

CP-16

User Manual



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1.0 WHAT'S IN THE BOX

- 1 x CP-16
- 1 x Rack Mount Kit
- 1 x RJ50 to DB9 cable with terminal block for GPI/Tally
- 1 x RJ45 to DB9 cable for RS-232
- 1 x DC 5V 3.2A Power Adapter
- 1 x Manual

Important Note:

Default IP address: 192.168.1.151

2.0 Key Features

- 16 programmable LED buttons
- First 8 buttons can also be used as GPI triggers
- Built-in web page setup, can be easily accessed by any web browser

3.0 Specifications

Description	16 Button Control Panel
Software	Built-in web interface
Connectors	
IP	100 Base-Tx, Ethernet TCP/IP on RJ45 port
GPIO	8 lines on 10-wire RJ50 port (adapter cable/breakout provided)
RS232	Serial on RJ45 connector (adapter cable provided). (Serial port use not currently available in firmware)
EMI/RFI	Complies with FCC Part 15, Class A, CE, EU, EMC, C-tick
Power	DC 5-Volt, 3.2 Amp power adapter
Size	440mm W x 125mm D x 44mm H (not including rack mounting 'rack-ears')
Mounting	Rack mount, 1 rack unit in height

4.0 Front/Rear Panels

4.1 Front Panel

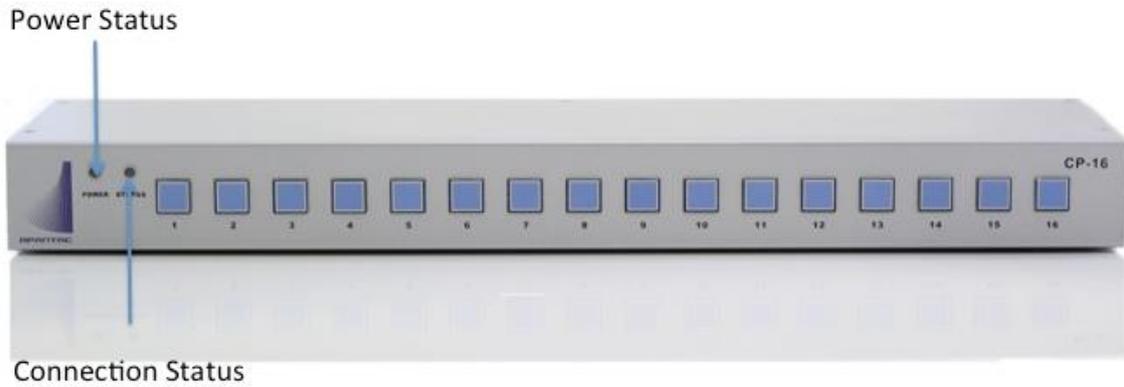


Figure 4-1 CP-16 Front Panel

4.2 Rear Panel

