TABLE OF CONTENTS

Figures

Tables

REVISION HISTORY

REVISION	DESCRIPTION	DATE
1.0	Original Version	Sep 00
1.1	Added information about 7701PS redundant power supply	Mar 01
1.2	Updated power specification and Safety information	May 05
1.3	Updated GROC relay and power specification and Safety information Added max power consumption, max current and max load specifications Updated Power Supply LED descriptions, added Frame Status section	Jul 06
1.3.1	Updated Rear panel drawing, added legends to External Power connector	Jun 07
1.3.2	Updated the external power connector diagram	Jul 08

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1. OVERVIEW

The 7701FR is a 1 rack unit high rack frame for the 7700 series modular system. This advanced rack frame design can house up to 3 modules of any combination of the 7700 series distribution, conversion, processing and synchronization modules. Special care was taken during the design process to ensure that the 7701FR meets the demanding needs of television studios today has sufficient flexibility to satisfy the emerging demands of the future.

The 7701FR is designed with a high density capacity to conserve on precious equipment rack space. Care has been taken to ensure sufficient thermal relief for up to 75 watts of processing power per frame, to meet the increasing power demands of future high speed processing cards.

The front loading design permits extraction of the active modules from the front without compromising performance even at 1.5Gb/s. Thus, there is no need for time consuming re-cabling nor is there need to have access to the rear of the frame replace or exchange modules.

Features:

- Houses up to 3 processing modules
- Each slot has individually configurable inputs and outputs
- Front monitoring window for verifying module and power supply status
- Frame status contact closure alarm signals power supply or fan failures and user selectable module alarms
- Front extractable modules
- Auto-ranging power supply operates from 90-250vac at 60/50hz
- Optional external redundant auto-ranging power supply available

1.1. TECHNICAL SPECIFICATIONS

1.1.1. Electrical

AC Mains Input:	Auto ranging, 100 ⇔ 240 VAC, 50/60 Hz
Maximum Operating Current:	1.5 A (@ 120 VAC), 0.8 A (@ 240 VAC)
Maximum Power Consumption:	100 W
Maximum Module Load:	75 W (13.3 W per slot)
Power Supply Configuration:	Single, External redundant
Connector:	IEC 60320
Fuses:	2 amps, 250 Volt time delay 5 x 20 mm. – line and neutral
Status Indicators:	
	PSU status LED
	Frame status/failure LED
Tally Output Connector:	4 pin terminal, relay N/O, N/C for status/fault alarm, 1A, 30 VDC max.
Temperature:	0 - 40°C

1.1.2. Compliance

Safety:	Complies with CSA C22.2 No. 60065-03, UL 60065-03
	IEC 60065-(2001-12) 7th Edition
	Complies with CE Low voltage Directive 93/68/EEC
EMC:	Complies with FCC part 15, class A.
	Complies with EU EMC directive 89/336/EEC

1.1.3. Physical

Height:	1.75” (45 mm)
Width:	19” (483 mm)
Depth:	14.5” (368 mm)
Module Capacity:	3 single or double slot modules
Weight:	Approx 7 lbs (3.1 Kg) with no cards
	Approx. 10 lbs. (4.5 Kg) with 3 slots occupied

1.1.4. 7701PSX Redundant Power Supply

AC Mains Input:	Auto ranging, 100 ⇔ 240 VAC, 50/60 Hz
Maximum Power Dissipation:	80 W
Certification: Safety:	CSA Listed
	Complies with CE Low voltage Directive 93/68/EEC
EMC:	Complies with FCC part 15, class A.
	Complies with EU EMC directive 89/336/EEC
Status Indicators:	Green OK LED
	Red Fault LED

1.2. COOLING

The 7701FR frame is designed to ensure adequate cooling for up to 75 watts of processing power per frame. Fans at the front and rear of the power supply module accomplish forced air cooling. Adjacent equipment may be mounted immediately to the top and bottom of the 7701FR frame. Additional module cooling is provided by interior cooling channels to ensure that even fully loaded frames mounted adjacent to each other will operate within the normal temperature range.

1.2.1. Fan Exhaust

The cooling fans for the power supply, located at the front of the frame, draws air in the front and exhaust out the side of the frame. The cooling fan for the modules, located at the rear of the frame, and draws air in the front and the exhaust out the rear of the frame.

