BLONDER TONGUE
LABORATORIES

USER MANUAL
VIDEO DELIVERY

FLEX SRT
IP PROCESSOR

STOCK #	MODEL NAME	DESCRIPTION
6583	FLEX SRT	SRT Processor; IP/ASI to IP/ASI + SRT (plus receive)

Rev: 022825

D/N: UMD-FLEX6583

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

Purchase Location Name:	
Purchase Location Telephone Number:	
FLEX SRT Serial Number(s):	

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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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.

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.

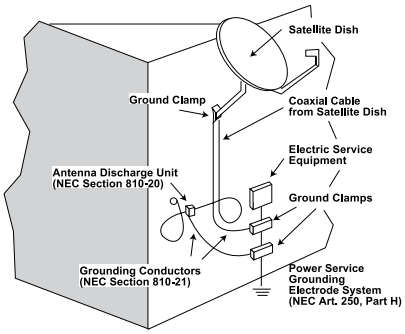
WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE

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.

You should always follow these instructions to help ensure against injury to yourselfand 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

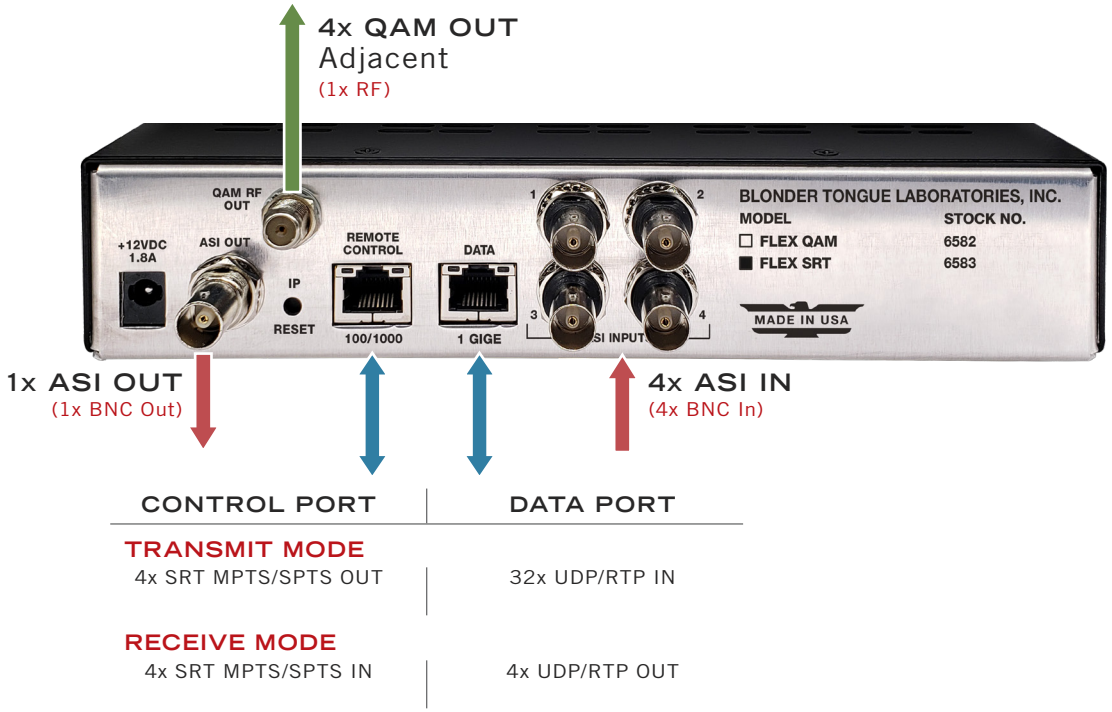
The **FLEX SRT** is designed to provide a bridge between existing transport stream-based systems and SRT for Content Providers to distribute high-quality live linear encoded programs to anywhere in the world with an Internet connection.

This IP processor utilizes the SRT protocol to send and receive video to/from remote endpoints, allowing SD, HD, and UHD content to be delivered quickly, easily, and securely without relying on traditional methods, such as satellite and fiber.

In SRT output mode, the unit sends up to four (4) IP transport streams wrapped in SRT with configurable encryption to a SRT endpoint using the Caller, Listener, and Rendezvous modes. In SRT input mode, the unit receives up to four (4) IP transport streams wrapped in SRT and outputs to ASI, IP, and QAM.

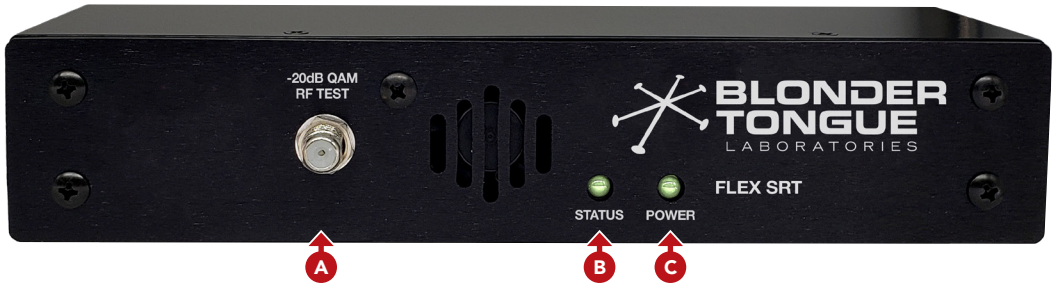
KEY FEATURES

- Simultaneous 4xIP transport streams output (up to 20 Mbps each*) in SRT, UDP, or RTP protocol
- Pass-through or modify PSIP information such as major/minor channels, short names and corresponding program IDs (PIDs)
- Program Drop and Mux capability
- Supports SPTS and MPTS formats on both input and output



* **Recommended**: up to 20 megabits or less per channel/stream - all four channels totaling up to 80 megabits

2.2 PRODUCT DESCRIPTION



FRONT PANEL

A **-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.

B **Input Status LED:**

- Solid Green = Input is detected and has no errors
- Solid Red = Input with error (Communication with QAM or over-temperature condition)

C **Power LED:**

- LED is Green = DC power is detected
- LED is Off = DC power is not detected

REAR PANEL

D **INPUT POWER:** +12VDC 2.2A Input power from external supply.

E **ASI OUT:** User can select 1 TS for ASI Output.

F **QAM RF OUT:** "F" for up to four (4) QAM RF outputs.

G **IP RESET:** When pushed and held for 5 seconds, temporarily resets the IP address, username, and password to the factory default values of:

- **IP Address**: **172.16.70.1**
- **Subnet Mask**: **255.255.255.0**
- **Username**: **Admin** *(case-sensitive)*
- **Password**: **pass** *(case-sensitive)*

PLEASE NOTE: The user-configured IP address, Login, and Password will still be present and unchanged in the system settings, and will revert back once the unit has been rebooted/power-cycled.

IMPORTANT: When using IP Reset, **AFTER** obtaining the user-configured information, including the IP address, within the user interface, **REBOOT** the unit to disable the default factory IP address and login credentials once more.

2.2 PRODUCT DESCRIPTION (CONTINUED)

H **REMOTE CONTROL 100/1000:** RJ45 connector for 100/1000Base-T Ethernet interface for monitoring and configuring the unit, in addition to Transmit Mode Output and Receive Mode Input. Only static IP address can be assigned to this interface. (Factory Default: 172.16.70.1)

I **DATA 1 GIGE:** RJ45 connector for 1000Base-T Ethernet (GIGE) interface for IP data (in/out).

J **ASI INPUT:** BNC connectors 1 to 4 for unencrypted ASI inputs.

2.3 OPERATIONAL MODE SPECIFICATIONS

	FLEX SRT: TRANSMIT MODE	FLEX SRT: RECEIVE MODE
IP I/O PORTS		
Input	DATA 1 GIGE (1x RJ45)	REMOTE CONTROL 100/1000 (1x RJ45)
Output	REMOTE CONTROL 100/1000 (1x RJ45)	DATA 1 GIGE (1x RJ45)
TRANSPORT STREAM I/O FORMATS		
Input	32x UDP/RTP (DATA 1 GIGE), 4x ASI	4x SRT MPTS/SPTS (REMOTE CONTROL 100/1000)
Output	4x SRT MPTS/SPTS (REMOTE CONTROL 100/1000)	4x UDP/RTP (DATA 1 GIGE), 4x QAM, 1x ASI
MEDIA CODEC FORMATS		
MPEG2	Supported	Supported
H.264	Supported	Supported
H.265	N/A	Supported
SRT DATA FLOW		
Supported	REMOTE CONTROL 100/1000 Port (Note: I/O is dependent on SRT mode for unit, see above for more information)	

2.4 PRODUCT SPECIFICATIONS

INPUT

IP

Connector	1x RJ45 (Rear Panel)
Standard	1000Base-T Ethernet (GigE)
UDP / RTP / SRT	Supported (User-Selectable)
Protocols Supported	IGMPv2 / IGMPv3

STREAM PORTFOLIO

Standard	ISO / IEC 13818-1 Systems
TS Packet Length	188 bytes
Sync Byte	0x47
SPTS and MPTS	Supported
Muxing	**Transmit**: 32 SPTS to 4 MPTS **Receive**: 4 TS to 4 TS passthrough
Bit Rate	Constant

ASI

Connector	4x BNC Female
Rates	DVB-ASI; EN 50083-9

OUTPUT

IP

Connector	1x RJ45 (Rear Panel)
Standard	1000Base-T Ethernet (GigE)
UDP / RTP / SRT	Supported (User-Selectable)
Address Assignment	IPv4 addresses & port numbers (User-Selectable)
SRT Protocols	Specifications - www.SRTalliance.org

ASI

Connector	1x BNC Female
Standard	DVB-ASI; EN 50083-9

QAM

Connector	1x “F” (Rear Panel, ≤ 4xRF QAM Ch.)
Modulation	QAM 16, 32, 64, 128, and 256
Standards	ITU-T J.83; Annex A & B
DVB Symbol Rate	Variable; ≤ Msymbol/sec (Mbaud)
Frequency Range	54 to 1002 MHz
Tuning	CATV Channel Selectable (Ch. 2-158)

OUTPUT

Channel Bandwidth	24 MHz (4x Adjacent, 6 MHz)
RF Level	40 dBmV (4 Ch. Combined)
RF Level Accuracy	± 1 dB
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	-98 dBc (@ 10 kHz)
Spurious	-60 dBc
Broadband Noise	-70 dBc (@ +52 dBmV level, 5.5 MHz BW)
Impedance	75 Ω
Spectral Inversion	Auto-Recognition
Carrier Supression	45 dB
Return Loss	14 dB typical
Signal-to-Noise Ratio	40 dB typical
MER	40 dB typical
I/Q Phase Error	< 1 degree
I/Q Amplitude Imbalance	< 1 degree

ALARMS & MONITORING

Local Monitoring	1x Power LED (bicolor) 1x Status LED (bicolor)
Local Control	1x IP Reset Button
Remote Device Monitoring/Control	1x RJ45 (10/100Base-T; Rear Panel) GUI-Based Menu via Web Browser

GENERAL

Dimensions (W x H x D)	8.69 x 1.97 x 12.70 in (220.7 x 50.0 x 322.6 mm)
Weight	3.0 lbs (1.36 kg)
Power	12 VDC External Power Supply
Power Consumption	20 W
Operating Temp.	32 to 122 °F (0 to 50 °C)
Storage Temp.	-13 to 158 °F (-25 to 70 °C)
Operating/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:

- FLEX SRT Processor (QTY=1)
- Switching Mode Power Supply, 12 VDC, 3.0A (QTY=1)

3.2 INSTALLATION AND POWER-UP

The **FLEX SRT** is designed for a desk/table top installation.

