TECHNICAL MANUAL

INTEGRITY 600 SERIES

MPA617 MULTI-PURPOSE DISTRIBUTION AMPLIFIER

Publication: 81-9059-0634-0, Rev. A

July, 2008

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Chapter 1 About This Manual

1.1 Documentation and Safety Overview

This manual provides instructions for the installation, operation, and maintenance as well as a top-level functional description of the Integrity 600 Series MPA617 Multi-Purpose Distribution Amplifier built by QuStream.

It is the responsibility of all personnel involved in the installation, operation, and maintenance of the equipment to know all the applicable safety regulations for the areas they will be working in. ***Under no circumstances should any person perform any procedure or sequence in this manual if the procedural sequence will directly conflict with local Safe Practices. Local Safe Practices shall remain as the sole determining factor for performing any procedure or sequence outlined in this document.***

1.2 Warnings, Cautions, and Notes

Throughout this document, you should notice various Warnings, Cautions, and Notes. These addendum statements supply necessary information pertaining to the text or topic they address. It is imperative that audiences read and understand the statements to avoid possible loss of life, personal injury, and/or destruction/damage to the equipment. These additional statements may also provide added information that could enhance the operating characteristics of the equipment (i.e., Notes). Examples of the graphic symbol used to identify each type of statement and the nature of the statement content are shown in the following paragraphs:

1.2.1 Warning

	**Warning statements identify conditions or practices that can result in loss of life or permanent personal injury if the instructions contained in the statement are not complied with.**

1.2.2 Caution

	**Caution statements identify conditions or practices that can result in personal injury and/or damage to equipment if the instructions contained in the statement are not complied with.**

1.2.3 Note

	**Notes are for information purposes only. However, they may contain invaluable information important to the correct installation, operation, and/or maintenance of the equipment.**

Chapter 2 Introduction

2.1 DESCRIPTION

QuStream's MPA617 Multi-Purpose Distribution Amplifier is a member of the Integrity 600 Series family of video and audio processing products, featuring "Fortel Inside" Technology. It mounts in the FRM603 chassis frame and accepts an input of analog video, analog black burst, tri-level sync or AES audio and provides seven outputs of the input signal. Redundant power and monitoring are optionally available to every processing module through the chassis frame.

The MPA series distribution amplifiers are perfect for distributing sync, test signals, or simple monitoring applications. Figure 2-1 shows, for reference only, a typical 600 Series module with a single-width rear panel attached to the main circuit board.

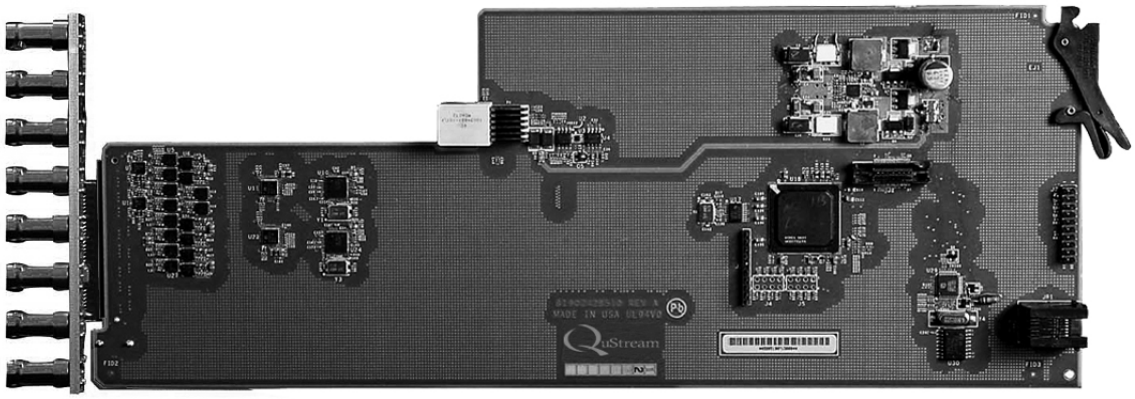


Figure 2-1 Typical 600 Series Module

Primary Features

- Distributes Analog Video signals
- Supports Analog Black Burst, Tri-level sync, or AES audio
- Equalization up to 250 FT.
- AC or DC Coupling
- Gain of -3 to +6 dB

