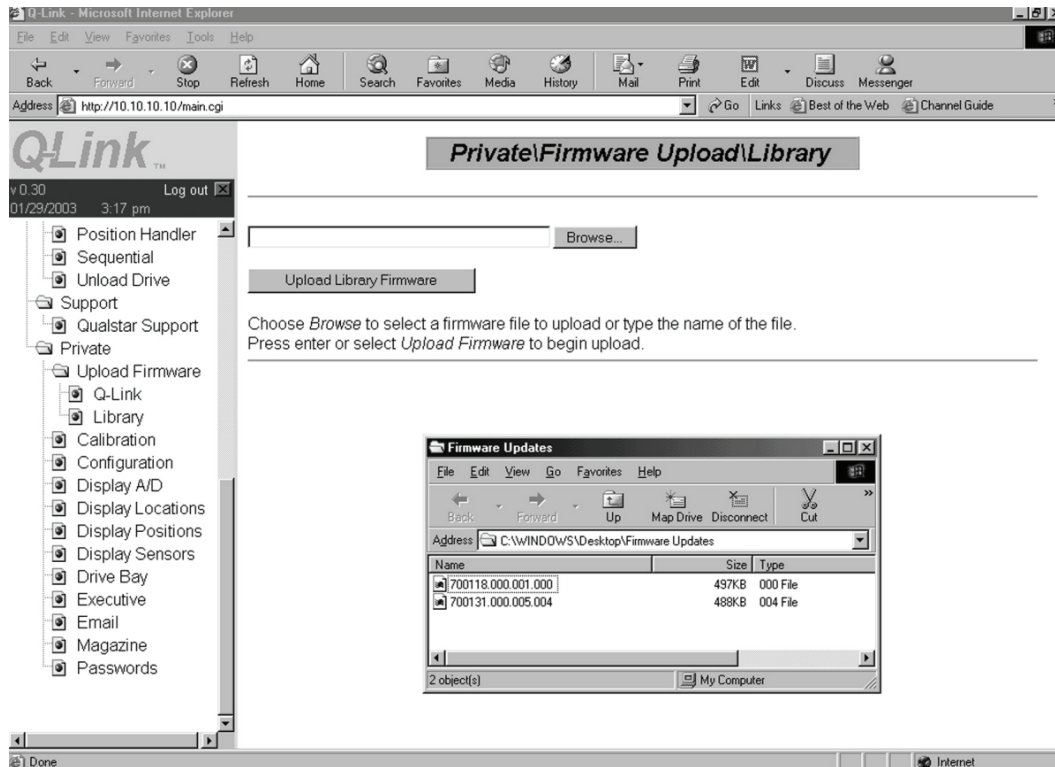
```
700118 0.42
### Packets
```

7. Do not turn off RLS power while the update is in progress. The last packet is number 512.
8. The RLS will begin the firmware update process. Wait for the following message to appear on the library's display:
**FIRMWARE UPGRADE
System Firmware
is being changed;
DO NOT POWER-OFF**
9. *It is very important not to power off the RLS Library while reprogramming is in progress. Doing so can cause the RLS Library to lose all of its program contents.*
10. Following the upgrade, the RLS will perform an internal initialization function followed by a scanning of the RLS inventory.
11. The FIRMWARE UPGRADE message will be cleared when the process has completed.
12. Go to the Maintenance\Display Revision menu. The displayed Part Number and Revision must correlate with the firmware filename just uploaded.