CAUTION: To ensure adequate cooling, care should be taken to ensure that the fan inlets and exhaust openings are free of obstructions.

1.3. MOUNTING

The 7701FR Rack frame requires 1 rack unit i.e. 1.75 inches (45 mm) of standard.19 inch (483 mm) wide rack space. To securely fasten the frame to the equipment rack, make sure that all four mounting screws are tightened securely.

1.4. POWER

The 7701FR frame comes with an auto-ranging power supply that automatically senses the input voltage over the range of 100 to 240 VAC. Power should be applied by connecting a 3-wire grounding type power supply cord to the power entry module on the rear panel. The power cord should be minimum 18 AWG wire size; type SVT marked VW-1, maximum 2.5 m in length.

The power entry modules contain a standard IEC power inlet connector, two 5 x 20 mm fuse holders and an EMI line filter.

CAUTION - TO REDUCE THE RISK OF ELECTRIC SHOCK, GROUNDING OF THE GROUND PIN OF THE MAINS PLUG MUST BE MAINTAINED

An external redundant power supply (model 7701PSX) is available to supply power in case of a failure in the main power supply.

1.4.1. Connecting the Redundant Power Supply

The 7701PSX redundant power supply is a self-contained auto-ranging power supply that automatically senses the input voltage. Power should be applied by connecting a 3-wire grounding type power supply cord to the power entry module on the power supply. The power cord should be minimum 18 AWG wire size; type SVT marked VW-1, maximum 2.5 m in length.

Connect the output of the 7701PSX to the **EXT POWER** connector on the rear of the 7701FR frame.

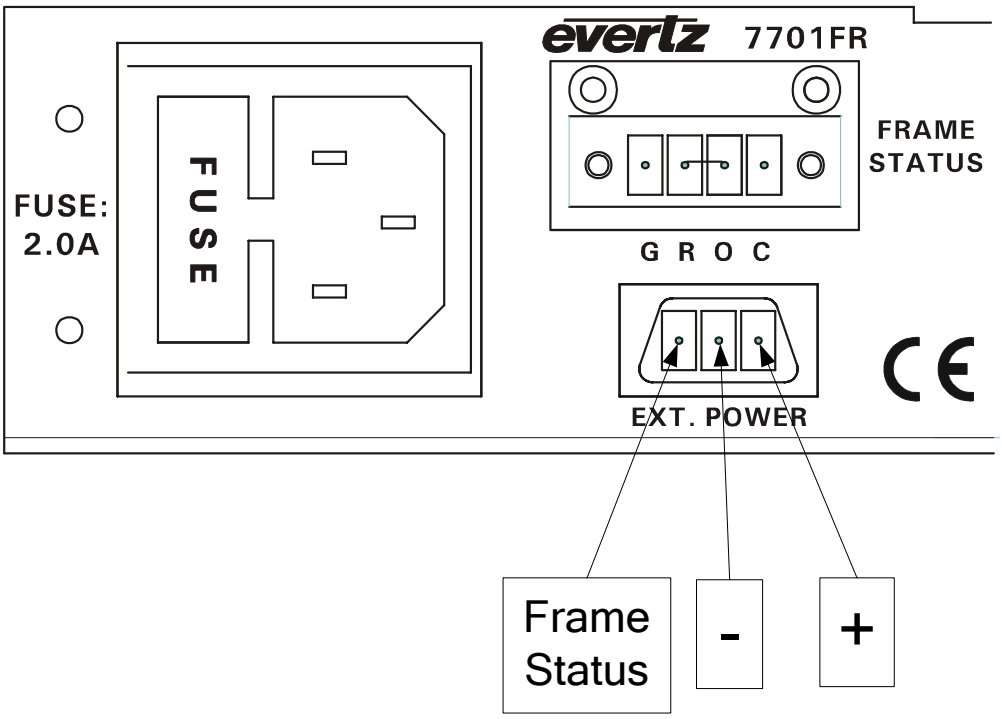

Figure 1-1: Locating the External Power Connector

There are two LEDs on the 7701PSX DC power connector. The Red indicator will be On when the 7701PSX is connected to the frame but is not connected to an AC input. This will cause the Red Frame Status LED on the main power supply to be illuminated. When AC power is supplied to the 7701PSX, the Green indicator on its DC connector will be On and the Frame Status indicator on the main power supply will go Off unless there are other fault conditions still active. See section 2 for more information about Frame Status fault conditions.