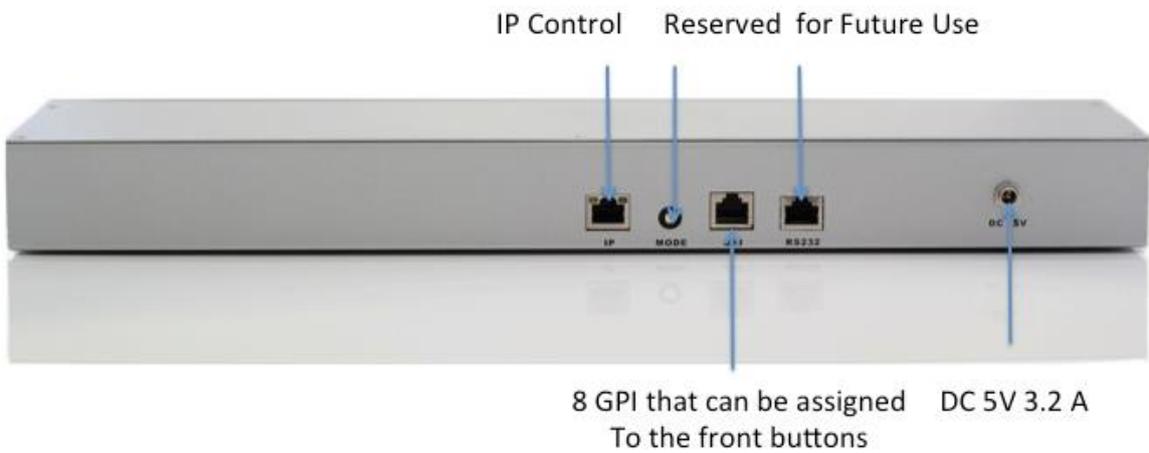


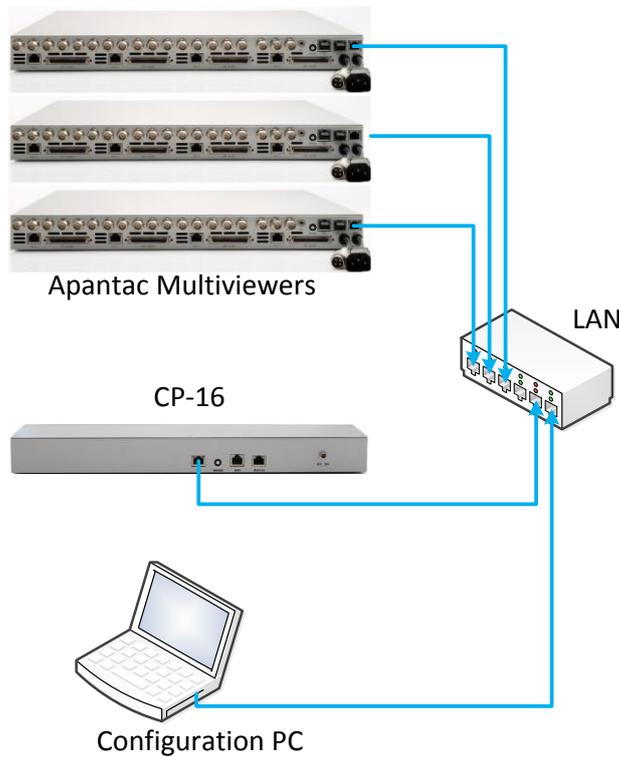
Figure 4-2: CP-16 Rear Panel

5.0 Accessories

	
<p>Power Adapter</p>	<p>2 x Mounting Plate</p>
	
<p>RJ50 to DB9 Cable for GPI/O</p>	<p>RJ45 to DB9 Cable for RS-232</p>
	
<p>Terminal Block for GPI/O</p>	

6.0 Installation

Ethernet Wiring

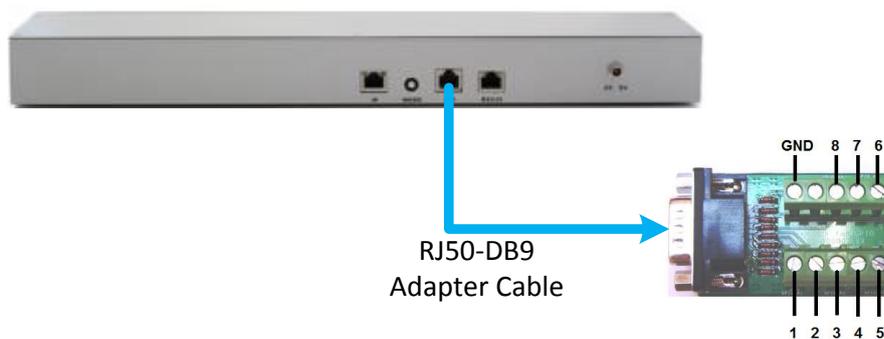


GPI/O Wiring

Connect the GPI port to the DB9 breakout wiring block using the RJ50-DB9 adapter cable. *(NOTE: The RJ50 connector has 10 contacts and a metal shielded end.)*

GPI inputs can be provided by either relay contact closures or open-collector circuits of external equipment. GPI connections must include the ground (GND) reference. The input is activated when it is brought to the ground reference level.

GPO outputs provide a 5volt output level from the CP-16 when active, and ground level when inactive.



7.0 Configuration and Programming

7.1 Getting Started

The CP-16 is designed to control a single or multiple Apantac products that supports GPI or AXP protocol. This section will help you get the CP-16 up and running with the built-in web page setup as quickly as possible.