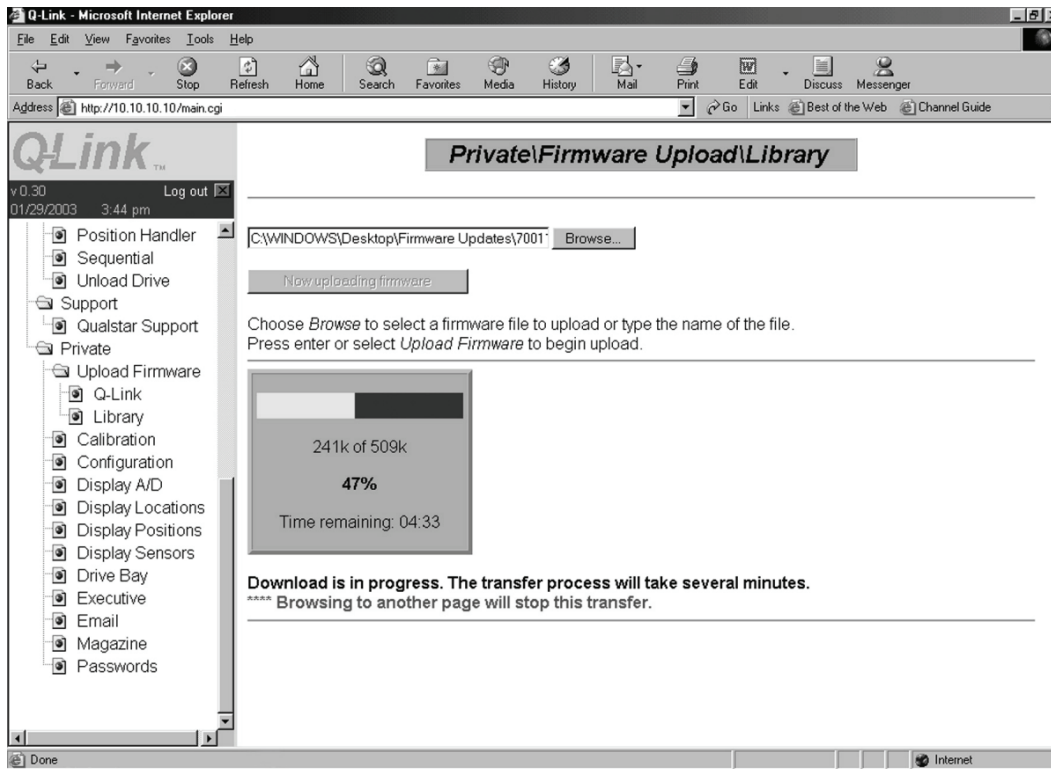
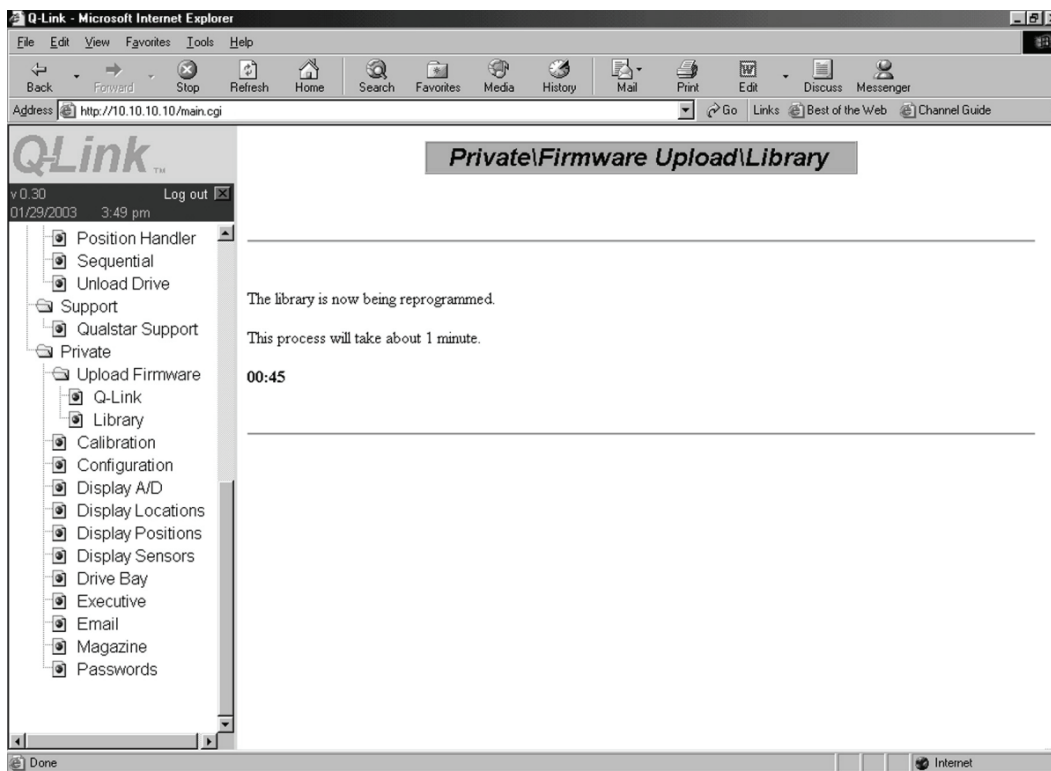
Executive Firmware Updating via Q-Link:

