



CV HD2X QAM IP

2 CHANNEL HDMI TO SPTS / SRT / QAM ENCODER



STOCK #	MODEL NAME	DESCRIPTION
6573	CV HD2X QAM IP	2 Channel Advanced Encoder with IP/SRT IPTV & QAM Output

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

Purchase Location Name:	
Purchase Location Telephone Number:	
CV HD2X QAM IP Serial Number(s):	

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CROSS-REFERENCE & HYPERLINKING USAGE

This guide makes use of hyperlinks for the Table of Contents, some cross-reference linking between sections, and external hyperlinking to web addresses. This has been done to assist the reader in finding the information they are seeking in a much quicker way. In addition to hyperlinking, the Table of Contents also makes use of the bookmarking feature present in the Adobe Reader application.

PRODUCT AND DOCUMENTATION UPDATES

The latest user documentation (PDF) and Firmware Updates can be obtained by visiting our website. Navigate to the product page by entering the full Model Name in the search field. **Firmware Updates** can also be directly accessed under the “Support” section of the website. If you cannot find your product model on the website, please reach out to Tech Support through our [support request form](#).

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 [review our return policies](#) or [contact our service department](#) for further information.

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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

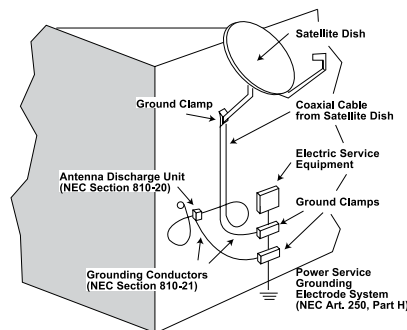
This reminder is provided to call the CATV System Installer’s attention to Article 820-40 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.



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.
- 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.

SECTION 2 – PRODUCT SUMMARY

2.1 PRODUCT APPLICATION & FEATURES

APPLICATION

The **CV HD2X QAM IP** advanced video encoder accepts two programs from any two sources, including two files for streaming, or via HDMI, 3G/HD-SDI, Component, or Composite input connectors. QAM output channel supports multiplexing and PSIP creation for direct digital TV discovery, including digital signage applications.

The CV HD2X QAM IP can also output two SRT or as Unicast/Multicast MPEG SPTS format. IP Output support via SFP Fiber adapter or RJ45 Ethernet with separate RJ45 for control port. Convenient IP Reset switch on front panel for admin support. The unit can encode to MPEG-2, H.264/MPEG-4 (AVC), or H.265 (HEVC) in all major resolutions from 480i through 1080p60.

KEY FEATURES

- ▶ HEVC, H.264 and MPEG-2 in CBR, SPTS or MPTS
- ▶ QAM Modulator with PSI Creation for Digital TV Display
- ▶ 2x IP / SRT or Unicast/Multicast SPTS IP Outputs
- ▶ Remote Setup, Management & Monitoring Capability
- ▶ Appliance-based 24 x 7 x 365 High Reliability Design

INPUT FORMATS

- ▶ File Streaming (Transcode or Passthrough)
- ▶ 3G/HD-SDI
- ▶ Component
- ▶ Composite
- ▶ Closed Caption

SUPPORTED FEATURES:

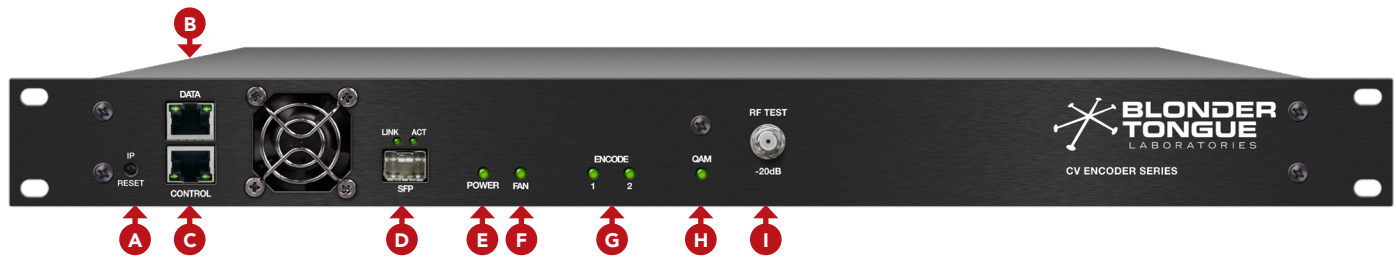
- ▶ Supports (2) HDMI inputs for local ingest
- ▶ Supports video encoding to MPEG-2, H.264, or H.265
- ▶ Supports audio encoding to Dolby® Digital AC3, AAC and MP3
- ▶ Supports output data rates from 2 to 19 Mbps
- ▶ Supports (2) video file inputs for local ingest
- ▶ Supports simultaneous QAM and IP output*
- ▶ Supports UDP/RTP for IP outputs
- ▶ Supports advanced SRT for IP output including both FEC and Encryption features

NOTE: Output to QAM is not supported for certain video file input modes



IMPORTANT NOTE: The unit does not currently support HDCP in any capacity. All HDMI sources **NEED** to be clear/unencrypted.

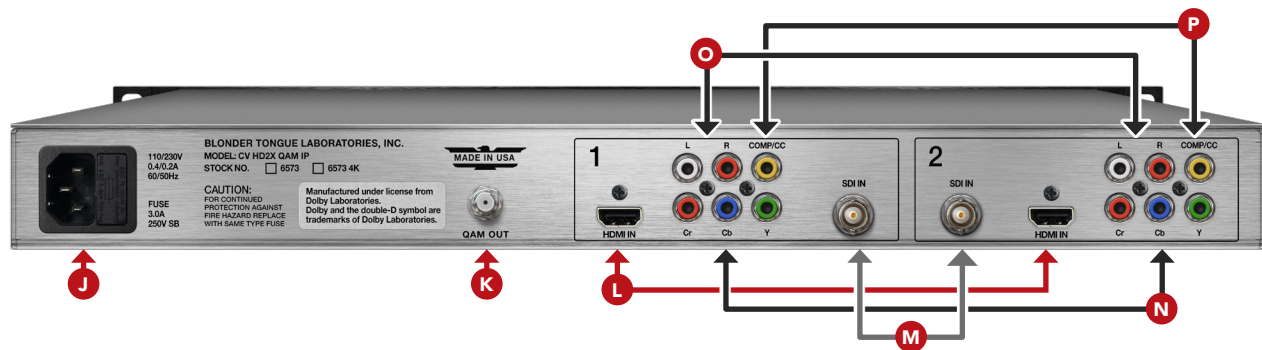
2.2 PRODUCT DESCRIPTION



FRONT PANEL

- A IP Reset:** When pushed and held for 5 seconds, temporarily resets the IP address, Usernames, and Passwords to Factory Default. Activation is indicated by the Power LED blinking twice. Default values are as follows:
- ▶ **IP Address:** **172.16.70.1**
 - ▶ **Username:** **Admin** (*case-sensitive*)
 - ▶ **Password:** **pass** (*case-sensitive*)
- PLEASE NOTE:** Resetting power will revert IP and login credentials back to what has been configured by the user. The effects of activating the IP Reset feature are temporary and only last until the unit is power cycled.
- B IP Video:** RJ45 for 1000Base-T Ethernet (GigE) interface; used for IP video output.
- C Control:** RJ45 connector for 1000Base-T Ethernet (GigE) Ethernet interface for monitoring and configuring the unit via standard web browser. Only a static IP address can be assigned to this interface. (Factory Default: "**172.16.70.1**")
- D IP Video:** RJ45 for 1000Base-T Ethernet (GigE) interface; used for IP video output.
- E Power LED:** If the LED is Green, the AC power is detected. If the LED is Off, it will indicate one of the following:
- ▶ AC power is not connected, **or**
 - ▶ AC power is connected but the power supply is defective. Unit must be sent to factory for repairs.
- F Fan (temperature) LED:**
- ▶ Solid Red = Unit temperature is critically high.
 - ▶ Solid Amber = Unit temperature is high.
 - ▶ Solid Green = Unit temperature is normal.
- G Encode Status LEDs # 1 and 2:**
- ▶ Off = Encode channel is not enabled.
 - ▶ Solid Green = Encode channel is configured and currently encoding without issue.
 - ▶ Solid Red = Encode channel is experiencing an error or has failed. See log for details.
- H QAM LED:**
- ▶ Solid Green = QAM channel is configured and currently outputting without issue.
 - ▶ Solid Red = QAM channel is experiencing an error or has failed. See log for details
- I -20dB QAM RF TEST:** "F" female connector for QAM RF output signal, 20dB lower than the actual QAM RF output. Used for test purposes, without taking the unit out of service.