7.2 Connecting to the CP-16 with a Web Browser

The default address for the CP-16 is 192.168.1.151. Open a web browser and type 192.168.1.151 in the URL address line. When connected the login page will be displayed.

The default username is "apantac", the default password is "apantac". The username and password are case sensitive.

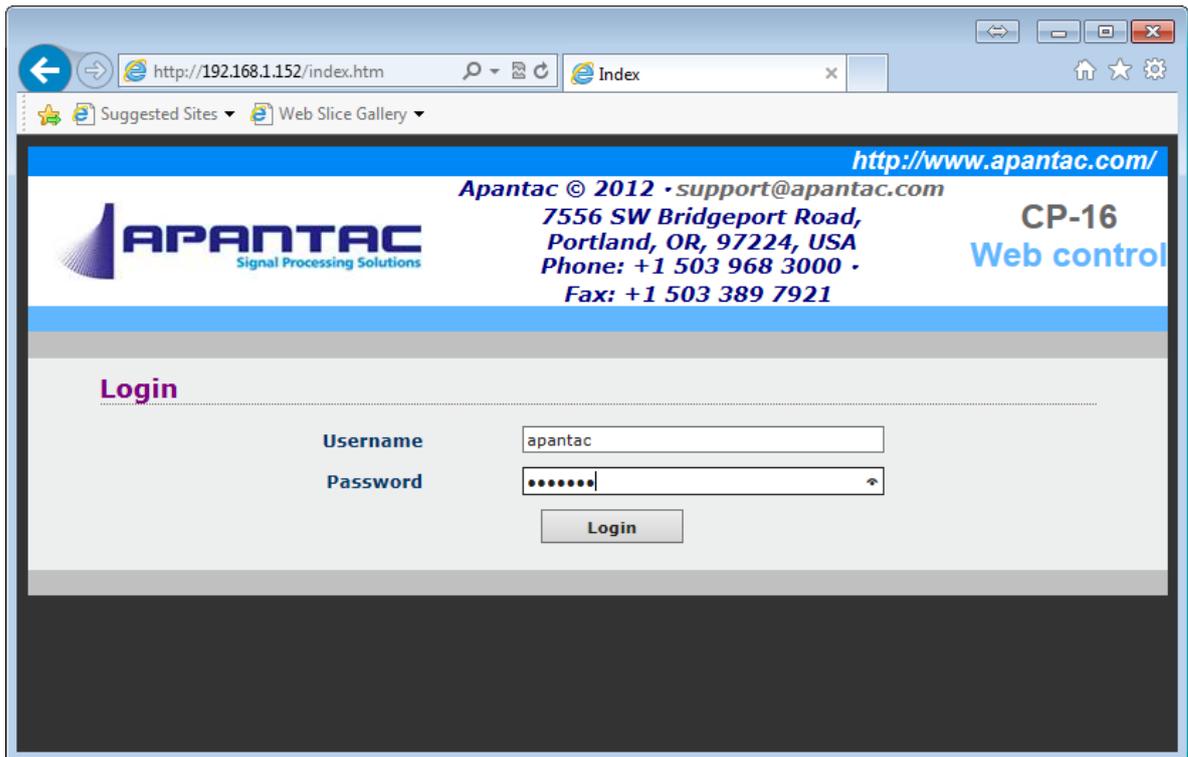


Figure 7.1: CP-16 login page

7.3 CP-16 Administration Setup

After you logon to the CP-16 page, you will be able to access 3 tabs, Setup, Advance and Administration. Click the Administration tab.

http://www.apantac.com/
Apantac © 2012 support@apantac.com
7470 SW Bridgeport Road,
Portland, OR, 97224, USA
Phone: +1 503 968 3000
Fax: +1 503 389 7921

CP-16
Web control

Logout

Setup Advance Administration

Username

Username

Apply Cancel

Password

Old Password

New Password

Confirm Password

Apply Cancel

Network

DHCP Client

Static IP Address

Static Subnet Mask

Static Default Gateway

Static DNS Server

Connection Type

Transmit Timer ms
Please enter an integer between 10~65535

Server/Client Mode

Server Listening Port
Please enter an integer between 1024~65535

Client Destination Host Number

Assign To AXP Ctrl Number
Value 0 will Ignore This Host IP, Normal Options Range of 1~16
Sample: 1,2,3,4 (Assign to AXP Ctrl 1,2,3,4) or *.* (Assign to All)