Q-Link allows for the uploading of library firmware using your web browser. Please see the Click on the Library menu item under the Upload Firmware folder in the menu tree to access the Private\Firmware Upload\Library screen and follow the instructions below.

1. Access the firmware file by either clicking on the Browse button or typing the file path to the firmware file.

**Figure 1 Sample of the Library Firmware Upload Screen**

2. Press the enter key or click on the Upload Firmware button to begin the uploading process.
3. Note that after the upload begins browsing to another page will stop the firmware uploading process.
4. Two different screens will appear as the uploading process proceeds. See Figure 2 and Figure 3.

**Figure 2 Sample of the Library Firmware Upload Progress Screen****Figure 3 Sample of the Library Firmware Reprogramming Progress Screen**

5. When the Q-Link uploading\programming is complete a screen will appear that shows the old and new firmware information. See Figure 4.

Library uploading/programming has finished.

Old firmware information:

Date: 1/15/2003

Part number: 700118

Revision: 0.42

New firmware information:

Date: 1/30/2003

Part number: 700118

Revision: 0.42

Figure 4 Sample of the Library Uploading/Programming Has Finished Screen

Executive Firmware Updating via Q-Conn

The user's host computer and the RLS are connected together using a NULL modem serial cable. This cable must have female DB-9 connectors at each end and wiring such that pins 2 and 3 are crossed over and pins 5 are connected to each other at both ends. See Table 2.

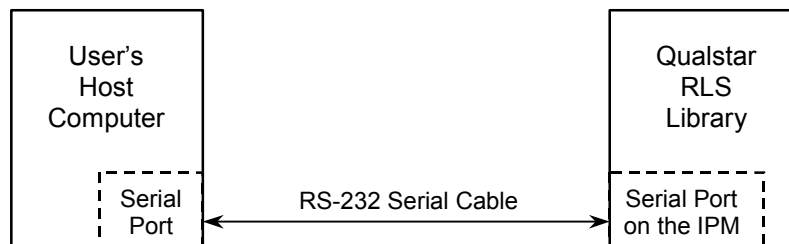


Figure 5 Host Computer Connected to RLS

User Host or PC RS232 Serial Female DB-9 Connector		RLS Library RS232 Serial Female DB-9 Connector	
Signal Name	Pin	Pin	Signal Name
Receive Data	2	3	Transmit Data
Transmit Data	3	2	Receive Data
Ground	5	5	Ground

Table 2 RS-232 Cable Wiring Requirements

Communication Parameter	Setting
Baud Rate	38400
Parity	None
Data Bits	8
Stop Bits	1

Table 3 RS-232 Serial Communication Parameters

Windows 9x and NT users can use the Communications accessory program, HyperTerminal.

