

ACU-1000 Manual Addendum

Replacement of CPM-2 with CPM-4

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1 Purpose:

The CPM-2 module is being replaced by the “New & Improved” CPM-4 Module. This new module is functionally equivalent with the CPM-2, but has a number of new features. Chief among them are that it has Ethernet connectivity built in, and the ability to upgrade the firmware in the field. With the CPM-4 installed, the ACU-1000 (or ACU-T) can be connected directly to an IP-Based network for remote control by the ACU Controller program, or a number of ACU Controllers. Previously, a Raytheon ETS-1 unit was required to perform this function. A related improvement is an increased maximum Baud Rate, from 9600 to 115,200. The CPM-4 may also be controlled by a single computer either by an RS-232 serial control connection (as was done with the CPM-2) or by a direct Ethernet connection using a standard CAT5 cable with RJ45 connectors at each end. If Ethernet connectivity is chosen the CPM-4 will allow multiple computers running ACU Controller software to control the ACU-1000 simultaneously. Refer to the ACU Controller software manual for information on remotely controlling the ACU-1000.

This addendum explains how to use the CPM-4 module in place of the CPM-2 to provide the same features as the CPM-2, and also how to connect the CPM-4 to a network for remote control. Subsequent addenda will explain how to make use of the new features of the CPM-4.

2 CPM-4/CPM-2 Compatibility

The CPM-4 is a plug in replacement for the CPM-2, fully compatible with existing ACU-1000 systems. The CPM-2 used a combination of DIP switches and Non-Volatile memory to set and store various system configuration parameters. The CPM-4 uses Non-Volatile memory only. Configuration parameters that were set using DIP switches in the CPM-2 are now set by connecting the CPM-4 to a network and using a browser to make changes from a menu.

2.1 Network Cables

A pair of CAT5 cables is included in the ACU-1000 accessory kit to assist in the setup & use of the new module. The proper type for connection directly between a computer's Ethernet port and the module's front panel RJ-45 jack for browsing or system control is a CAT5 crossover cable (typically red in color, P/N 0314-000024). A standard CAT5 network patch cable (P/N 0313-070000) is the proper interface from a network to the module's RJ-45 jack. These are standard CAT5 network cables; cables in varying lengths are widely available.

2.2 Factory Default Settings

For the most part the CPM-4 factory default settings match those of the CPM-2. CPM-4 modules that are installed in a system at the factory are set to match the requirements of that particular system. For example, if the ACU-1000 chassis is sold as part of an expanded (dual chassis) system, the CPM-4 will be pre-configured to either "Master" or "Expansion" mode.

<i>Table 1 CPM-2, CPM-4 Factory Defaults</i>			
CPM-2 Dipswitch SW1 Position(s)	CPM-2 Default Switch Setting	CPM-2 Default Operation	CPM-4 Default Operation
1,2	On, On	9600 Baud	115.2 K Baud
3	On	Remote Enabled	Remote Enabled
4	Off	No Serial Sync Char.	No Serial Sync Char.
6,7	Off, Off	Single Chassis	Single Chassis
8	Off	Normal Operation	Normal Operation

2.3 Changing the RS-232 Serial Port Baud Rate

In most cases the factory defaults for the CPM-4 are the same as the CPM-2. The exception is the ACU-1000 RS-232 serial port baud rate. The default for the CPM-4 is 115.2K Baud.

Note: if ACU Controller software version 4.0 or later is being used there is no need to change the CPM-4 baud rate. The ACU Controller software can be set to 115.2K baud, which is the default for the CPM-4. But if an earlier version of ACU Controller software is being used then the user must change the baud rate of the CPM-4 to 9600 as outlined here.

In systems where only the RS-232 serial port on the rear panel of the ACU-1000 is being used it may be necessary to change the Baud rate. This can be done directly from the ACU-1000 serial port without having to connect the CPM-4 to a network via Ethernet. See Section 5.

2.3.1 Changing the Serial Port Baud Rate

If it is necessary to change the CPM-4 serial port baud rate to something other than 115.2K baud, then the user must use a computer with a terminal program such as MTTY or Hyperterminal (included with Windows) to change the serial port configuration. These examples show the use of MTTY.

1. Connect to the ACU-1000 serial port at 115200 baud.
2. Enter the command ***CONFIG*** and press Enter.
3. The ACU should return with "OK".
4. Enter the desired baud rate using the **BAUD** command. The example below changes the baud rate to 9600. Valid baud rates are 300, 1200,2400, 4800, 9600, 19200, 38400, 57600, and 115200. To set the baud rate to 9600 type **BAUD 9600** and press Enter.
5. The ACU will show the new baud rate setting.
6. Enter the command **SAVE** and press Enter.
7. The ACU will reboot at the new baud rate.