2.2 PRODUCT DESCRIPTION (CONTINUED)



REAR PANEL

- J Input Power Assembly & Fuse:** IEC 14 power inlet plug – rated 110-230 VAC; 0.4/0.2 A; 60/50 Hz; equipped with Slo-Blo, 3.0A, 250 V Fuse. The operation of the power assembly can be monitored through the User Interface.
- K RF OUT:** “F” (female) connector for a single (1) QAM RF output.
- L HDMI # 1 and 2:** Type “A” HDMI connectors used for SD and HD content input.
- M SDI IN # 1 and 2:** “BNC” connector for 3G-SDI or HD-SDI input.
- N Component Video Input # 1 and 2:** “RCA” connectors for YCbCr Component video input.
- O Baseband (Composite) Video and Audio Input # 1 and 2:** “RCA” (female) connectors for 2 channels of baseband Video and Audio input.
- P CC IN # 1 and 2:** RCA connector used for bringing in Closed Caption content.

2.3 PRODUCT SPECIFICATIONS

INPUT	
Connectors	2x HDMI 2x RCA, Baseband Composite 2x RCA, YCbCr Component 2x 3G/HD/SD-SDI

File	2x Video Files (512MB max each)
------	---------------------------------

Control	1x Front Panel RJ45
---------	---------------------

Closed Caption	2x RCA (CC Ports, Rear Panel)
----------------	-------------------------------

VIDEO	
Video Resolution	480i (59.94, 60 FPS) 480p (29.97, 30, 59.94, 60 FPS) 720p (29.97, 30, 60 FPS) 1080i (59.94, 60 FPS) 1080p (29.97, 30, 59.94, 60 FPS) 2160p (29.97, 30, 59.94, 60 FPS) - 4K (note: 4K is HDMI-only)

AUDIO FORMAT	
SDI	Uncompressed L-PCM (IEC-60958) @ up to 192 kHz
HDMI	L-PCM @ up to 192 kHz; Dolby® AC3; AAC; MP3

GENERAL	
Dimensions (W x H x D)	19.0 x 1.75 x 8.5 in (483 x 45 x 216 mm)
Weight	9.5 lbs (4.31 kg)
Power	110/230VAC, 0.35/0.175A, 60/50 Hz
Power Consumption	35 W
Operating Temp.	32 to 122 °F (0 to 50 °C)
Storage Temp.	-13 to 158 °F (-25 to 70 °C)
Operating Humidity	0 to 95% RH @ 35 °C max, non-condensing

ALARMS & MONITORING	
Local Monitoring	1x Power and Status LED (bicolor) 1x Fan Control Status LED (bicolor) 2x Encoder Status LED (bicolor) 1x QAM Status LED (bicolor)
Local Control	1x IP Reset Button
Remote Control	1x RJ45 (1000Base-T GbE; Front Panel) GUI-Based Menu Via Internal Web Server

OUTPUT	
Connectors	1x “F” Connector, Full Agile QAM 1x “F” Connector, -20 dB Test Point 1x RJ45 Gigabit Ethernet Output 1x SFP Module Port, Fiber Optic

RF QAM MODULATION	
Standards	ITU-T J.83; Annex B
Frequency Range	54 to 1002 MHz
Power	+45 dBmV
Channel Bandwidth	6 MHz
Return Loss	≥ 14 dB
Level Adjust. Range	15 dB
Level Accuracy	±1 dB
QAM MER	>40 dB
Impedance	75 Ω
Phase Noise	-95 dBc @ 10 kHz offset

IP OUTPUT	
IP Protocols	UDP; RTP; SRT
Streaming Protocols	Unicast, Multicast
SRT Protocols	Specifications - www.SRTalliance.org

SPTS STREAM PROTOCOLS	
Standard	ISO/IEC 13818-1 Systems
TS Supported	2x SPTS
TS Packet Length	188 bytes
Sync Byte	0x47
Encoding Type	CBR or Capped VBR

ENCODED VIDEO AND AUDIO	
Encoded Video Bitrate	2 Mbps to 19 Mbps (0.1 Mbps increments)
Video Resolution	1080p (30, 60 FPS); 1080i (60 FPS); 720p (30, 60 FPS); 480p (30, 60 FPS); 480i (60 FPS)
Video Format	MPEG-2; H.264 (AVC); H.265 (HEVC)
Audio Format	Dolby® AC3; AAC

SECTION 3 – INSTALLATION & POWER-UP

3.1 UNPACKING

You will find the following items in the box:

- ▶ CV HD2X QAM IP Encoder (QTY=1)
- ▶ Power Cord with IEC C13 line socket and 3-pin type “B” NEMA 5 plug (QTY=1)

3.2 INSTALLATION AND POWER-UP

The **CV HD2X QAM IP** is designed to be installed in a standard 19-inch (483 mm) rack (EIA 310-D, IEC 60297, and DIN 41494). Adequate ventilation is very important for unit installations. Some air movement is advisable in enclosed rack cabinets.

- 1 To install, secure the unit’s front panel to the rack by inserting four (4) machine screws, with cup washers, through the four (4) mounting holes in the front panel. A 1RU open space is recommended above the unit for ventilation.



DO NOT BLOCK THE UNIT’S AIR INTAKE OR AIR DISCHARGE OPENINGS.

Unit performance will be degraded without proper ventilation.

Excessive heat will shorten the life of the unit.

- 2 To power the unit up, connect the IEC line cord to the input power receptacle on the rear panel. Then connect the other end to a 120 VAC power outlet. The input power receptacle is equipped with a fuse-holder and fuse (SLO-BLO, 3.0 Amp, 250V).



For safe and reliable operation, the ground pin of the power cord must be grounded properly.

SECTION 4 – CONNECTING TO A PC/LAPTOP

4.1 ETHERNET ACCESS

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 cable into the **Control** management port located on the front-panel of the unit. Connect the other end of the Ethernet cable to your computer.
- 2 The factory default IP address of the control management port is **172.16.70.1**. To be able to communicate with the management port, you must first change your computer's IP address.

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

- (a) On your computer, navigate to the “**Network and Sharing Center**” via the “**Control Panel**”.
- (b) Once open, click on “**Change Adapter Settings**” on left hand side of the window.
- (c) Right-click on the local area network, and then click on “**Properties**”.
- (d) A “**Properties**” dialog box will appear. In this box, double-click on the “**Internet Protocol Version 4 (TCP/IPv4)**”.
- (e) 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. Your computer is now ready to communicate with the unit.

4.2 ACCESSING THE GATEWAY VIA THE WEB BROWSER

You must complete the steps described in Section 4.1 before proceeding as follows:

- 1 Open a web browser on your computer (Chrome or Firefox is recommended) and enter the following URL address (**http://172.16.70.1**). The “**Login**” prompt (Figure 4.2a) will appear.
- 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.