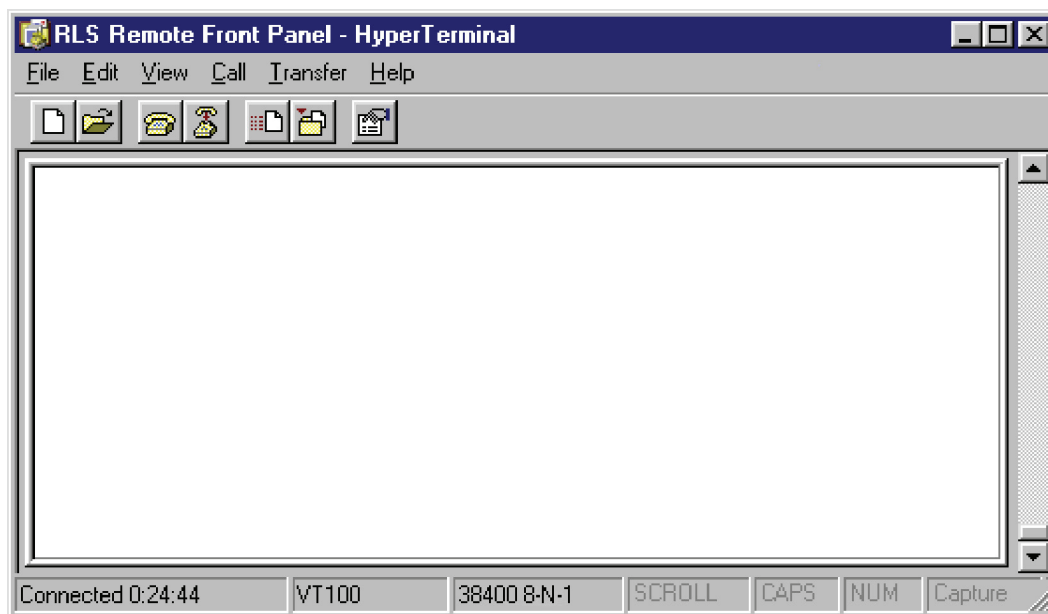


Figure 6 RLS Remote Front Panel Program Displayed in HyperTerminal

Use the File\Properties menu selection to configure the application for direct communications. Select the appropriate communications port. See Figure 7.

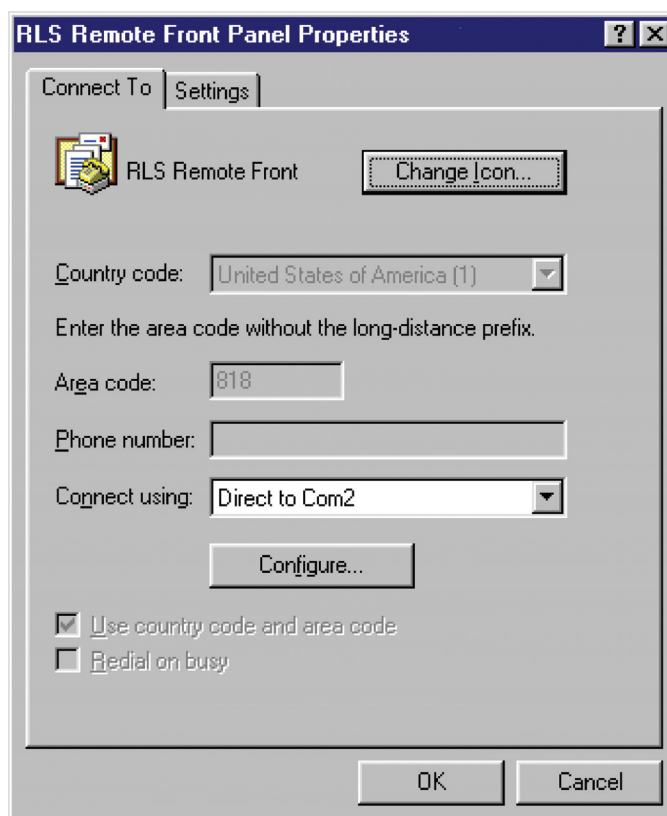


Figure 7 Properties Screen

Select the **Configure** button to set the communications parameters for a baud-rate of 38400, with 8 data bits, no parity, one stop bit and no flow control. See Figure 8.