Client Destination Host Name/IP
Please enter host IP address(e.g. 192.168.1.151)

Client Destination Port
Please enter an integer between 101~65535

Accessible IP Setting

IP #1

IP #2

IP #3

IP #4

Control

Attention:
For the <Accessible IP Setting> change to take effect, you must power cycle or reboot the device

Apply Cancel

Figure 7.2: Administration Tab, CP-16 settings

7.3.1 CP-16 Module Setup

The areas outlined in red in the figure 7.2 above pertain to the CP-16 module itself.

- **Username**

The default username for logging on to these setup webpage is "apantac". This can be changed to your preference. Click the corresponding "Apply" button after entering your information.

- **Password**

The default password for logging on to these setup webpage is "apantac". This can be changed to your preference. Click the corresponding "Apply" button after entering your information.

- **DHCP Client**

DHCP can be Enabled or Disabled. Enabling DHCP will cause your network's DHCP server (server or router) to assign the CP-16 an IP Address of it's choice. Not knowing the assigned IP Address will make displaying the setup webpages difficult. If your I.T. department insists on DHCP, they should program their DHCP server (router) to assign a known, preselected IP Address to the CP-16 unit. To apply these changes click the 'Apply' button at the bottom of this webpage and then click the 'Reboot' button on the Setup tab.

NOTE: If DHCP is Enabled, the following four network settings will be ignored. (Your Network's DHCP server will assign them.)

- **Static IP Address**

The IP Address of the CP-16 module. This should be set to an address on the same subnet as the multiviewers it will control.

- **Static Subnet Mask**

Default subnet masks depend on the class of your network.

Network class	Network IP addresses	Subnet Mask
Class A	10 . xxx . xxx . xxx	255 . 255 . 0 . 0
Class B	172 . xxx . xxx . xxx	255 . 255 . 240 . 0
Class C	192 . 168 . xxx . xxx	255 . 255 . 255 . 0

- **Static Default Gateway**

Not applicable when CP-16 and Multiviewers are on the same local subnet network.

- **Static DNS Server**

Not applicable when CP-16 and Multiviewers are on the same local subnet network.

Accessible IP Setting

WARNING: If enabled, only computers with these IP addresses can login to the CP-16's webpages.

- **IP #1 through IP #4**

Enter the IP addresses of the computer's to be permitted to login to, access, and change the CP-16's settings.

- **Control**

This will enable or disable the 'Accessible IP Setting' function and settings. See the above warning prior to enabling this function.

7.3.2 Multiviewer Connection General Setup

The areas outlined in red in the figure below pertain to the CP-16 module connecting to the multiviewer/s it will control.

The screenshot shows the Administration tab of the APANTAC CP-16 Web control interface. The page includes a header with the APANTAC logo, contact information, and the URL <http://www.apantac.com/>. The main content area is divided into sections: Username, Password, Network, and Accessible IP Setting. The Network section contains various configuration fields, with a red box highlighting the Connection Type (TCP), Transmit Timer (100 ms), Server/Client Mode (Client), and Server Listening Port (2009). The Accessible IP Setting section includes four IP address fields (all set to 0.0.0.0) and a Control dropdown (set to Disable). An attention note at the bottom states: "Attention: For the <Accessible IP Setting> change to take effect, you must power cycle or reboot the device".

Section	Field	Value
Username	Username	
	Buttons	Apply, Cancel
Password	Old Password	
	New Password	
	Confirm Password	
Buttons	Apply, Cancel	
Network	DHCP Client	Disable
	Static IP Address	172.28.34.151
	Static Subnet Mask	255.255.0.0
	Static Default Gateway	172.28.34.1
	Static DNS Server	172.28.34.1
	Connection Type	TCP
	Transmit Timer	100 ms
Server/Client Mode	Client	
Server Listening Port	2009	
Client Destination Host Number	Host 1	
Assign To AXP Ctrl Number	1,2,3,4	
Client Destination Host Name/IP	172.28.34.100	
Client Destination Port	101	
Accessible IP Setting	IP #1	0.0.0.0
	IP #2	0.0.0.0
	IP #3	0.0.0.0
	IP #4	0.0.0.0
	Control	Disable