An optional rack panel allows two units to be mounted in 1RU. If used, the unit(s) can then be installed into a standard 19-inch (483 mm) rack (EIA 310-D, IEC 60297, and DIN 41494 SC48D). 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 power supply cord to the input power receptacle on the rear panel. Then connect the other end to a 120 VAC power outlet. The "POWER" LED on the front-panel will light green.

> 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 **Port 1** (typical) front-panel interface of the Master Controller module. Plug the other end of the Ethernet cable to your computer.
2. The factory default IP address of the Master Controller 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**".

(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.

Figure 4.2a - "Login" Screen

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

NOTE: When logged in as Admin, the user has read and write permission. Only one Admin can be logged in at a time.

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:

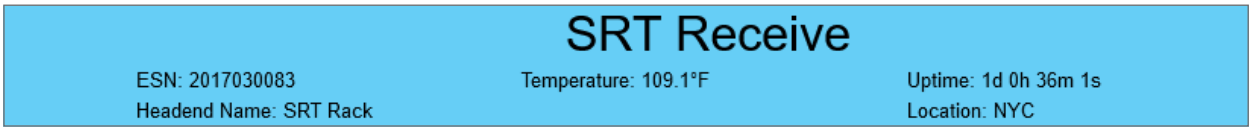


Figure 4.2b - Page Header and Navigation

- **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 tab "**Main**" includes the following sub-tabs:
  - **SRT Transmit Mode:** Status, Input, TS Map, TS Config, QAM Config, Output, and Refresh.
  - **SRT Receive Mode:** Status, Input, QAM Config, Output, and Refresh.
- Left Navigation tab "**Network**" does not include any sub-tab(s).
- Left Navigation tab "**Time**" does not include any sub-tab(s).
- Left Navigation tab "**Event Log**" does not include any sub-tab(s).
- Left Navigation tab "**Logout**" does not include any sub-tab(s).
- Right Navigation tab "**Admin**", right side of the header, does not include any sub-tab(s).

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

SECTION 5 – BASIC CONFIGURATION

5.1 "NETWORK" TAB

The "**Network**" (Figure 5.1) tab is a "read and write" screen. The general ethernet connection and user-defined identification data for the system can be configured here.

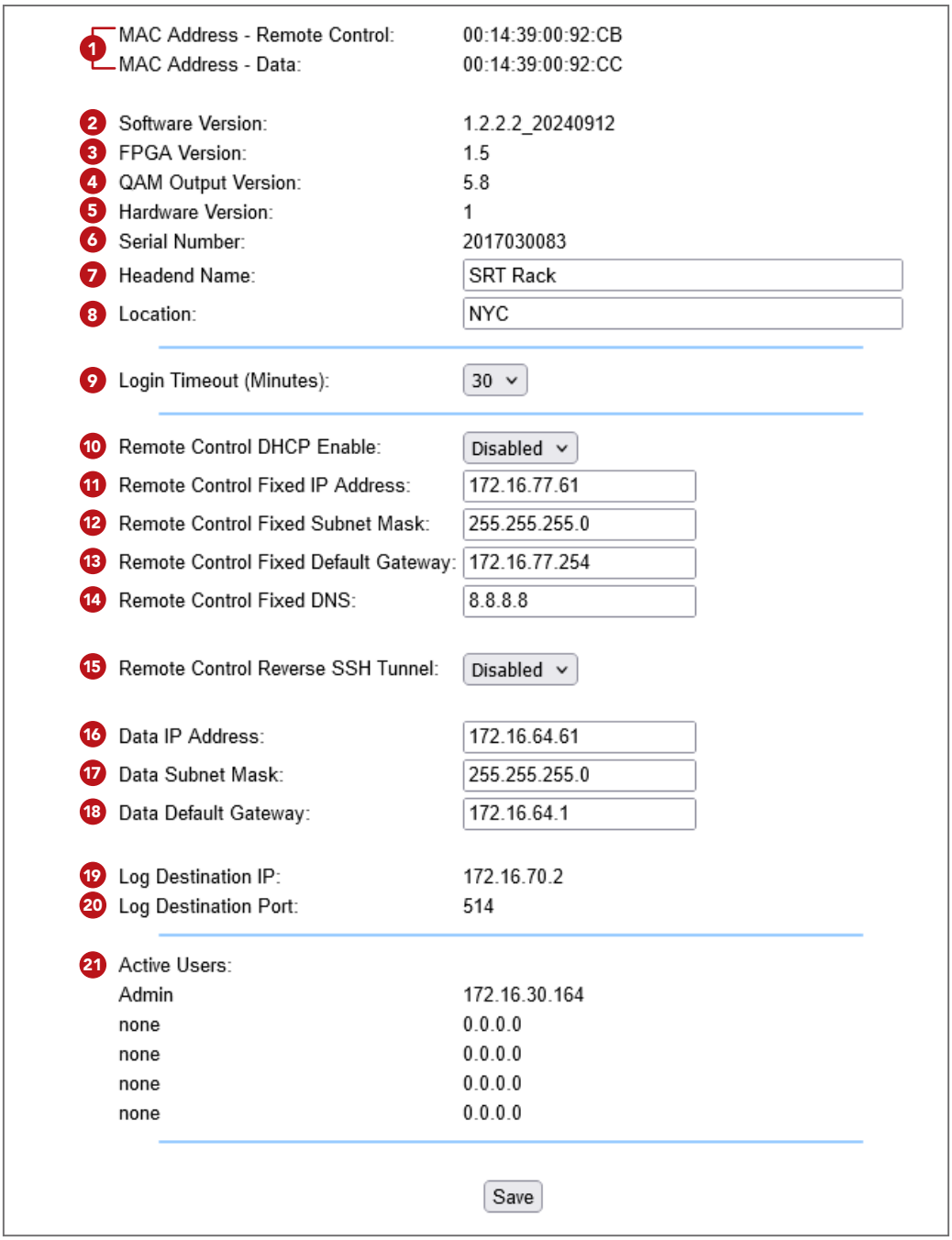


Figure 5.1 - "Network" Configuration - Full View

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

5.1 "NETWORK" TAB (CONTINUED)

1. **MAC Address:** the Media Access Control (MAC) Address is a read-only field that serves as a unique identifer assigned to the network. This page displays the MAC Addresses for both Remote Control port as well as the Data port.
2. **Software Version:** indicates the software version of the unit. Read-only.
3. **FPGA Version:** indicates the current hardware version of the unit's FPGA chipset. Read-only.
4. **QAM Output Version:** indicates the current software version of the unit's QAM output module. Read-only.
5. **Hardware Version:** indicates the current hardware version of the unit. Read-only.
6. **Serial Number:** indicates the serial identification number assigned to the unit. Read-only.
7. **Headend Name:** a user-defined field intended to make identification easier.
8. **Location:** a user-defined field intended to make identification easier.
9. **Login Timeout (Minutes):** indicates the period of time before the unit logs itself out if there is no activity on the web screens. Options are 5, 15, 30, or 60 minutes. (Factory Default: "5" minutes)
10. **Remote Control DHCP Enable:** the user can "Enable" or "Disable" DHCP on the unit.
11. **Remote Control Fixed IP Address:** the static IP address that is assigned to the Remote Control Port 100/1000, 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**.
12. **Remote Control Fixed 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. **Remote Control Fixed 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.
14. **Remote Control Fixed DNS:** the primary Domain Name Server (DNS) hosts the controlling zone file, containing all the authoritative information for a domain.
15. **Remote Control Reverse SSH Tunnel:** the user can "Enable" or "Disable" SSH access to the unit. This allows the unit to be remote-managed by using SSH tunneling.

