Blonder Tongue

SOLUTIONS FOR ALL YOUR APPLICATIONS

Stock No. 6238/6243/6223 User Manual

QAM Transcoder Power & Control Module

QTPCM-4

QAM Transcoder Module

QTM-HD-4

QAM Transcoder Module

QTM-HD-4-NPU

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MADE IN THE USA

800-523-6049
www.blondertongue.com

We recommend that you write the following information in the spaces provided below.

Purchase Location Name:	
Purchase Location Telephone Number:	
QTPCM-4 Serial Number:	

The information contained herein is subject to change without notice. Revisions may be issued to advise of such changes and/or additions.

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Table of Contents

Section 1 — General & Safety Instructions

The STOP sign symbol is intended to alert you to the presence of REQUIRED operating and maintenance (servicing) instructions that if not followed, may result in product failure or destruction.

The YIELD sign symbol is intended to alert you to the presence of RECOMMENDED operating and maintenance (servicing) instructions.

The LIGHTNING flash symbol is intended to alert you to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electrical shock.

TO REDUCE THE RISK OF ELECTRICAL SHOCK, DO NOT REMOVE COVER FROM THIS UNIT.
NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE

NOTE TO CATV SYSTEM INSTALLER

This reminder is provided to call the CATV System Installer's attention to Article 820-40 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

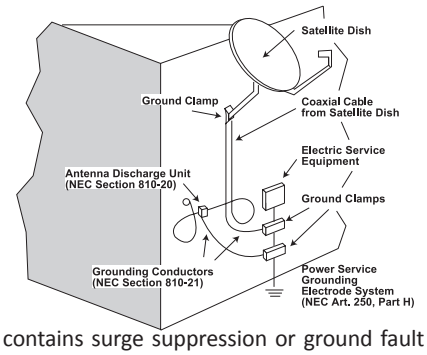
Safety Instructions

YOU SHOULD ALWAYS FOLLOW THESE INSTRUCTIONS TO HELP ENSURE AGAINST INJURY TO YOURSELF AND DAMAGE TO YOUR EQUIPMENT.

- Elevated Operating Ambient - If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature per Section 2.3.
- Reduced Air Flow - Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.
- Mechanical Loading - Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.
- Circuit Overloading - Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.
- Reliable Earthing - Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g. use of power strips).
- Read all safety and operating instructions before you operate the unit.
- Retain all safety and operating instructions for future reference.
- Heed all warnings on the unit and in the safety and operating instructions.

Safety Instructions - continued

- Follow all installation, operating, and use instructions.
- Unplug the unit from the AC power outlet before cleaning. Use only a damp cloth for cleaning the exterior of the unit.
- Do not use accessories or attachments not recommended by Blonder Tongue, as they may cause hazards, and will void the warranty.
- Do not operate the unit in high-humidity areas, or expose it to water or moisture.
- Do not place the unit on an unstable cart, stand, tripod, bracket, or table. The unit may fall, causing serious personal injury and damage to the unit. Install the unit only in a mounting rack designed for 19" rack-mounted equipment.
- Do not block or cover slots and openings in the unit. These are provided for ventilation and protection from overheating. Never place the unit near or over a radiator or heat register. Do not place the unit in an enclosure such as a cabinet without proper ventilation. Do not mount equipment in the rack space directly above or below the unit.
- Operate the unit using only the type of power source indicated on the marking label. Unplug the unit power cord by gripping the plug, not the cord.
- The unit is equipped with a three-wire ground-type plug. This plug will fit only into a ground-type power outlet. If you are unable to insert the plug into the outlet, contact an electrician to replace the outlet. Do not defeat the safety purpose of the ground-type plug.
- Route power supply cords so that they are not likely to be walked on or pinched by items placed upon or against them. Pay particular attention to cords at plugs, convenience receptacles, and the point where they exit from the unit.
- Be sure that the outdoor components of the antenna system are grounded in accordance with local, federal, and National Electrical Code (NEC) requirements. Pay special attention to NEC Sections 810 and 820. See the example shown in the following diagram:



- We strongly recommend using an outlet that contains surge suppression or ground fault protection. For added protection during a lightning storm, or when the unit is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the lines between the unit and the antenna. This will prevent damage caused by lightning or power line surges.
- Do not locate the antenna near overhead power lines or other electric light or power circuits, or where it can fall into such power lines or circuits. When installing the antenna, take extreme care to avoid touching such power lines or circuits, as contact with them can be fatal.
- Do not overload wall outlets or extension cords, as this can result in a risk of fire or electrical shock.
- Never insert objects of any kind into the unit through openings, as the objects may touch dangerous voltage points or short out parts. This could cause fire or electrical shock.
- Do not attempt to service the unit yourself, as opening or removing covers may expose you to dangerous voltage and will void the warranty. Refer all servicing to authorized service personnel.
- Unplug the unit from the wall outlet and refer servicing to authorized service personnel whenever the following occurs:
  - ❑ The power supply cord or plug is damaged;
  - ❑ Liquid has been spilled, or objects have fallen into the unit;
  - ❑ The unit has been exposed to rain or water;
  - ❑ The unit has been dropped or the chassis has been damaged;
  - ❑ The unit exhibits a distinct change in performance.
- When replacement parts are required, ensure that the service technician uses replacement parts specified by Blonder Tongue. Unauthorized substitutions may damage the unit or cause electrical shock or fire, and will void the warranty.
- Upon completion of any service or repair to the unit, ask the service technician to perform safety checks to ensure that the unit is in proper operating condition.

Returning Product for Repair (or Credit)

A Return Material Authorization (RMA) Number is required on all products returned to Blonder Tongue, regardless if the product is being returned for repair or credit. Before returning product, please contact the Blonder Tongue Service Department at 1-800-523-6049, Ext. 4256 or visit our website: **www.blondertongue.com** for further information.

Section 2 — Product Summary

2.1 Revision History & Reason

This is the 2nd release of the manual, adding the QTM-HD-4-NPU, updating service features (Section 2.2, below) and adding note to have all the same input modulation rate on a given QTM-Module (Section 5.3).

2.2 Product Application & Description

Application:

QTPCM-4 (QAM Transcoder Power Control Module) provides control and monitoring of QTM-HD-4 (6243), QTM-HD-4-NPU (6223) and QTM-HD-Plus (6242) transcoder modules via GUI-based web pages. Local or remote control via the Internet is accomplished with any computer running a standard web browser. The QTPCM-4 will power up to four (4) QTM-HD-4 (2 slot width) or four (4) QTM-HD-4-NPU (2 slot width); eight (8) QTM-HD-Plus (1 slot width); or a combination of modules all housed in a QTRC (stk# 6233A) rack chassis. The 3RU chassis, when fully loaded with four (4) QTM-HD-4 or (4) QTM-HD-4-NPU and a QTPCM-4, will transcode sixteen (16) QPSK/8PSK satellite transponders to sixteen (16) QAM channels.

The QTM-HD-4 contains (4) independent transcoders in a single module. Each transcoder accepts one (1) input in QPSK or 8PSK format and delivers (1) QAM channel output, therefore each QTM-HD-4 module transcodes (4) satellite transponders to (4) QAM channels (54-864 MHz). An integrated satellite selector switch allows the operator to select any of the 4 inputs to any of the transcoders without the need for an external multi-switch.

The QTM-HD-4-NPU functions the same as the QTM-HD-4, but with a “Null Packet” feature that allows adding/removing null packets to/from the input stream.

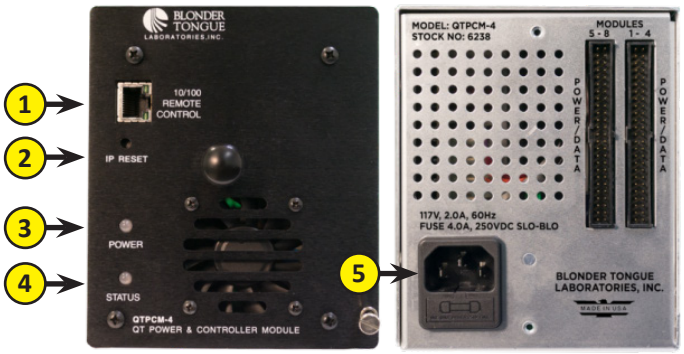
The QTM-HD-Plus features a single transcoder, accepting a QPSK or 8PSK input and delivering a single QAM channel output in the frequency range of 54-864 MHz. This module is typically used in applications requiring QAM 512/1024 modulation.

Servicing Feature

It is recommended to disconnect AC power to the QTPCM-4 when installing or removing QTM modules. When replacing QTM Modules, simply disconnect the input and output cables along with the power supply/control cabling and remove the module from the chassis. Install a new “like” module and reconnect the cabling. The QTPCM-4 will automatically configure the new module with the same settings as the replaced module.

If the QTPCM-4 has to be replaced, remove power and all cabling on the rear of the unit. Replace the module and reconnect power and cabling. Once the new QTPCM-4 has booted up it will read the configuration settings from the transcoder modules, store them in memory and return to full system operation, without any further user interface.

QTPCM-4 Description:



1 **CONTROL 10/100:** RJ45 connector for 10/100Base-T Ethernet interface for monitoring and configuring the unit. Only static IP address can be assigned to this interface. The factory default value is 172.16.70.1.

2 **IP RESET:** When pushed and held for about 6 seconds, the Status LED will flash momentarily indicating the unit has defaulted to the original IP address, Usernames and Passwords as shipped from the Factory (shown below).

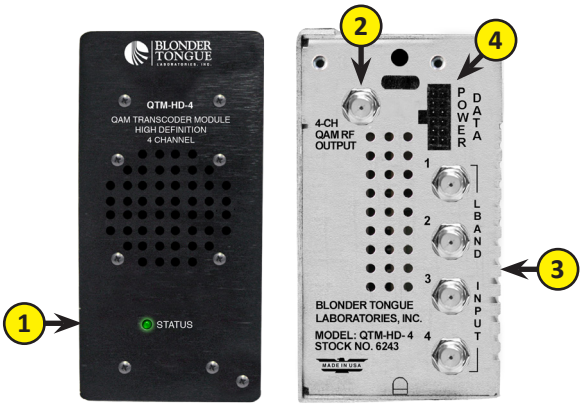
IP address = 172.16.70.1
Username = Admin (case-sensitive)
Password = pass (case-sensitive)
(NOTE: QTPCM-4 must be power cycled for change to take effect.)

3 **POWER:** LED is Green = AC power is detected. LED is off = indicates (i) AC power is not connected, or (ii) AC power is connected but the power supply has failed.

4 **STATUS:** LED is Green = Ready (booted up)

5 **INPUT POWER:** IEC 14 power inlet plug - rated 105 to 240 VAC; 50/60 Hz; equipped with Slo-blo, 4.0 Amps, 250 V Fuse. Power/Data: Multi-pin connector for module power and control cabling.

QTM-HD-4 Description:



1 **STATUS:** Provides user feedback based on the following LED conditions:

a) Solid Green ON: Indicates all transcoders in the module are locked to transponders

b) Flash ON/OFF:

1) Output state of one or more transcoders is in OFF or CW Mode.

2) One or more transcoders are not locked to transponders.

2 **4-CH QAM OUTPUT:** "F" connector for up to four (4) QAM RF outputs 54-864 MHz.