Specifications

Input (Termination on VDA, DC Coupled Video)	1V p-p
Max Input Level	2.5V p-p
Input impedance	75 Ohm or High-Z
Input Return Loss	>50dB to 10MHz >30dB to 150MHz
Coupling	DC or AC
CMRR	-55dB to 10kHz @ 4V p-p
Output (all outputs terminated)	
Number of Outputs	7
Output impedance	75 Ohm
Output Return Loss	>50 dB to 10MHz >25 dB to 150MHz
Output Isolation	>45dB to 10MHz
Performance	
Gain Range	-3dB to +6 dB, Min.
Frequency Response	< ± 0.05dB to 10MHz +0.1 dB, -0.3dB to 40MHz ±0.1dB to 80MHz **+ 1dB, -3dB to 150 MHz**
Frequency Response *EQ to 250ft using Belden 8281*	±0.1dB to 10MHz ±1dB to 40MHz + 1dB, -3dB to 150 MHz Output 2V p-p >30MHz
Line Rate Window Tilt	<0.20%
Field Rate Window Tilt	<0.20%
Differential Gain	(10-90%APL) <0.1%
Differential Phase	(10-90% APL) <0.12%
S/N	>65dB (p-p Video to RMS noise)
HUM	1mV p-p
Propagation Delay	8 (±0.4) Ns
Temperature	
Performance	0-40 degrees C
Operating	0-50 degrees C

Chapter 3 Installation

3.1 INTERNAL ROUTING CONSIDERATIONS

The MPA617 Multi-Purpose DA module is not equipped for mid-plane routing functions. When determining in which frame slot to install the module, you should consider whether or not internal signal routing capabilities of the frame are to be used for signal input or output sharing by other modules installed in the frame. For further information on planning an Integrity 600 Series system using internal routing capability, refer to the Technical Manual for the FRM603 Frame, QuStream Publication 81-9059-0622-0.

There are no restrictions on placing modules in the FRM603 frame – any module will function stand-alone in any slot. However, if you are intending to incorporate internal frame routing, adjacent module signal sharing or Star Slot routing, you should have the system pre-planned prior to module installation. QuStream recommends that you make a detailed drawing of your system and follow it when loading modules into the frame. The following guidelines will help you in your system planning, but they are not intended to be an all-inclusive, step-by-step guide.

- Make a listing of the modules you will use in your system, and determine the internal routing capability of each module. Not all 600 Series modules share the same capabilities: for example some of the 600 Series dual input distribution amplifiers are actually two independent amplifiers; one of which can receive input signals from the module *LEFT* adjacent to it, or the Star Slot *A* routing bus, and the other can receive input signals from the module *RIGHT* adjacent to it, or the Star Slot *B* routing bus.

- Not all modules are equipped for internal signal routing. If you are going to use internal routing in your layout, it would not be advisable to install modules without such capability in a Start Slot or in a frame slot you may need for signal sharing.

- Consider placement of modules you intend to share signals first. Include in your sketch which module will receive a signal from an external source, how you want signals distributed to other modules and with which module the internal routing will terminate.

3.2 INSTALLATION PROCEDURE

Every Integrity 600 Series processing module consists of a rear connector panel and the main circuit card. These two items are shipped as a set, but must be installed individually into the FRM603 Chassis Frame. The MPA617 rear connector panel occupies one card slot in the FRM603, and may be installed in any available slot in the chassis frame. Proper installation requires that the rear connector panel be installed before the circuit board. Observe the following precautions before proceeding with installation:

CAUTION

Damage may occur to the rear connector panel or the circuit board if the installation instructions are not properly followed.

- Rear connector panel MUST be installed before the front-mounted circuit board.
- If a circuit board should occupy a chassis frame slot where a rear connector panel is to be added or changed, the circuit card MUST be removed or slid out a minimum of two inches from the front side of the chassis frame before installing the rear connector panel.

It is not necessary to remove power to the chassis frame prior to installing a processing module.

