Quarch Technology Ltd

24 Port Power Switch Board

Technical Manual

For use with:

QTL1574 – 24 Port Power Switch Board
Hardware Version -03A and above

Using Quarch firmware version 4.500 and above

Monday, 07 October 2013

Change History

1.0   20th June 2013   Initial Release

2.0   4th October 2013   Added Power Sense Sections

Contents

Introduction

The Quarch Technology 24 Port Power Switch board can independently switch 12V and 5V power to 24 drive ports. The board can also measure voltage at and current supplied to each drive port independently and assert a drives DEV_SLEEP pin where supported by the drive.

Technical Specification

Voltage Measurement

Resolution	1.25mV
Typical Accuracy	1%
Worst Case Accuracy	5%

Current Measurement

Range	-8A to 8A
Resolution	0.25mA
Typical Accuracy	±(2mA + 1%)
Worst Case Accuracy	±(2mA + 5%)

Each drive port has an activity LED which is fed from the ports 5V power supply, when the LED is active this accounts for an additional 20mA of current on the 5V power rail, when inactive the current drain is negligible.

Sampling

Each port has two independent sensors, one on the 12v rail and one on the 5V rail. Each sensor measures voltage then current consecutively. Each measurement is acquired over an 8mS period and 4 measurements are averaged together to give the final result. So each measurement is in effect averaged over a period of 64mS. Measurements are retrieved from each port in turn through internal hardware, this process takes 81 mS, so measurements appear to update on an 81mS cycle to the user.

Control Interfaces

Serial Terminal

The Controller supports a standard ASCII serial terminal via the RS232 connection port on the rear of the unit.

Setting	Required value
Baud Rate	19,200
Data Bits	8
Stop Bits	1
Handshaking	None or Hardware

Ethernet

Control via a Telnet terminal works in exactly the same way as with a serial terminal.

Only one Telnet connection to the unit can be made at a time, further connections will be refused. An active Telnet connection will also lock out the serial terminal as only one connection can be active at a time.

The Array Controller supports DHCP and NetBios names.

Default NetBios Name: The serial number of the unit (As found on its label) in the form "QTLnnnn-nn-nnn"

Default IP Address: 192.168.1.99 (This will change if a local DHCP server is available)

Telnet Port: 23

You can read or change the Ethernet settings from a Serial or USB terminal connection.

"config:ethernet:ip?" will return the current IP address

"config:Ethernet:mask?" will return the current subnet mask

"config:ethernet:name?" will return the current NetBios name

Power Switch Board Commands

The Power Switch Board has a 64 character line buffer; any command sent MUST NOT exceed this limit, which would result in a failed command. The only time you are risk exceeding this limit is if you have used a very long address list.

These commands are based on the SCPI style control system that is used by many manufacturers of test instruments. The entire SCPI specification has NOT been implemented but the command structure will be very familiar.

- SCPI commands are case-insensitive
- SCPI commands are in a hierarchy separated by ':' (LEVel1:LEVel2:LEVel3)
- Most words have a short form (e.g. 'register' shortens to 'reg'). This will be documented as REGister, where the short form is shown in capitals.
- Query commands that return a value all have a '?' on the end
  Commands with a preceding '*' are basic control commands, found on all SCPI devices

Basic Commands

*RST

Triggers a reset in all connected Array Controllers and Control Modules, the system will behave as if it had just been powered on

*CLR

Clears the terminal window and displays the normal start screen

*IDN?

Displays a standard string, identifying the Array Controller in the form:

"Manufacturer, Product part #, Processor part #, Firmware version string"

Where:
Manufacturer = "Quarch Technology"
Product part # = "QTLxxxx" (Part number of the Product)
Processor part # = "QTLxxxx" (Part number of the communicating processor)
Firmware Version = A parsable list containing the version of part

*TST?

Runs a set of standard tests to confirm the Array Controller is operating correctly, these tests are also performed at start up.

 # [comments]

Any line beginning with a # character is ignored as a comment. This allows commenting of scripts for use with the system.

Power Control Commands

PORT:[x/x-y]:POWer:[UP|DOWN}
PORT:[x]:POWer?

Turns the power to port [x] on or off.
X is an ASCII coded integer value from 1 to 24 to control single ports.
A range of ports can also be controlled, where x-y is an ascending range containing 2 port numbers separated by a dash.

PORT:[x/x-y]:DEV_SLEEP:[ON|OFF}
PORT:[x]:DEV_SLEEP?

Turns dev_sleep to port [x] on or off.
X is an ASCII coded integer value from 1 to 24 to control single ports.
A range of ports can also be controlled, where x-y is an ascending range containing 2 port numbers separated by a dash.

General Setup Commands

CONFig: MESSages [SHORt|USER]
CONFig: MESSages?

Gets or sets the mode for messages that are returned to the user's terminal

Short: Only a "FAIL" or "OK" will be returned
User: Full error messages with description are returned to the user on failure

CONFig:TERMinal [USER|SCRIPT]
CONFig:TERMinal?

Sets the ASCII terminal configuration mode:
USER: Standard mode for manual control via Hyperterminal etc
SCRIPT: Does not echo characters, sends <CR> after the cursor. This is to assist scripting, especially from Linux based systems

CONFig:TERMinal:LOCK:[ON|OFF]
CONFig:TERMinal?

> Locks the board into serial mode, telnet connections will not be accepted

Ethernet Commands

CONFig:ETHernet:IP [xxx.xxx.xxx.xxx]
CONFig:ETHernet:IP?

> Sets the static IP address of the unit. Setting a static IP address will disable DHCP if it is currently enabled. This command will automatically store the setting in EEPROM. You will have to reset/power cycle the unit for the change to take effect.

CONFig:ETHernet:MASK [xxx.xxx.xxx.xxx]
CONFig:ETHernet:MASK?

> Sets the IP mask of the unit. This command will automatically store the setting in EEPROM. You will have to reset/power cycle the unit for the change to take effect.

CONFig:ETHernet NAME [xxxx] (15 characters max)
CONFig:ETHernet NAME?

> Sets the NetBios name of the unit. This command will automatically store the setting in EEPROM. You will have to reset/power cycle the unit for the change to take effect.

CONFig:ETHernet DHCP [ON|OFF]
CONFig:ETHernet DHCP?

> Enables/disables the DHCP client. When enabled, the controller will try to obtain an IP address from the local DHCP server. You will have to reset/power cycle the unit for the change to take effect.

Voltage Measurement Commands

MEASure:VOLTage:SELF [3v3?|5v? |12v?]

> Measures the internal voltage rails of the unit for self-test purposes. Measurements are returned in the form "12000mV"