3 **L BAND INPUT (1 to 4):** "F" connectors for four (4) QPSK/8PSK satellite RF inputs 950-2150 MHz.

4 **POWER/DATA:** Multi-pin connector for module power and control cabling from QTPCM-4.

2.3 Product Specifications

QTPCM-4 Specifications

General

Dimensions (W x D x H)	
QTPCM Module:	4.5 x 10.6 x 5.25 inches (114 x 270 x 134 mm)
QTRC Rack Chassis:	19 x 12.0 x 5.25 inches (483 x 305 x 134 mm)
Power:	105 to 240 VAC; 50/60 Hz
Weight:	5.0 lbs (kg)
Operating Temperature:	32 to 122 °F (0 to 50 °C)
Storage Temperature:	-13 to 158 °F (-25 to 70 °C)
Operating Humidity:	0 to 95% RH @ 35 °C max, non-condensing
Storage Humidity:	0 to 95% RH @ 35 °C max, non-condensing

Alarms/Monitoring/Control

Indicators:	Power (Green LED) Status (Green LED)
Remote Monitoring/Control:	GUI-based Menu via web browser

QTM-HD-4 Specifications

Input

Connector:	4x "F" Female
Standards:	QPSK & 8PSK (DVB-S, DVB-S2, DCII, LDPC/BCH, & Turbo FEC)
Symbol rate	
DVB-S:	Variable; 1 to 45 MSymbols/sec (Mbaud)
DVB-S2:	Variable; 5 to 33 MSymbols/sec (Mbaud)
8PSK Turbo:	Variable; 2 to 30 MSymbols/sec (Mbaud)
Frequency Range:	950 to 2150 MHz
Frequency Granularity:	1 MHz
Bandwidth:	Variable, up to 36 MHz
Capture Range:	± 5 MHz
Code Rate	
DVB-S:	Auto Detect; 1/2, 2/3, 3/4, 5/6, 7/8, DC II
DVB-S2 (QPSK):	Auto Detect; 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10
DVB-S2 (8PSK):	Auto Detect; 3/5, 2/3, 3/4, 5/6, 8/9, 9/10
Turbo FEC (QPSK):	Auto Detect; 1/2, 2/3, 3/4, 5/6, 7/8
Turbo FEC (8PSK):	Auto Detect; 2/3, 3/4, 5/6, 8/9
Forward Error Correction (FEC):	DVB / DigiCiper® II
Input Level:	-65 to -20 dBm
Impedance:	75 Ω
Return Loss:	Greater than 9 dB

Alarms/Monitoring/Control

Indicators	
QTM-HD-4 Module:	Status (Green LED)

Output

Connector:	1x "F" Female (4x RF QAM channels combined)
Modulation:	QAM 16, 32, 64, 128, and 256
Standard:	ITU-T J.83; Annex A and B
DVB Symbol Rate:	Variable; up to 7 MSymbol/sec (MBaud)
Frequency Range:	54 to 864 MHz
Tuning:	CATV Channel Selectable (CH. 2 to 135)
Channels' Bandwidth:	4x 6 MHz in any 42 MHz-wide spectrum
RF Level:	+40 dBmV ±1 dB (100 dBµV ±1 dB)
RF Level Adjustment Range:	+32 to +42 dBmV, 1 dB increment
Frequency Tolerance:	± 0.5 kHz @ 77°F (25° C)
Frequency Stability:	± 5 kHz over 32° to 122° F (0 to 50° C)
Amplitude Flatness:	± 0.25 dB (over 6 MHz channel)
Phase Noise:	-95 dBc (@ 10 kHz)
Spurious:	-60 dBc
Broadband Noise:	-70 dBc (@ +40 dBmV output level, 5.5 MHz bandwidth)
Impedance:	75 Ω
Carrier Suppression:	45 dB
Return Loss:	14 dB typical
Signal-to-Noise Ratio (SNR):	Greater than 40 dB typical
MER:	Greater than 39 dB typical
I/Q Phase Error:	Less than 1 degree
I/Q Amplitude Imbalance:	Less than 1%

General

Dimensions (W x D x H)	
QTM-HD-4 Module:	3.0 x 10.6 x 5.25 inches (38 x 270 x 134 mm)
Power Dissipation	
QTM-HD-4 Module:	21 W
Weight	
QTM-HD-4 Module:	1.7 lbs (0.77 kg)
Operating Temperature:	32 to 122 °F (0 to 50 °C)
Storage Temperature:	-13 to 158 °F (-25 to 70 °C)
Operating Humidity:	0 to 95% RH @ 35 °C max, non-condensing
Storage Humidity:	0 to 95% RH @ 35 °C max, non-condensing

Section 3 – Installation & Power-up

3.1 Unpacking

You will find the following items in the box:

- QTPCM-4 (QTY=1)
- Power Cord with IEC C13 line socket and 3-pin Type b NEMA 5 plug (QTY=1)
- A hardware bag (item 741018800) containing the following:
  Cable wire bracket (QTY=1)
- DC/Control cable harness (QTY=2)

3.2 Installation

The QTPCM-4 AND QTM-HD-4s are designed to be installed in a QTRC chassis (shown below) and a standard 19-inch (483 mm) rack (EIA 310-D, IEC 60297, and DIN 41494 SC48D).

FOR SAFE AND RELIABLE OPERATION, THE GROUND PIN OF THE POWER CORD PLUG MUST BE GROUNDED PROPERLY.

3.3 Power-up

Connect the Power/Data cables 1- 4 from the QTPCM-4 to the QTM-HD-4 modules. Connect the QTPCM-4 line cord to a 117 VAC, 60 Hz outlet. The “POWER” LED on the front-panel will light green. After approximately 30 seconds, the "Status" LED will light green, indicating the unit has booted and is ready for operation.

STATUS LED's of QTM modules are on steady (green) except for OFF/CW or NOT LOCKED.

IT IS RECOMMENDED TO DISCONNECT AC POWER TO THE QTPCM-4 PRIOR TO INSTALLING OR REMOVING ANY QTM-4 MODULES.

Section 4 – Communicating with the Unit

Local or remote communication with the unit is only possible through a GUI-based menu via any standard web browser. Before you can communicate with the unit, you must configure your computer's IP address to be in the same subnet as the units default IP address. To do so, follow these steps:

(1) Plug one end of the Ethernet cross cable that is provided in the hardware bag to unit's rear-panel RJ45 interface marked "Control 10/100". Plug the other end of the cable to your computer.

(2) The factory default IP address of the unit is 172.16.70.1. To be able to communicate with the unit, you must first change your computer's IP address.

The following steps explain how to do this for a computer with **Windows XP** operating software:

(a) On your computer, open the "Control Panel"

(b) Double-click on "Network Connections"

(c) Right-click on the "Local Area Connection", and then click on the "properties".

(d) A dialog box entitled "Local Area Connection Properties" will appear. In this box, double-click on the "Internet Protocol (TCP/IP)".

(e) A dialog box entitled "Internet Protocol (TCP/IP) Properties" will appear. Select the "Use the following IP address" option and enter the following addresses:

IP address: 172.16.70.2
Subnet mask: 255.255.255.0
No need to enter a value for the Default Gateway.

Click OK to close the dialog box. Now your computer is ready to communicate with the unit.

-OR -

The following steps explain how to do this for a computer with **Windows 7** operating software:

(a) On your computer, open the "Control Panel"

(b) Click on "Network and Internet"

(c) Click on the "View network status and tasks"

(d) Click on "Change Adapter Settings" on left hand side of the window

(e) Right-click on the "Local Area Connection", and then click on the "properties".

(f) A dialog box entitled "Local Area Connection Properties" will appear. In this box, double-click on the "Internet Protocol Version 4 (TCP/IPv4)".

(g) A dialog box entitled "Internet Protocol Version 4 (TCP/IPv4) Properties" will appear. Select the "Use the following IP address" option and enter the following addresses:

IP address: 172.16.70.2
Subnet mask: 255.255.255.0
No need to enter a value for the Default Gateway.

Click OK to close the dialog box. Now your computer is ready to communicate with the unit.

Section 5 - Configuring the Unit

5.1 Accessing the Unit Via the Web Browser

You must complete the steps described in Section 4 before proceeding as follows:

1. Open a web browser on your computer (Internet Explorer 7 or higher is recommended) and enter the following URL address **(http://172.16.70.1)**. The "Login" Screen (Figure 5.1) will appear.

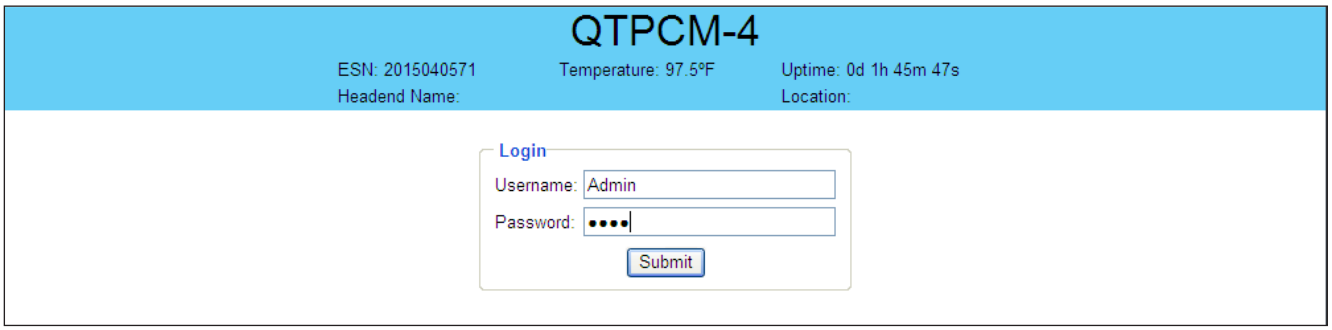


Figure 5.1 - "Login" Screen

2. Enter the following case-sensitive factory-default Username and Password, and click on the "Submit" button.

   NOTE: When logged in as Admin, the user has read and write permission. Only one Admin can be logged in at a time. When logged in as Guest, the user has only read permission. Up to four Guests can be logged in simultaneously.