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

Figure 4.2a - “Login” Screen

4.2 ACCESSING THE GATEWAY VIA THE WEB BROWSER (CONTINUED)

Monitoring and configuration of the unit is achieved via a series of web pages as described in the Sections below. The following read-only information is displayed in a **“Page Header”** at the top of each web page:



Figure 4.2b - Page Header and Navigation

- ▶ **Name:** a user-defined field to make identification easier
- ▶ **Location:** a user-defined field to make identification easier
- ▶ **ESN:** unit's serial number
- ▶ **Uptime:** time elapsed since last time the unit was turned on
- ▶ **Version:** software version of the Controller Module.

As shown in Figure 4.2b, under the **“Page Header”** the following Navigation tabs and links will appear:

- ▶ **Left Navigation:** **“Status”, “System”, “Time”, “Encoders: Status”, “Encoders: Settings”, and “Encoders: Global Output Settings”**
- ▶ **Right Navigation:** **“Log” and “Firmware Update”**
- ▶ **Modules Navigation:** This includes tabs to the remaining 12 module slots. The tabs will give access to any installed module in the numbered slot. To review how the physical slots are numbered, please see the product diagram in **Section 2.3**.
- ▶ In addition, in the upper right corner above the navigation, the user can access the **“Admin”** screen through a link, alongside the **[LOG OUT]** button.

Each tab for the **“Left”** and **“Right”** Navigation is described in the subsequent sections.

SECTION 5 – BASIC CONFIGURATION

5.1 “STATUS” TAB

“Status” (Figures 5.1a and 5.1b) is a “read-only” screen which displays the general health of the unit, such as temperature, fan speed and status reporting. The information is provided as a quick way to monitor the system or assist with troubleshooting issues that may arise.

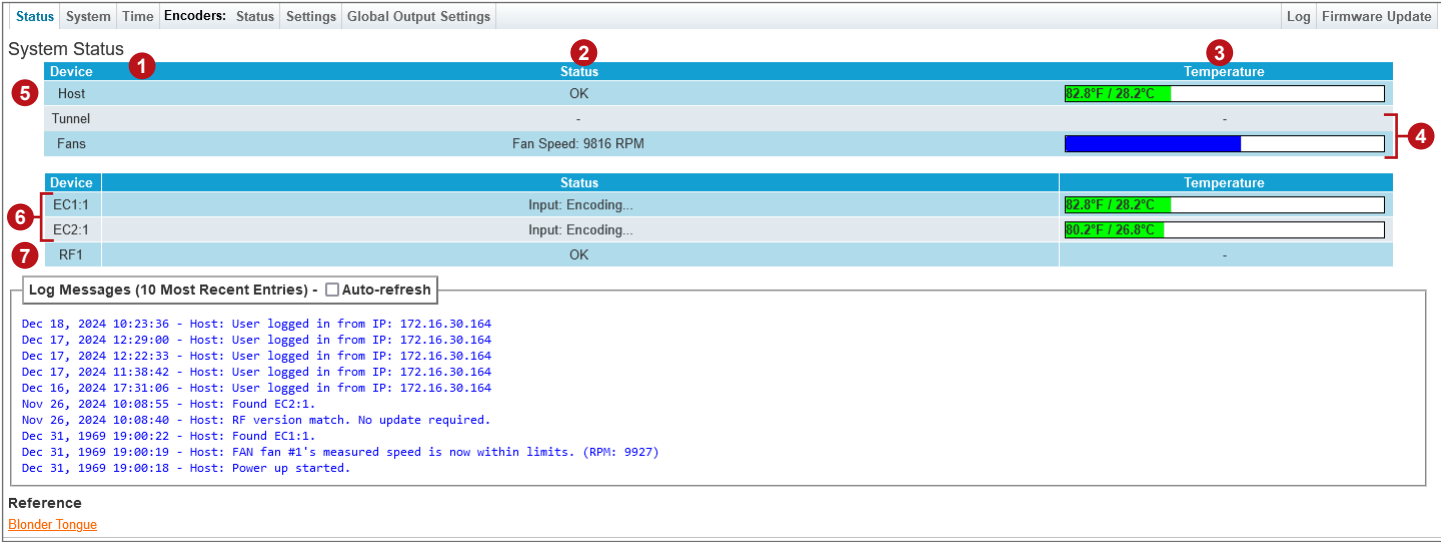


Figure 5.1a - “System Status”

The “System Status” page has four (4) columns of data for each system component. The data is detailed as follows:

- 1

Device: Indicates the following system components:

 - **Host** is the **CV HD2X QAM IP** system.
 - **Fans** displays data for each of the system fans on the chassis.
 - **EC1 and EC2** displays information for each of the 2 input streams being encoded. These will populate other data as the channels are set up and enabled. When a numbered encoder is not available the row will display as empty.
 - **RF1** displays information for the single RF output.
- 2

Status: Indicates a status for each system component being monitored. The following section gives a breakdown of the information given in this column.
- 3

Temperature: Indicates the following in real-time:

 - **Host:** Temperature the Host unit is currently running at. Temperatures are displayed in both Fahrenheit and Celsius. (Figure 5.1a)
 - **EC1 and EC2:** Temperature each encoder is currently running at. The temperatures are displayed in both Fahrenheit and Celsius. (Figure 5.1b)
- 4

Fans: Revolutions Per Minute (RPM), rotational speed, of each fan in the chassis. (Figure 5.1c)

 - **Fan Speed:** numerically displayed and measured in Revolutions-per-Minute (RPM).



Figure 5.1b - Temperature Status Color Range



Figure 5.1c - Fan RPM Status Range

5.1 "STATUS" TAB (CONTINUED)

STATUS - MESSAGES / INFORMATION

- 5 Host:** Types of messages under status column for Host:
- **Ok:** indicates the host is working without errors.
 - **Error:** indicates one or more errors have been detected. See the message log below or navigate to the full Log using the menu at the top.
 - **Warnings:** indicates one or more warnings have been triggered. Check system log for more information.
- 6 EC1 and EC2 (Encoders):** Types of messages under the status column(s).
- **Encoding...:** indicates the EC is actively encoding. Each of the EC programs is shown on its own row. If applicable, SRT output status will be displayed.
 - **Error:** indicates that one or more errors have been detected. See the message log below or navigate to the full Log using the menu at the top.
- 7 RF1:** Types of messages under the status column(s).
- **Ok:** indicates the host is working without errors.
 - **Error:** indicates one or more errors have been detected. See the message log below or navigate to the full Log using the menu at the top.



NOTE: Listed are the most common status messages. Messages shown will give indication of what is occurring within the unit, alongside those shown under the Log screen, to assist with any required troubleshooting.

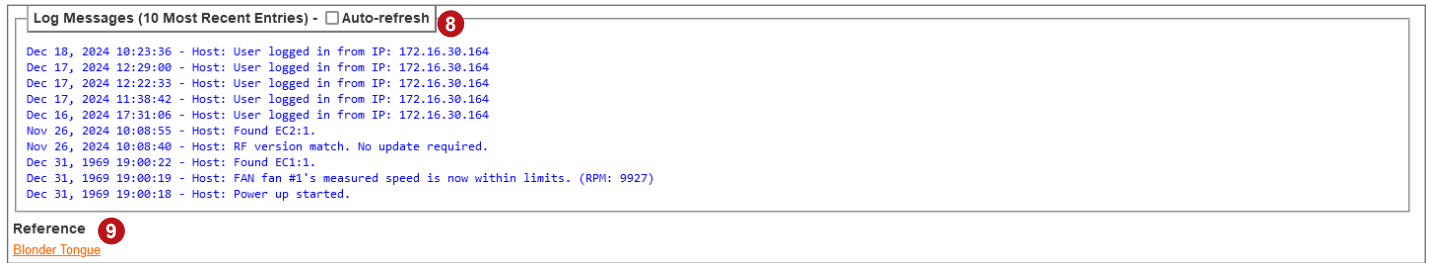


Figure 5.1b - "System Status"

OTHER INFORMATION:

- 8 Log Messages:** The Log Messages sections will show the 10 most recent entries to the system log. For a full view of all messages, please see the Log tab. The user can click on the "Auto-Refresh" checkbox to enable that function. See Section 7.2 for more information on types of messages.
- 9 Reference:** The reference link within this sub-section points to the Blender Tongue website.