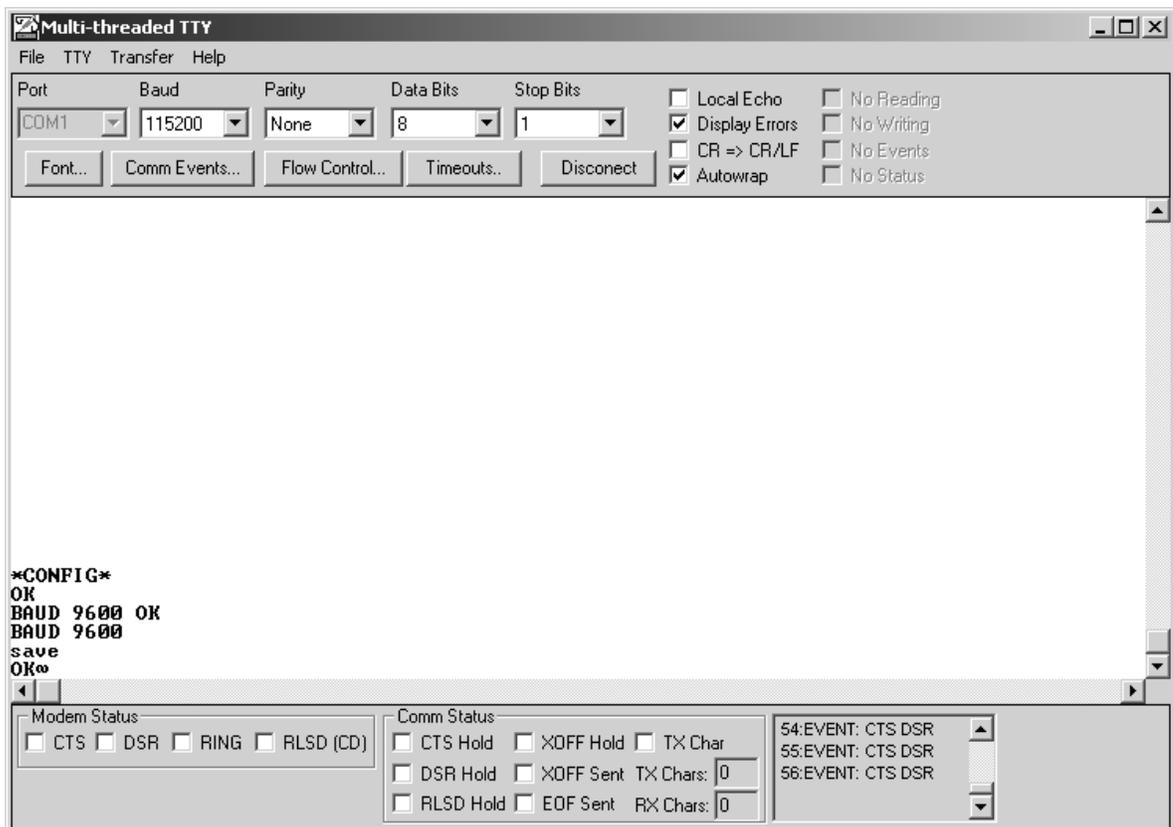


Figure 1 Reconfiguring the ACU Serial Port Baud Rate

2.3.2 Changing the Chassis Configuration Setting

If the CPM-4 is being installed in an Expanded system (a system with more than one chassis) it may be necessary to change the CPM-4 *chassis* configuration. The CPM-4 chassis configuration may be changed by using a computer with a terminal program such as MTTY or Hyperterminal. The chassis configuration will either be **Single** (a single chassis), **Master** (the Master chassis in a two chassis system) or **Expanded** (the Expansion chassis in a two chassis system).

1. Connect to the ACU-1000 serial port using a terminal program.
2. Enter the command ***CONFIG***.
3. The ACU should return with "OK".
4. Enter the desired configuration using the CHASSIS command. The example below changes the chassis configuration to "Single". Valid configurations are SINGLE, MASTER and EXPANSION.
5. The ACU will show the new chassis configuration setting.
6. Enter the command **SAVE**
7. The ACU will reboot.

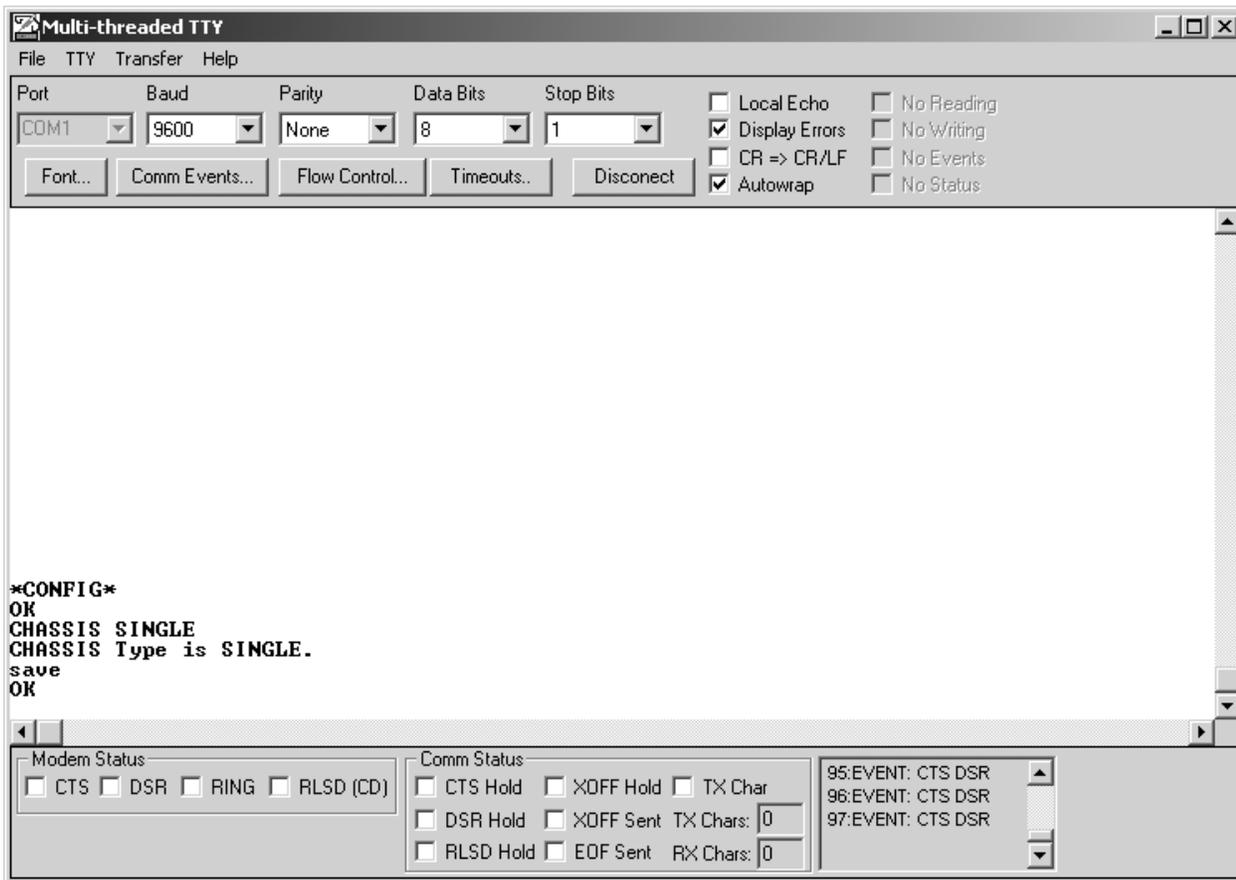


Figure 2 Chassis Configuration Setup

2.4 Remote Control Via The ACU Controller

The ACU Controller software treats the CPM-4 exactly as it does the CPM-2. The user attaches the serial port of the computer to the serial port of the ACU-1000 and selects the proper serial port in the ACU Controller software. In the case of network control the ACU Controller treats the CPM-4 exactly as it does a CPM-2/ETS-1 combination, and provides remote control of the unit across an IP network. When configuring ACU Controller for network control the user should enter the IP address and port number of the CPM-4 in the ACU Controller network settings in the Connect menu. The default IP address of the CPM-4, as shipped from the factory, is 192.168.1.200, and the control port is 23. Directions for changing these settings are included below.