1.4.2. Turning the Power On and Off

The 7701PS power supply is fitted with a power switch on the front. This switch is accessible by lowering the front panel of the frame.

1.4.3. Power Supply Status Indicators

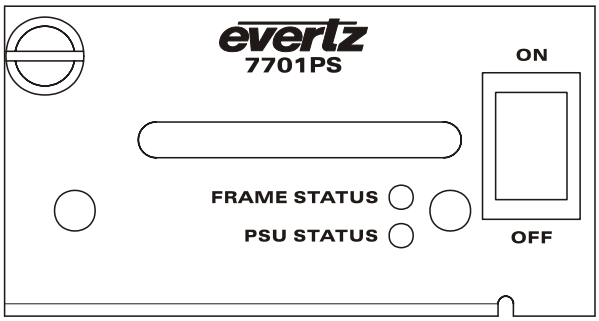

Figure 1-2: 7701PS Status Indicators

The 7701PS internal power supply has two status indicator LEDs. The green PSU STATUS LED indicates the health of the local power supply. The red FRAME STATUS LED (labeled FRAME FAULT on some versions of the 7701PS) indicates the health of the entire frame and is operated by the frame status buss of the frame. The FRAME STATUS LED will be Off under normal conditions and On when there are Frame Status Fault conditions. See section 2 for more information about frame status buss fault conditions.

If the 7701PS internal power supply malfunctions (power cord disconnected, power switch is off, fuse is blown, etc,) when the 7701PSX external redundant power supply is connected, then its PSU STATUS LED will go Off, and the red FRAME STATUS LED will turn On.

If there is a fuse failure, contact Evertz customer service regarding the power supply immediately. The power supplies are short circuit protected and should not blow the fuse under a short circuit condition.

2. FRAME STATUS FAULT CONDITIONS

The Frame is fitted with a global Frame Status monitoring buss that is connected to the internal and external power supplies and to each of the modules. When a fault condition occurs on one of the power supplies, or one of the modules, a Frame Status Fault condition is active on the frame status buss. When this occurs the red FRAME STATUS LED on the 7701PS power supply (labeled FRAME FAULT on some versions) will come on and the relay on the Frame Status Tally terminal block will activate.

The 7701PS power supply, will assert a frame status fault when its PSU STATUS LED is off. The 7701PSX external power supply will assert as frame status fault when it is not plugged in to AC power.

Each module has a large red LOCAL FAULT LED and a large green MODULE OK LED at the left side of the card edge. This green LED indicates good module health while the red LED indicates that there is a fault condition on the module. Each module has its own criteria that determines when the red fault LED comes on. When the red LOCAL FAULT LED is On the module can also assert a fault condition on the Frame Status buss. On each module there is a jumper that disables sending local card fault information to the Frame Status Buss. For more information about fault conditions on individual modules, and for the location of the Frame Status Jumper on the module consult the individual chapter for the module. For example, if a module requires video or audio for its functionality and the video or audio is not present, the red LOCAL FAULT LED on the module will be On and the fault will be reported on the frame status buss if the FRAME STATUS jumper on the module is set to the On position (default).

2.1. FRAME STATUS TALLY TERMINAL BLOCK

There is a green terminal block at the rear of the frame that has a normally open and normally closed relay contact that can be used to indicate frame status fault conditions to external equipment. There are 4 connections.

Label	Pin #	Function
G	1	Chassis Ground (connect to cable shield)
R	2	Common (connect to Ground or your reference)
O	3	Open with respect to common when Frame Status fault exists
C	4	Closed with respect to common when Frame Status fault exists

Table 2-1: Frame Status Tally Terminal Block Pin Assignments

The relay contacts can sink up to 1A and operate up to 30 VDC.

3. INSTALLING AND REMOVING THE MODULES

3.1. INSTALLING THE MODULE REAR PLATES

Each module is shipped with a matching rear panel plate which houses the connectors appropriate for the module. When installing a rear plate, locate the desired slot position where you wish to install the rear plate. Make a note of the slot number where you are installing the rear plate. Orient the plate so that the labeling is visible when the plate is installed. Loosely fasten the plate to the extrusions using the mounting screws provided, beginning with the top screw. You will tighten the screws after the main module is installed.