5.2 “SYSTEM” TAB

“System” (Figure 5.2) is a “read and write” screen. The general ethernet connection and user-defined identification data for the platform can be configured here.

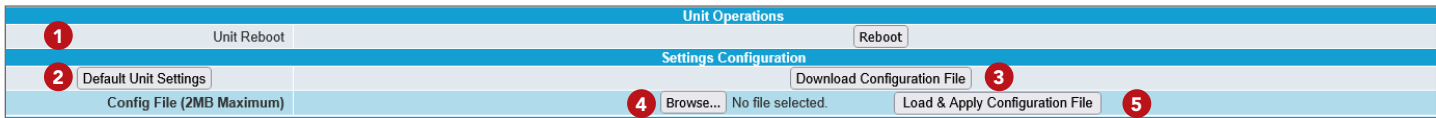


Figure 5.2a - “System Configuration” - Unit Operations, Settings Configuration

UNIT OPERATIONS

- 1
- Reboot
- Clicking this button will reboot the unit. All firmware updates will be applied upon restart.



IMPORTANT: A reboot is required after defaulting or applying a configuration file.

SETTINGS CONFIGURATION

- 2
- Default Unit Settings
- Resets the unit back to the factory defaults. It is always recommended to save the existing configuration file before resetting to the default values.
- 3
- Download Configuration File
- Downloads the current unit configuration file.
- 4
- Browse... No file selected.
- Browse and select a configuration file. (2 MB maximum file size)
- 5
- Load & Apply Configuration File
- After selecting a file, click this to load and apply the new configuration.

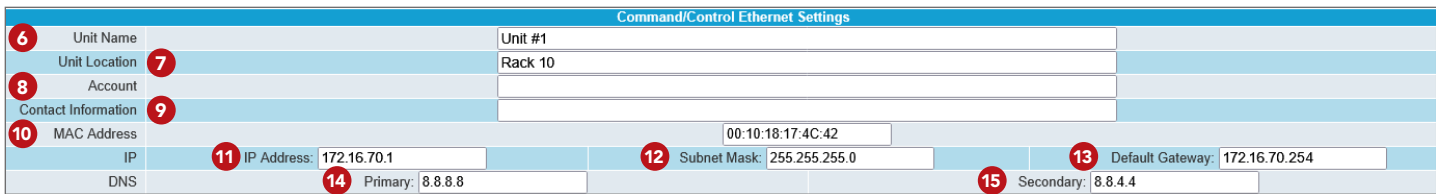


Figure 5.2b - “System Configuration” - Command/Control Ethernet Settings

COMMAND/CONTROL ETHERNET SETTINGS

- 6
- Unit Name:** a user-defined field providing identification of the unit by name. The character limit is 64 alphaumeric, however if other character types are used, the display limit is decreased and may truncate.
- 7
- Unit Location:** a user-defined field providing identification of the unit’s location. The character limit is 64 alphaumeric, however if other characters types are used, the display limit is decreased and may truncate.
- 8
- Account:** a user-defined field providing identification of the unit’s account information. The character limit is 64 alphaumeric, however if other characters types are used, the display limit is decreased and may truncate.
- 9
- Contact Information:** a user-defined field providing identification of the unit’s account contact information. The character limit is 64 alphaumeric, however if other characters types are used, the display limit is decreased and may truncate.
- 10
- MAC Address:** the Media Access Control (MAC) Address is a read-only field that serves as a unique identifier assigned to the network.
- 11
- IP Address:** the static IP address that is assigned to the unit, allowing the user to access it via the web interface. Pressing the IP reset button returns unit to factory default of **172.16.70.1**.

5.2 “SYSTEM” TAB (CONTINUED)

- 12 Subnet Mask:** the subnet mask allows the user to access it from another network via the web interface. Factory Default is **255.255.255.0** for local subnet.
- 13 Default Gateway:** the gateway address of unit, allowing the user to access it from another network via the web interface. The gateway address should be in the same subnet as IP Address. Factory Default is **172.16.70.254**.
- 14 Primary DNS:** the primary Domain Name Server (DNS) hosts the controlling zone file, containing all the authoritative information for a domain.
- 15 Secondary DNS:** the secondary Domain Name Server (DNS) contains read-only copies of the zone file, and gets its info from a primary server in a communication known as a zone transfer.

Authentication Settings			
16	Authentication Mode:	Local Credentials	Remote Connection Failure Fallback Mode: None 17
18	Authentication Server:	IP Address: 0.0.0.0	Port: 49
19	TACACS+ Settings:	Shared Secret Set: False	Shared Secret: ☐ Show

Figure 5.2c - “System Configuration” - Authentication Settings

AUTHENTICATION SETTINGS

This section allows the user to configure how administrative access to the unit is authenticated. The unit supports both local user authentication and integration with a centralized authentication server using TACACS+ (Terminal Access Controller Access-Control System Plus).

- 16 Authentication Mode:** Select the method used to authenticate users accessing the unit—either through locally managed credentials or a centralized authentication server using TACACS+.
 - ▶ **Local Credentials:** Usernames and passwords are managed directly on the unit.
 - ▶ **Remote Credentials (TACACS+):** Authentication is handled by an external TACACS+ server. This is commonly used in enterprise environments for centralized user management.
- 17 Remote Connection Failure Fallback Mode:** Defines the system behavior if the remote TACACS+ server becomes unreachable. This setting is unlocked if Remote Credentials (TACACS+) is set as the Authentication Mode. Options are as follows:
 - ▶ **None:** No fallback authentication is allowed; access is denied if the remote server fails.
 - ▶ **Note:** To avoid accidental lockouts, it is **strongly** recommended to configure a fallback authentication method whenever possible.
 - ▶ **Local:** The system falls back to locally stored user credentials for authentication.
 - ▶ **Cached:** The system allows access using previously cached remote user credentials from a successful prior login.



WARNING: Selecting “None” as the fallback authentication option may result in the user being locked out of the system if the TACACS+ server becomes inaccessible.

- 18 Authentication Server:** Enter the IP address and port of the external TACACS+ server that will handle authentication when Remote Credentials are selected.
 - ▶ **IP Address:** The static IP address of the TACACS+ server.
 - ▶ **Port:** The port used by the server for authentication communication. (*default for TACACS+ is typically 49*)

5.2 “SYSTEM” TAB (CONTINUED)

- 19 **TACACS+ Settings:** Configure the shared secret used for encrypted communication between the unit and the TACACS+ server.
- **Shared Secret Set:** Indicates whether a shared secret has been set. *(Read-only)*

► **Shared Secret:** The password or key used for encrypted communication between the unit and the TACACS+ server.

► **Show:** Check this box to toggle visibility of the shared secret.

SFP Information			
Vendor Name:	Methode Elec.	Vendor P/N:	EX-SFP-1GE-T-OEM
Vendor by IEEE OUI:	XEROX CORPORATION (0)	Identifier:	SFP Transceiver
		Vendor S/N:	THJEXTX000505
		Connector:	Unknown / Unspecified

Figure 5.2d - “System Configuration” - IP Video Ethernet Settings

SFP INFORMATION

This section displays technical and vendor-specific details for the Small Form-factor Pluggable (SFP) transceiver module currently installed in the unit. These values are automatically populated based on the module’s onboard memory and are not user-editable.