   Username = **Admin** (case-sensitive)

   Password = **pass** (case-sensitive)

   - OR -

   Username = **Guest** (case-sensitive)

   Password = **pass** (case-sensitive)

Monitoring and configuration of the unit is achieved via a series of web pages described in following sections. The following read-only information is displayed in a blue “page header”on top of each web page:

ESN: unit’s Serial number
Headend name: a user-defined field to make identification easier
Temperature: temperature of unit’s chipset
Uptime: time elapsed since last time the unit was turned on
Location: a user-defined field to make identification easier

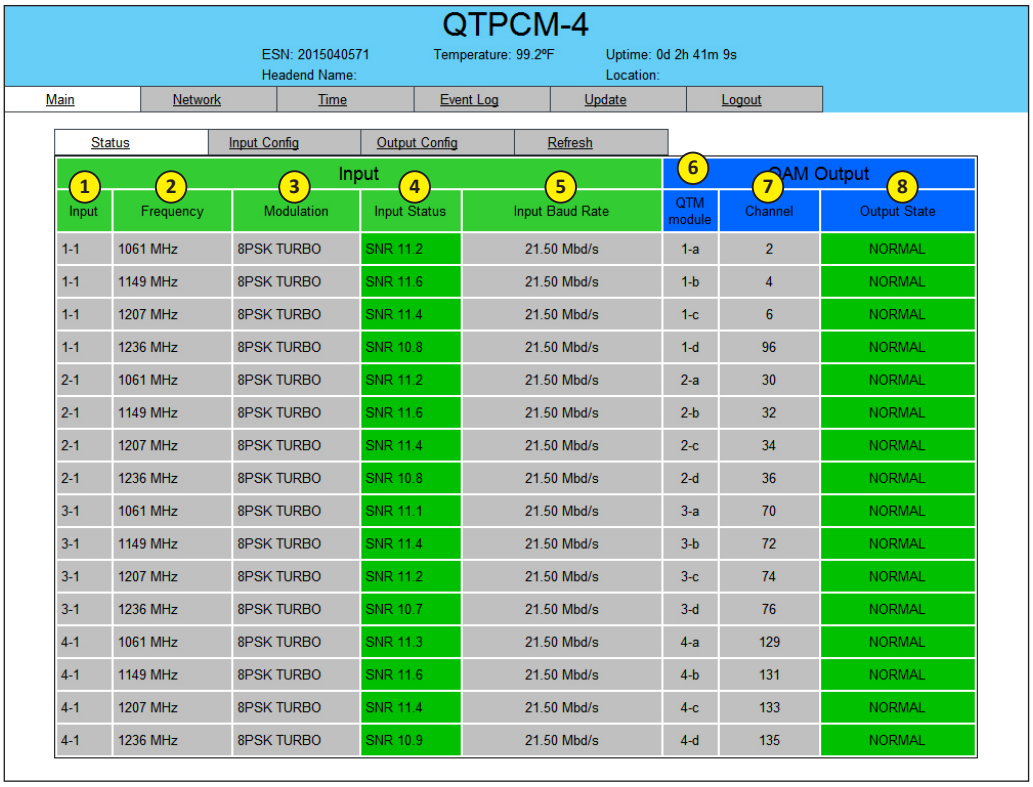
As shown in Figure 5.2, under the blue “page header” the following Primary tabs will appear:

- Primary tab **“Main”** includes the following sub-tabs: Status, Input Config, Output Config, and Refresh.
- Primary tab **“Network”** doesn’t include any sub-tab.
- Primary tab **“Time”** doesn’t include any sub-tab.
- Primary tab **“Event Log”** doesn’t include any sub-tab.
- Primary tab **“Logout”** doesn’t include any sub-tab.
- Primary tab **“Update”** doesn’t include any sub-tab.

Each Primary and sub-tab is described in the subsequent Sections.

5.2 "Main > Status" Screen

The “Main > Status” screen (Figure 5.2) is a “read only” screen and displays Input, and Output information of the transcoder modules. The screen is automatically refreshed every 30 seconds.



Input					QAM Output		
1 Input	2 Frequency	3 Modulation	4 Input Status	5 Input Baud Rate	6 QTM module	7 Channel	8 Output State
1-1	1061 MHz	8PSK TURBO	SNR 11.2	21.50 Mbd/s	1-a	2	NORMAL
1-1	1149 MHz	8PSK TURBO	SNR 11.6	21.50 Mbd/s	1-b	4	NORMAL
1-1	1207 MHz	8PSK TURBO	SNR 11.4	21.50 Mbd/s	1-c	6	NORMAL
1-1	1236 MHz	8PSK TURBO	SNR 10.8	21.50 Mbd/s	1-d	96	NORMAL
2-1	1061 MHz	8PSK TURBO	SNR 11.2	21.50 Mbd/s	2-a	30	NORMAL
2-1	1149 MHz	8PSK TURBO	SNR 11.6	21.50 Mbd/s	2-b	32	NORMAL
2-1	1207 MHz	8PSK TURBO	SNR 11.4	21.50 Mbd/s	2-c	34	NORMAL
2-1	1236 MHz	8PSK TURBO	SNR 10.8	21.50 Mbd/s	2-d	36	NORMAL
3-1	1061 MHz	8PSK TURBO	SNR 11.1	21.50 Mbd/s	3-a	70	NORMAL
3-1	1149 MHz	8PSK TURBO	SNR 11.4	21.50 Mbd/s	3-b	72	NORMAL
3-1	1207 MHz	8PSK TURBO	SNR 11.2	21.50 Mbd/s	3-c	74	NORMAL
3-1	1236 MHz	8PSK TURBO	SNR 10.7	21.50 Mbd/s	3-d	76	NORMAL
4-1	1061 MHz	8PSK TURBO	SNR 11.3	21.50 Mbd/s	4-a	129	NORMAL
4-1	1149 MHz	8PSK TURBO	SNR 11.6	21.50 Mbd/s	4-b	131	NORMAL
4-1	1207 MHz	8PSK TURBO	SNR 11.4	21.50 Mbd/s	4-c	133	NORMAL
4-1	1236 MHz	8PSK TURBO	SNR 10.9	21.50 Mbd/s	4-d	135	NORMAL

Figure 5.2 - "Main > Status" Screen

In the section entitled **“Input”** under the green header, the following parameters about each input program in the TS are displayed:

1. **Input:** The first number indicates the module number and the second number indicates the L-Band input (satellite 1 to 4) selected for it.
2. **Frequency:** L Band center frequency of the transponder
3. **Modulation:** indicates the modulation type of the input program.
4. **Input Status:** SNR of the transponder. The cell will be green when locked and red when not locked to the transponder.
5. **Input Baud Rate:** Baud rate of the transponder being received.

In the section entitled **“QAM Output”** under the dark blue header, the following parameters about each output is displayed:

6. **QTM Module:** Main transcoder module number (1-4) with transcoder designator (a-d)
7. **Channel:** QAM RF output channel
8. **Output State:**

NORMAL = normal QAM RF channel (GREEN Highlight)

OFF = QAM RF channel turned off (RED Highlight)

CW = CW is a calibrated reference signal that replaces the Normal QAM output. It is used for measuring and setting the RF output signal level when only analog test instruments are available. Activating the CW mode on any transcoder (a-d) will affect all others (RED).

5.3 "Main > Input Config" Screen

The “Main > Input Config” screen (Figure 5.3a) is a “user-configurable” screen where the L-Band center frequencies, input source (satellite) and modulation tuning mode parameters can be configured. The QAM output section (blue header) is displayed as a read-only.

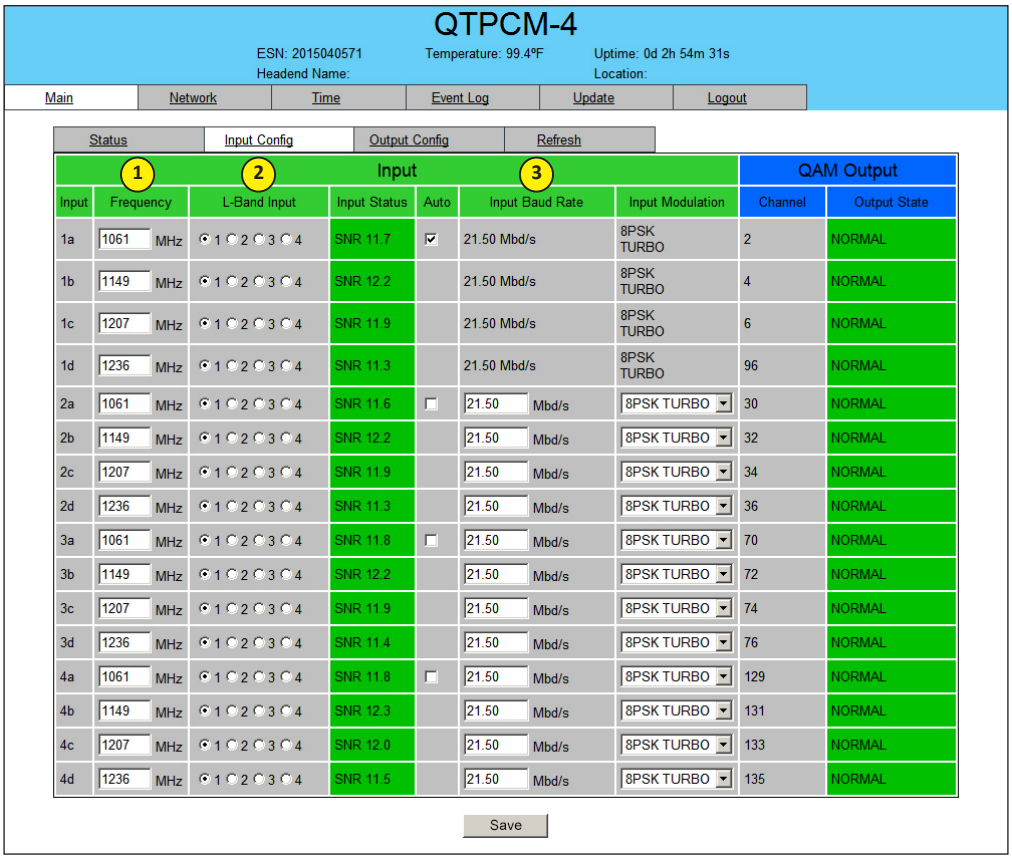


Figure 5.3a - "Main > Input Config" Screen

1. **Frequency:** Enter the desired L Band center frequency of the transponder in MHz.
2. **L-BAND Input:** Select the desired satellite input for the transponder being tuned.
3. **AUTO:** **Auto:** Auto box is checked (recommended setting). Unit searches for the correct Input Modulation format of the transponder to lock on to.

   Manual: Auto box is not checked. User **must** select the proper Input Modulation (Figure 5.3b) and enter in the baud rate of the transponder.

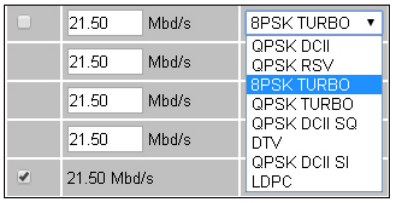


Figure 5.3b - Manual Mode

If not properly configured, the STATUS indicator on the transcoder module will continuously blink indicating the transcoder is not locked.

The mode selected (Auto/Manual) on the "Input Config" screen will also be applied to the "Output Config" screen and vice versa.

Do not mix different input modulation rates within the same QTM-HD unit. The modulation rate needs to be either ALL 8PSK or ALL QPSK in the same unit.

Remember to click on the SAVE button to apply the new values/configurations.

5.4 "Main > Output Config" Screen

The “Main > Output Config” screen (Figure 5.4a) is a “user-configurable” screen where the output RF QAM channels, levels and status are set. The Input section (green header) is displayed as a read-only.