3.2.1 INSTALL REAR CONNECTOR PANEL

Install rear connector panel as follows:

1. If your processing module was shipped with the rear connector panel attached to the main circuit board, separate the two units.
2. Figure 3-1 illustrates the connector panel installation process using a single-width panel; however the procedure is identical for installing a double-width rear panel.
3. Orient the rear connector panel with the main board connector toward the lower edge of the chassis.
4. Install the panel by pressing it upward under the top lip of the chassis frame, and move the panel toward the chassis until it is flat against the chassis frame, refer to Figure 3-1.
5. Allow the bottom edge of the connector panel to drop down into its mating slot at the bottom of the lower edge of the chassis.
6. Install retention screw through connector panel to chassis frame, but **DO NOT** fully tighten the retention screw, leaving the rear panel freedom to move, until after the Main Circuit Board is installed per Paragraph 3.2.2.

CAUTION

DO NOT fully tighten the retention screw until **after** the Main Circuit Board is installed. Severe damage could occur to the main board connector if the rear panel is tightly secured prior to installing the main board.

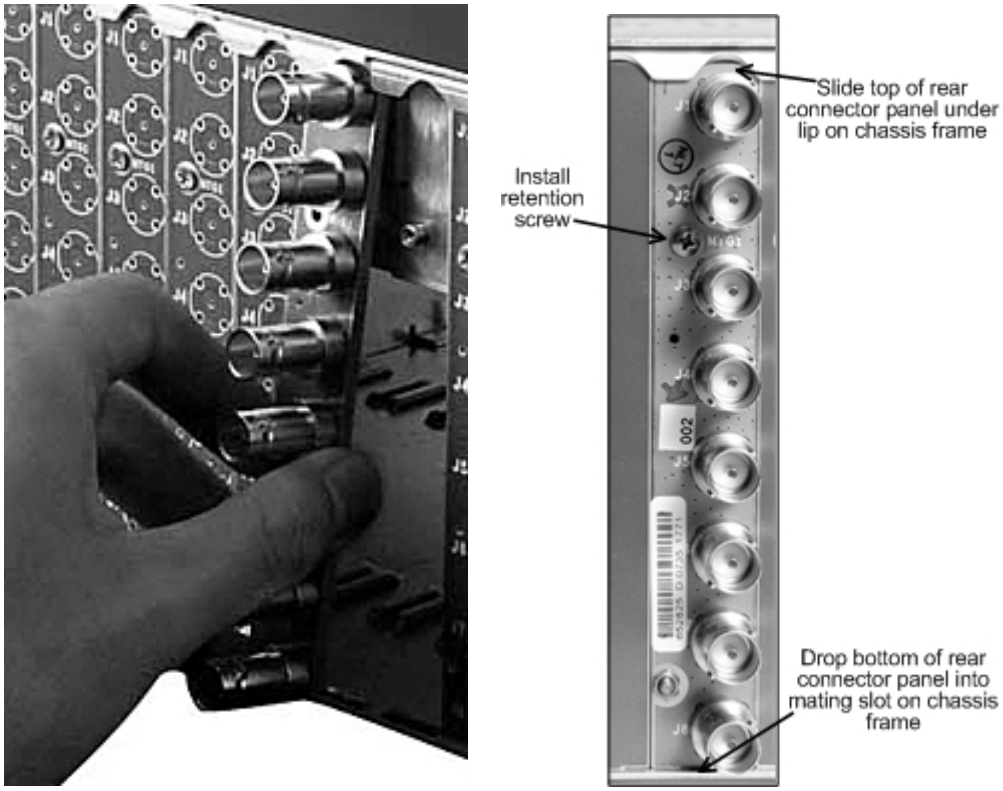


Figure 3-1 Installing Rear Connector Panel

3.2.2 INSTALL MAIN CIRCUIT BOARD

Install main circuit board as follows:

1. Open front access door on the FRM603 chassis frame.
2. Locate the empty card slot that mates to the rear connector panel installed in the previous step.
3. Align the top and bottom edges of the circuit board with the chassis card guides as shown in Figure 3-2.
4. Hold the card ejector lever out (unlocked position) as shown when inserting the board.
5. Press the board into place to ensure solid connection with the mating connectors on the mid-plane and rear connector panel.

NOTE

Do not force the card into position. If the card does not seat with gentle pressure, back it out, realign with the card guides and reinsert the card.

6. When the card is properly seated, press the card ejector lever toward the board to lock the card in position.
7. Once the main board is seated and locked, and all connectors have properly mated, secure the rear connector panel to the chassis frame by tightening the retention screw.
8. Close the chassis frame front access door.