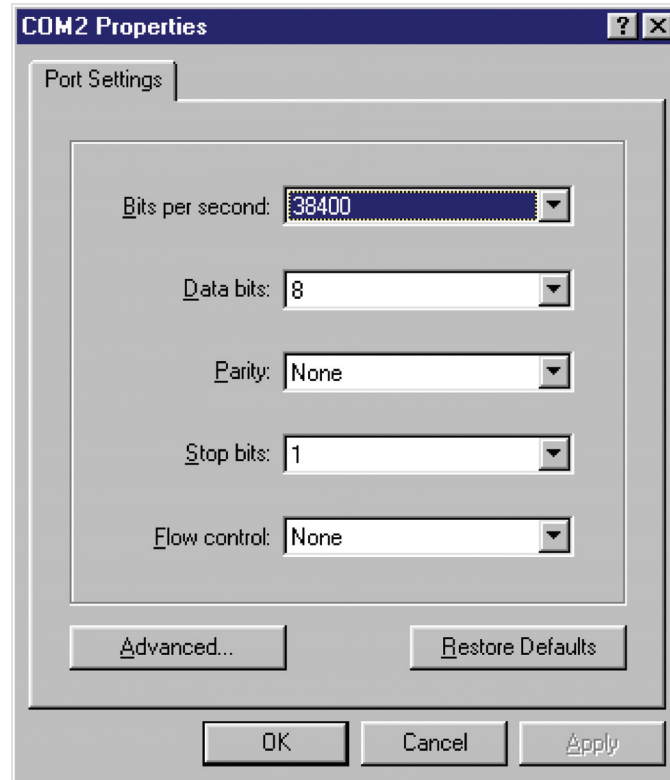
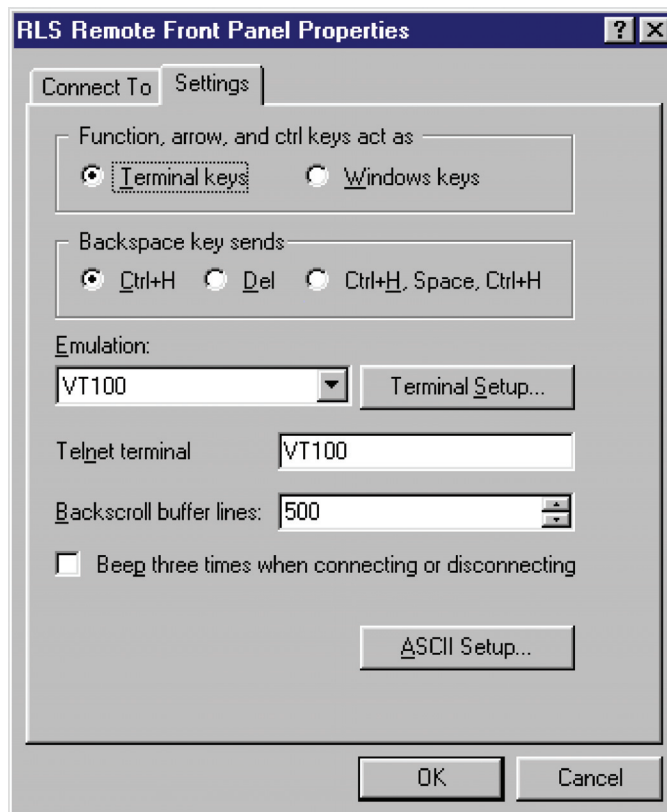