3 CPM-4 Extended Features and Configuration Overview:

The CPM-4 is a functional superset of the CPM-2, in that it will perform all the “classic” CPM-2 functions in an ACU-1000 (or ACU-T), and also contains additional, extended features beyond that of the CPM-2. Most of the extended functions of the CPM-4 revolve around its ability to be connected to a network via Ethernet. When connected to a network, the CPM-4 can provide a network connection for the ACU Controller program that functions identically to a CPM-2/ETS-1 combination. The CPM-4 also has a handset connection on the front panel that can be used to provide a VoIP link to the system. This feature will be covered in a subsequent addendum.

This document will address how to use the Ethernet Network connection in the CPM-4 to manage system configuration settings, as well as to make any changes necessary to control the ACU-1000 or ACU-T using the ACU Controller software.

The CPM-4 is equipped with a standard Ethernet RJ-45 jack on the front panel. The network connection to the CPM-4 is similar to that of a Raytheon ETS-1 or NXU-2. Configuration is accomplished via a PC / Browser / Ethernet web access.

As shipped from the factory, the default configuration of the CPM-4 is to behave identically to a CPM-2. The only system default setting that is different from the CPM-2 is the RS-232 serial port Baud rate. The maximum rate on the CPM-2 serial port was 9600 Baud. The CPM-4 is capable of running up to 115.2K Baud and is configured from the factory to run at this speed.

To change the CPM-4 system configuration settings, the user must connect the CPM-4 to the user’s Ethernet LAN via the front panel RJ-45 Ethernet connector, via a “straight” Ethernet cable to a switch or router which is also connected to a PC with network access to the same switch or router. Alternatively the user may connect the Ethernet port of the CPM-4 directly to the computer’s Ethernet port via an Ethernet “crossover” cable.

The user must browse (using a web browser like “Internet Explorer”) to the IP address of the CPM-4. The default address of the CPM-4 as shipped from the factory is 192.168.1.200. This IP address may be changed to comply with the user’s network setting.

3.1 Information

Upon successfully browsing to the CPM-4, a screen similar to Figure 3 will appear. This page contains a summary of the current CPM-4 operating status and configuration.

Items in the top section are relevant to system configuration while the items in the lower section pertain to VOIP operation. This addendum will address all configuration options other than those related to the CPM-4's VoIP capability.

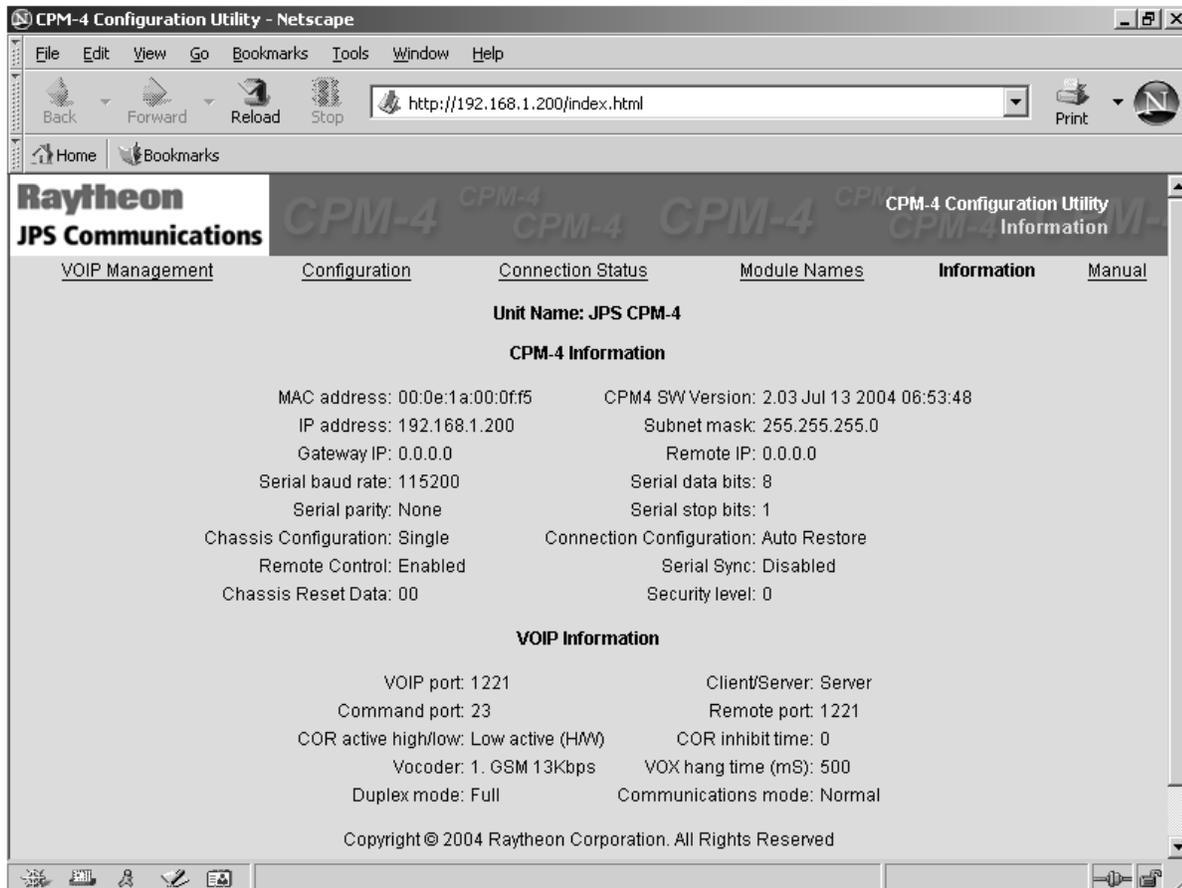


Figure 3 *The Information Screen*

To modify any of the CPM-4 operating parameters, select the “**Configuration**” link that appears at the top of the page. The Configuration Screen will appear see Figure 4 on the next page.