- 26 **Vendor Name:** Displays the name of the company that manufactured the SFP module.
- 27 **Vendor P/N:** Displays the vendor-assigned part number of the SFP.
- 28 **Vendor S/N:** Displays the unique serial number of the SFP module.
- 29 **Vendor by IEEE OUI:** Displays the vendor name associated with the IEEE Organizationally Unique Identifier (OUI).
- 30 **Identifier:** Displays the recognized transceiver type, such as “SFP Transceiver.”
- 31 **Connector:** Displays the physical connector type used (e.g., LC, SC).

SFP Information	
Status:	No SFP information available

Figure 5.2e - “System Configuration” - Display when no SFP is in unit.

If a SFP+ plugin is not being used within the unit, this section will show as on Figure 5.2e and state that there is no SFP information available.

SSH Remote Management Settings			
Tunnel Control	Disabled	Tunnel Mode:	Password
Password			
Locally-generated Keys	Generate Public/Private Keys	Download Public Key	Delete All Locally-generated Keys
User-supplied Private Key	Browse... No file selected.	Upload	Delete User-supplied Key
Connection	Host IP: 0.0.0.0	Port: 20	Remote Port: 8080

Figure 5.2f - “System Configuration” - IP Video Ethernet - Enable/Disable

SSH REMOTE MANAGEMENT SETTINGS

This section allows the user to enable and configure Secure Shell (SSH) remote access for the unit. SSH is a secure protocol that enables encrypted communication and command execution over an unsecured network. These settings are primarily used to establish an SSH tunnel to the unit for secure remote management.

- 14 **Tunnel Control:** Controls whether SSH tunneling is active for the unit. Select “**Enabled**” to unlock and configure the rest of the SSH configuration options. By default this section is set to “**Disabled**”.

5.2 “SYSTEM” TAB (CONTINUED)

Figure 5.2g - “System Configuration” - IP Video Ethernet Settings

- 15 Tunnel Mode:** Specifies the method used for SSH authentication. Available options include: “**Password**”, “**Locally-Generated Keys**”, or “**User-supplied private Key**”.
- 16 Mode: Password** - Allows basic SSH login credentials to be used.
- **Username:** The login name required by the remote host
 - **Password:** The corresponding password for the SSH session.
- 17 Mode: Locally Generated Keys** - Uses an SSH key pair created by the unit for authentication.
- **Generate Public/Private Keys:** Creates a new SSH key pair. (*Note: will overwrite existing key pair*)
 - **Download Public Key:** Downloads the generated public key for installation on the remote SSH host.
 - **Delete All Locally-Generated Keys:** Removes any key pairs previously generated by the unit.
- 18 Mode: User-supplied Private Key** - Allows the user to upload their own private SSH key.
- **Browse:** Opens a file browser to select a private key file from the user’s local machine.
 - **Upload:** Uploads the selected key to the unit.
 - **Delete User-Supplied Key:** Removes the currently uploaded key.
- 19 Connection:** These fields define the destination and ports for the SSH tunnel.
- **Host IP:** The IP address of the remote server the SSH session will connect to.
 - **Port:** The listening port for SSH on the remote host. (default for SSH port is typically 22)
 - **Remote Port:** Optional. Used when port forwarding is involved or when a specific service port on the remote system needs to be accessed through the tunnel.

Figure 5.2h - “System Configuration” - IP Video Ethernet Settings

IP VIDEO ETHERNET SETTINGS

- 20** This section allows the user to individually configure the network settings for each numbered encoder (EC1 & EC2). In addition to the IP Address, Subnet Mask, and Default Gateway, the user is also able to choose between “**Static IP**” or “**DHCP**” for the IP Setting.



REMEMBER: Click on the [APPLY SETTINGS] button to save and apply new values/configuration changes.

5.3 “TIME” TAB

“Time” (Figure 5.3a, Figure 5.3b, Figure 5.3c, and Figure 5.3d) is a “read and write” screen. Time settings for the system and the event log are configured here.



Figure 5.3a - “Current Time at Page Load”

CURRENT TIME AT PAGE LOAD

- 1 **Hardware or Unit Time:** read-only display of the unit’s current date and time, shown in UTC format. The time is adjusted for states, territories and countries that use time change (ie. Eastern Standard Time and Eastern Daylight Time).
- 2 **Client or Local Browser Time:** read-only display of the current client, or local browser, date and time, shown in UTC format with time zone. The time is adjusted for states, territories and countries that use time change (ie. Eastern Standard Time and Eastern Daylight Time).

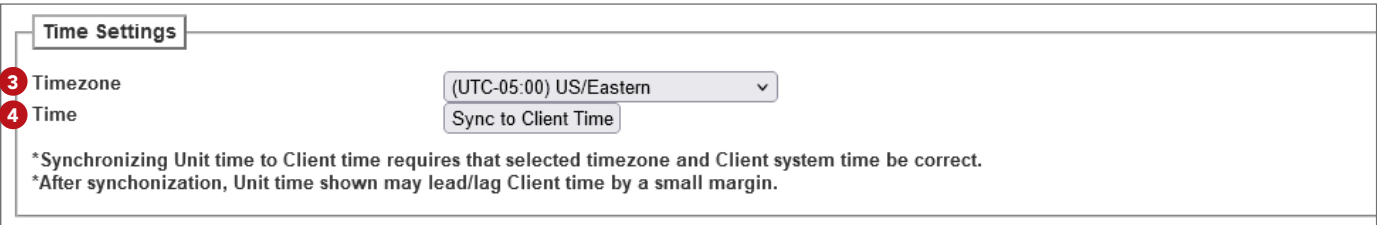


Figure 5.3b - “Time Settings”

TIME SETTINGS

- 4 **Time Zone:** user is able set the time zone, shown in UTC format.
- 3 **Time:** Clicking the button will synchronize the Hardware time to Client time. This requires that the selected time zone and client system time are correct. After synchronization, the Hardware time shown may lead or lag the Client time by a small margin.

5.3 “TIME” TAB (CONTINUED)

NTP Settings

5 Enable NTP System Time Synchronization ☒

6 Use Custom NTP Servers ☐

7 Custom NTP Server #1 IP 0.0.0.0

Custom NTP Server #2 IP 0.0.0.0

Custom NTP Server #3 IP 0.0.0.0

*Default NTP servers: 0.pool.ntp.org, 1.pool.ntp.org, 2.pool.ntp.org, 3.pool.ntp.org

Figure 5.3c - “NTP Settings”

NTP SETTINGS

- 5 Enable NTP System Time Synchronization:** Enable (☒) or Disable (☐) System Time Synchronization.
- 6 Use Custom NTP Servers:** Enable (☒) or Disable (☐) the Custom NTP Servers. Network Time Protocol (NTP) uses one or more IP addresses that the platform can sync time to. When enabled, the three fields under **7** are usable.
- 7 Custom NTP Server IP (#1, #2, #3):** Enter the custom NTP server IP addresses within these fields. The time servers specified must support the Network Time Protocol (NTP) in order for automated time acquisition to work properly.

NOTE: Default NTP Servers are “0.pool.ntp.org”, “1.pool.ntp.org”, “2.pool.ntp.org”, and “3.pool.ntp.org”.



REMINDER: Internet access must be present in order to access the default NTP Servers.

NTP servers: 0.pool.ntp.org, 1.pool.ntp.org, 2.pool.ntp.org, 3.pool.ntp.org

8 Apply

er Tongue Laboratories, Inc. All rights reserved. Unit IP: 192.168.1.101

Figure 5.3d - Saving your configuration

- 8** Click to apply and save the system configuration changes.