    Secure Socket Shell (SSH) is a network protocol that provides administrators with a secure way to access a remote computer over an unsecured network such as the Internet.
16. **Data IP Address:** the static IP address that is assigned to the Remote Control Port, 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**.
17. **Data 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.
18. **Data 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.
19. **Log Destination IP:** the IP address of the remote server, to which Syslog sends the activities recorded by the unit for monitoring and troubleshooting purposes. Read-only, can be set under "**Admin**" screen.
20. **Log Destination Port:** the port to which a duplicate of the error messages created by the unit can be forwarded for monitoring and troubleshooting purposes. Read-only, can be set under "**Admin**" screen.
21. **Active Users:** displays current login names and IP addresses

5.2 "ADMIN" TAB

When logged in as admin (and not guest), the "**Admin**" screen (Figure 5.2) appears as a "read and write" screen where the following parameters are displayed or can be configured:

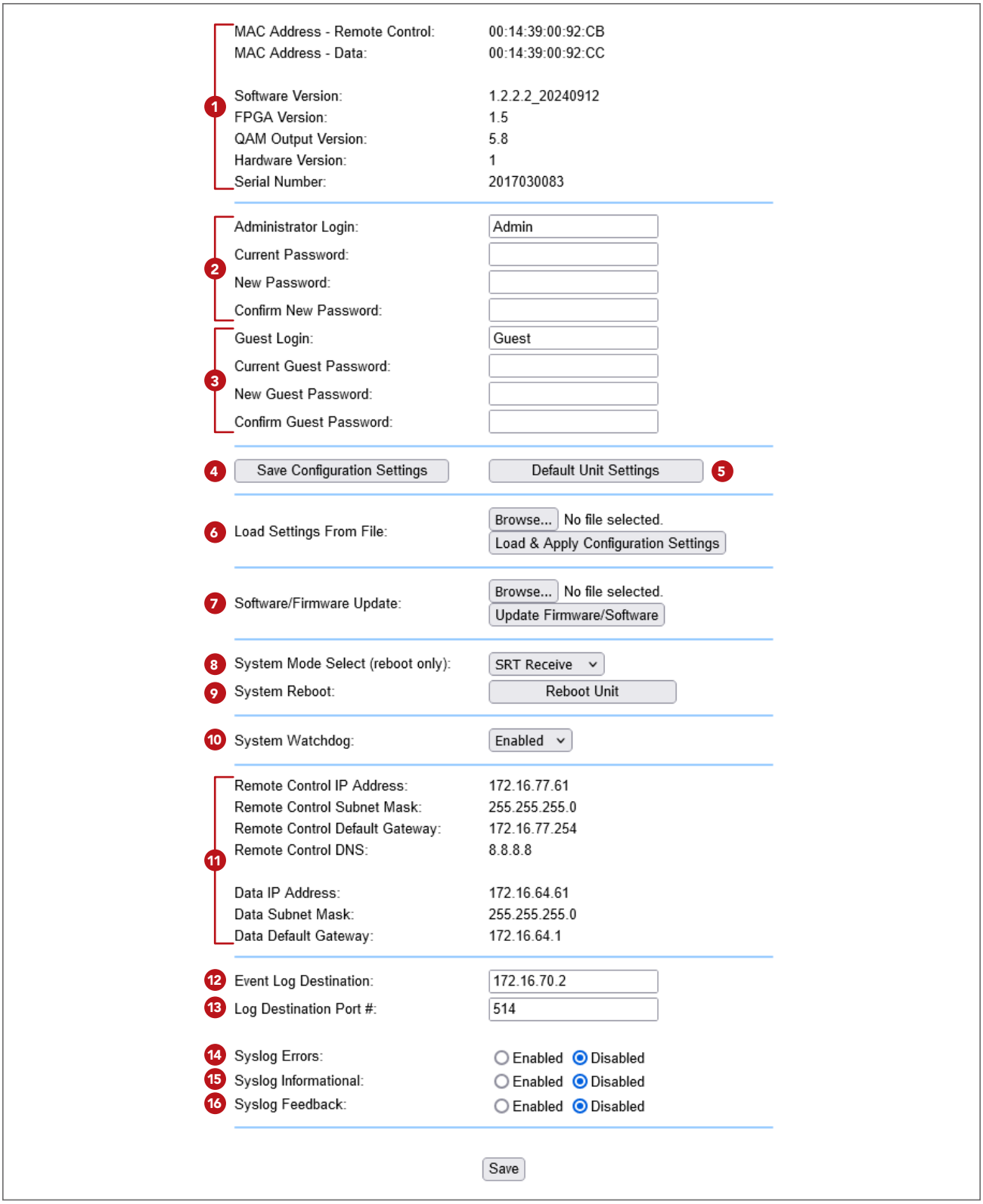


Figure 5.2 - "Admin" Configuration - Full View

5.2 "ADMIN" TAB (CONTINUED)

1. **Unit Information:** indicates the read-only information assigned to the unit and its firmware/hardware versions. See Network Tab (Section 5.1) for more information.
   - **MAC Address - Remote Control**
   - **MAC Address - Data**
   - **Software Version**
   - **FPGA Version**
   - **QAM Version**
   - **Hardware Version**
   - **Serial Number**

2. **Administrator Login:** is the Administrator's login (10 characters max.). This login allows the user to make changes to any area of the unit. Login is case sensitive. (Factory Default: Admin)
   - **Administrator Current Password:** the current password assigned to the Administrator login. It is case sensitive and will not be displayed. (Factory Default: pass)
   - **Administrator New Password:** used only if the user wants to change the current Administrator's password. User must enter a new password (10 characters max.). Password is case sensitive and will not be displayed.
   - **Administrator Confirm New Password:** user must enter the same password as entered for the New Password field. If password does not match, an error will be displayed.

3. **Guest Login:** is the Guest login, allowing the user to view the unit settings but does not allow any changes. Login is case sensitive. (Factory Default: Guest)
   - **Guest Current Password:** the current password assigned to the Guest login. It is case sensitive and will not be displayed. (Factory Default: pass)
   - **Guest New Password:** used only if the user wants to change the current Guest password. User must enter a new password (10 characters max.). Password is case sensitive and will not be displayed.
   - **Guest Confirm New Password:** user must enter the same password as entered for the New Password field. If password does not match, an error will be displayed.

4. **Save Configuration Settings:** allows the user to download and save the existing configuration of the unit in a .dat file format. Not recommended for basic users. Please consult the factory regarding this function.

5. **Default Unit Settings:** Returns the unit to the original settings as shipped from the factory.

6. **Load Settings from File:** Not recommended for basic users. Please consult the factory regarding this function.
   - **Browse / Choose File:** allows the user to select the desired configuration file from any location on the computer to be uploaded to the unit.
   - **Load & Apply Configuration Settings:** allows the user to upload a newly created file or update an existing file.

7. **Software/Firmware Update:** To update, click "Choose File" or "Browse" to select the firmware update file to be applied by "Update Firmware/Software". Typically there will be only one file to update. At this point the unit is updated and you can verify the "Software Version" from this same page to confirm a successful update. Update can also be verified on the Event Log page.

8. **System Mode Select:** Select between SRT Receive and SRT Transmit Modes. (reboot required)

9. **System Reboot:** allows the user to reboot the unit.

10. **System Watchdog:** options are "Enabled" and "Disabled". When Enabled, automatically reboots the unit, if the operating system stops working.

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

5.2 "ADMIN" TAB (CONTINUED)

11 **System IP Settings:** displayed as read-only, but can be configured via the "Network" tab (Section 5.1). The settings shown are as follows:

- **Remote Control Port:** IP Address, Subnet Mask, Default Gateway, and DNS.
- **Data Port:** IP address, Subnet Mask, and Default Gateway.

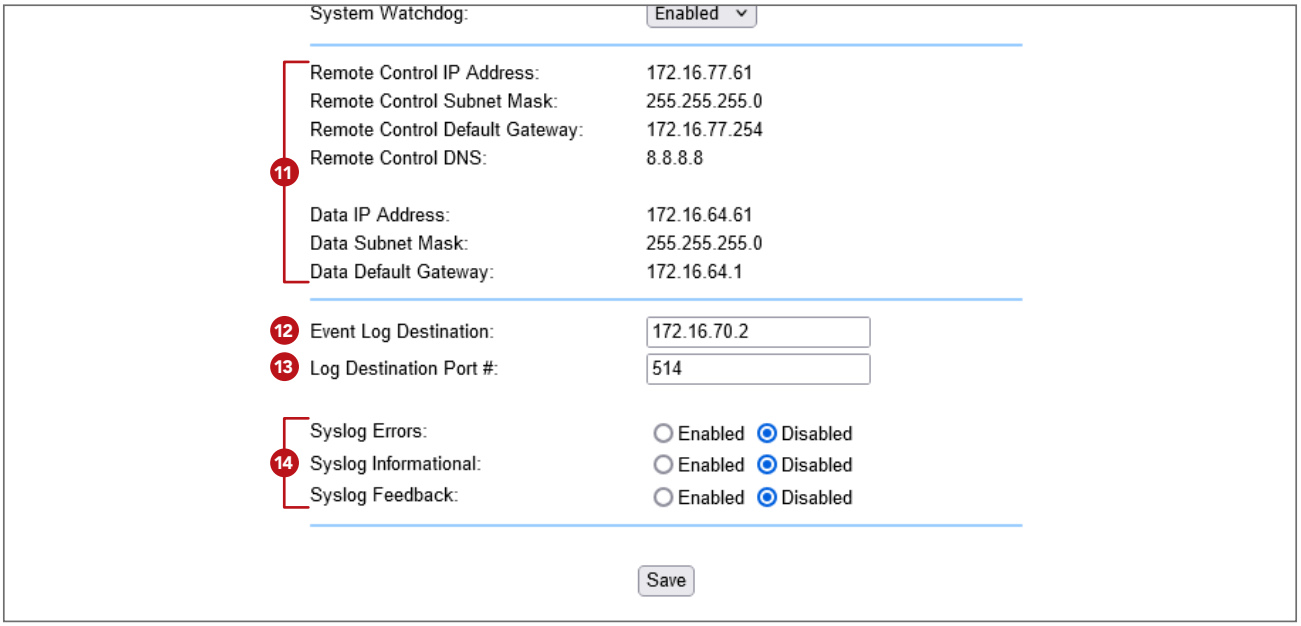


Figure 5.2 - "Admin" Configuration - Full View

12 **Event Log Destination:** the IP address of the remote server, to which Syslog sends the activities recorded by the unit for monitoring and troubleshooting purposes. (Factory Default: 172.16.70.2)

13 **Log Destination Port #:** 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. (Unmodifiable Factory Default: 514)

14 The following settings allow the user to enable/disable the unit to forward three types of event messages to the Syslog. (Factory Defaults: Disabled)

- **Syslog Errors:** error messages are shown in a red font.
- **Syslog Informational:** informational messages are shown in a blue font.
- **Syslog Feedback:** feedback or confirmation messages are shown in a green font.

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

5.3 "TIME" TAB

The "**Time**" (Figure 5.3) tab is a "read and write" screen. Time settings for the system are configured here.