3.2 Configuration

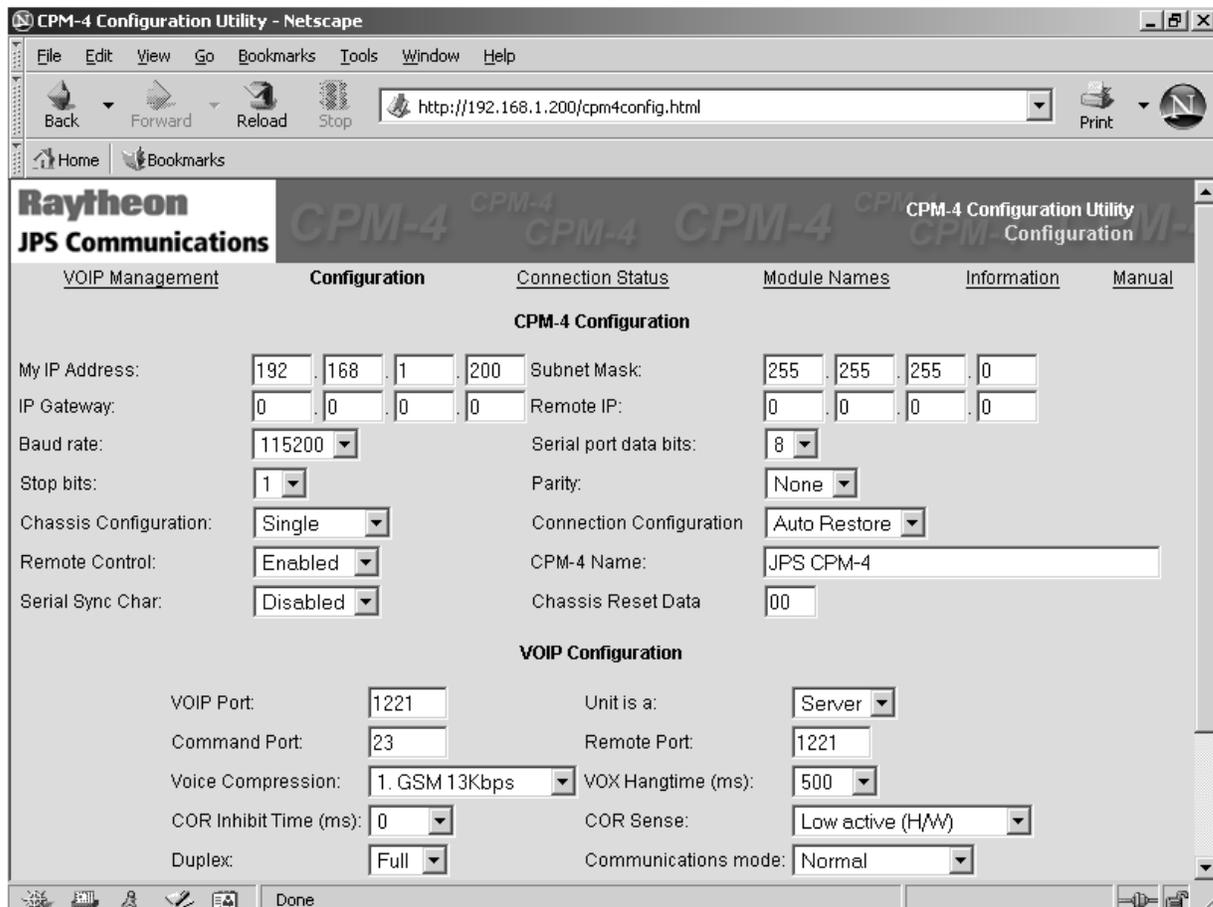


Figure 4 *The Configuration Screen*

Configuration changes to the CPM-4 are made either by selecting a field and entering text, or by making a selection from pull down boxes. Each of these fields and its options are described in the next section.

Note: For any operational changes to take effect, you must **SAVE CHANGES** via the “Save Changes” button. This button may be viewed by scrolling down to the bottom of the screen.

3.2.1 Configuration Screen Field Descriptions:

My IP Address:

The user may enter numeric text (0-255 decimal) into each of the four fields that define the unique Internet Protocol address of the unit. Note: upon saving the changes, the user will need to browse to the new address to continue configuration.

Subnet Mask:

The user may enter numeric text (0-255 decimal) into each of the four fields that define the unique Internet Protocol mask of the unit. Note: upon saving the changes, the user will need to browse to the new address to continue configuration.

IP Gateway:

The user may enter numeric text (0-255 decimal) into each of the four fields that define the gateway address that the unit will use for resolving external network accesses.

Remote IP:

The user may enter numeric text (0-255 decimal) into each of the four fields that define the unique Internet Protocol address of the remote VoIP unit that is paired with this unit. When the CPM-4 is set up as a client, this is where the server's IP address is entered. THIS OPTION RELATE TO VoIP CAPABILITY. See note on page 11.

Baud Rate:

The pull down menu allows the user to configure the baud rate for the RS-232 serial port located on the rear panel of the ACU-1000. Nine baud rates are available: 300, 1200, 2400, 4800, 9600, 19200, 38400, 57600, and 115200.

Serial Port Data Bits:

The pull down menu allows the user to configure the number of data bits for the serial port. Two choices are available: 7 or 8 bits. The ACU Controller serial mode uses 8 bits.