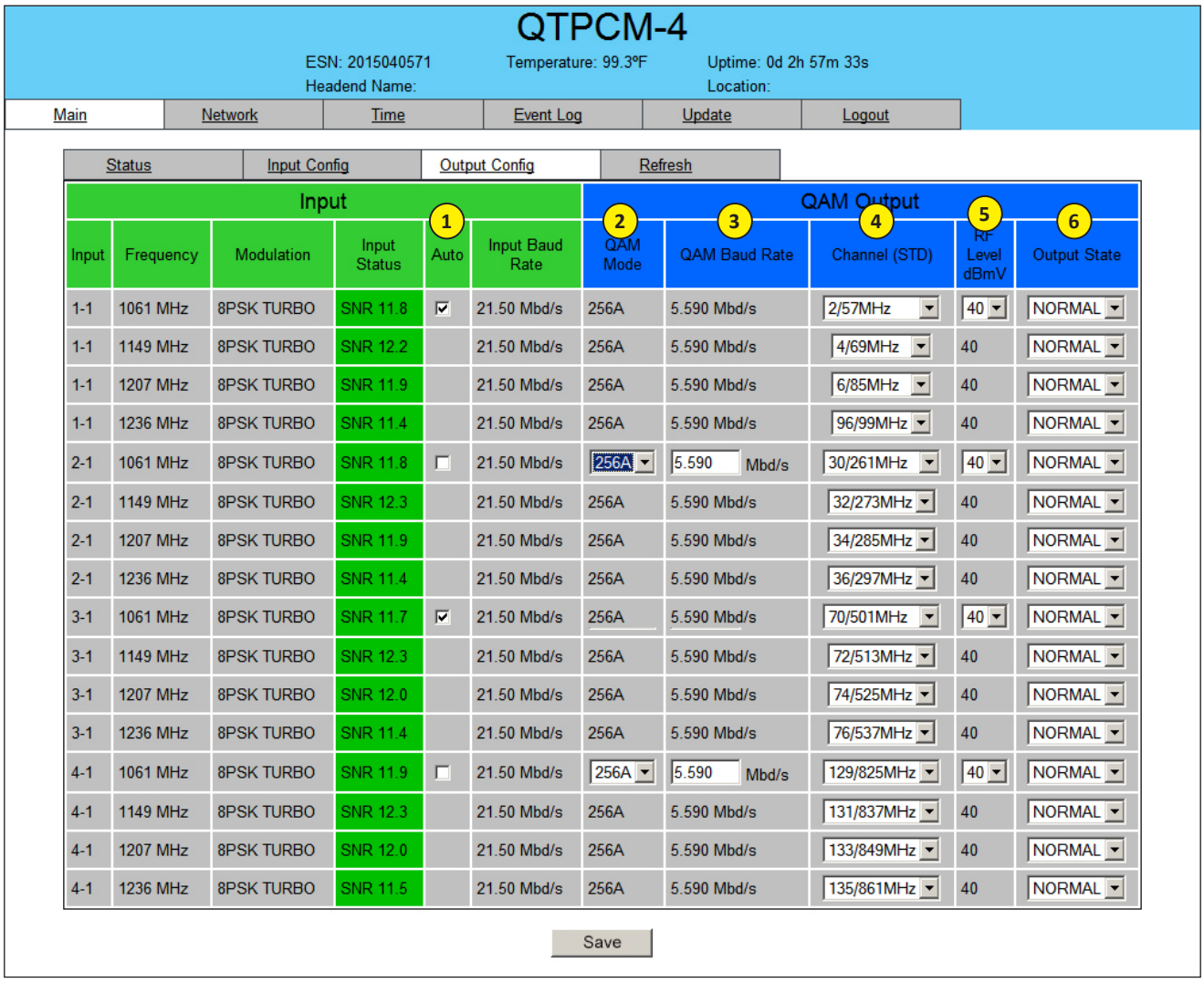


Figure 5.4a - "Main > Output Config" Screen

1 **Auto:** Auto mode (recommended setting) searches for the correct output settings to match the input source. When not in Auto mode (check box unmarked), the user must manually select the proper QAM mode and baud rate for the input source from a series of drop-down boxes.

Note: If not properly configured the module will not provide the proper output.

2 **QAM Mode:** This is a read-only field when in Auto Mode. When in Manual mode, the drop down selections are: 64B, 256B, 16A, 32A, 64A, 128A or 256A.

3 **QAM Baud Rate:** This is a read-only field when in Auto Mode. When in Manual mode, user must enter the QAM Baud Rate in Mbd/S.

5.4 "Main > Output Config" Screen (Continued)

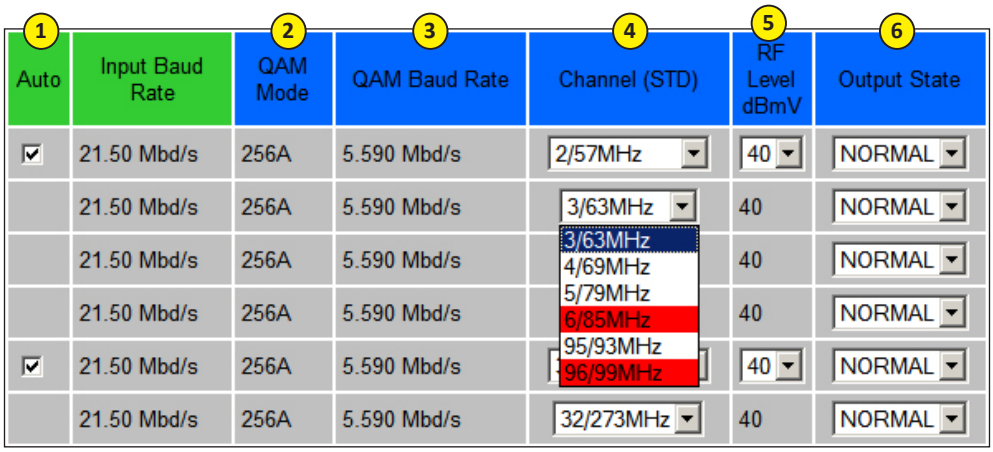


Figure 5.4b - "Main > Output Config" - Selected Channel/Frequencies

4 **Channel (STD):** Select the beginning desired Channel/Frequency on the first transcoder from its pull down menu. The remaining 3 transcoder sections on each module will display only channels within a 42 MHz bandwidth starting with the first channel selected. Channel/Frequencies that have already been selected are highlighted in RED to avoid duplications **(Figure 5.4b).** Channel/Frequency selections should be in increasing (higher) order from the first (top) to the last (bottom) transcoder within each module and from module 1 to 4.

5 **RF Level dBmV:** Pull down level selection. Range is 32 to 42 dBmV in 1 dB increments.

6 **Output State:** There are 3 available settings, Normal, Off and CW.

NORMAL = QAM modulated output is present. Changing any output to Normal mode changes all outputs of the same QTM-HD-4 module to normal mode.

OFF = Output is turned off. (No RF output present) Outputs for each channel can be turned on and off independently.

CW = Continue Wave (tone) is on, replacing the normal QAM output with a calibrated RF un-modulated signal. CW mode facilitates user level measurements when only analog test instruments are available. Changing any output to CW mode changes all outputs on the same QTM-HD-4 module to CW mode.

Remember to click on the SAVE button to apply the new values/configurations.

5.5 "Main > Refresh" Tab

The “Main > Refresh” tab can be clicked while you are on any of the following sub-tab screens: “Status”, “Input Config”, and “Output Config”. When clicked, it will update all relevant fields/parameters of the active screen as that information is retrieved from the QTPCM-4 in a real-time basis.

5.6 "Network" Screen Tab

The “Network” screen (Figure 5.6) is a user-configurable screen where the following parameters are configured or displayed:

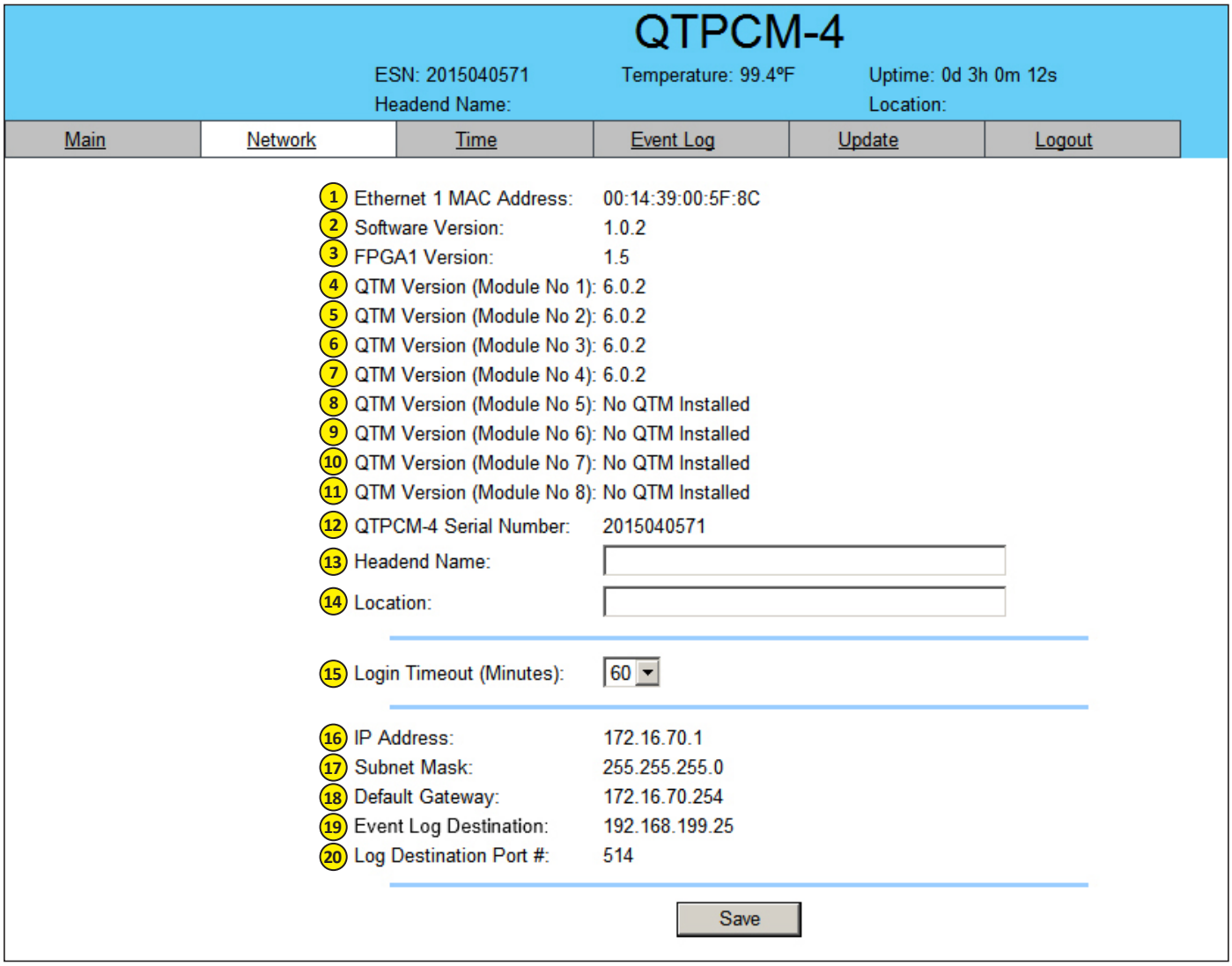


Figure 5.6 - "Network" Screen

5.6 "Network" Screen Tab (Continued)

1. **Ethernet 1:** indicates the MAC Address of the "10/100 Control" Port
2. **Software Version:** indicates the software version of the QTPCM-4.
3. **FPGA1 Version:** Displays the current firmware version.
4. **QTM Version (Module No. 1):** indicates the current firmware version of Module 1
5. **QTM Version (Module No. 2):** indicates the current firmware version of Module 2
6. **QTM Version (Module No. 3):** indicates the current firmware version of Module 3
7. **QTM Version (Module No. 4):** indicates the current firmware version of Module 4
8. **QTM Version (Module No. 5):** indicates the current firmware version of Module 5
9. **QTM Version (Module No. 6):** indicates the current firmware version of Module 6
10. **QTM Version (Module No. 7):** indicates the current firmware version of Module 7
11. **QTM Version (Module No. 8):** indicates the current firmware version of Module 8
12. **Serial Number:** indicates the unit's serial number
13. **Headend Name:** a user-defined field to make identification easier
14. **Location:** a user-defined field to make identification easier
15. **Login Timeout (Minutes):** indicates the period of time before the unit logs itself out if there is no activity on the web screens. Range is 5, 15, 30, or 60 minutes.
16. **IP Address:** Read-Only field. See section 5.6.1 for details
17. **Subnet Mask:** Read-Only field. See section 5.6.1 for details
18. **Default Gateway:** Read-Only field. See section 5.6.1 for details
19. **Event Log Destination:** Read-Only field. See section 5.6.1 for details
20. **Event Log Destination Port #:** Read-Only field. See section 5.6.1 for details

5.6.1 "Admin.html" Hidden Screen

This screen allows the user to change/modify the IP network parameters, as well as the Username and Password values for the unit, user must be logged in to the unit as “Admin” to access the hidden screen shown in Figure 5.6.1. The "Admin" screen is accessed by typing the URL of the unit followed by a forward slash and Admin.html, for example: http://172.16.70.1/Admin.html.