Attention:
For the <Accessible IP Setting> change to take effect, you must power cycle or reboot the device

Buttons: Apply, Cancel

Figure 7.3: Administration Tab, Multiviewer general settings

- **Connection Type**
TCP or UDP protocol. Default is TCP (Apantac Tahoma multiviewers utilize TCP protocol.)
- **Transmit Timer**
Transmission timeout limit. Default is '100'. Change to 200 or 300 ms if experiencing trouble with the multiviewer not receiving commands and no other reason can be found.
- **Server / Client Mode**
CP-16 to Multiviewer communication mode. Default is 'Client' and cannot be changed.
- **Server Listening Port**
Not applicable to the CP-16 functionality. Default is '2009'.

7.3.3 Multiviewer Connection Specific Setup

The areas outlined in red in the figure below pertain to configuring all the multiviewers which the CP-16 module will control and which buttons will control which multiviewer/s.

The screenshot shows the Administration tab of the APANTAC CP-16 Web control interface. The page is titled "Administration" and includes a "Logout" link. The main content area is divided into sections: "Username", "Password", "Network", and "Accessible IP Setting".

The "Network" section contains the following fields:

- DHCP Client: Disable (dropdown)
- Static IP Address: 172.28.34.151
- Static Subnet Mask: 255.255.0.0
- Static Default Gateway: 172.28.34.1
- Static DNS Server: 172.28.34.1
- Connection Type: TCP (dropdown)
- Transmit Timer: 100 ms (with a note: "Please enter an integer between 10~65535")
- Server/Client Mode: Client (dropdown)
- Server Listening Port: 2009 (with a note: "Please enter an integer between 1024~65535")

The "Accessible IP Setting" section contains the following fields:

- IP #1: 0.0.0.0
- IP #2: 0.0.0.0
- IP #3: 0.0.0.0
- IP #4: 0.0.0.0
- Control: Disable (dropdown)

A red box highlights the following fields in the "Network" section:

- Client Destination Host Number: Host 1 (dropdown)
- Assign To AXP Ctrl Number: 1.2.3.4 (with a note: "Value 0 will Ignore This Host IP, Normal Options Range of 1~16 Sample: 1.2.3.4 (Assign to AXP Ctrl 1,2,3,4) or *.* (Assign to All)")
- Client Destination Host Name/IP: 172.28.34.100 (with a note: "Please enter host IP address(e.g. 192.168.1.151)")
- Client Destination Port: 101 (with a note: "Please enter an integer between 101~65535")

At the bottom of the page, there is an "Attention:" section with the text: "For the <Accessible IP Setting> change to take effect, you must power cycle or reboot the device". Below this are "Apply" and "Cancel" buttons.

Figure 7.3b: Administration Tab, Multiviewer specific settings

- **Client Destination Host Number**

Allows for programming up to 16 different multiviewers for the CP-16 to control. *You must click the 'Apply' button below each time you select a different Host Number (multiviewer) to refresh the page with that multiviewer's information before changing any of the following fields.*

The following three fields apply to the particular Host Number chosen above.

- **Assign to AXP Ctrl Number**

Enter which buttons will send their commands to this multiviewer (Host Number).

Acceptable numbers are 1 through 16. Separate the button numbers by a period character. Setting this parameter to 0 (zero) will assign no buttons to this host, effectively disabling the host.

- **Client Destination Host Name / IP**

Enter the IP addresses of the Apantac Tahoma Multiviewer to be associated with the chosen Host Number.

- **Client Destination Port**

This is the TCP/IP port number the multiviewer receives the AXP command protocol through. Default is '101', do not change. (All Apantac Tahoma multiviewers utilize port 101 for receiving AXP command protocol.)

A programming example:

Section 7.4 below explains how to assign AXP commands to the 16 buttons. This section determines which multiviewer IP addresses a particular button's commands will be sent to. Each button can send its commands to one or more multiviewers (IP addresses). [*The programming may appear to be logically reverse. Instead of assigning which destinations a particular button will send to, the configuration designates which buttons will send to the particular destination.]*

In this example let's imagine we want buttons 1 through 4 to control multiviewer #1, buttons 5 through 8 to control multiviewer #2, and buttons 9 through 12 to simultaneously control multiviewers #3, #4, and #5. The resulting settings would be as shown in this table.