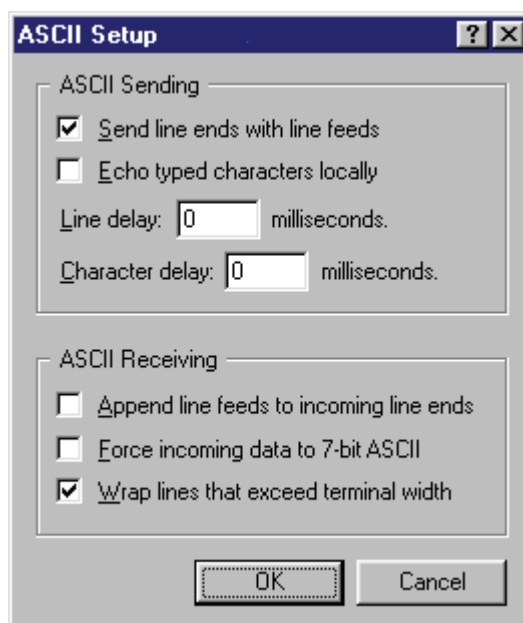
Figure 8 Configure Screen Under the Properties Menu

VT100 Terminal Emulation

Use the **File\Properties Settings** dialog tab to configure the application for VT100 terminal emulation.

**Figure 9 Settings Screen Under the Properties Menu**

You may also consider ASCII Setup parameters to satisfy your display requirements.

**Figure 10 ASCII Setup Screen under Settings Screen**

Remote Library command Mode

To access the Remote Library Command Mode, press the ESC key and type “cmd” followed by the <Enter> key. This will display the Command Help screen depicted in Figure 11 followed by a DOS-like command prompt “>”. Commands may now be entered in lower case text. All commands must end with the <Enter> key. Most terminal emulators support the backspace key for correcting typing errors. Quotation marks are shown for clarity and are not to be typed in the actual command line.