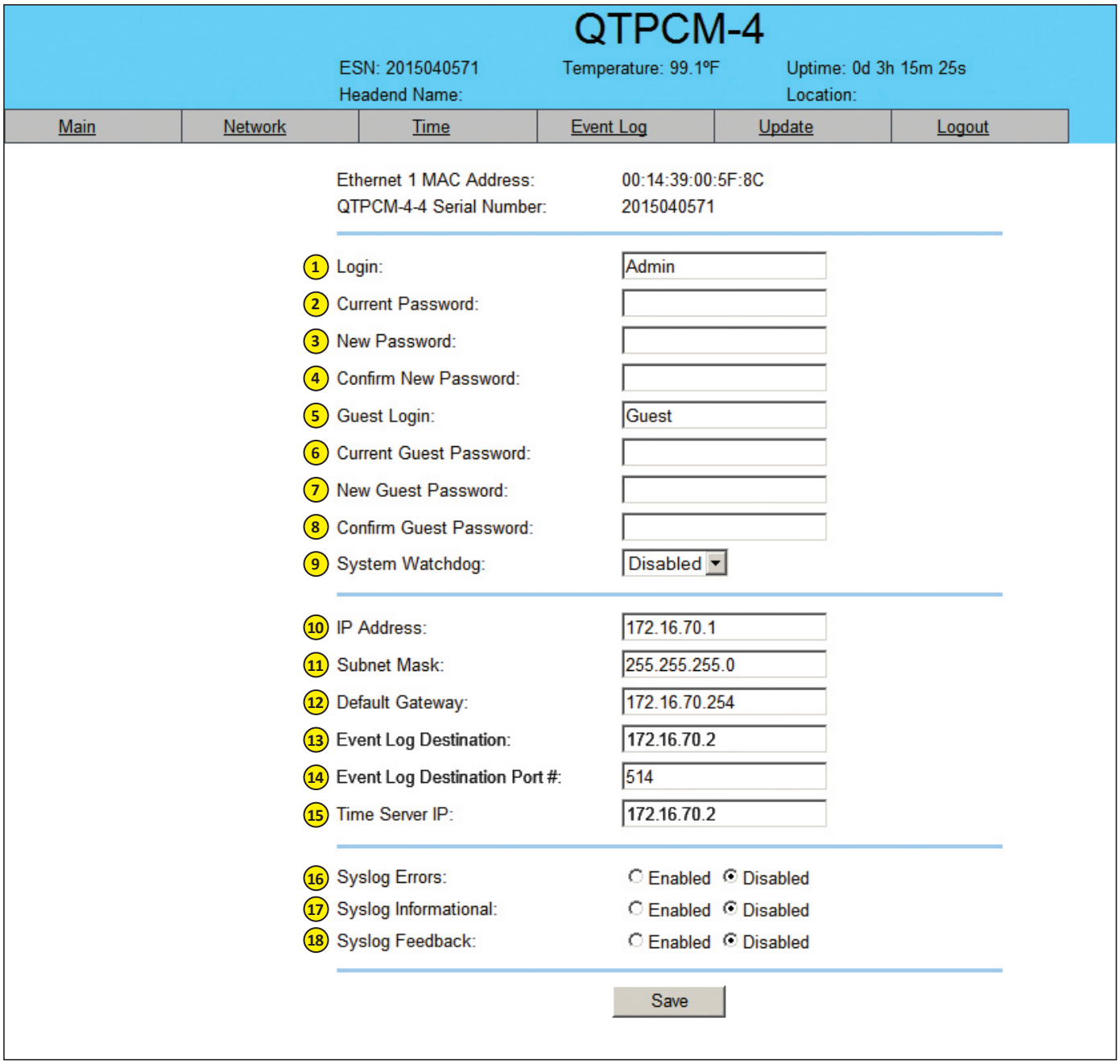


Figure 5.6.1 - "Admin" Screen

5.6.1 "Admin.html" Hidden Screen (Continued)

The following parameters can be modified:

1. **Login:** is the Administrator's login (10 characters maximum). This login allows the user to make changes to any area of the unit. The factory default Login is "Admin". Login is case sensitive.
2. **Current Password:** is the Administrator's Current Password (10 characters maximum). The factory default password is "pass". Password is case sensitive and will not be displayed.
3. **New Password:** used only if the user wants to change the current Administrator's password. User must enter a new password (10 characters maximum). Password is case sensitive and will not be displayed.
4. **Confirm New Password:** User must enter the same password as entered in 3 above. If the password entered in 3 & 4 does not match, an error message will be displayed.
5. **Guest Login:** is the Guest login (10 characters maximum). This login allows the user to view the unit settings but does not allow any changes. The factory default Guest Login is "Guest". Login is case sensitive.
6. **Current Guest Password:** is the Current Guest Password (10 characters maximum). The factory default Guest password is "pass". Password is case sensitive and will not be displayed.
7. **New Guest Password:** used only if the user wants to change the current Guest password. User must enter a new password (10 characters maximum). Password is case sensitive and will not be displayed.
8. **Confirm Guest Password:** User must enter the same password as entered in 7 above. If the password entered in 7 & 8 does not match, an error message will be displayed.
9. **System Watchdog:** When Enabled, automatically reboots the unit if the Operating System stops working. When Disabled, a manual reboot would be required in such case.
10. **IP Address:** is the static IP address that is assigned to the unit. It allows the user to access the unit via the web interface. The factory default IP address is 172.16.70.1.
11. **Subnet Mask:** is the Subnet Mask address of the unit. It allows the user to access the unit from another network via the web interface. The factory default Subnet Mask is 255.255.255.0.
12. **Default Gateway:** is the gateway address of unit. It allows the user to access the unit from another network via the web interface. The factory default Subnet Mask is 172.16.70.254.
13. **Event Log Destination:** is the IP address of the remote server, to which Syslog sends the activities recorded by QTPCM-4 for monitoring and troubleshooting purposes.
14. **Log Destination Port #:** is the Error Log Destination port to which a duplicate of the error messages created by the unit can be forwarded for monitoring and troubleshooting purposes. The factory default value, which cannot be modified, is 514.
15. **Time Server IP:** is the IP address for the Time Server from where the unit can obtain its clock reference (see Section 5.7 for details).
16. **Syslog Errors:** is to enable/disable QTPCM-4 to forward error messages (in red font) to syslog. The factory default value is disabled.
17. **Syslog Informational:** is to enable/disable QTPCM-4 to forward information messages (in blue font) to syslog. The factory default value is disabled.
18. **Syslog Feedback:** is to enable/disable QTPCM-4 to forward feedback or confirmation messages (in green font) to syslog. The factory default value is disabled.

Remember to click on the SAVE button to apply the new values/configurations.

5.7 "Time" Screen

The "Time" screen (Figures 5.7a and 5.7b) allows the user to set the current date and time for the QTPCM-4. It is recommended to use the "automatic" option which allows the unit to automatically acquire time settings from a "Time Server", in which the user must enter the IP address of the time server (see Section 5.6.1 for details). The time server specified must support the Network Time Protocol (NTP) in order for automatic time acquisition to work properly.

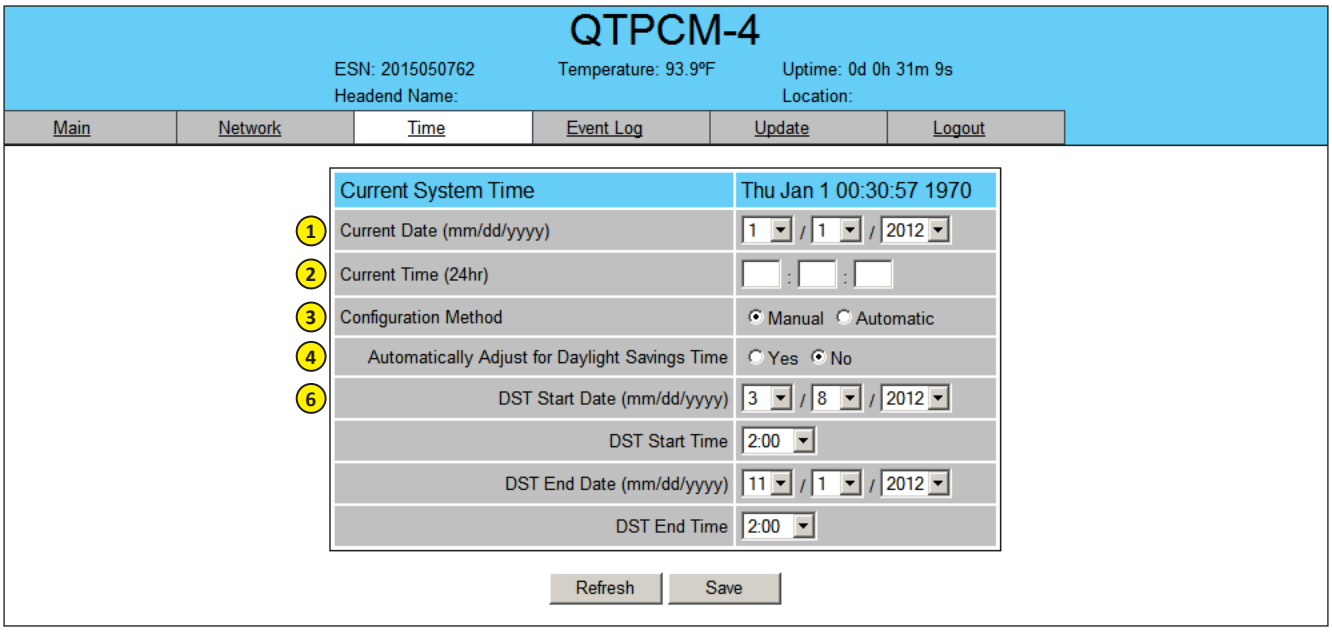


Figure 5.7a - "Time" Screen (Manual)