Stop Bits:

The pull down menu allows the user to configure the number of stop bits for the serial port. Two choices are available: 1 or 2 bits. The ACU Controller serial mode uses 1 bit.

Parity:

The pull down menu allows the user to configure the parity for the serial port. Three choices are available: even, odd, or none. The ACU Controller serial mode uses "none".

Chassis Configuration:

The pull down menu allows the ACU-1000 chassis configuration to be set to one of the following:

Single, for a single chassis.

Master, for a multiple chassis system where this is the main chassis.

Expanded, for a multiple chassis system where this is the Expansion chassis.

Connection Configuration:

The ACU-1000 can be configured to automatically restore the module connections to the user programmed preset configuration upon power-up.

Auto Restore, puts the module connections in the user programmed configuration on power-up.

No Restore, leaves all modules unconnected on power-up.

Remote Control:

This pull down menu allows the ACU-1000 RS-232 serial port on the rear panel to be **Enabled** or **Disabled**.

CPM-4 Name:

The user may enter text in this field that identifies this CPM-4. The name should uniquely identify this unit, from all others on the network. This name will appear on the WAIS Controller to identify this site.

Serial Sync. Char:

This pull down menu is used to **Enable** or **Disable** the RS-232 remote control synchronizing character feature. The ACU Controller serial mode uses disable.

Chassis Reset Data:

The user may enter a 2-digit number in this field that will be used by the chassis reset (system reset) command that is available to remote DTMF users.

The System Reset Feature allows users in the field with DTMF capability (and the proper code) to reset the ACU-1000 to its initial power-up state. This means all current connections will be lost, and the unit will return to any connections stored last by the * 3 6 command. In order to prevent any inadvertent or unauthorized use of this powerful feature, the System Reset Feature can only be used after first being enabled by entering a code other than 00 as the Chassis reset data field of the CPM-4 Configuration Screen (or via the HSP-2 keypad). DSP-2 or PSTN-1 users must then enter this code in order to implement this feature.

The ACU-1000 factory default for this feature is disabled. To enable System Reset capability, enter any number other than 0 0 in the Chassis Reset Data Field. The feature is now enabled, and “n n” is the system reset code. If a DSP-2, RDI-1, or PSTN-1 user (who is currently connected to the system) enters the DTMF command * **9 0 n n**, the system will be reset. If * 9 0 and any digits other than the system reset code are entered, the system will not be reset.

To disable this feature, enter 0 0 in this field. This feature may also be enabled or disabled by the HSP-2 keypad. See the ACU-1000 Operations Manual for details.

Note: The remaining menu options are related to the VoIP capability of the CPM-4, which will be covered in detail in a subsequent addendum. They are included now only maintain a complete listing.

VoIP Port:

The user may enter numeric text in this field (1-65535) defining which port to use for the VoIP traffic.

Unit is a:

The pull down menu allows the user to choose either “server” or “client” mode. VOIP operation requires pairing of clients and servers.

Command Port:

The user may enter numeric text in this field (1-65535) defining which port to use for the remote control traffic.

Remote Port:

The user may enter numeric text in this field (1-65535) defining which port to use when connecting to its paired unit for VOIP traffic.

Voice Compression:

The pull down menu allows the user to configure the voice compression (vocoder) that is used for VoIP audio traffic. Five choices are available: GSM at 13Kbps, ADPCM at 16Kbps, ADPCM at 24Kbps, ADPCM at 32Kbps, and PCM at 64Kbps. If the unit is a server, adaptation to the incoming client vocoder is automatically selected to match the client request.

VOX Hang time (mS):

The pull down menu allows the user to configure the VOX hangtime in milliseconds. Five hangtimes are available: 500ms, 1000ms, 2000ms, 3000ms, and 4000ms.

COR Inhibit Time (mS):

The pull down menu allows the user to configure the COR inhibit time. Six options are available: 0ms, 500ms, 1000ms, 2000ms, 3000ms, 4000ms.

COR Sense:

The pull down menu allows the user to configure the COR sense. Three options are available: active low, active high, and VOX.

Duplex:

The pull down menu allows the user to configure the VoIP channel for either full or half duplex operation.

Communications Mode:

The pull down menu allows the user to configure for either “normal”, “broadcast”, “connectionless”, or “multicast” modes of VoIP communications. Except for special applications this setting should be left as “normal.”

Client Autoconnect:

The CPM-4 can be configured to automatically attempt to establish connection with a given Server if the CPM-4 is configured as a *Client* and a valid IP address has been entered for the *Server*.

3.3 VoIP Connection Management:

Client VoIP sessions may be managed by browsing to the “**VoIP Connection Management**” link at the top of any of the unit’s web pages. This feature will be detailed in a subsequent addendum.

3.4 Connection Status:

VOIP session status may be monitored by browsing to the “**Connection Status**” link. Again, this feature will be detailed in a subsequent addendum.

3.5 Module Names:

The CPM-4 has the ability to store and retrieve user-defined names for each of the modules installed in the chassis. The module names may be programmed by browsing to the “**Module Names**” link at the top of the web pages, and then typing in the name alongside the associated module extension number. Note: These module names are only needed when using the ACU-1000 in a WAIS (Wide Area Interoperability System.) See the WAIS Controller manual for details. These names will show up on the WAIS Controller screen.

Note: Module 0 corresponds with the HSP module of an ACU-T, single Chassis ACU-1000 or Master ACU-1000 of a dual chassis system. Numbers 1 through 12 are associated with the unit’s interface module extension numbers. For dual chassis systems, Module 25 is the Expansion Chassis HSP module, while numbers 13 through 24 correspond with this chassis’ interface extensions. (See Figure 5).