Multiviewer	Client Destination Host Number	Assign to AXP Ctrl Number	Client Destination Host Name / IP	Client Destination Port
#1	Host 1	1.2.3.4	192.168.1.151	101
#2	Host 2	5.6.7.8	192.168.1.152	101
#3	Host 3	9.10.11.12	192.168.1.153	101
#4	Host 4	9.10.11.12	192.168.1.154	101
#5	Host 5	9.10.11.12	192.168.1.155	101
	Host 6	0	n/a	n/a
		
	Host 16	0	n/a	n/a

Procedure;

1. Select Host 1 in the pulldown, click the Apply button below, and wait for the page to refresh.
2. Set the Client Destination Host Number to "1.2.3.4" designating that buttons 1 through 4 will send their commands to this multiviewer.
3. Set the Client Destination Host Name / IP to the IP address of this multiviewer. (*In this example we used 192.168.1.151 .*)
4. Set the Client Destination Port to "101". (*All Apantac multiviewer's receive AXP command protocol via port 101.*)
5. Click the Apply button below to set these parameters. Wait for the page to refresh.
6. Repeat steps 1 through 5 for all 16 Host Numbers*.

* Host Numbers which are not used should have the 'Assign to AXP Ctrl Number' parameter set to "0".

7.4 CP-16 Programming and GPIO Setup

The Setup tab provides for button programming and for GPIO setup.

http://www.apantac.com/

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CP-16
Web control

Logout

Setup Advance Administration

Serial Settings

Preset button mode
AXP command mode through TCP port 125

GPIO button mode
Allocation comment effective of "allocation mode"

AXP Ctrl 0	<input type="text" value="AXP call preset"/>
AXP Ctrl 1	<input type="text" value="AXP call preset"/>
AXP Ctrl 2	<input type="text" value="AXP call preset"/>
AXP Ctrl 3	<input type="text" value="AXP call preset"/>
AXP Ctrl 4	<input type="text" value="AXP call preset"/>
AXP Ctrl 5	<input type="text" value="AXP call preset"/>
AXP Ctrl 6	<input type="text" value="AXP call preset"/>
AXP Ctrl 7	<input type="text" value="AXP call preset"/>
AXP Ctrl 8	<input type="text" value="AXP call preset"/>
AXP Ctrl 9	<input type="text" value="AXP call preset"/>
AXP Ctrl 10	<input type="text" value="AXP call preset"/>
AXP Ctrl 11	<input type="text" value="AXP call preset"/>
AXP Ctrl 12	<input type="text" value="AXP call preset"/>
AXP Ctrl 13	<input type="text" value="AXP call preset"/>
AXP Ctrl 14	<input type="text" value="AXP call preset"/>
AXP Ctrl 15	<input type="text" value="AXP call preset"/>

Figure 7.4: Setup Tab

7.4.1 Button Programming

When a button on the CP-16 is pressed it will send an ASCII text command to an Apantac Tahoma Multiviewer via TCP/IP protocol over Ethernet. The list of commands Apantac Tahoma Multiviewers will respond to is known as the "Apantac eXchange Protocol" or AXP for short. See the appendices for the list of AXP commands.

- **Preset Button Mode**

AXP CMD or Reserved. Default is 'AXP CMD'. 'Reserved' is for future firmware options and currently performs no function.

- **GPIO Button Mode**

See the next section.

- **AXP Ctrl 0 - AXP Ctrl 15**

Type the desired AXP command here for buttons 1 through 16. Click the 'Apply' button at the bottom of the page, then the confirmation popup box to complete the programming change.

AXP Examples:

To load a preset configuration file stored within the multiviewer.

```
Load |filename.pt1|
```

To select an SDI embedded audio channel for monitoring output.

```
Audio 0 SDI 1 1 1
```

Multiple commands:

```
Audio 0 SDI 1 1 1 ||| Label 0 5 1 . . . |Audio pair 1|
```



A single button can send multiple commands.

Separate commands with ||| .