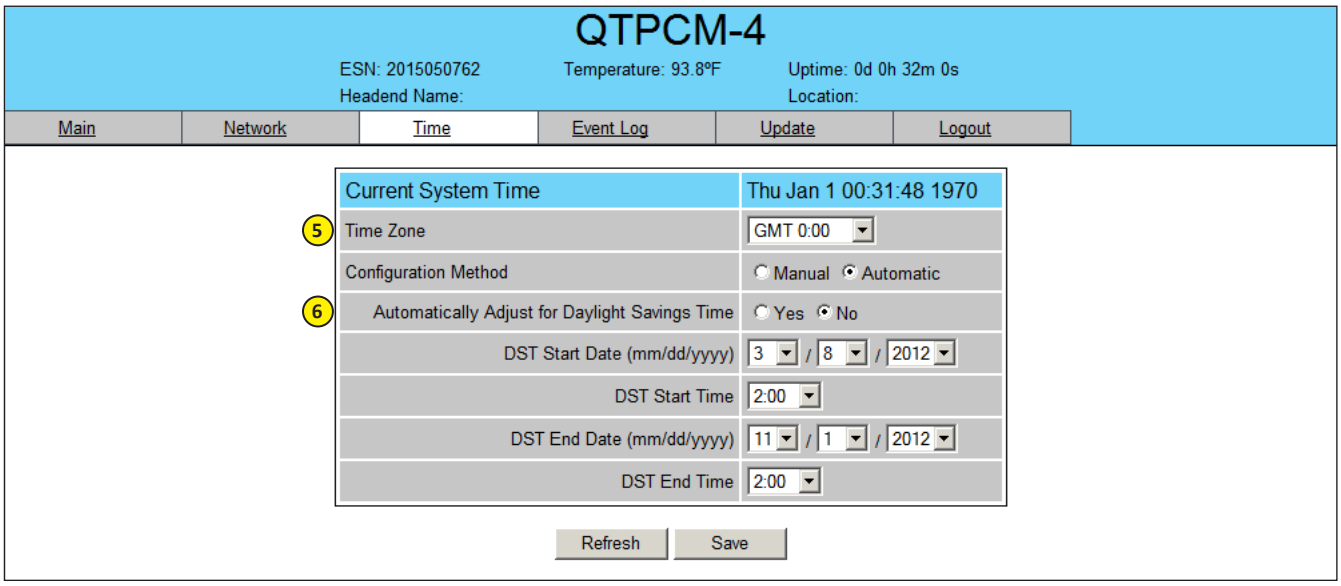


Figure 5.7b - "Time" Screen (Automatic)

5.7 "Time" Screen (Continued)

1. **Current Date (MM/DD/YYYY)**: Date can be set with drop-down selections. (Manual Configuration Mode)
2. **Current Time (24hr):** Time can be entered in 24 hour format: hour/minutes/seconds. (Manual Configuration Mode)
3. **Configuration Method:** Selects either Manual or Automatic Time Zone Settings.
4. **Automatically Adjust for Daylight Savings Time:** The user can apply the Daylight Savings (DST) automatically by selecting "yes". Selecting "No" does not provide any time changes from information entered under 6.
5. **Time Zone:** The local time zone on Coordinated Universal Time (UTC) can be set. Refer to Figure 5.7b. (Automatic Configuration Mode)
6. **DST Settings:** User selectable start and stop dates and times for Daylight Savings Time. When "Automatically Adjust for Daylight Savings Time" is set to "Yes", the time will be changed accordingly.

Remember to click on the SAVE button to apply the new values/configurations.

5.8 "Event Log" Screen

The “Event Log” screen (Figure 5.8) is a “read and write” screen where the following parameters can be displayed or configured. The data in Event Log can be forwarded to an event log database through the Admin hidden configuration screen. **(Section 5.6.1 for details)**

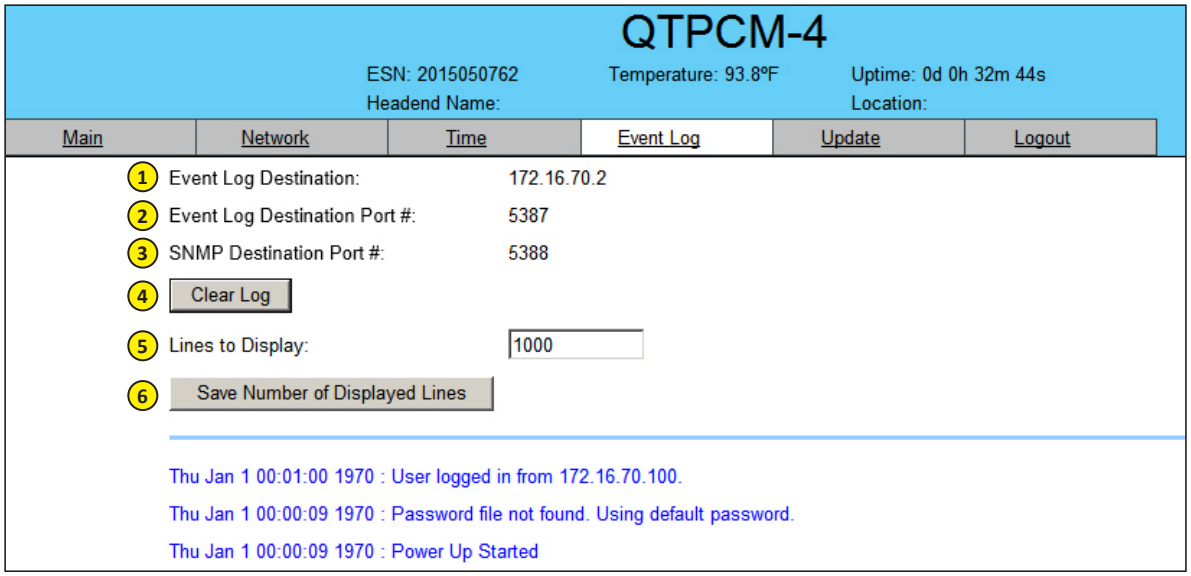


Figure 5.8 - "Event Log" Screen

The displayed lines are color coded as follows:

Red font = error message

Blue font = informational message

Green font = confirmation or feedback message

1. **Event Log Destination:** see 13 of Section 5.6.1 for details.
2. **Event Log Destination Port #:** see 14 of Section 5.6.1 for details.
3. **SNMP Destination Port #:** Optional for future release
4. **Clear Log:** allows the user to clear the records generated during unit’s boot-up process and operation afterward. The records are cleared if the unit loses power.
5. **Lines to Display:** allows the user to select the number of lines to be displayed. The unit supports up to 400 MB of data or approximately 65,000 lines. The range is 1 to 65,535.
6. **Save Number of Displayed Lines:** Saves changes made to 5 "Lines to Display". Please note that this setting only affects the amount of lines shown on display and does not save to any file or database.

5.9 "Update" Screen

The update screen permits the user to easily apply firmware updates to QTM-HD-4 modules.

Note: This feature is only applicable for updating QTM-HD-4 modules. For information regarding QTM-HD and QTM-HD Plus firmware updates please contact the factory.

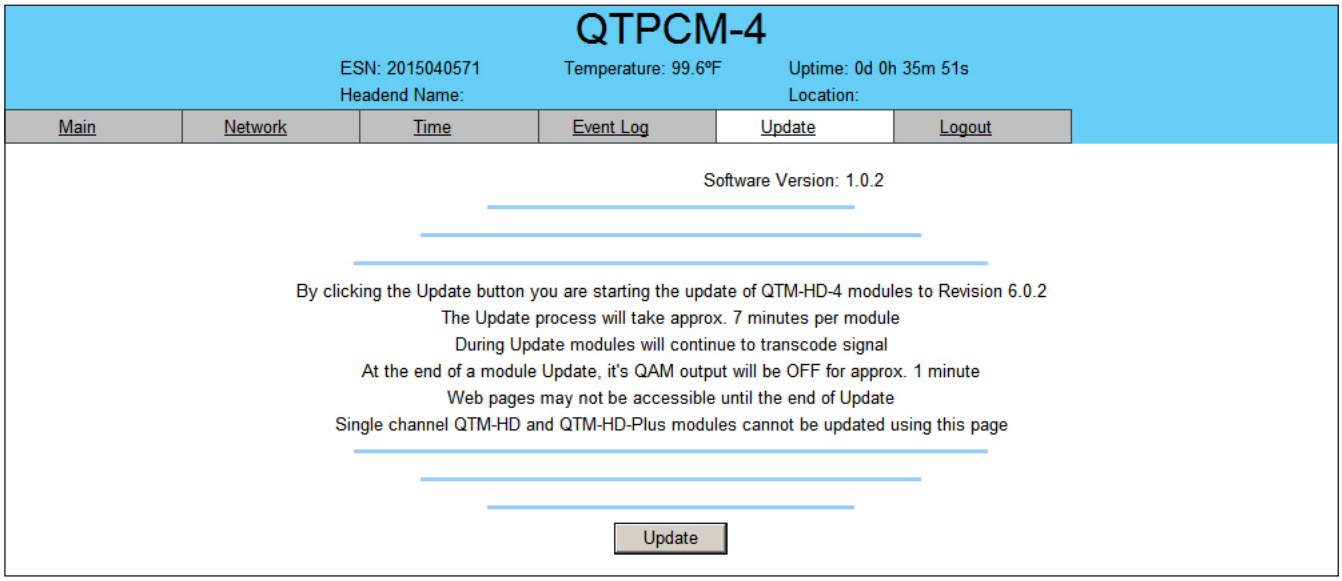


Figure 5.9 - "Update" Screen

The update information for each QTM-HD-4 unit resides within the QTPCM-4 module. **Important:** Prior to pressing the **UPDATE** button, be sure the QTPCM-4 module has the latest firmware release. This can be done by visiting our website or contacting our Technical Support Department. The website product firmware information can either be found under the Main Page - Support Tab or by going to the QTPCM-4 product page document tab. Information regarding updating the QTPCM-4 firmware is in Section 6.0, “Updating the Software Remotely” of this manual.

Detailed description of QTM-HD-4 Module Update:

1. The update process with take approximately 7 minutes per module if the FPGA code does not require updating. With FPGA upgrade, time is approximately 20 minutes per module. Update page will indicate the appropriate time.
2. Updates are applied sequentially starting with Module 1.
3. during the update the modules will continue to transcode the input signals.
4. At the end of a module update, a soft reset is applied and the QAM output will be off for approximately one minute.
5. When all modules have been updated, the QTPCM-4 will update the webpages accordingly and document the activity in the "Event Log".
6. If the QTPCM-4 is unable to re-establish communication with one or more modules within 2 minutes, a hard-reset will be applied to those modules.
7. During the hard-reset, the QAM Output of the modules will be off for approximately one minute.
8. Application of the hard-reset will be documented in the "Event Log".