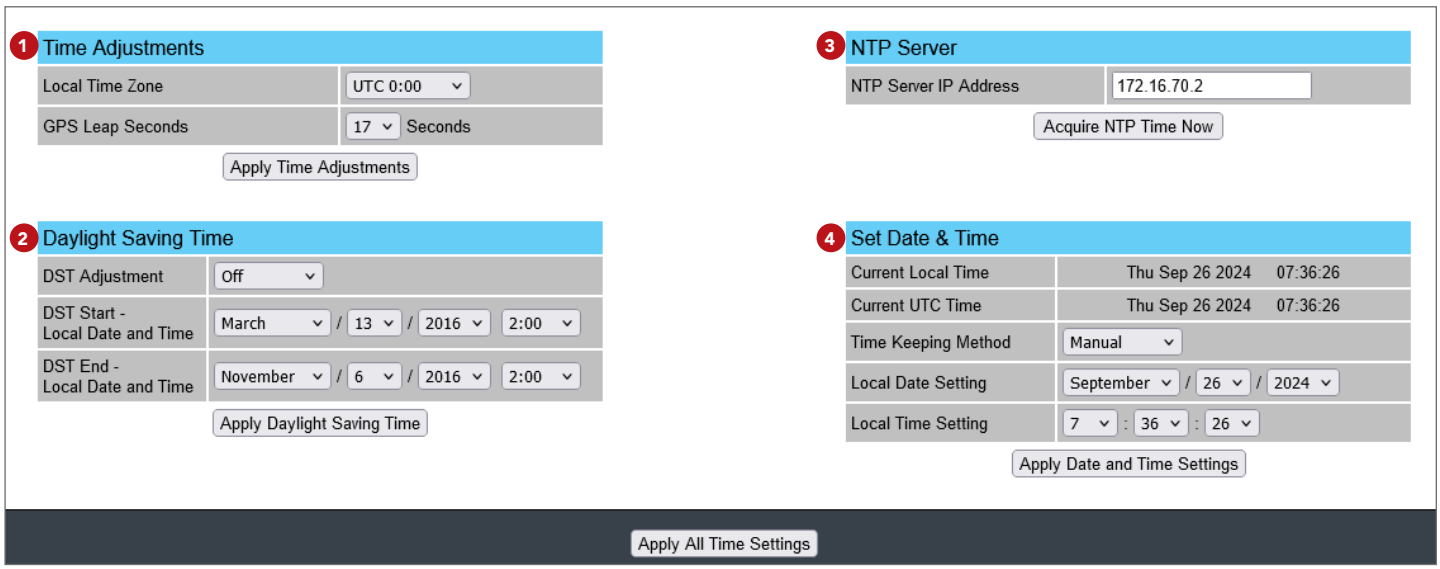


Figure 5.3 - "Time" Configuration - Full View

The "Time" screen allows the user to set various time-related parameters, including the current date and time for the unit. To remain compliant with ATSC and cable standards, it is important to have the accurate date and time stamps. For this reason, it is recommended that time settings be acquired from an "NTP Server" - user must enter the IP address of the NTP Server and click "Acquire NTP Time Now".

The time server specified must support the Network Time Protocol (NTP) in order for automatic time acquisition to work properly. The unit would refresh the date and time settings from the Time server every 20 minutes. If, however, an internet connection is not available, the date and time can be entered manually. The unit is capable of adjusting the Day Light Saving (DST) time settings automatically as well.

1. In the section entitled "**Time Adjustments**", the local time zone based on Coordinated Universal Time (UTC) can be set.
2. In the section entitled "**Daylight Saving Time**", the user can set the Daylight Saving Settings either manually or automatically using the DST Adjustment option.
3. In the section entitled "**NTP Server**", the user can enter the IP address of the NTP server to acquire the time directly from the NTP Server when an internet connection is available.
4. In the section entitled "**Set Date & Time**", the user can manually enter the date and time.

NOTE: Internet access MUST be present in order to access the default NTP Servers.

REMEMBER: Click on the buttons below the individual sections or the [Apply All Time Settings] to apply and save the new values/configurations.

5.4 "EVENT LOG" SCREEN

The "Event Log" screen (Figure 5.4) is a "read and write" screen which displays system event log messages. The following is a description of the changeable parameters for this screen as well as a description of the message filter types. The data in Event Log can be forwarded to a Syslog database.

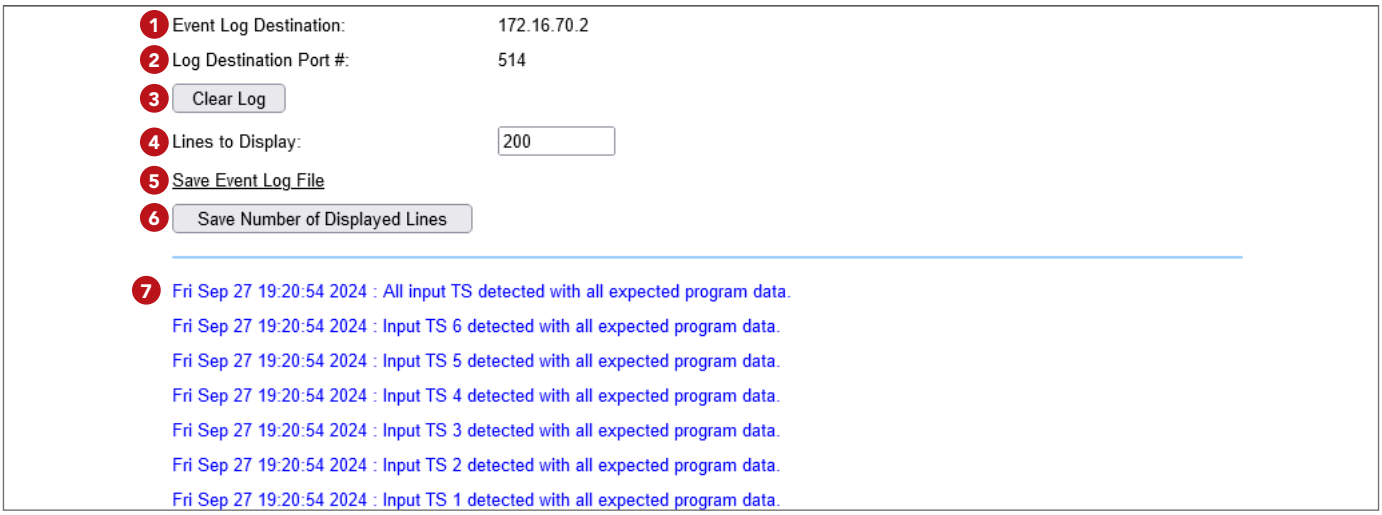


Figure 5.4 - "Admin" Configuration - Full View

1. **Event Log Destination:** read-only is the IP address of the remote server, to which Syslog sends the activities recorded by the unit for monitoring and troubleshooting purposes. This setting can be changed under the "**Admin**" tab. (Section 5.2)
2. **Log Destination Port:** is the Event Log Destination port to which a duplicate of the error messages created by the unit can be forwarded for monitoring and troubleshooting purposes. This setting can be changed under the "**Admin**" tab. (Section 5.2)
3. **Clear Log:** allows the user to clear the records generated during unit's boot-up process and operation afterward.
4. **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. The records are maintained if the unit loses power.
5. **Save Event Log File:** To save the full event log, right-click and choose "Save link as...". The log can then be saved to a user-chosen location.
6. **Save Number of Displayed Lines:** allows the user to save the "Lines to Display" setting. Please note that the event log would be saved only on the screen and not on any database.

MESSAGE SEVERITY

The following message filters can be set to enabled or disabled for the syslog via the "**Admin**" Tab.

Event Message Severity: The severity levels used on the log are displayed by color as explained below.

- **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.
- **Error:** messages appear in red text and indicates an event was logged that caused or may cause loss of service.

5.5 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 8:00 AM and 5:00 PM (EST, UTC -5).

5.6 "MAIN > REFRESH" TAB

The "**Main**" **>** "**Refresh**" tab, available in both SRT Transmit and SRT Receive modes, performs a browser refresh of the information on the active screen. Refresh is helpful to verify parameters have changed.

SECTION 6 – CONFIGURING IN SRT TRANSMIT MODE

6.1 SRT TRANSMIT: "MAIN" > "STATUS" TAB

"**Main**" **>** "**Status**" (Figures 6.1a and 6.1b) is a "read-only" screen which displays the general health of the input and output. The information is provided as a quick way to monitor the unit or assist with troubleshooting issues that may arise.

Figure 6.1a - "Main" » "Status" - Assigned Inputs and Output (SRT Transmit Mode)

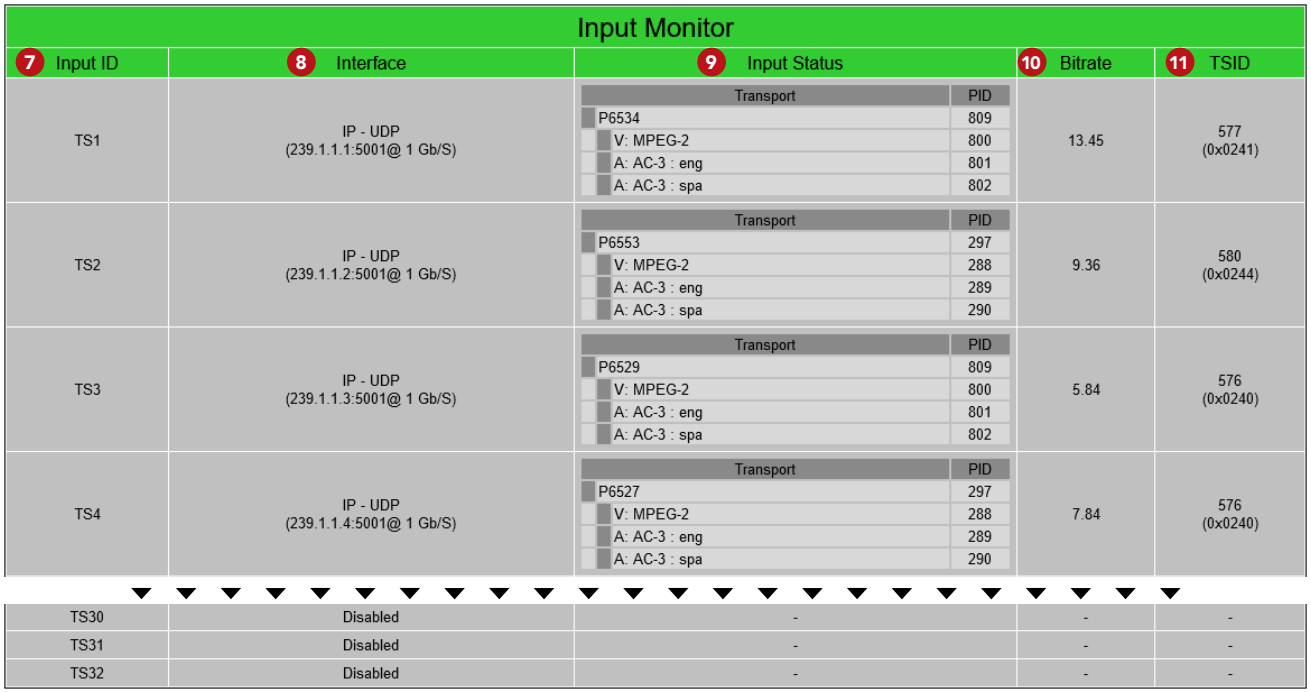
ASSIGNED INPUTS

1. **Interface:** indicates the configuration of up to four input transport streams
2. **Assigned Input Status:** indicates the health of the input transport streams
3. **Assigned Bitrate:** indicates bit-rate of the incoming transport streams
4. **TSID:** the Transport Stream ID for each of the input streams

OUTPUT

5. **Interface:** indicates the configuration of the output for each transport stream
6. **Status:** indicates the status of enabled outputs by type as well as connection statuses using color coding.