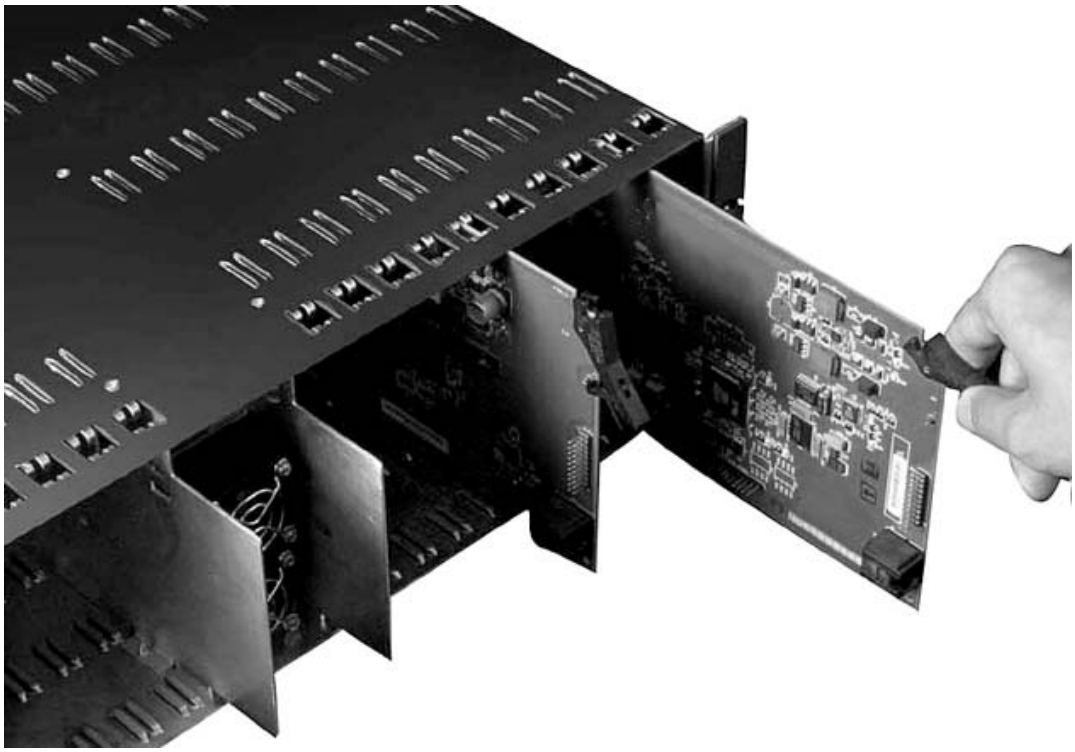


Figure 3-2 Installing Main Circuit Board

3.3 REAR PANEL SIGNAL CONNECTIONS

Input and output connections to the MPA617 module are made through BNC connectors on the single-width rear connector panel. Rear connector panel layout is shown in Figure 3-3 and the function of each connector is briefly discussed in the following paragraphs. When making connections to the rear panel connectors, use a good quality coaxial cable and ensure that the mating BNC connector is properly installed.

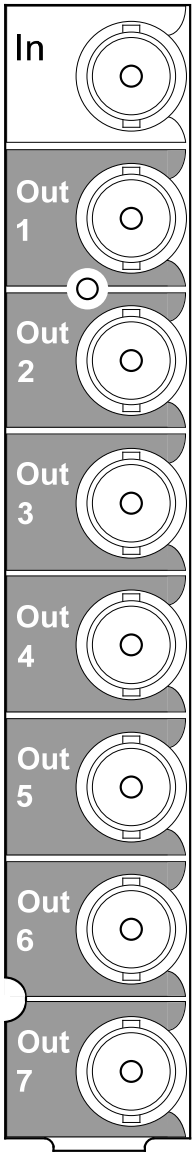


Figure 3-3 MPA617 - Rear Panel Connections

3.3.1 INPUT SIGNAL CONNECTOR

Rear panel connector IN accepts an input of analog video, analog black burst, tri-level sync or AES audio from an external source.

3.3.2 OUTPUT SIGNAL CONNECTORS

Rear panel connectors OUT 1 through 7 provide isolated outputs of the input signal.