Section 6 — Remote Software Updates

6.1 Updating the Software Remotely

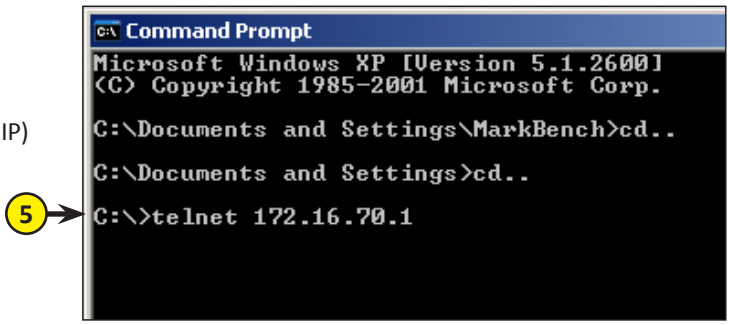
The QTPCM-4 requires 1 PROM to be updated for new revision changes. As referenced in Section 5.9 Update Screen, the QTPCM-4 firmware also contains the QTM-HD-4 updates. Once the QTPCM-4 has been updated following the procedure below, the QTM-HD-4 modules it serves can be updated as shown in Section 5.9.

To obtain the latest firmware revision, please visit our website or contact our Technical Support Department. The website product firmware information can be found under the Main Page - Support Tab or by going to the QTPCM-4 product page document tab.

Note: It is recommended to copy the EPCS_1_ver#.bin file to the root directory of your computer. ie, My Computer >C:

The updating procedure uses the Command Prompt application on your computer. For Windows, it can be found under Programs > Accessories > Command Prompt. All commands are case sensitive and file names must be entered exactly. The Command Prompt must be in the same folder as the EPCS file.

1. From the Command Prompt
   Type: **`ftp -A 172.16.70.1`**
   NOTE: there is a space between "ftp" and "–A" there is also a space between "–A" and the IP address
   (The example assumes the default IP address. Use current IP address of the unit)
2. Type: **`bin`**
   Press ENTER
3. Type: **`put EPCS_1_ver#.bin`** (NOTE: Use exact file name)
   Press ENTER
4. Type: **`bye`**
   Press ENTER
5. Telnet into the unit from the Command Prompt
   Type: **`telnet 172.16.70.1`** (NOTE: Assumes default IP)
   Press ENTER
6. Log into the unit.
   Username: **`Admin`**
   Press ENTER
7. Password: **`pass`**
   Press ENTER
8. Type: **`cd home/ftp`**
   Press ENTER
9. Type: **`ls`**
   Press ENTER
10. Type: **`epcs -e1 EPCS_1_ver#.bin`** (NOTE: Use exact file name)
    Press ENTER
    a. Note there is a space between "epcs" and "–e1"
    b. Note there is a space between "–e1" and the file name

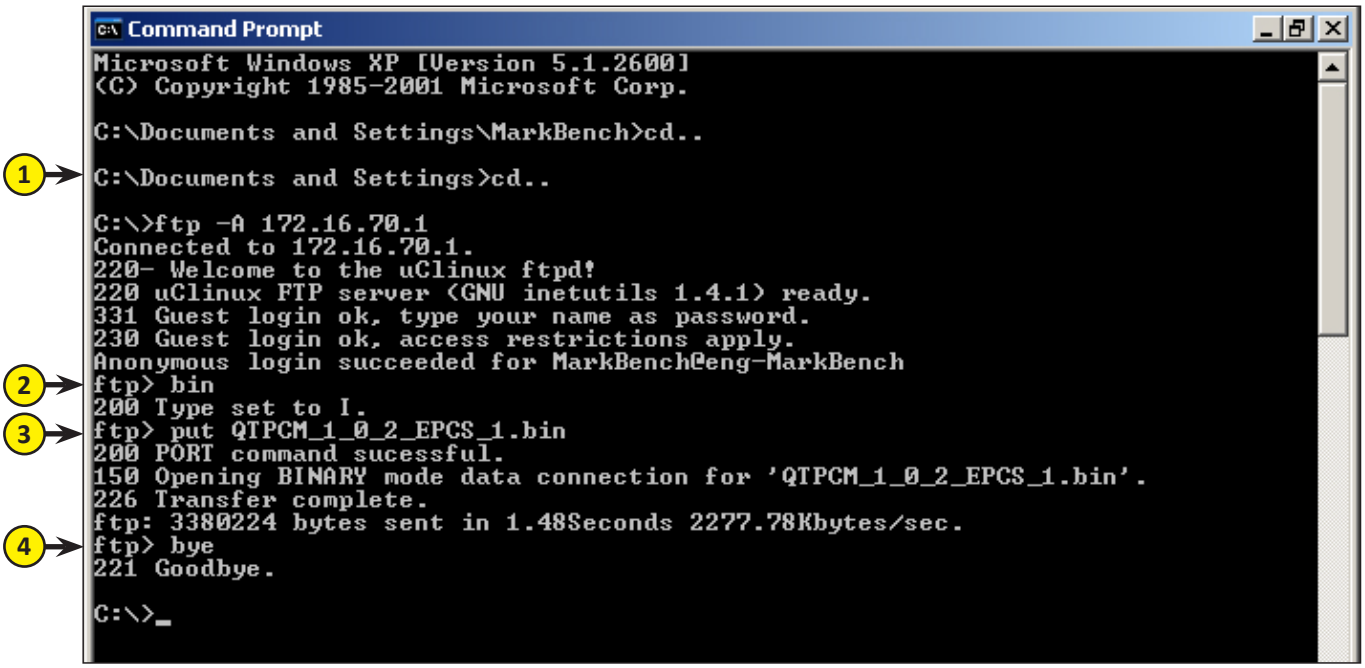


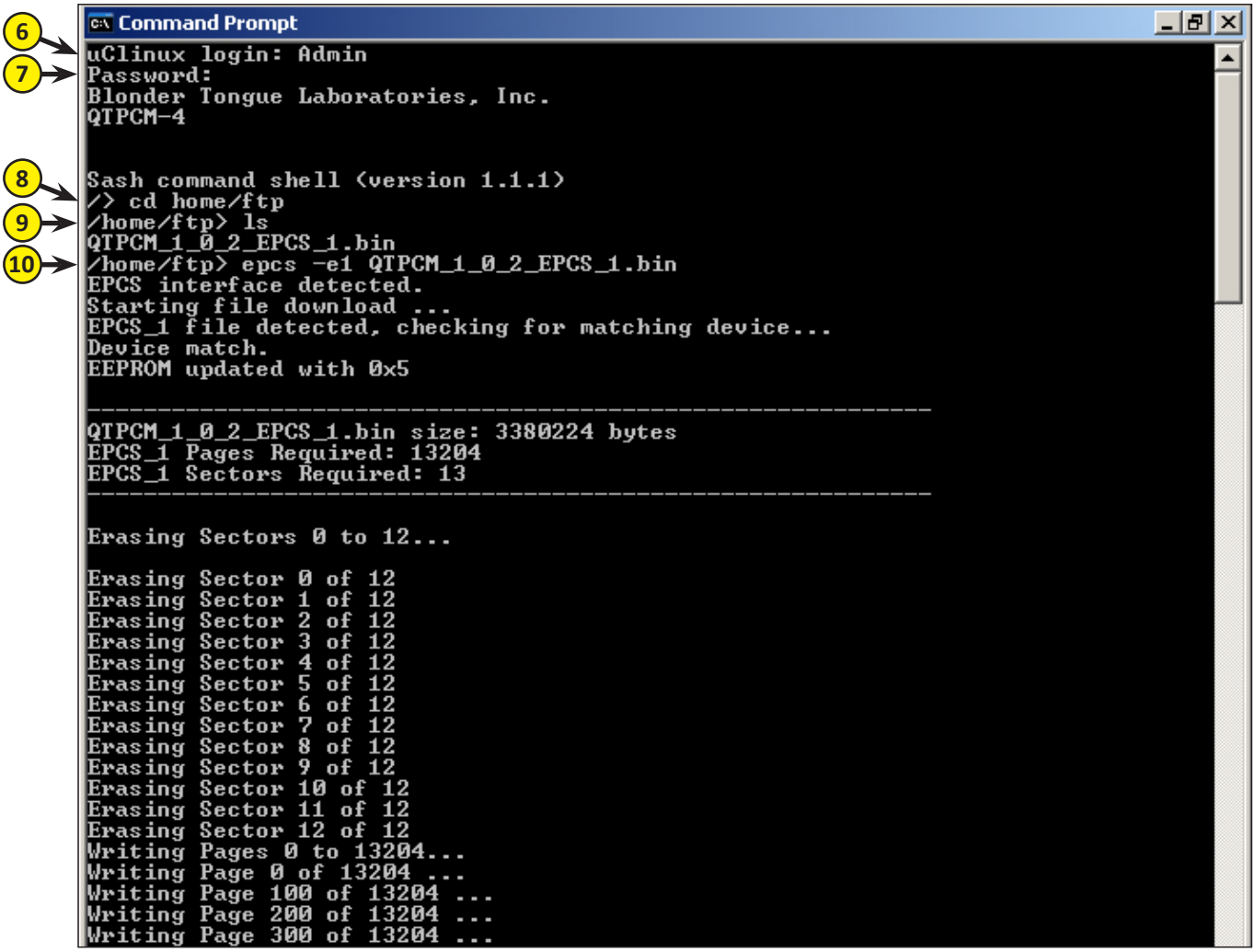
The QTPCM-4 must be rebooted once the update has finished being applied to complete the update process.
To automatically reboot the unit use telnet and enter the following:

Type: **`epcs -c`** (NOTE: Space between "epcs" and "–c")
Press ENTER

Powering off then on with the line cord IEC connector can also be done.

6.1 Updating the Software Remotely (Continued)





NOTES:

Extended Warranty Program

STANDARD TERMS & CONDITIONS OF THE EXTENDED WARRANTY

A. THE EXTENDED WARRANTY AGREEMENT (EWA)

If during the period following the expiration of the Blonder Tongue Manufacturers' Standard Warranty (Copy Included) the products which constitute the subject matter of the extended warranty, manifest any manufacturing or similar such defects then Blonder Tongue shall at its option repair or replace the product. It is emphasized that the extended warranty is in effect an extension of the Blonder Tongue Warranty and covers the items stipulated in Paragraph B to the exclusion of the terms in Paragraph C of this agreement. Eligibility to purchase EW is limited to 90 days following initial shipment on selected products of sufficient value.

The product/products included in this extended warranty agreement are listed in the invoice that accompanies the EWA. Term of the extension will be _____ year(s). Purchase Order is required for extended warranty coverage.

B. WHAT IS COVERED?

1. If a product has been determined to have failed, which falls within the Terms & Conditions of this EWA, Blonder Tongue Inc. may at its sole discretion repair, modify or replace its component parts that are defective at 100% coverage for parts and labor.
2. A loaner unit may be available on request; PO required.
3. Product is manufactured by Blonder Tongue.
4. Extended warranty period is up to and not to exceed 24 months and sold in increments of 12 months. Order # 9981 for 1 year and #9982 for 2 year extensions.
5. Return of repair or replaced product shipping costs for ground shipments.
6. Firmware upgrades at no charge with automatic notification.

