4. CLI Features

This Command Line Interface (CLI) is provided for you to configure the ARC-8020 expander box. The CLI is useful in environments where a graphical user interface (GUI) is not available.

● Establishing the Connection for the RS-232 Port

The CLI function can be done by using an ANSI/VT-100 compatible terminal emulation program. You must complete the appropriate installation procedure before proceeding with the CLI function. Whichever terminal emulation program is used must support the 1K XMODEM file transfer protocol.

The serial port on the SAS expander controller's front panel can be used in VT100 mode. The provided interface cable converts the RS232 signal of the RJ11 connector on the SAS expander controller into a 9-pin D-Sub male connector. The firmware-based terminal SAS expander management interface can access the expander through this RS-232 port. You can attach a VT-100 compatible terminal or a PC running a VT-100 terminal emulation program to the serial port for accessing the text-based setup menu.

4.1 Expander RS-232C Port Default Setting

To ensure proper communications between the SAS expander controller and the VT-100 Terminal Emulation, Please configure the VT100 terminal emulation settings to the values shown below:

Terminal requirement	
Connection	Null-modem cable
Baud Rate	115,200
Data bits	8
Stop	1
Flow Control	None

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4.2 Start-up VT100 Screen

By connecting a VT100 compatible terminal, or a PC operating in an equivalent terminal emulation mode, all CLI administration functions can be exercised from the VT100 terminal.
There are a wide variety of Terminal Emulation packages, but for the most part they should be very similar. The following setup procedure is an example Setup VT100 Terminal in Windows XP system using Hyper Terminal use Version 3.0 or higher.

Step 1. Open the "Taskbar Start"/"Programs"/"Accessories"/ "Commmunications"/"Heyper Terminal". (Heyper Terminal requires version 3.0 or higher) (Figure 4.2-1)
Step 2. Open "HYPERTRM.EXE". (Figure 4.2-2)

Figure 4.2-1

Figure 4.2-2

Step 3. Enter a name you prefer and then click "OK". (Figure 4.2-3)
Step 4. Select an appropriate connecting port and then click "OK". (Figure 4.2-4)

Figure 4.2-3

Figure 4.2-4

Step 5. Configure the port parameter settings and then click "OK".
Bits per second: 115200
Data bits: 8
Parity: None
Stop bits: 1
Flow control: None (Figure 4.2-5)
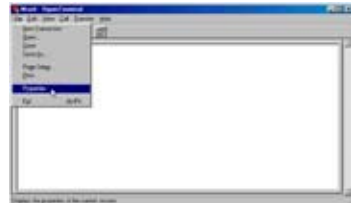**Step 6.** Open the file menu and select "Properties". (Figure 4.2-6)

Figure 4.2-5   Figure 4.2-6

Step 7. Configure the "Connect To" setting. (Figure 4.2-7)
Step 8. Configure the "Settings" items and then click "OK".
Function, arrow and ctrl keys act as: Terminal Keys
Backspace key sends: Crtl+H
Emulation: VT100
Telnet terminal: VT100
Back scroll buffer lines: 500 (Figure 4.2-8)

Now, The VT100 is ready to be used.
After you finished the VT100 Terminal setup, you may press " X "
key (in your Terminal) to link the expander CLI setup screen and
Terminal together.
Press "X" key to display the expander CLI utility screen on your
VT100 Terminal. The CLI prompt is displayed in a DOS console
window. Press "H" to display the sub-manual.
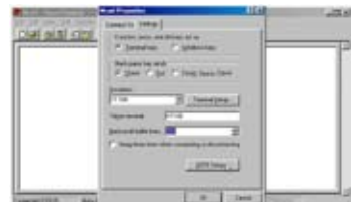

Figure 4.2-7   Figure 4.2-8

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4.3 Command

This command provides an on-line table of contents, providing brief descriptions of the help sub-commands. You can use the <CLI> -he or –help to get detail information about the command.

● Help Command

Syntax
CLI>HE or HELP [Enter]

Example:
CLI>HELP
CLI commands:

    ER - Erase block region
    FL - Update flash region
    ST - Store system configurations in flash
    PA - Set password
    PL - Print system log
    SY - Print system information
    SP - Operate the HDD spin up attribute
    LI - Operate the device link rate
    DR - Set the PHY driven strength
    LO - Logout CLI shell
    HE - Show all CLI commands and its usage
    XR - Warm reboot the system

All Numeric Arguments must in HEX format, eg: 0x1028A and 0x8

● ER Command

Flash memory is a popular form of non-volatile memory. An entire block of flash can be erased with a single command. Erase the code area before you update the firmware.

Syntax
CLI> ER {CODE | DATA | ... } [Enter]

Example:
CLI>ER CODE
Erase Flash Region ...OK

● FL Command

The controller has added the expander firmware update through the CLI on the external RS-232 port. Before you process the firmware update, use the ER command to erase program block region. To update the expander controller firmware, follow the procedure below:

Syntax
CLI>FL { CODE | DATA | ... } [Enter]

Then use XModem/1K protocol transmit file to update ROM region

Example:
The procedure to update firmware through the UART:

A. Open any UART communication tools like HypeTerminal (115200,n,8,1).
B. Press any key on HyperTerminal window, the window will show "CLI>" prompt.
C. Type help will show help screen.
D. 3 commands for update firmware, erase, flash and reboot, steps as follow,
E. First issue "erase code" under "CLI>" prompt, CLI>er code
F. After success, issue "flash code" CLI>fl code
Wait to Receive File ...C <-----expander prompt for ready receive file to program
G. Then under HyperTerminal program, use the pull down menu item transfer -> send
files when dialog box prompt, choose "Xmodem 1K" and the file in the directory then press "send".