This is the 'vertical-bar' key on your keyboard.

7.4.2 GPIO Control Setup

- **GPIO Button Mode**

There are two options; GPO and AXP CMD.

GPO

When this option is selected the GPIO port on the back of the CP-16 is configured for output.

When buttons 1 through 8 are pressed the corresponding GPO wire on the port will go high (5 Volts). Only the actively lit button will be high, the other GPO wires will be low (0 volts).

The AXP command for the button will also be sent via TCP/IP to the multiviewer. The GPO output can be used to trigger any external equipment.

Apantac Tahoma Multiviewer's also have a GPIO port and the CP-16 GPO can be used to trigger these inputs if desired. The multiviewer must be configured to respond to GPIO inputs.

AXP CMD (GPI)

When this option is selected the GPIO port on the back of the CP-16 is configured for input. An internal 5-volt source is provided through a 'pull-up' resistor. All inactive inputs of the GPI port will be high.

When the corresponding GPO wire on the port is brought low (shorted to the port's ground pin by an external relay or open-collector GPO of an external piece of equipment) the corresponding button will be selected (buttons 1 through 8). The button will lite and the command will be sent via TCP/IP to the multiviewer.

7.5 CP-16 Advance tab

The Advance tab provides further administration setup and service.

The screenshot shows the APANTAC CP-16 Web control interface. At the top, there is a blue header with the APANTAC logo (Signal Processing Solutions) on the left, contact information in the center (Apantac © 2012 support@apantac.com, 7556 SW Bridgeport Road, Portland, OR, 97224, USA, Phone: +1 503 968 3000, Fax: +1 503 389 7921), and the URL http://www.apantac.com/ on the right. Below the header, there is a navigation bar with tabs for Setup, Advance (selected), and Administration. A Logout link is visible in the top right corner. A red warning message states: "Warning! Before you proceed with any changes on this page, please first consult Apantac support". The main content area is divided into two sections: "Firmware Upgrade Settings" and "Auto Warning Report Settings". The Firmware Upgrade Settings section includes a TFTP Server IP field (192.168.1.41) and a File Name field (CP16.bin), with Apply, Cancel, and FirmwareUpgrade buttons. The Auto Warning Report Settings section includes four dropdown menus for Cold Start, Authentication Failure, Local IP Address Changed, and Password Changed, all set to "Enable", with Apply and Cancel buttons.

- **Firmware Upgrade Settings**

For use by authorized service personnel only. Contact Apantac Technical Support prior to making any changes on this page.

- **Auto Warning Report Settings**

When certain setup actions are performed an alternate webpage is displayed as standard warnings. These are enabled by default and there are no reasons to alter these settings.

Appendix - I

Two Popular AXP Commands

NOTE: This is a partial listing of AXP commands. For a complete listing see the separate "Apantac eXchange Protocol" document, available for download from our website.

Audio: Set audio monitoring output

Audio [VPM_ID][Type][Input_#][GROUP] [Channel/PAIR]

Parameters	Values	Description
[VPM_ID]	0 - 7	Video Processing Module ID number. Each VPM handles four video inputs. 0 : inputs 1.1 thru 1.4 1 : inputs 2.1 thru 2.4 ~ 7 : inputs 8.1 thru 8.4
[Type]	SDI/AES/AA	Type of audio format. SDI : embedded, AES or AA discrete input audio.
[Input_#]	1 - 4	(SDI type only) Video input number within the VPM.
[Group]	1 - 4	(SDI only) SDI embedded audio group number.
[Channel/Pair]	1 - 4 (SDI) 1 - 8 (AES or AA)	(SDI) channel number. (AES/AA) channel pair number.

Examples:

Command	Description
Audio 3 SDI 1 2 3	Select SDI input 1 from VPM 3, embedded Group 2, Channel 3 and 4 to be the monitoring output. Input 1 of VPM 3 is input 4.1
Audio 1 AA 5	Select Discrete Analog audio inputted into VPM 1 (second module), pair 5 (channels 9,10).
Audio 0 AES 7	Select Discrete Analog audio inputted into VPM 0 (first module), pair 7 (channels 13,14).

Load: Load a display configuration from a saved 'preset' file

Load [FILE_NAME]

Parameters	Values	Description
[file_name]	The preset file name.	*The file name must be bracketed with " ".