SECTION 6 – CONFIGURING THE ENCODERS

6.1 “ENCODERS: STATUS” TAB

The “**Encoders: Status**” Tab (Figure 6.1) is a “read-only” screen which indicates the status of each encoder. A visual status of the pipeline is also shown on the left side. When hovering over an encode block, the corresponding status table, to the right, will highlight. In addition, when an input is chosen, the corresponding image (below) will show a yellow highlight box behind it. Ensuring that for each encoder, the user can see at a glance what input is being used/selected.

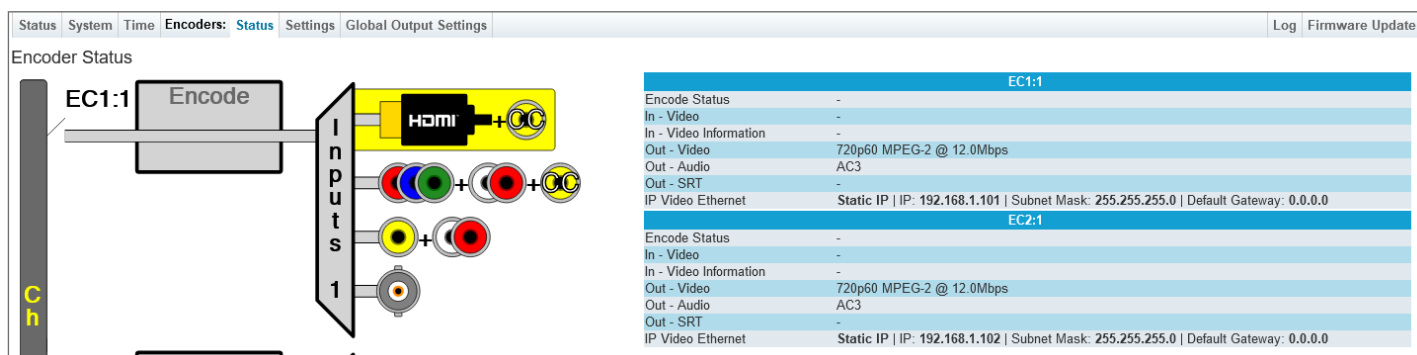
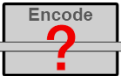
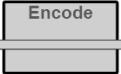
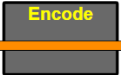
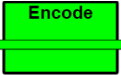


Figure 6.1 - “Encoders: Status” Screen

ENCODER STATUS STATES

-  **Light Gray (Red ? Mark):** Encoder has not been detected yet.
-  **Light Gray:** Encoder is disabled.
-  **Dark Gray (Orange Pipe):** Encoder is idle.
-  **Green:** Encoder is active.
-  **Red:** Encoder has failed.

HDMI STATUS STATES

-  **Black:** The HDMI has no connection.
-  **Green:** The HDMI is connected and sending a signal.
-  **Red:** The HDMI is connected and has an error.

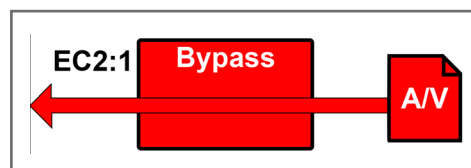
VIDEO FILE STATES

-  **Green:** Video File has been successfully uploaded and converted.
-  **Red:** Video File input has been selected, but no video file has been uploaded.

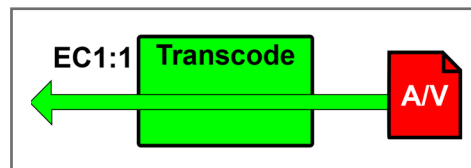


NOTE: The video file states will display instead of the HDMI when a file is uploaded and selected for streaming. See Section 6.2 for more information on use and setup of this feature.

VIDEO FILE OPTION EXAMPLES



Video File Passed-through (Excluded from QAM)



Video File with Transcode

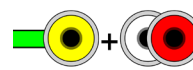
6.1 “ENCODERS: STATUS” TAB (CONTINUED)

ENCODER INPUTS

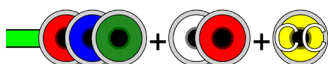
► HDMI



► Composite + Analog Audio



► Component + Analog Audio



► HD-SDI



6.2 “ENCODERS: SETTINGS” TAB

The “**Encoders: Settings**” Tab (Figure 6.2) allows the user to configure each encoder (EC) and displays status information about the input and output streams. A visual status of the pipeline is also shown on the left side. When hovering over an encode block, the corresponding status table, to the right, will highlight.

The screenshot shows the 'Encoders: Settings' tab with two encoder configurations, EC1:1 and EC2:1. Each encoder has an 'Encode' block and input options. The right side displays the 'Video/Audio Pipeline Settings' for EC1:1, with numbered callouts 1, 2, and 3 pointing to specific settings.

EC1:1 EC2:1 Video/Audio Pipeline Settings	
1 Pipeline Control	Enable
Input Control	HDMI
3 Video File (512MB Max)	Browse... No file selected.
Output Resolution	720p60
Output Video Encoding Format	MPEG-2
Overscan Adjustment (Horizontal)	0 Pixels
Overscan Adjustment (Vertical)	0 Pixels
Output Video Bitrate	12.0Mbps
Output Audio Encoding Format	AC3 (2.0)
Output Audio Bitrate	192Kbps
Output Audio Gain	0 - Unity
Output Stream URI	UDP 224.20.20.1 5001
SRT Key Length	Clear
SRT Passphrase	AbCdEfGhIj
Major Virtual Channel Number	6
Minor Virtual Channel Number	1
Short Channel Name	

Figure 6.2 - “Encoders: Settings” Screen Overview

To begin configuration on an encoder, click on a tab (on the right side) to open the “**Video/Audio Pipeline Settings**”, as shown above. The configurable options are as follows:

- 1 **Pipeline Control:** Allows the user to “**Enable**” or “**Disable**” the encode.
- 2 **Input Control:** Allows the user to set the desired input type. Options available are “**HDMI**”, “**Component + Analog Audio**”, “**Composite + Analog Audio**”, “**HD-SDI**”, “**Video File with Transcode**”, and “**Video File Passed-through (Excluded from QAM)**”.
 - **Note:** No content conversion is being performed for video files being passed-through. When in this mode, the resulting output will only be available through IP.
- 3 **Video File:** Video files may be uploaded here. Supported formats are “.m4v”, “.mp4”, “.mpg”, “.mpeg”, and “.ts”. Due to the wide variety of media and media container formats, file type alone cannot be used to determine whether a particular video file is supported by the unit.

The video file must be in a format capable of being converted to a transport stream container. Video files will be rejected if the size exceeds 512MB. An uploaded video file must be deleted before another is allowed to be uploaded.

6.2 “ENCODERS: SETTINGS” TAB (CONTINUED)