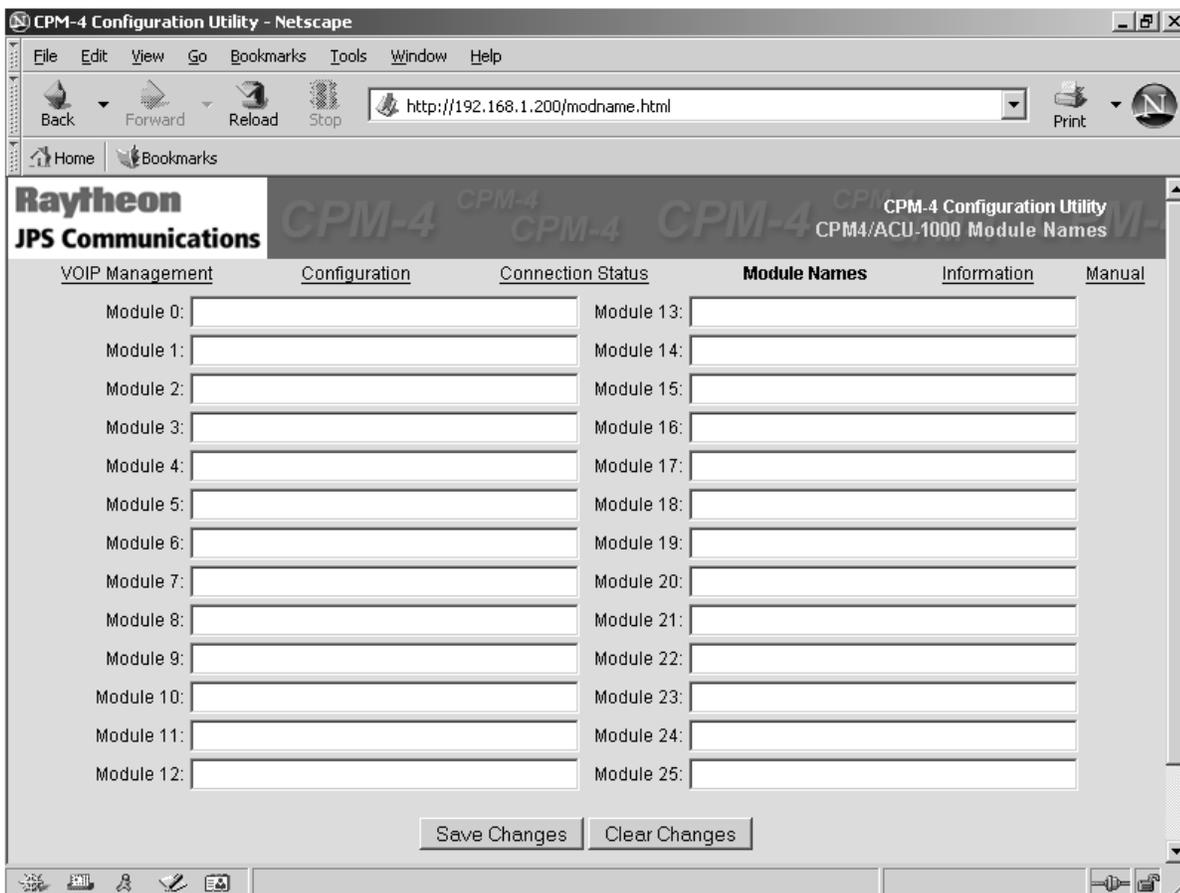


Figure 5 *The Module Names Screen*

4 Restoring Factory Defaults:

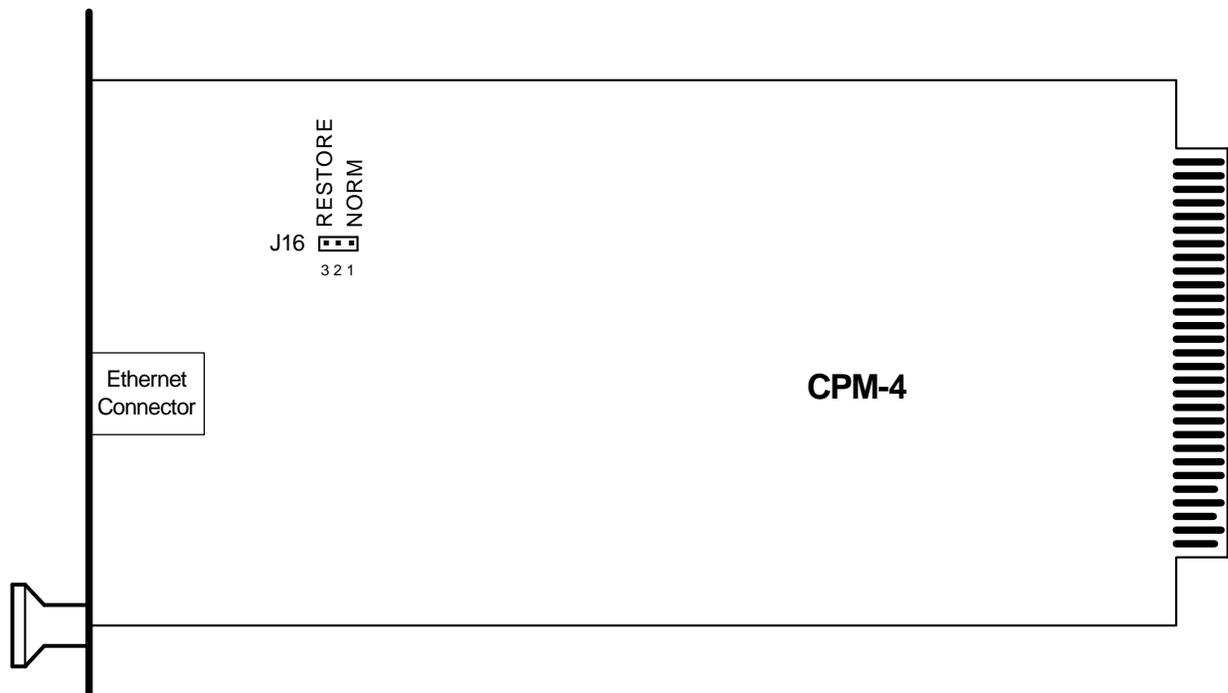
In rare circumstances, there may be the need to completely restore the CPM-4 to the original configuration that was established when the module was manufactured. The procedure for doing this follows.