3.4 INITIAL POWER-UP

It is not necessary to remove power when installing the MPA617 module into an active chassis frame. If this is an initial installation, before applying power for the first time, please take time to go back and verify the following:

- Check for electrically sound connections, proper connector placement and possible wiring errors.
- Ensure that the chassis frame has a connection to a source of in-house sync, if required for the application.
- Check that all 600 Series modules, rear panels, power supply and controller modules are securely installed.

There is no power switch on the frame, and it is powered-up simply by connecting the main power cord to a source of primary power. Systems with redundant power supply modules have two main power cords, each of which must be connected to a source of primary power.

When the MPA617 module is initially powered up, look at the green power supply status LED located on the module circuit board, as shown in Figure 3-4. Verify that the LED is lit, indicating that both the +5V and -5V power supplies are operating.

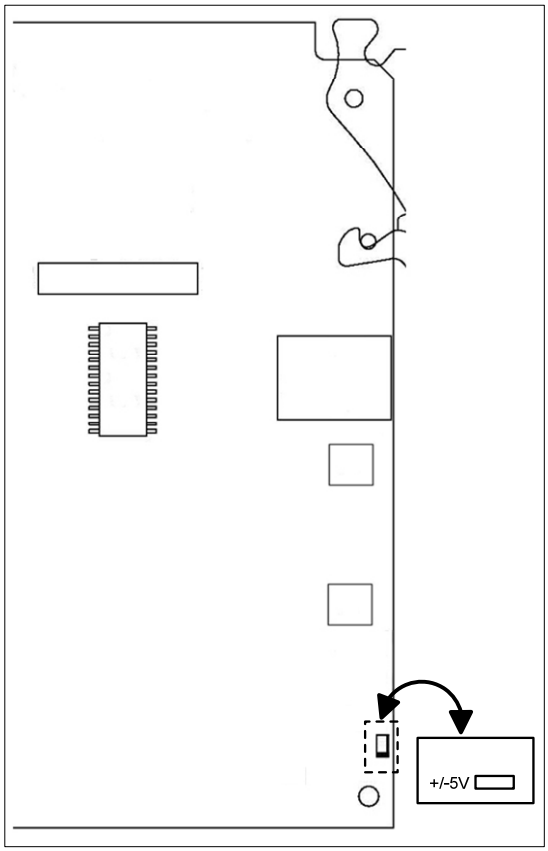
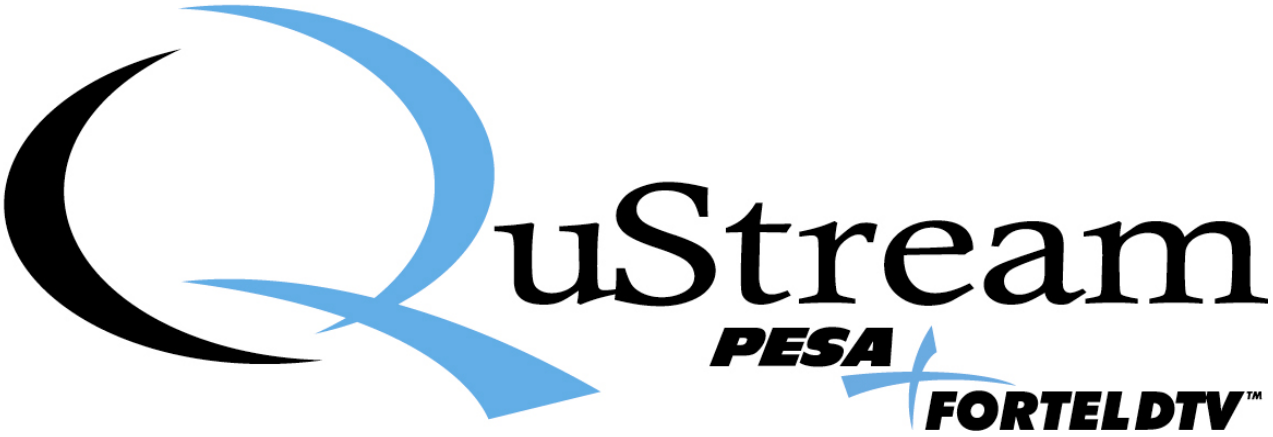


Figure 3-4 MPA617 Power Supply Status LED

Chapter 4 Operation

4.1 OPERATION

There are no operating controls located on the MPA617 module. Operation consists of installing the module in the FRM603 chassis frame, connecting input and output signal cabling to the rear panel and applying power to the module through the frame power supply.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