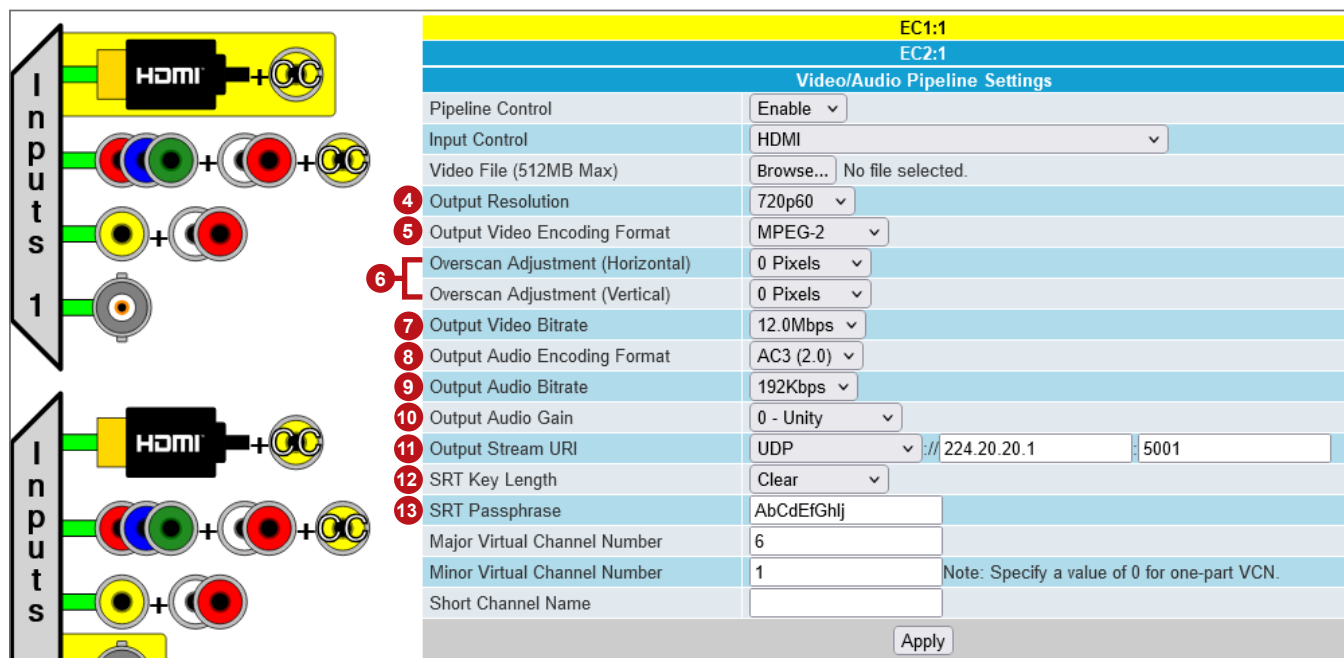


Figure 6.2a - “Encoders: Status” Screen

- 4 Output Resolution:** Sets the output video resolution. Options available for this model are “480i60”, “480p30”, “480p60”, “720p30”, “720p60”, “1080i60”, “1080p30”, and “1080p60”.
- 5 Output Video Encoding Format:** Sets the output video encoding format. Options available for this model are “MPEG-2”, “H.264/AVC”, and “H.265/HEVC”.
- 6 Overscan Adjustments:** Allows the user to adjust framing of the resulting encoded video to account for variances in the actual viewable region on display devices. The adjustment range in both the vertical and horizontal directions is from 0 to 100 pixels.
- 7 Output Video Bitrate:** Sets the output video bitrate in Mbps. Options available for this model are “2.0” to “19.0”, incremented by “0.1” Mbps.
- 8 Output Audio Encoding Format:** Sets the output audio encoding format. Options available for this model are “AC3 (2.0)” and “AAC”.
- 9 Output Audio Bitrate:** Sets the output audio bitrate. Options available for this model are “128Kbps”, “192Kbps”, and “256Kbps”.
- 10 Output Audio Gain:** Sets the output audio gain. Options available for this model are “Mute” and a range between “-7 (minimum)” to “+7 (maximum)”.
- 11 Output Stream URI:** The user can configure the following URI Output stream settings: “Protocol”, “IP”, and “Port”. The user must select the protocol that matches the one used by the receiving equipment. The available options within this model are: “Disabled”, “UDP”, “RTP”, “SRT Caller”, and “SRT Rendezvous”.
- 12 SRT Key Length:** Allows a user to select the encryption level of a resulting SRT stream. Options available for this model are “Clear” (no encryption), “AES128 (16)”, “AES192 (24)”, and “AES256 (32)”.
- 13 SRT Passphrase:** Allows a user to configure an encryption passphrase when operating in an SRT mode. The passphrase must be 10 to 79 alphanumeric characters in length. The device receiving the SRT stream will use this same passphrase to decrypt the stream.

6.2 “ENCODERS: SETTINGS” TAB (CONTINUED)

EC1:1	
EC2:1	
Video/Audio Pipeline Settings	
Pipeline Control	Enable ▾
Input Control	HDMI ▾
Video File (512MB Max)	Browse... No file selected.
Output Resolution	720p60 ▾
Output Video Encoding Format	MPEG-2 ▾
Overscan Adjustment (Horizontal)	0 Pixels ▾
Overscan Adjustment (Vertical)	0 Pixels ▾
Output Video Bitrate	12.0Mbps ▾
Output Audio Encoding Format	AC3 (2.0) ▾
Output Audio Bitrate	192Kbps ▾
Output Audio Gain	0 - Unity ▾
Output Stream URI	UDP ▾ :// 224.20.20.1 : 5001
SRT Key Length	Clear ▾
SRT Passphrase	AbCdEfGhIj
Major Virtual Channel Number	6
Minor Virtual Channel Number	1
Short Channel Name	
Apply	

Figure 6.2b - “Encoders: Status” Screen

- 14 Major/Minor Virtual Channel Numbers:** Allows a user to configure the major/minor virtual channel numbers associated with a program when output via QAM. This can be done as One-part and two-part. One part can be set by setting the Minor Virtual Channel number to 0. The Major Virtual Channel will then be used as the One-part VCN value.
- 15 Short Channel Name:** Allows a user to assign a name to a program when output via QAM. Names may be up to 7 alpha-numeric characters in length. Please note that you must specify a value of “0” for a one-part VCN.



REMINDER: Click on the “Apply” button to apply any new values and/or configurations.

6.3 “ENCODERS: GLOBAL OUTPUT SETTINGS” TAB

The “**Encoders: Global Output Settings**” Tab (Figure 6.3) allows the user to configure each encoder (EC) and displays status information about the input and output streams. A visual status of the pipeline is also shown on the left side. When hovering over an encode block, the corresponding status table, to the right, will highlight.

Status	System	Time	Encoders: Status	Settings	Global Output Settings
Global Output Configuration					
Global Output Settings					
1	Output RF Channel				6 (85 MHz) ▾
2	Output RF Level				40.0dBmV ▾
3	Output RF Mode				256QAM ▾
4	Transport Stream ID				1
5	Virtual Channel Table Mode				CVCT ▾
Apply					

Figure 6.3 - “Encoders: Global Output Settings” Tab

To begin configuration on an encoder, click on a tab (on the right side) to open the “**Video/Audio Pipeline Settings**”, as shown above. The configurable options are as follows:

- 1 **Output RF Channel:** Allows the user to select the RF channel/frequency for QAM output. The channel range is from **2 (57 MHz)** to **158 (999Mhz)**.
- 2 **Output RF Level:** Set the desired RF output level. The output level range is from **30.0dBmV** to **45.0dBmV** in **0.5dBmV** steps. The “F” connector labeled as “**-20d RF TEST**” on the front of the unit will provide an RF level that is 20dB lower than what is configured.
- 3 **Output RF Mode:** Sets the output RF mode. Options available for this model are “**Disabled**”, “**256QAM**”, “**64QAM**”, and “**CW**”. Selecting the “**Disabled**” option will turn off the RF output. IP outputs will be unaffected. Selecting the “**CW**” mode will put the RF output in a Continuous Wave mode for testing and troubleshooting purposes.
- 4 **Transport Stream ID:** Sets the transport stream identifier included in the QAM output. The allowable range is **0** to **65535**. Transport stream IDs should be unique on a cable system.
- 5 **Virtual Channel Table Mode:** Configures the type of virtual channel table included in the QAM output. The virtual channel tables handle the EIT, or Event Information Tables, which contain the titles and program guide data. Option mode selections available for this model are as follows:
 - ▶ “**Disabled**” - The virtual channel table is disabled.
 - ▶ “**CVCT**” (Cable Virtual Channel Table) - This mode assigns numbers to each virtual channel and enables EITs to be associated with the channel.
 - ▶ “**TVCT**” (Terrestrial Virtual Channel Table) - This mode defines each virtual channel and enables EITs to be associated with the channel.