Equipment Required:

1. Extender Card (supplied in the ACU-1000 Accessory Kit).
2. ACU-1000 (ACU-T)

Procedure:

1. Power down the ACU-1000.
2. Remove the CPM-4 from the rack.
3. Install the extender card into the now empty slot.
4. Install the CPM-4 into the extender card.
5. Configure the “Restore Factory Defaults” jumper **J16** [left to center]
6. Power up the ACU-1000.
7. Wait 15 seconds. (The LED’s will sequence...)
8. Power off the ACU-1000.
9. Remove the CPM-4 from the extender card.
10. Remove the extender card from the ACU-1000.
11. Re-install the bridging block on jumper **J16**- [right to center].
12. Install the CPM-4 back into the ACU-1000.
13. Finished.



Results:

The completion of the above procedure will re-establish the original factory configuration to the CPM-4. In summary, they are shown in Figure 6.

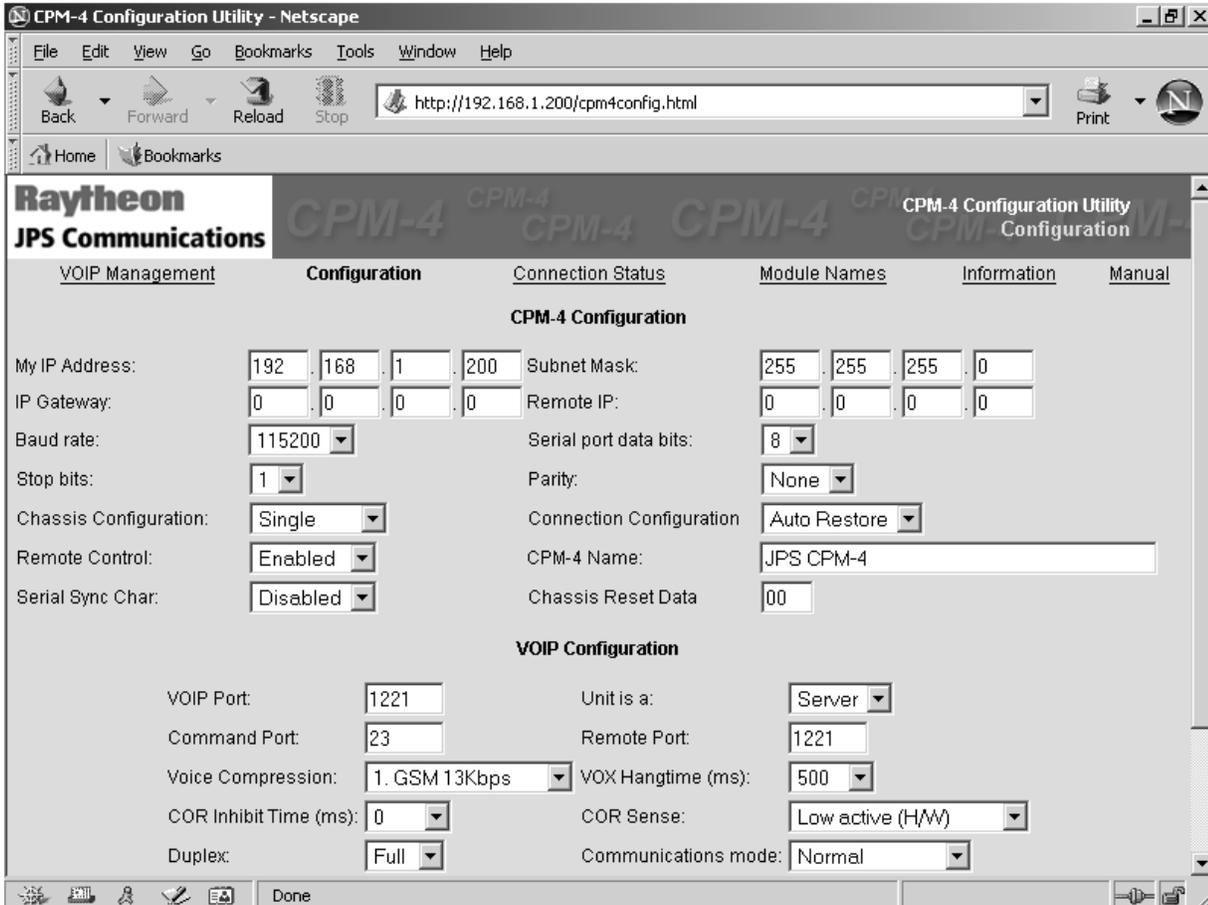


Figure 6 Restored Factory Defaults

5 Additional Features With The Rev 2.06 (and higher) Software

Version 2.06 (released 10 September 2004) of the CPM-4 software introduces two new HSP programming items. These programming items are only available to ACU-1000 or ACU-T systems equipped with the CPM-4 module.

5.1 Chassis Baud Rate

Using a Browser program and an Ethernet network interface to the CPM-4 module, the user may program the ACU-1000 Serial Port Baud rate. Version 2.06 adds a new HSP programming item, ***54x**, that allows the user to make changes to the Serial Port Baud rate via the HSP keypad. This is especially helpful in systems where it's not convenient to program via an Ethernet connection.

To program the ACU-1000 chassis Serial Port Baud rate via the HSP keypad:

1. The user enters ***99** on the HSP keypad. The ACU will respond with the "Programming Mode" voice prompt.
2. The user then enters one of the following key press sequences to set the desired Baud rate:
 - *540** 300 Baud
 - *541** 1200 Baud
 - *542** 2400 Baud
 - *543** 4800 Baud
 - *544** 9600 Baud
 - *545** 19200 Baud
 - *546** 38400 Baud
 - *547** 57600 Baud
 - *548** 115200 Baud (factory default Baud rate).
3. The user enters **"* #"** (star-pound) on the HSP keypad to exit Programming mode. The ACU will respond with the "Saving Configuration" voice prompt, followed by the "Configuration Saved" voice prompt shortly thereafter.

5.2 *Auto-Restore of Stored Connections at Power Up*

Using a Browser program and an Ethernet network interface to the CPM-4 module, the user may program the ACU-1000 to enable or disable the Stored Connections Auto-Restore feature. When this feature is enabled, the ACU-1000 will automatically restore the Module Connections to the user programmed default whenever the ACU power is cycled. These Stored Connections are saved by using the “*36” HSP command. See the ACU-1000 manual for more information about the Store Connections feature.