3.2. OPENING AND CLOSING THE FRONT PANEL

In order to insert or remove modules you will have to open the front panel. Turn the two captive screws located on the front panel counter clockwise several turns until they release completely from the front extrusions. Carefully lower the front panel door so that the front edge of the door is lower than the rear of the door.

3.3. INSTALLING THE MODULES

Orient the module horizontally such that the white card ejector is on the right. Align the card with the card guide corresponding to the slot number where you installed the rear panel plate. Carefully slide the module into the frame and press it completely into the rear panel connectors. Make sure that the connectors are fully seated in the rear panel. When this is done, close the front panel and then tighten the screws that hold the rear panel in place.

3.4. REMOVING THE MODULES

Press the card ejector to release the module. Grasp then the card using the card ejector and pull the module out from the frame. Carefully place the module in a safe place, free from static discharge.

4. SERVICING INSTRUCTIONS

CAUTION – These servicing instructions are for use by qualified service personnel only. To reduce risk of electric shock do not perform any servicing instructions in this section of the manual unless you are qualified to do so.

4.1. CHANGING THE FUSES

Check that the line fuse is rated for the correct value marked on the rear panel. Never replace with a fuse of greater value.

The fuse holder is located inside the power entry module. To change the fuses, pull out the fuse holder from the power entry module using a small screwdriver. The fuse holder contains two fuses, one for the line and one for the neutral side of the mains connection. Pull out the blown fuse and place a fuse of the correct value in its place. Use slo blo (time delay) 5 x 20 mm fuses rated for 250 Volts with a current rating of 2 amps. For your convenience there are spare fuses located in the vinyl pouch in the front of this manual. Carefully reinsert the fuse holder into the power entry module.

4.2. REPLACING THE POWER SUPPLY

The 7701PS power supply is a complete assembly and includes the power supply cooling fan and one frame cooling fan. In the event that the power supply or one of the fans malfunctions, you will need to replace the power supply assembly with a spare one while the failed assembly is being repaired.

When you have a 7701PSX external power supply connected to the frame and connected to AC power the 7701PS power supply is hot swappable and can be easily replaced without interrupting the signal integrity of the frame. The 7701PSX is capable of supplying full power to the frame by itself, however we recommend running with both supplies powered for power redundancy.

The 7701PS power supply can be easily replaced from the front. The power supply is secured into the frame by a thumbscrew on the front of the power supply (as shown in **Error! Reference source not found.**). This screw must be loosened before the power supply can be extracted.

To reduce risk of electric shock you must replace the mounting screw after replacing the power supply.

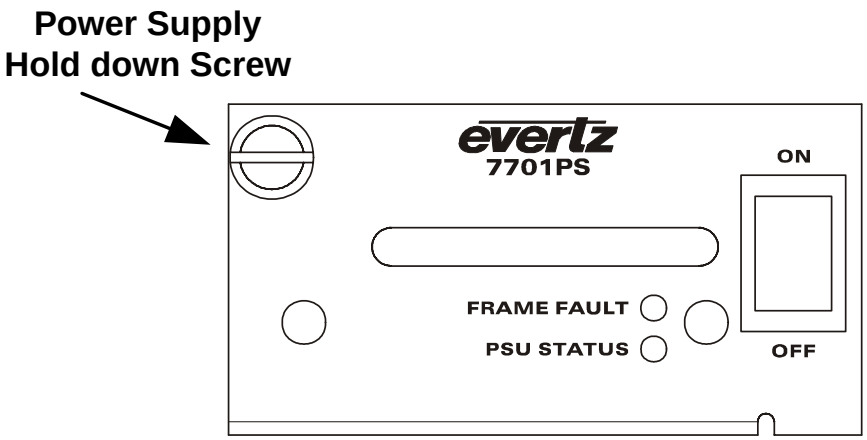

Figure 4-1: Locating the Power Supply Mounting Screw

To replace the power supply the following procedure should be used.

1. Ensure that the 7701PSX external supply is connected to the frame and AC power if you want to hot swap the main power supply
3. Open the front door of the frame
2. Turn off the power supply switch
4. Loosen the power supply hold down screw.
5. Pull the power supply out of the frame.
6. Reinsert the new power supply into the frame taking care that it is proper aligned with the card guides. Press firmly to make sure that the power supply is fully seated into the rear panel connector.
7. Tighten the power supply hold down screw.
8. Turn on the power switch for the power supply. After a few seconds you should see the PSU STATUS LED come on indicating that the power supply is working correctly.

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