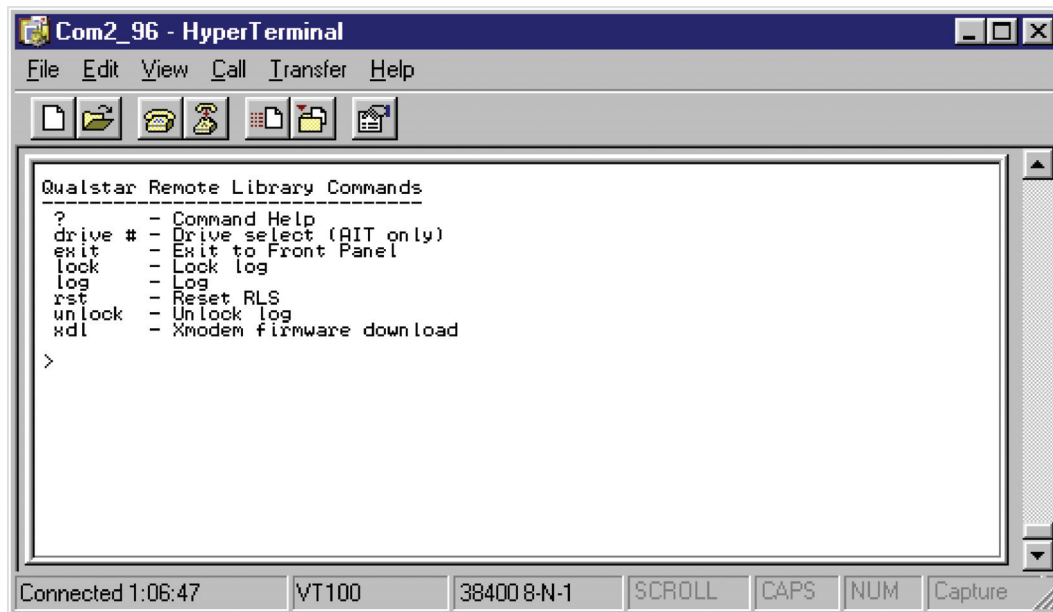


Figure 11 Remote Library Commands

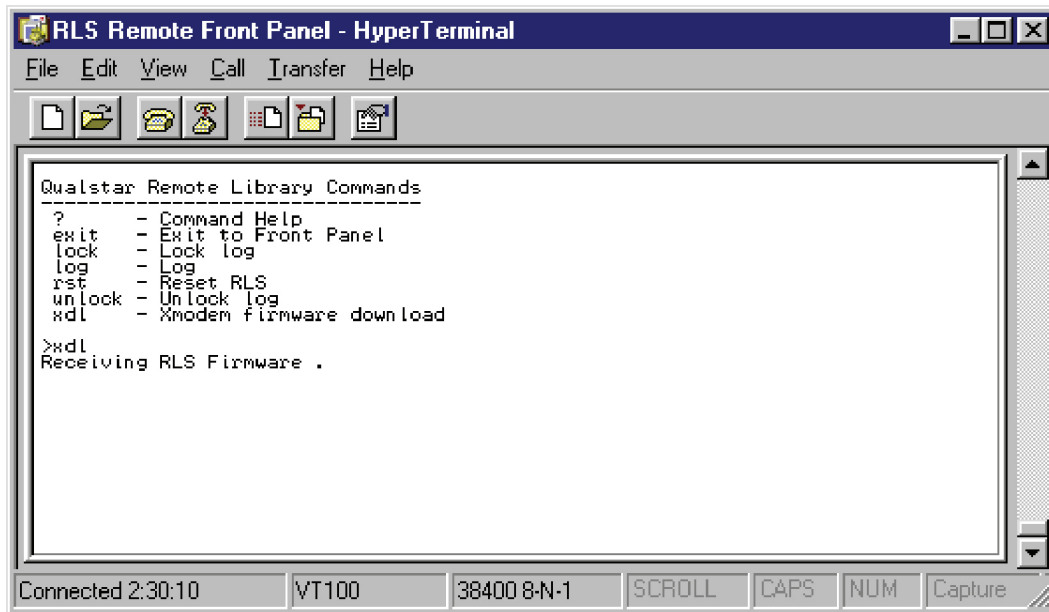
Xmodem Firmware Download <xdl>

The “xdl” command instructs the library to receive new RLS firmware via an object file on the remote terminal computer using the XMODEM communications protocol. If the transmission is terminated at the terminal emulator, the RLS will ignore the partial download. Do not turn off RLS power while the update is in progress. If the entire firmware object file is successfully downloaded, the RLS will reprogram itself and then restart automatically.

Once the library restarts, the user will see the Qualstar Remote Library Control Panel.

Example of a download session

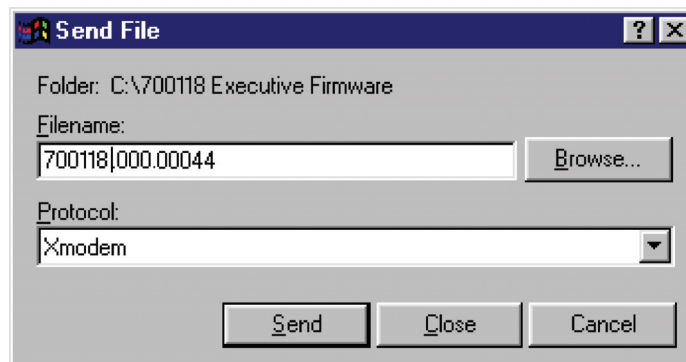
Enter the command “xdl”. The application will respond “Receiving RLS Firmware”, to indicate it is waiting for the user’s xmodem data.

**Figure 12 Example of Xmodem Firmware Download**

Use the HyperTerminal menu function **Transfer->Send File**, to download the RLS firmware file to the library. RLS firmware object files are typically named 700118.000.00044 where 700118 represents the code-set name and .00044 is the Version (Version 0.44 in this example).

NOTE

It is very important not to power off the RLS Library while reprogramming is in progress. Powering off the RLS Library is not necessary and can cause the RLS Library to lose its program contents.

**Figure 13 Send File Screen Under Transfer**