C. WHAT IS NOT COVERED?

1. The warranty does not cover any defects caused by foreign objects /connection errors .
2. Use other than by the customer at the declared address appearing in this document.
3. Failure by the end user to comply with the manufacturers' instructions for installation, maintenance or use.
4. The use of accessories which have not been approved by Blonder Tongue.
5. The application and/or use of any incorrect or abnormal electrical supply to the product.
6. Any defect in wiring or electrical connections which does not form part of the product at the time of the original purchase.
7. Neglect, misuse, or willful abuse of the product.
8. Any repairs or attempted repairs of the product by any person other than Blonder Tongue Service Department.
9. Any modification of the product by any person other than Blonder Tongue Service Department.
10. Fire, flood, war, civil disturbance, industrial action, acts of God or any other causes beyond the reasonable control of Blonder Tongue.
11. Any defect caused by lightning strike or power surges.
12. Shipping costs to return products to Blonder Tongue for warranty service.
13. Blonder Tongue will not in any circumstances be liable for any consequential loss or damages suffered by the customer whether directly or indirectly related defect in the product to the extent permissible by law.
14. Repairs may not be effected without prior authorization from Blonder Tongue Laboratories.

D. GENERAL

1. The customer shall notify Blonder Tongue Laboratories in writing within ten days of any change of his or her address.
2. Customer must provide original ***purchase receipt*** and ***serial number*** to initiate extended warranty coverage.
3. The fee paid for the warranty is not refundable under any circumstances unless cancelled within seven days of purchase.
4. The customer shall take all reasonable precautions to maintain the product is maintained in good working order.
5. The warranty contract ceases to exist if the product is replaced or a credit is given to the customer. Any monies paid for the warranty contract are forfeited and not refundable. This is only applicable when the product is out of the manufacturer's warranty.
6. The extended warranty period as stated on the Extended Warranty Agreement shall be the governing period notwithstanding any additional supplier warranty on specific components.
7. The warranty shall in no way effect the terms and conditions of the sale agreement in terms of which the customer bought the product.
8. The extended warranty is limited to the terms and conditions herein contained
9. No agreement, varying, adding to, amended, deleting, or cancelling this warranty shall be effective unless given in writing (email is acceptable) and signed by or on behalf of both parties.
10. The cost of the extended warranty is 8% of the purchase price for a 1 or 2 year extension beyond the Blonder Tongue standard warranty. e.g. A product price of $1000 will be $80 for the 1st year (12 mos) and additional $80 for 2 year (24 mos) extension for a total of $160.
11. Warranty product return postage paid to:

Blonder Tongue Laboratories, Inc.
Attn: Warranty Service Dept.
1 Jake Brown Road
Old Bridge, NJ 08857

Contact Blonder Tongue at 800-523-6049 ext. 555 to order extended warranty service.

Limited Warranty

Seller will at its sole option, either repair or replace (with a new or factory reconditioned product, as Seller may determine) any product manufactured or sold (or in the case of software, licensed) by Seller which is defective in materials or workmanship or fails to meet the applicable specifications that are in effect on the date of shipment or such other specifications as may have been expressly agreed upon in writing: (i) for a period of three (3) years from the date of original purchase for all stock hardware products (other than those specifically referenced herein below having a shorter warranty period); (ii) for a period of one (1) year from the date of original purchase, with respect to all MegaPort™, IPTV products, test equipment and fiber optics receivers, transmitters, couplers and integrated receiver/distribution amplifiers; (iii) for a period of one (1) year from the date of original purchase (or such shorter period of time as may be set forth in the license agreement specific to the particular software being licensed from Seller) with respect to all software products licensed from Seller (other than Core Product Software) that is (a) developed for a specific function or application, (b) complimentary to and does not function without the Core Product Software, and (c) listed with a specific model number and stock number in Seller's Price List (**"Non-Core Software"**); (iv) for a period of ninety (90) days from the date of original purchase, with respect to non-serialized products and accessories, such as parts, sub-assemblies, splitters and all other products sold by Seller (other than Core Product Software and Refurbished/Closeout Products) not otherwise referred to in clauses (i) through (iii) above. The warranty period for computer programs in machine-readable form included in a hardware product, which are essential for the functionality thereof as specifically stated in the published product specifications (**"Core Product Software"**) will be coincident with the warranty period of the applicable hardware product within which such Core Product Software is installed.

Software patches, bug fixes, updates or workarounds do not extend the original warranty period of any Core Product Software or Non-Core Software.

Notwithstanding anything herein to the contrary,

(i) Seller's sole obligation for software that when properly installed and used does not substantially conform to the published specifications in effect when the software is first shipped by Seller, is to use commercially reasonable efforts to correct any reproducible material non-conformity (as determined by Seller in its sole discretion) by providing the customer with: (a) telephone or e-mail access to report non-conformance so that Seller can verify reproducibility, (b) a software patch or bug fix, if available or a workaround to bypass the issue if available, and (c) where applicable, replacement or damaged or defective external media, such as CD-ROM disk, on which the software was originally delivered;

(ii) Seller does not warrant that the use of any software will be uninterrupted, error-free, free of security vulnerabilities or that the software will meet the customer's particular requirements; and the customer's sole and exclusive remedy for breach of this warranty is, at Seller's option, to receive (a) suitably modified software, or part thereof, or (b) comparable replacement software or part thereof;

(iii) Seller retains all right, title and interest in and to and ownership of all software (including all Core Product Software and Non-Core Software) including any and all enhancements, modifications and updates to the same; and

(iv) in some cases, the warranty on certain proprietary sub-assembly modules manufactured by third-party vendors and contained in Seller's products, third party software installed in certain of Seller's products, and on certain private–label products manufactured by third-parties for resale by Seller, will be of shorter duration or otherwise more limited than the standard Seller limited warranty. In such cases, Seller's warranty with respect to such third-party proprietary sub-assembly modules, third-party software and private-label products will be limited to the duration and other terms of such third-party vendor's warranty, if any. In addition, certain products, that are not manufactured by Seller, but are resold by Seller, may carry the original OEM warranty for such products, if any. The limited warranty set forth above does not apply to any product sold by Seller, which at the time of sale constituted a Refurbished/Closeout Product, the limited warranty for which is provided in the following paragraph.

Seller will at its sole option, either repair or replace (with a new or factory-reconditioned product, as Seller may determine) any product sold by Seller which at the time of sale constituted a refurbished or closeout item (**"Refurbished/Closeout Product"**), which is defective in materials or workmanship or fails to meet the applicable specifications that are in effect on the date of shipment of that product or fails to meet such other specifications as may have been expressly agreed upon in writing between the parties, for a period of ninety (90) days from the date of original purchase. Notwithstanding the foregoing, in some cases the warranty on certain proprietary sub-assembly modules manufactured by third-party vendors and contained in Seller products, third party software installed in certain of Seller's products, and on certain private–label products manufactured by third-parties for resale by Seller will be of shorter duration or otherwise more limited than Seller limited warranty for Refurbished/Closeout Products. In such cases, Seller's warranty for Refurbished/Closeout Products constituting such third party proprietary sub-assembly modules, third party software, and private-label products will be limited to the duration and other terms of such third-party vendor's warranty, if any. In addition, notwithstanding the foregoing, (i) certain Refurbished/Closeout Products that are not manufactured (but are resold) by Seller, may carry the original OEM warranty for such products, if any, which may be longer or shorter than Seller's limited warranty for Refurbished/Closeout Products. All sales of Refurbished/Closeout Products are final.

To obtain service under this warranty, the defective product, together with a copy of the sales receipt, serial number if applicable, or other satisfactory proof of purchase and a brief description of the defect, must be shipped freight prepaid to Seller at the following address: One Jake Brown Road, Old Bridge, New Jersey 08857.

This warranty does not cover failure of performance or damage resulting from (i) use or installation other than in strict accordance with manufacturer's written instructions, (ii) disassembly or repair by someone other than the manufacturer or a manufacturer-authorized repair center, (iii) misuse, misapplication or abuse, (iv) alteration, (v) exposure to unusual physical or electrical stress, abuse or accident or forces or exposure beyond normal use within specified operational or environmental parameters set forth in applicable product specifications, (vi) lack of reasonable care or (vii) wind, ice, snow, rain, lightning, or any other weather conditions or acts of God.

OTHER THAN THE WARRANTIES SET FORTH ABOVE, SELLER MAKES NO OTHER WARRANTIES OR REPRESENTATIONS OF ANY KIND, EXPRESS OR IMPLIED, AS TO THE CONDITION, DESCRIPTION, FITNESS FOR A PARTICULAR PURPOSE, MERCHANTABILITY, OR AS TO ANY OTHER MATTER, AND SUCH WARRANTIES SET FORTH ABOVE SUPERSEDE ANY ORAL OR WRITTEN WARRANTIES OR REPRESENTATIONS MADE OR IMPLIED BY SELLER OR BY ANY OF SELLER'S EMPLOYEES OR REPRESENTATIVES, OR IN ANY OF SELLER'S BROCHURES MANUALS, CATALOGS, LITERATURE OR OTHER MATERIALS. IN ALL CASES, BUYER'S SOLE AND EXCLUSIVE REMEDY AND SELLER'S SOLE OBLIGATION FOR ANY BREACH OF THE WARRANTIES CONTAINED HEREIN SHALL BE LIMITED TO THE REPAIR OR REPLACEMENT OF THE DEFECTIVE PRODUCT F.O.B. SHIPPING POINT, AS SELLER IN ITS SOLE DISCRETION SHALL DETERMINE. SELLER SHALL IN NO EVENT AND UNDER NO CIRCUMSTANCES BE LIABLE OR RESPONSIBLE FOR ANY CONSEQUENTIAL, INDIRECT, INCIDENTAL, PUNITIVE, DIRECT OR SPECIAL DAMAGES BASED UPON BREACH OF WARRANTY, BREACH OF CONTRACT, NEGLIGENCE, STRICT TORT LIABILITY OR OTHERWISE OR ANY OTHER LEGAL THEORY, ARISING DIRECTLY OR INDIRECTLY FROM THE SALE, USE, INSTALLATION OR FAILURE OF ANY PRODUCT ACQUIRED BY BUYER FROM SELLER.

All claims for shortages, defects, and non-conforming goods must be made by the customer in writing within five (5) days of receipt of merchandise, which writing shall state with particularity all material facts concerning the claim then known to the customer. Upon any such claim, the customer shall hold the goods complained of intact and duly protected, for a period of up to sixty (60) days. Upon the request of Seller, the customer shall ship such allegedly non-conforming or defective goods, freight prepaid to Seller for examination by Seller's inspection department and verification of the defect. Seller, at its option, will either repair, replace or issue a credit for products determined to be defective. Seller's liability and responsibility for defective products is specifically limited to the defective item or to credit towards the original billing. All such replacements by Seller shall be made free of charge f.o.b. the delivery point called for in the original order. Products for which replacement has been made under the provisions of this clause shall become the property of Seller. Under no circumstances are products to be returned to Seller without Seller's prior written authorization. Seller reserves the right to scrap any unauthorized returns on a no-credit basis. Any actions for breach of a contract of sale between Seller and a customer must be commenced by the customer within thirteen (13) months after the cause of action has accrued. A copy of Seller's standard terms and conditions of sale, including the limited warranty, is available from Seller upon request. Copies of the limited warranties covering third-party proprietary sub-assembly modules and private-label products manufactured by third-parties may also be available from Seller on request. **(Rev 0713)**

Blonder Tongue

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