6.1 SRT TRANSMIT: "MAIN" > "STATUS" TAB (CONTINUED)



Input Monitor

7 Input ID	8 Interface	9 Input Status	10 Bitrate	11 TSID
TS1	IP - UDP (239.1.1.1:5001@ 1 Gb/S)	Transport: P6534 (PID 809); V: MPEG-2 (800); A: AC-3 : eng (801); A: AC-3 : spa (802)	13.45	577 (0x0241)
TS2	IP - UDP (239.1.1.2:5001@ 1 Gb/S)	Transport: P6553 (PID 297); V: MPEG-2 (288); A: AC-3 : eng (289); A: AC-3 : spa (290)	9.36	580 (0x0244)
TS3	IP - UDP (239.1.1.3:5001@ 1 Gb/S)	Transport: P6529 (PID 809); V: MPEG-2 (800); A: AC-3 : eng (801); A: AC-3 : spa (802)	5.84	576 (0x0240)
TS4	IP - UDP (239.1.1.4:5001@ 1 Gb/S)	Transport: P6527 (PID 297); V: MPEG-2 (288); A: AC-3 : eng (289); A: AC-3 : spa (290)	7.84	576 (0x0240)
TS30	Disabled	-	-	-
TS31	Disabled	-	-	-
TS32	Disabled	-	-	-

Figure 6.1b - "Main" » "Status" - Input Monitor (SRT Transmit Mode)

INPUT MONITOR

7 **Input ID:** Input transport stream ID number.

8 **Interface:** indicates the configuration of up to four input transport streams.

9 **Input Status:** indicates the health of the input transport streams. Information includes the Transport Stream Information and PIDs

10 **Bitrate:** indicates bit-rate of the incoming transport streams

11 **TSID:** the Transport Stream ID for each of the input streams

6.2 SRT TRANSMIT: "MAIN" > "INPUT" TAB

"**Main**" **>** "**Input**" (Figure 6.2) is a "read-and-write" screen which allows for configuration of the input.

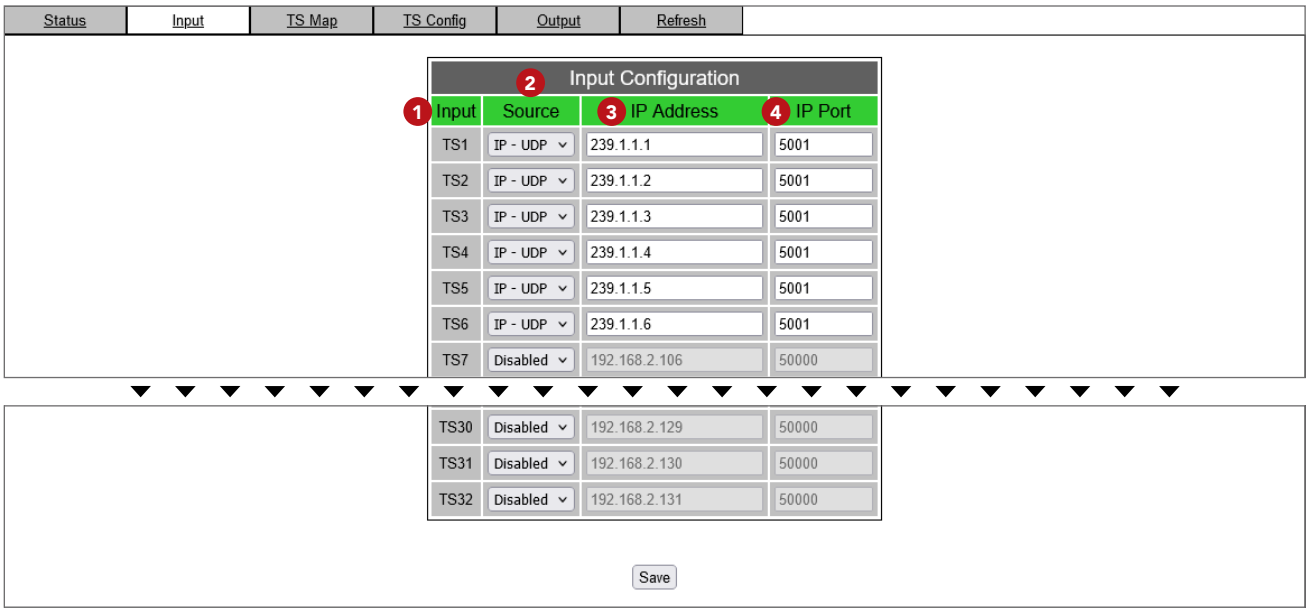


Figure 6.2 - "Main" » "Input" - Input Configuration

1. **Input:** Input transport stream number.
2. **Source:** Input selections for each TS (32 max) are: IP - UDP, IP - RTP, ASI #1 to #4, or Disabled.
3. **IP Address:** input the IP Address for each transport stream (IP options UDP or RTP must be selected in order to configure)
4. **IP Port:** input the IP Port number for each input stream (IP options UDP or RTP must be selected in order to configure)

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

6.3 SRT TRANSMIT: "MAIN" > "TS MAP" TAB

"**Main**" **>** "**TS Map**" (Figure 6.3) is a "read-and-write" screen which allows for configuration of the TS Map.

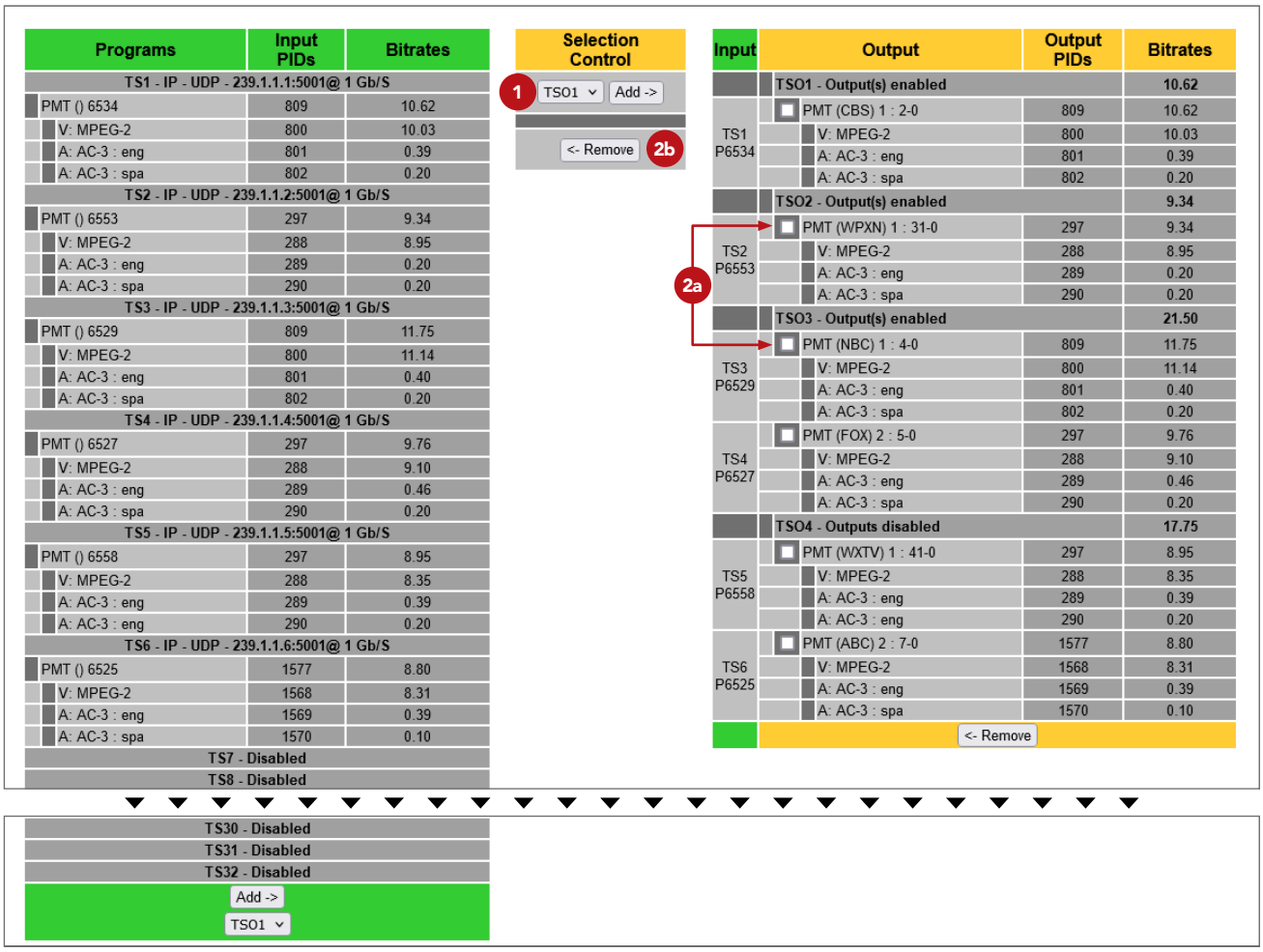


Figure 6.3 - "Main" » "TS Map"

1. **Selection Control (Add):** select the desired programs from Input TS's under the green header for each output TS (TSO#) using the "Selection Control" and click on the "Add ->" button.