   (1). If the expander receive to file under the timeout limit (30s), the transfer and flash-update start."

   (2). If time out, please retry the step F again.

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H. You also can cancel the program step by type 3 times ctrl-X.
I. If program done, warm reboot expander (using XR command) or power off/on the expander.

• ST Command

ST command stores system configurations in flash. The 0xFF means store all element data in flash. Since all the revised parameter setting is temporarily stored in the working RAM, the ST command saves those parameters permanently in flash ROM.

Syntax
CLI> ST 0xFF [Enter]

Example:
CLI>ST 0xFF
CLI>

• PA Command

The PA command allows user to set or clear the expander controller password protection feature. Once the password has been set, the user can only monitor and access the expander controller setting by providing the correct password. The password can accept max. 8 chars and min. 4 chars. The manufacture default password is "0000".

Syntax
CLI>PA [Enter]

Example:
CLI>PA
   Old Password:****
   New Password:****
   Verify New Password:****
   Password Changed But Not Save Permanently!
   Note, use CLI command "ST 0xFF" to keep permanently.

• PL Command

The PL command allows you to display system event notifications

that have been generated event by the SAS expander box.

Syntax
CLI>PL [Enter]

Example:
CLI>PL
```
   0: 0: 0>POST: System Boot Up!
   0: 0: 0>POST: Enter the Main Loop ...
   0: 2:50>UART: Password Is Changed!
   0: 0: 0>POST: System Boot Up!
   0: 0: 0>POST: Enter the Main Loop ...
   0: 3:10>OK  : Save Config !
   0: 0: 0>POST: System Boot Up!
   0: 0: 0>POST: Enter the Main Loop ...
   0: 0:10>UART: Password Is Changed!
```

• SY Command

SY command is used to view the SAS expander's information. Typical information includes: vendor, model name, serial/unit number, expander port number/chip revision/firmware version, CFG data file and work time.

Syntax
CLI>SY [Enter]

Example:
CLI>SY
```
 Vender     : Areca Technology Co Ltd. Taiwan, R.O.C
 Model      : ARC-8010
 Serial No. : 0000000000000000
 Unit Serial:
 SAS address: 0x5001B4DFFFFFF03F
 Customer   : 0x91
 Port Num.  : 28
 Chip Rev.  : A01
 Firmware   : 05.10.A123 03/18/08
 CFG Data   : 0x05
 Work Time  : 0: 2:45
```

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● SP Command

SP command defines the mode of staggering drive spin-up function connected on the expander controller. The "H" and "S" parameter gives the host and expander controller the ability to spin up the disk drives sequentially or in groups, allowing the drives to come ready at the optimum time without straining the system power supply. Staggering drive spin-up in a multiple drive environment also avoids the extra cost of a power supply designed to meet short-term startup power demand as well as

Syntax
CLI> SP [I|H|S [Delay Num] [Drive Num]] [Enter]
I - Power up to spin up all drives simultaneously mode.
H - Host/RAID controller notify mode.
S – Expander issues the spin up the drives by [Delay Num] [Delay Num] parameter.

Example1:
CLI>SP S 0X40 0X2
CLI>SP
 SpinUp Attribute: (1tc= 16ms)
 Mode = SelfTimed, Delay = 0x0040tc(4x16x16ms=1s), Drive Num = 0x02(2Disks per step)

Example2:
CLI>SP I
 OK:Pls. Save Config. & Reboot To Take Effect
CLI>SP
 SpinUp Attribute: (1tc= 16ms)
 Mode = Immediate

Example3:
CLI>SP H
 SpinUp Attribute: (1tc= 16ms)
 Mode = Host-Notify

• Ll Command

The LI command allows you to display the operate device link rate information that has been collected by expander controllers. Typical information include: Max and Min disk speed connected the SAS expander controller.

Syntax
CLI>LI [Enter]

Example:
CLI>LI
Usage : LINK
 Device Link Attribute: 8=1.5G, 9=3.0G
 ======SPEED=MAX=MIN================
 0x00   NA   9   8   NA   SLOT 01
 0x01   NA   9   8   NA   SLOT 02
 0x02   NA   9   8   NA   SLOT 03
 0x03   NA   9   8   NA   SLOT 04
 0x04   NA   9   8   NA   SLOT 05
 0x05   NA   9   8   NA   SLOT 06
 0x06   NA   9   8   NA   SLOT 07
 0x07   NA   9   8   NA   SLOT 08

• DR Command

The DR command allows you to adjust the PHY driver strength that can meet different SAS cable length.

Syntax
CLI> DR [-C[1|2|..]] 0x{1..8}][Enter]
C[1|2|3]: For external cable [1|2|3] setting.
{1..8} : For cable length 1 to 8m.
Example:

CLI>DR
External SAS Port Signal Level:
 (1)Left Port Level :   3m
 (2)Mid. Port Level :   3m
 (3)Right Port Level :   3m

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CLI>DR -C2 0x5
OK:Pls. Save Config. & Reboot To Take Effect
CLI>DR

External SAS Port Signal Level:
 (1)Left Port Level :   3m
 (2)Mid. Port Level :   5m
 (3)Right Port Level :   3m
CLI>

● LO Command

To close the currently selected expander controller and exit the CLI, use the exit LO command.

Syntax
CLI> LO [Enter]

Example:
CLI>LO
Password:

● XR Command

The XR command allows you to warm reboot the system.

Syntax
CLI>XR [Enter]