Examples:

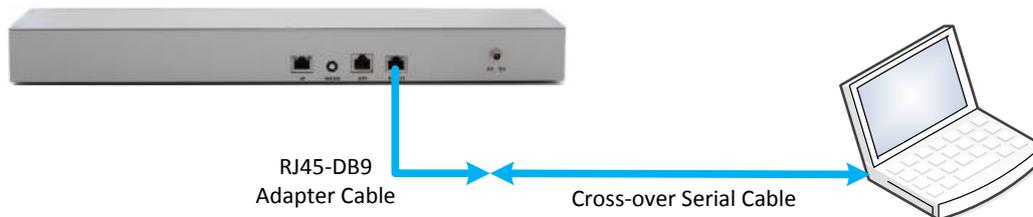
Command	Description
Load 1_full.pt1	Loads preset name "1_full.pt1"

Appendix - II

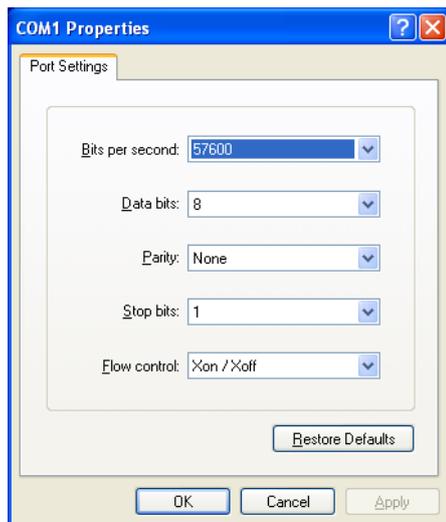
Reset to Factory Defaults

1. Connect RS232 port to your computer. Use the RJ45-DB9 adapter cable included with accessories and a cross-over serial cable (or standard serial cable and cross-over adapter).

Note: cross-over serial adapters or cables are also known as 'Null Modem' adapters or cables.



2. Power on the CP-16 unit.
3. Launch the "HyperTerminal" program on your PC.
4. Configure HyperTerminal to use the serial port with the following setup.



5. Key in the factory reset command "`dft net`" then click Enter.

(Note: insert a space after 'dft' and a space after 'net'),

6. Power reset the CP-16 unit.
7. You can now connect to the CP-16 unit using WEB page.
 - Factory reset CP-16 IP address: 192.168.1.151
 - Factory reset WEB login username: apantac
 - Factory reset WEB login password: apantac

Example and Notes...

```
e - HyperTerminal
File Edit View Call Transfer Help
Make a TCP connection with host ip 192 168 1 151 at port 101
Make a TCP connection with host ip 192 168 1 151 at port 101
Make a TCP connection with host ip 192 168 1 151 at port 101
Make a TCP connection with host ip 192 168 1 151 at port 101
dft net

AXP CMD(12)->
**** CFG Default setting ****
Rx dft cfg dt.

Make a TCP connection with host ip 192 168 1 151 at port 101
Make a TCP connection with host ip 192 168 1 151 at port 101
Make a TCP connection with host ip 192 168 1 151 at port 101
1. Execute Runtime.
2. Download runtime via RS232.
3. Download runtime via Ethernet.
4. Download new bootloader via Ethernet.

Please input 1,2,3, or 4 to execute above : 1. Execute Runtime.
2. Download runtime via RS232.
3. Download runtime via Ethernet.
4. Download new bootloader via Ethernet.

Please input 1,2,3, or 4 to execute above :
Wait runtime code.
UART0 init ok.
```

Hyper-Terminal Program with CP-16 responses.

When successfully connected to the CP-16 unit, the CP-16 will repeatedly output the following message approximately every 5 seconds.

```
Make a TCP connection with host ip 192 168 1 151 at port 101
```

After typing the 'dft net ' command and pressing enter, the CP-16 will return the following acknowledgement.

```
AXP CMD(12)->
**** CFG Default setting ****
Rx dft cfg dt.
```

You can now dis-connect and close HyperTerminal and reboot the CP-16 unit.

If HyperTerminal is left connected during the CP-16 reboot, it will receive a number of bootup messages, some of which are shown above.