2. **Selection Control (Remove):** to remove programs from the Output, click on the check box (2a) and then click the "<- Remove" button (2b) .

NOTE: A "Red" Flag will appear when a transport stream is not detected.

6.4 SRT TRANSMIT: "MAIN" > "TS CONFIG" TAB

"**Main**" **>** "**TS Config**" (Figures 6.4a and 6.4b) is a "read-and-write" screen which allows for TS Configuration.

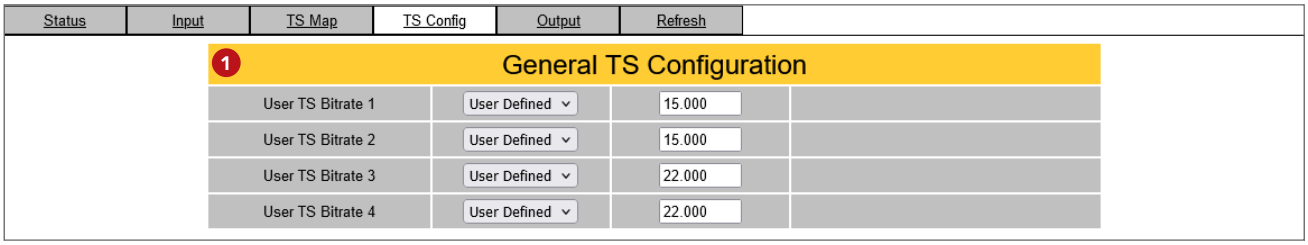


Figure 6.4a - "Main" » "TS Config" - General TS Configuration

In the section entitled "**General TS Configuration**", the user can select and configure the following parameters of the output TS:

1. **User TS Bitrate:** there are (4) user TS bitrate preset profiles. The available selections are (in Mbps): 38.81, 19.39, 12.00, 8.00, or User Defined.

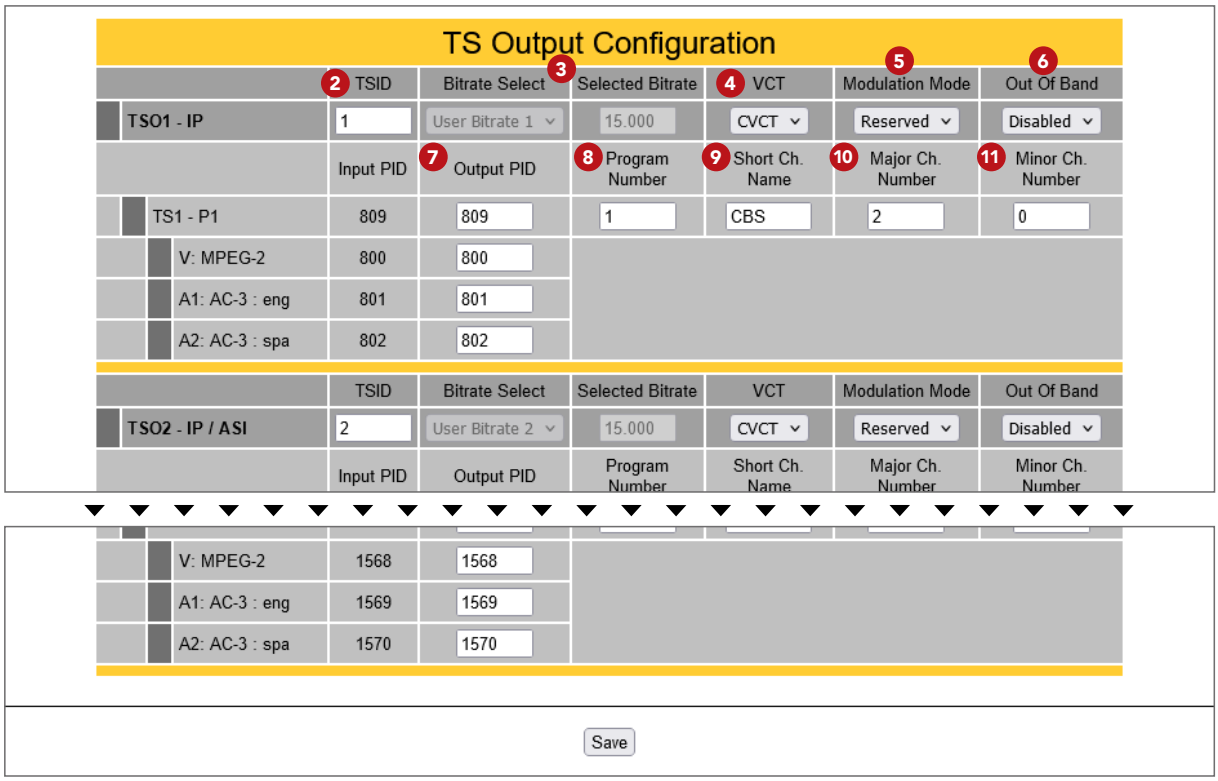


Figure 6.4b - "Main" » "TS Config" - TS Output Configuration

In the section entitled "**TS Output Configuration**", the user can select and configure the following parameters of the output TS:

2. **TSID:** user must enter the identification number for the output TS. The range is 1 to 65535. the TS ID assigned must be unique.w
3. **Bitrate Select and Selected Bitrate:** displays the profile set in the General TS Configuration section (1) .
4. **VCT:** MPEG Virtual Channel Table selections are: Off, TVCT (terrestrial) and CVCT (cable).

6.4 SRT TRANSMIT: "MAIN" > "TS CONFIG" TAB (CONTINUED)

5. **Modulation Mode:** user can select the modulation mode for the MPEG TS Table. Options are: Reserved, Analog, QAM64, QAM256, 8-VSB, and 16-VSB.

6. **Out of Band:** an Out of Band (OOB) is a channel which is the combination of the forward and reverse OOB channels. When a cable virtual channel is flagged as being out-of-band, it is carried on the OOB channel. Options are Enable and Disable. When Enabled, assigns the OOB bit in the TS packet and label the TS as out-of-band.

   - **NOTE:** As per the ATSC and Cable standards, the Modulation Mode and Out-of-Band fields are required to be assigned in the TS packet. Selecting the above two fields would allow the TS packets to be compliant with industry standards, but would not affect the input or output configuration of the unit.

7. **Output PID:** Set Packet Identifier (PID) to unique PID value. PIDs can not be same.

8. **Program Number:** user-defined unique output program number for each program. PMT (Program Map Table) provides information on each program present in the transport stream such as program number, and the list of the elementary streams (audio, video or data).

9. **Short Ch. Name:** user-defined channel name. Up to 7 alphanumeric characters are permitted.

10. **Major Ch. Number:** user-defined major channel number for the output program. The range is 1 to 99 for Terrestrial and 0 to 999 for Cable.

11. **Minor Ch. Number:** user-defined minor channel number for the output program. The range is 1 to 99 for Terrestrial and 0 to 999 for cable.

    - **NOTE:** When zero (0) is entered as a minor channel, it sets the encoder to provide a one part virtual channel number as entered in the major channel field. For example, a major channel of "205" with a minor channel of "0" will be displayed as "205" on a TV. A major channel of "205" with a minor channel of "1" will be displayed on a TV as "205-1".

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

6.5 SRT TRANSMIT: "MAIN" > "OUTPUT" TAB

"**Main**" **>** "**Output**" (Figures 6.5a and 6.5b) is a "read-and-write" screen which allows for configuration of the Output.

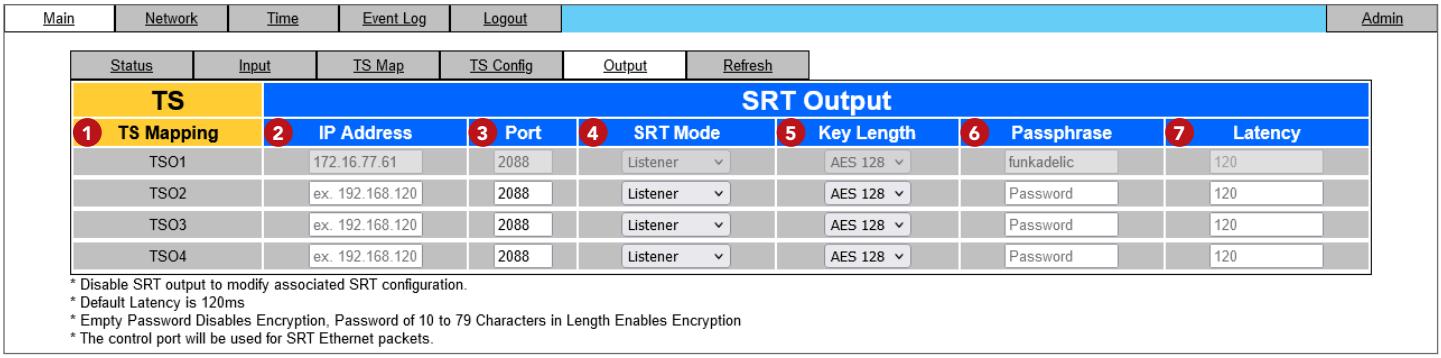


Figure 6.5a - "Main" » "Output" - SRT Output Configuration

In the section entitled "TS" under an orange header, the following parameters about each output TS are displayed:

1. **TS Mapping:** Shows the status of the transport mapping to PID mapping.

In the section providing for **"SRT Output"** configuration, the user can select and configure the following parameters. To set the SRT parameters, you must first change, "IP Type" to UDP, RTP, or None and save. Next adjust the parameters and save the settings. Then go back to, "IP Type" and select SRT and save.

2. **IP Address:** User defined IP address or Host name. Enter the IP address of the IP program that you are streaming.
3. **Port:** The UDP port used for communicating from the encoder-to-broadcaster. Default port used by IP broadcasters is "2088".
4. **SRT Mode:** The SRT mode can be selected from the following: "Caller", "Listener" or "Rendezvous".
5. **Key Length:** Choose the bits of encryption keys to the length the user would like for an encrypted stream. The available options to choose from are: AES 128, AES 192, or AES 256 bits.
6. **Passphrase:** Used to prevent unauthorized connections but does not encrypt the stream. The unit's passphrase MUST match the passphrase from the source. An empty field is equivalent to an unencrypted stream.
7. **Latency (ms):** Used to set maximum allowed latency of the stream over the SRT protocol. Units are in milliseconds. Increasing latency setting allows better operation with lower quality of service (QoS) connections.