Version 2.06 adds a new HSP programming item, *55, which allows the user to program the ACU-1000 to Enable or Disable the Stored Connections feature via the HSP keypad. This is especially helpful in systems where it's not convenient to program via an Ethernet connection.

To program the ACU-1000 Auto-restore feature via the HSP keypad:

1. The user enters *99 on the HSP keypad. The ACU will respond with the “Programming Mode” voice prompt.
2. The user then enters one of the following key press sequences:
 - *550 Auto-restore is disabled (factory default setting).
 - *551 Auto-restore is enabled.
3. The user enters “* #” (star-pound) on the HSP keypad to exit Programming mode. The ACU will respond with the “Saving Configuration” voice prompt, followed by the “Configuration Saved” voice prompt shortly thereafter.

6 Software Updates:

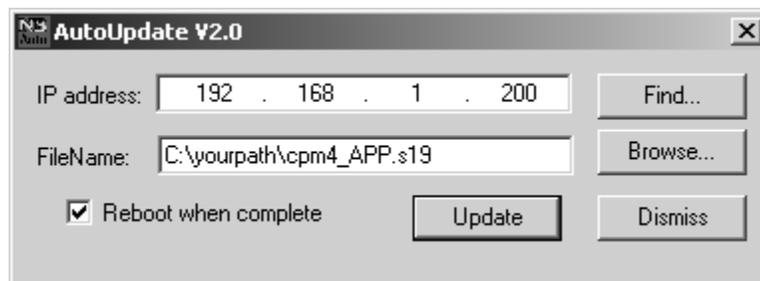
The CPM-4 is designed to support software updates in the field. Should it become necessary to install updates to the software, the following process should be followed. Instructions and the update software is available on the website.

Equipment Required:

1. PC with Internet network access via a browser (Internet Explorer).
2. Ethernet access via an Ethernet switch (for the CPM-4 connection).
3. Ethernet cable.
4. CPM-4 installed in the ACU-1000 / TRP-1000.
5. CPM-4 software and installation software (available from the website).
6. The IP address of the networked CPM-4.

Procedure:

1. Use the PC connected to the Internet to browse to the website.
2. Download the CPM-4 software by right clicking on “cpm4_update.zip”, and choose “save target as”.... Browse to a local folder on your computer to deposit it, then “save”.
3. Unzip the files in the zip archive.
4. Connect the CPM-4 to the LAN via the switch and Ethernet cable.
5. Launch the “autoupdate” software by navigating to the folder where it was unzipped / saved, and double clicking on the file “autoupdate.exe”.
6. A dialog box similar to the one shown below will appear:

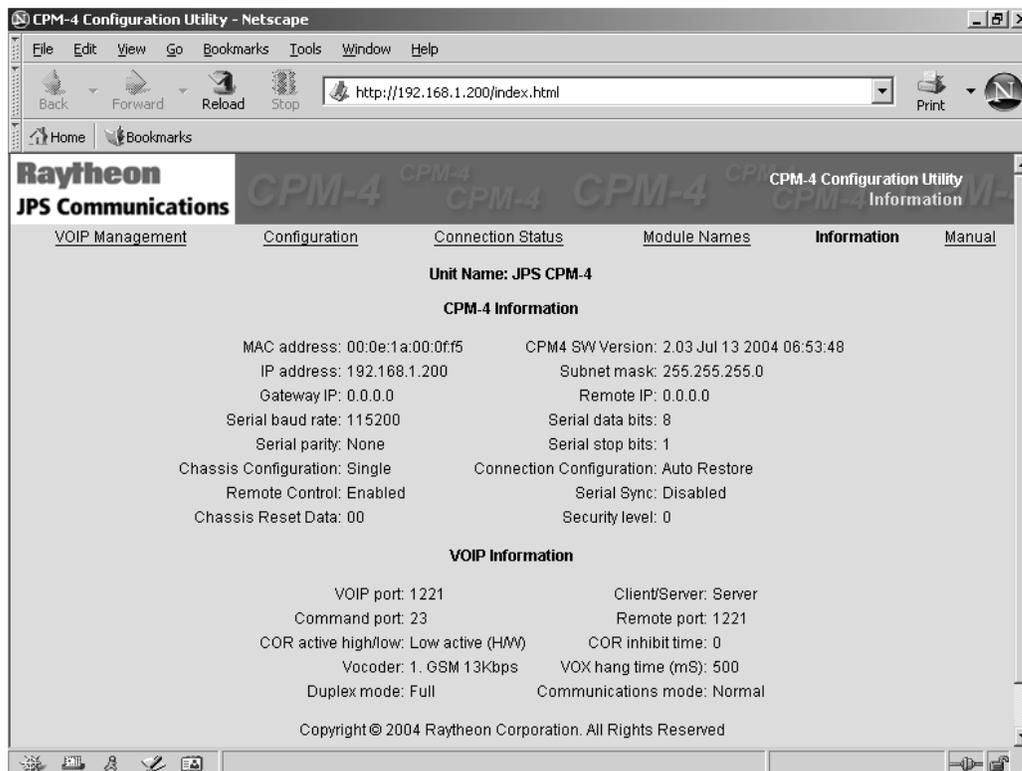


7. Enter the IP address of the CPM-4, the path to “cpm4_app.s19” (the update software), and insure that the “Reboot when complete” checkbox is checked.
8. Click the “Update” button, and a status bar will appear, showing the update progress.

9. After a short delay (10-15 seconds), the following dialog will appear: the CPM-4 will be reset and restarted with the new software activated.



10. Click OK to close the “AutoUpdate” dialog.
11. Verify the new version of the software has been loaded correctly by browsing to the IP address of the CPM-4, and validating the Firmware version matches the latest release “CPM-4 SW Version” (per website).



12. This completes the process for updating the CPM-4 software.

If you have any questions not answered by this addendum or need further assistance on the functions or use of the CPM-4, please contact Customer Service at 919-790-1011. Please ask the operator for Technical Assistance.