REMINDER: Click on the “Apply” button to apply any new values and/or configurations.

SECTION 7 – UPDATE, TROUBLESHOOT, AND MAINTENANCE

7.1 “LOG” TAB

The “Log” (Figure 7.1) screen displays system log messages. The following is a description of the changeable parameters for this screen as well as a description of the message filter types.

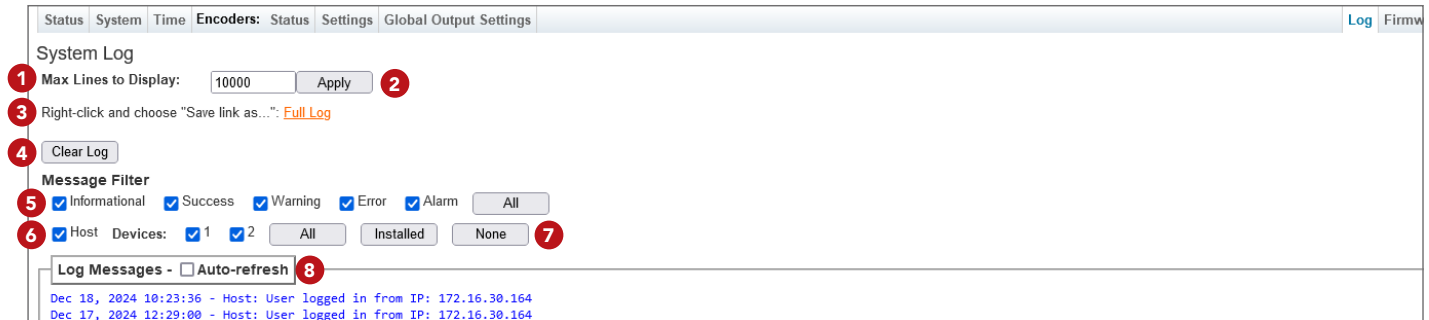


Figure 7.1 - “System Log”

- 1 **Max Lines to Display:** allows the user to select the maximum number of lines to display starting at the most recent. (Minimum: 1, Maximum: 100,000)
- 2 **Apply** Click this button to apply changes to Max Lines to Display setting.
- 3 **Full Log:** To save the full event log, right-click the link and choose “Save link as...” as instructed. The log can then be saved to a user-chosen location.
- 4 **Clear Log** Click this button to clear the event log.

MESSAGE FILTERS

The following message filters can be set to enabled or disabled.

- 5 **Event Message Severity:** The following severity messages can be chosen individually or enable them all easily by clicking the all button.
 - **Informational:** messages appear in **blue text** and indicates an informational-only event was logged.
 - **Success:** messages appear in **green text** and indicates an event was logged where an operation was successful.
 - **Warning:** messages appear in **dark orange text** and indicates an event was logged pertaining to an issue that did not cause a loss of service.
 - **Error:** messages appear in **bold red text** and indicates an event was logged that caused or may cause loss of service.
 - **Alarm:** messages appear as **bold white text on a red background** and indicates an ongoing event was logged that is actively causing a loss of service.
- 6 **Host:** the user may enable or disable the event log monitoring of the Host unit.
- 7 **Devices:** the user may show or hide the event log monitor messages of any or all encoders.
- 8 **Auto Refresh:** The user is able to set the auto-refresh on this page. The log messages will display real-time as they happen.

7.2 “FIRMWARE UPDATE” TAB

The “**Firmware Update**” tab (Figures 7.2a to 7.2d) is located on the right side of the main menu. This page allows the user to review the currently installed firmware version and provides a quick and easy way to apply firmware updates.

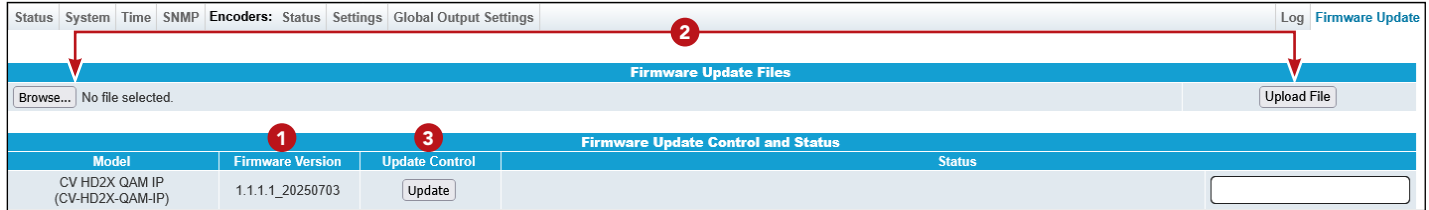


Figure 7.2a - “Firmware Update” Tab

- 1 Check “**Firmware Version**” to ensure you have the latest firmware. To determine if a new firmware update has been released, please go to our website at: (www.blondertongue.com/support/firmware-updates/)

Click the “**Firmware Download Site**” linked button and then click through the following folders to view the device files: “**BLONDER TONGUE**” > “**C-**” > “**CV HD2X_QAM_IP_Stk# 6573**”

NOTE: There is a check of the file name versus product model ID to eliminate a user inadvertently updating any product models with incorrect files.

- 2 Under the “**Firmware Update Files**” section, the user can use **Browse...** and **Upload File** to select and send the update file(s) into the unit. See a view of the file when uploaded to the platform as shown below on Figure 7.2b.



Figure 7.2b - File when uploaded

- 3 Update the Firmware version by clicking the **Update** button. The update status and progress will show under the “**Status**” columns. Below are the firmware updates as they appear while in-progress (Figure 7.2c) and upon completion (Figure 7.2d).

Note: After clicking the “Update” button, please allow a few seconds for the file to load.



Figure 7.2c - Update In Progress

- 4 Once the update progress is complete, the user **MUST** reboot the unit. The most convenient method for this process is by clicking the **Reboot** button (Figure 7.2d) to apply and finalize the update(s).

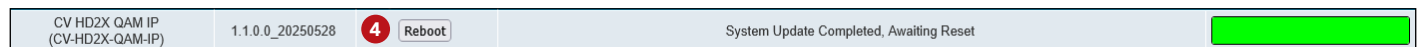


Figure 7.2d - Completed Update

NOTE: An update can also be applied and finalized by using the reboot control through the system page.



When firmware updates are complete, the user can remove the loaded file by clicking the **X** button shown on **Figure 7.2b** next to the “Upload File” button under “Firmware Update Files”.

7.3 “ADMIN” SCREEN

The “**Admin**” (Figure 7.3) settings allow a user to change or modify the Username and Password values for the unit while logged in. To access this screen, click the “**admin**” link at the top right corner as shown below.

Figure 7.3 - “User Configuration”

- 1 Username:** is the Administrator’s login (16 characters maximum). This login allows the user to make changes to any area of the unit. (Factory Default: “Admin”)
- 2 Password:** is only used when changing the current Administrator’s password (16 characters maximum). The password will not be displayed. (Factory Default: “pass”)
- 3 Verify Password:** is required when changing the current Administrator’s password. It MUST match the “Password” field and will not be displayed.



PLEASE NOTE: Both the Login and Password are case-sensitive.

7.4 TROUBLESHOOTING

For any additional technical support issues, please send more information to us about your issue via our website at www.blondertongue.com/support/ or call us toll-free at 1-800-523-6049 between the hours of 9:00 AM and 5:00 PM (EST, UTC -5).

For best service on calls, please leave a voice message with a brief summary of your problems including the Product Model Name(s) which are having issues. We will have someone use this information to prepare, in advance, to assist you in advance and contact you as soon as possible during business hours.

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 one (1) year (and for all BIDA products a period of eight (8) years) from the date of original purchase for all stock hardware products (ii) 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"); (iii) 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 (ii) 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.

(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. (Rev 1121)



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