6.5 SRT TRANSMIT: "MAIN" > "OUTPUT" TAB (CONTINUED)

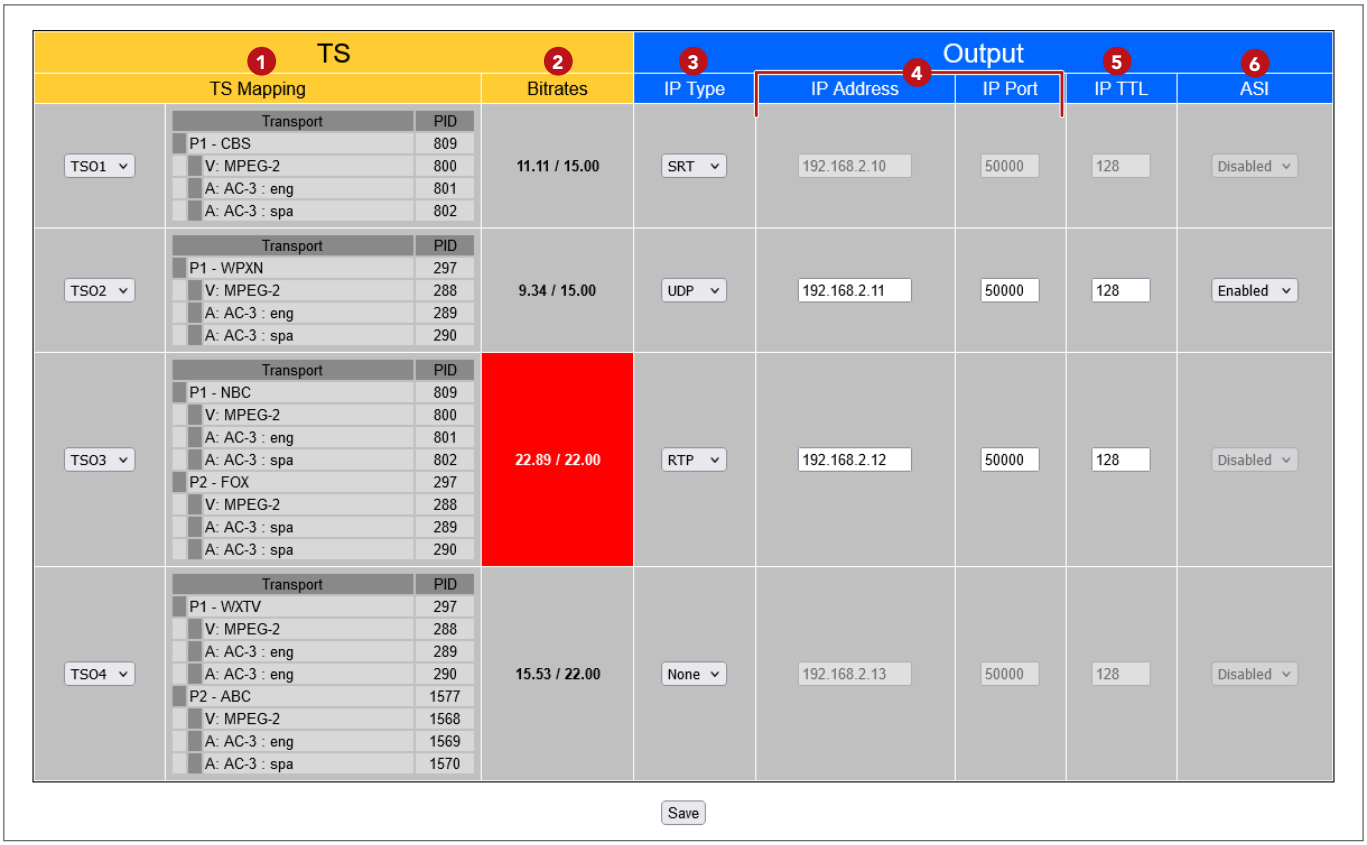


Figure 6.5b - "Main" » "Output" - Output Configuration

In the section providing **"Output Configuration"** located below the previous section, the user can select and configure the following parameters:

1. **TS Mapping:** Allows the user to select a transport stream and shows the status of the transport mapping to PID mapping.
2. **Bitrates:** Shows the bit-rate for each output transport stream.
3. **IP Type:** Select the one that matches the protocol used by the receiving equipment. Selections are: None, UDP, RTP, and SRT.
4. **IP Address and IP Port:** Enter the IP address of the device you are streaming to. The receive device will require the same port being used. Please note this section is for UDP and RTP only.
5. **IP TTL:** TTL is an upper bound on the time that an IP packet can exist in an IP network. The value is set by the sender of the packet, and reduced by every host on the route to packet's final destination. If the Time to Live reaches zero before the packet arrives at its final destination, then the packet is discarded. The purpose of this field is to avoid an undeliverable packet from circulating on an IP network perpetually. The range is 1 to 255 and is incremented by 1. (Factory Default: "128").
6. **ASI:** One output TS (only) can be simultaneously provided as an ASI output by selecting "Enabled".

SECTION 7 – CONFIGURING IN SRT RECEIVE MODE

7.1 SRT RECEIVE: "MAIN" > "STATUS" TAB

"**Main**" **>** "**Status**" (Figures 7.1) is "read-only" and displays the general health of the input and output. The information is provided as a quick way to monitor the unit or assist with troubleshooting issues that may arise.

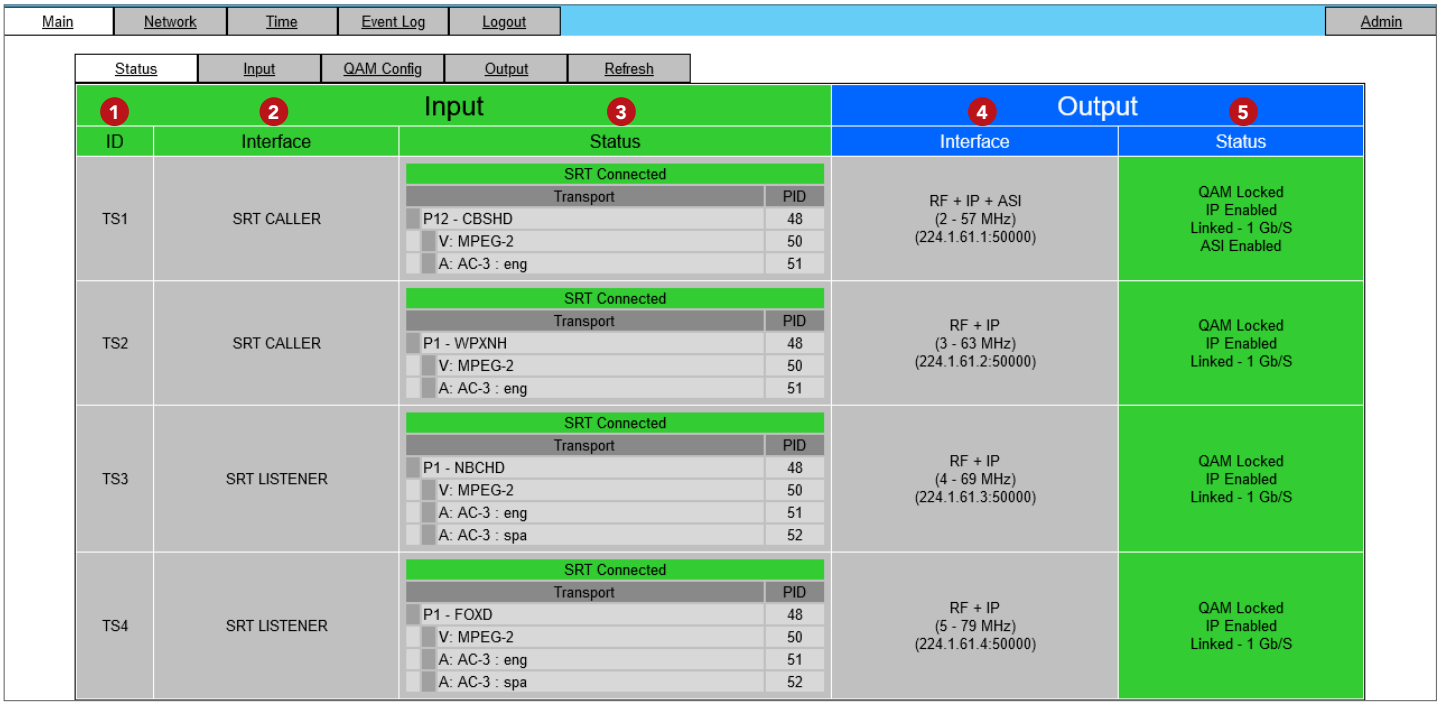


Figure 7.1 - "Main" » "Status" - SRT Receive Mode

INPUT STATUS INFORMATION

1. **Input ID:** Input transport stream ID number.
2. **Input Interface:** indicates the configuration of up to four input transport streams. Possible settings are:
   - ▶ Disabled
   - ▶ SRT Caller
   - ▶ SRT Listener
   - ▶ SRT Rendezvous
3. **Input Status:** indicates the health of the input transport streams. Information includes:
   - ▶ SRT Connection Status
   - ▶ Transport Stream Information and PIDs

OUTPUT STATUS INFORMATION

4. **Output Interface:** indicates the configuration of the output for each transport stream including:
   - ▶ Outputs: RF, IP, and/or ASI
   - ▶ IP Address and Port numbers
   - ▶ MHz range
5. **Output Status:** indicates the status of the following Output states:
   - ▶ QAM Lock
   - ▶ Linked Speed
   - ▶ IP Enabled
   - ▶ ASI Enabled

7.2 SRT RECEIVE: "MAIN" > "INPUT" TAB

"**Main**" **>** "**Input**" (Figures 7.2) is a "read-and-write" screen which allows for configuration of the SRT input.

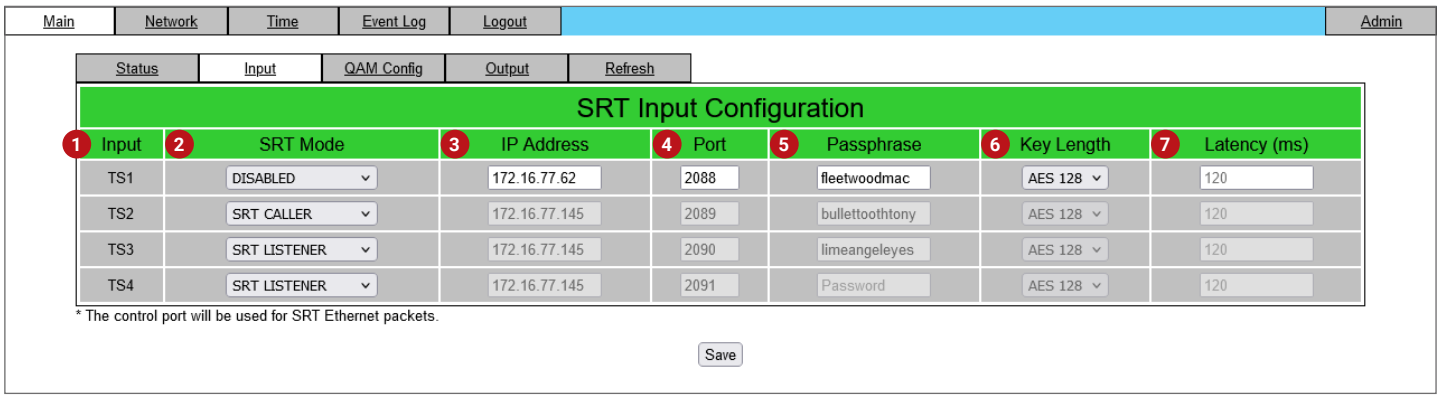


Figure 7.2 - "Main" » "Input" - SRT Input Configuration (SRT Receive Mode)

1. **Input:** Input transport stream number.
2. **SRT Mode:** selections for the SRT Mode are: SRT Caller, SRT Listener, SRT Rendevous, or Disabled.

Before continuing, the "SRT Mode" **MUST** be set to "Disabled" first. This will allow the configuration of the following settings:

3. **IP Address:** the IP Address for each transport stream. This setting is not required for Listener mode, but is required for Caller and Rendevous modes.
4. **Port:** the IP Port number for each input stream. This is required for all 3 SRT Modes
5. **Passphrase:** Used to prevent unauthorized connections but does not encrypt the stream. The unit's passphrase MUST match the passphrase from the source. An empty field is equivalent to an unencrypted stream.
6. **Key Length:** Choose the bits of encryption keys to the length the user would like for an encrypted stream. All options are: (list options) 128, 192, 256 bits.
7. **Latency (ms):** Used to set maximum allowed latency of the stream over the SRT protocol. Units are in milliseconds. Increasing latency setting allows better operation with lower quality of service (QoS) connections.

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

7.3 SRT RECEIVE: "MAIN" > "QAM CONFIG" TAB

"**Main**" **>** "**QAM Config**" (Figures 7.3) is a "read/write" screen allowing for configuration of the QAM Output.

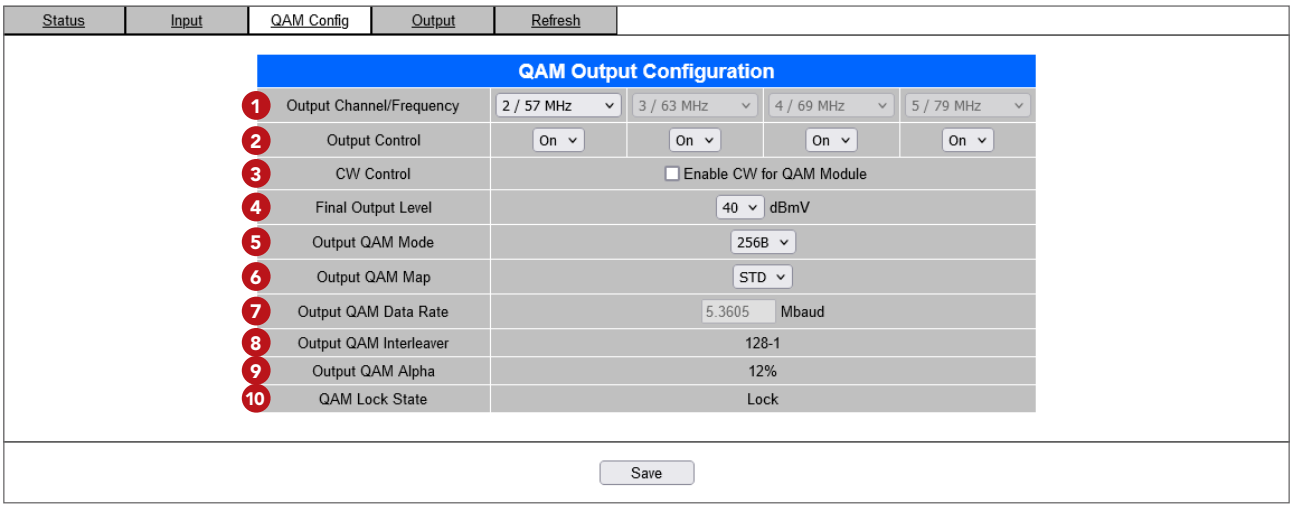


Figure 7.3 - "Main" » "QAM Config" - QAM Output Configuration (SRT Receive Mode)

1. **Output Channel/Frequency:** user must assign a RF channel number to the RF QAM output of the Quad-QAM module (i.e. RF channel 50, as shown in Figure 5.4). The remaining three RF QAM channels will be automatically assigned to the next adjacent channels (i.e. RF channels 51, 52, and 53). The range is NTSC channels 2 to 155.

> RF Channel number will be displayed on TV only if source stream does not carry any virtual channel number.

2. **Output Control:** turns each of the 4 RF channels On/Off.
3. **CW Control:** allows the user to switch QAM output mode to CW (Continuous Wave) which activates an analog carrier at the selected channel's center frequency; this is typically used in level adjustment of the system.
4. **Final Output Level:** allows user to select the level for the QAM RF output. The range is 35 to 45 dBmV. It is recommended to maintain the output level at 40 dBmV for normal operation.
5. **Output QAM Mode:** allows user to select desired QAM modulation mode. Options are: 64B, 256B, 16A, 32A, 64A, 128A, and 256A. For most applications in the USA, the recommended QAM modulation mode is 256B.
6. **Output QAM Map:** allows user to select desired QAM Map (channel/frequency plan). Options are STD, IRC, and HRC.
7. **Output QAM Data Rate:** indicates the maximum data rate depending on the selected QAM mode, for example 5.360500 Mbaud for QAM 256B.
8. **Output QAM Interleaver:** indicates the interleaver value for the selected QAM mode.
9. **Output QAM Alpha:** indicates the Alpha value for the selected QAM mode.
10. **QAM Lock State:** indicates whether Quad-QAM module is working properly (locked) or not.

- ▶ **NOTE:** The module may take a few seconds to lock when QAM output parameters are changed.

> **REMEMBER:** Click on the **[SAVE]** button to save and apply new values/configuration changes.

7.4 SRT RECEIVE: "MAIN" > "OUTPUT" TAB

"**Main**" **>** "**Output**" (Figures 7.4) is a "read-and-write" screen which allows for configuration of the unit Output.

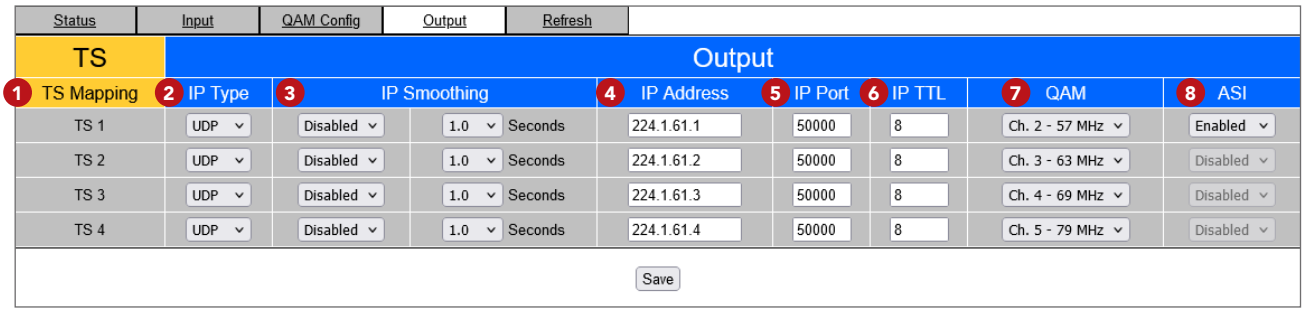


Figure 7.4 - "Main" » "Output" - Output Configuration (SRT Receive Mode)

In the section entitled "TS" under an orange header, the following parameters about each output TS are displayed:

1. **TS Mapping:** Shows the status of the transport mapping to PID mapping.

In the section entitled "Output" under blue header, the following parameters about each output TS are displayed:

2. **IP Type:** There are two available options (RTP & UDP). Select the one that matches the protocol used by the receiving equipment.

3. **IP Smoothing:** This control allows the smoothing of the UDP output in the event that the SRT input is bursty, improving your video quality by removing the jagged (rough, irregular) edges in an image.

   - When disabled, packets are passed to UDP output as received.
   - When enabled, the packets are passed to UDP based on timing contained between adjacent PCRs.

   The second selection allows the choice of time between 0.5 and 12.5 seconds. Increasing the time spec allows for deeper buffering and will result in increased latency.

4. **IP Address:** Enter the Unicast or multicast IP address.

5. **IP Port:** Enter a port number. Select the one that matches the protocol used by the receiving equipment.

6. **IP TTL:** TTL is an upper bound on the time that an IP packet can exist in an IP network. The value is set by the sender of the packet, and reduced by every host on the route to packet's final destination. If the Time to Live reaches zero before the packet arrives at its final destination, then the packet is discarded. The purpose of this field is to avoid an undeliverable packet from circulating on an IP network perpetually. The range is 1 to 255 and is incremented by 1. (Factory Default: "128").

7. **QAM:** Select the QAM RF channel number of the QAM output.

8. **ASI:** Select the physical ASI OUT port number to which a TS is assigned.

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

NOTES

NOTES

NOTES

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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