TABLE OF CONTENTS

1. OVERVIEW 1

2. INSTALLATION 3

2.1. 7705IFT CONNECTIONS 4

2.2. 7705IFR CONNECTIONS 4

2.3. CARE AND HANDLING OF OPTICAL FIBER 4

2.3.1. Safety 4
2.3.2. Assembly 4
2.3.3. Labelling 4
2.3.4. Handling And Connecting Fibers 5

3. SPECIFICATIONS 6

3.1. 7705 IFT SPECIFICATIONS 6

3.1.1. IF Input 6
3.1.2. IF Output 6
3.1.3. Optical Output 6
3.1.4. Electrical 6
3.1.5. Physical 6

3.2. 7705IFR SPECIFICATIONS 7

3.2.1. IF Output 7
3.2.2. Optical Input 7
3.2.3. Electrical 7
3.2.4. Physical 7

4. STATUS INDICATORS AND DISPLAYS 8

4.1. 7705IFT STATUS INDICATORS 8

4.2. 7705IFR STATUS INDICATORS 9

5. DIP SWITCH CONTROLS 9

5.1. IFT DIP SWITCH CONTROLS 9

5.1.1. Configuring IFT for AGC or Manual mode 10

5.2. IFR DIP SWITCH CONTROLS 10

5.2.1. Configuring IFR for AGC or Manual mode 10

6. JUMPERS 11

6.1.1. Selecting Whether Local Faults Will Be Monitored By The Global Frame Status 12

Figures

Figure 1: 7705IFT Block Diagram 1
Figure 2: 7705IFR Block Diagram 2
Figure 3: Rear Panels 3
Figure 4: Location of 7705IFT Jumpers and LEDs 11
Figure 5: Location of 7705IFR Jumpers and LEDs 11

Tables

Table 1: Front DIP Switch Functions 10

REVISION HISTORY

REVISION	DESCRIPTION	DATE
1.0	First Release	Oct 02
1.1	Correction to table 2	Jan 03
1.2	Correction to Output power tables 3 & 4, Updated specifications	Jan 03
1.3	Updated specs, output indicators	Jan 05
1.4	Updated safety and added assembly and labeling section	July 05

1. OVERVIEW

The 7705IFT and 7705IFR IF Transmitter/Receiver modules are used for transmitting IF satellite signals over fiber optic cable. The 7705IFT accepts one IF coaxial input and provides a fiber optic output signal. An additional BNC IF output is also available for monitoring or further signal distribution. The 7705IFR accepts a fiber optic input from the 7705IFT and provides two IF output signals via BNCs.

The 7705IFT and 7705IFR modules each occupy one card slot and can be housed in either a 1RU frame, which will hold up to three modules, or a 3RU frame which will hold up to 15 modules.

Features:

- Broadband operation - 70 or 140MHz
- Protocol transparent - handles all video, audio and data modulation formats
- Fully hot swappable from front of frame
- Available in SC/PC, ST/PC and FC/PC connector options
- Supports multi-mode and single-mode fiber optic cable

7705IFT Features

- Automatic or manual gain control on IF input
- Additional IF BNC output

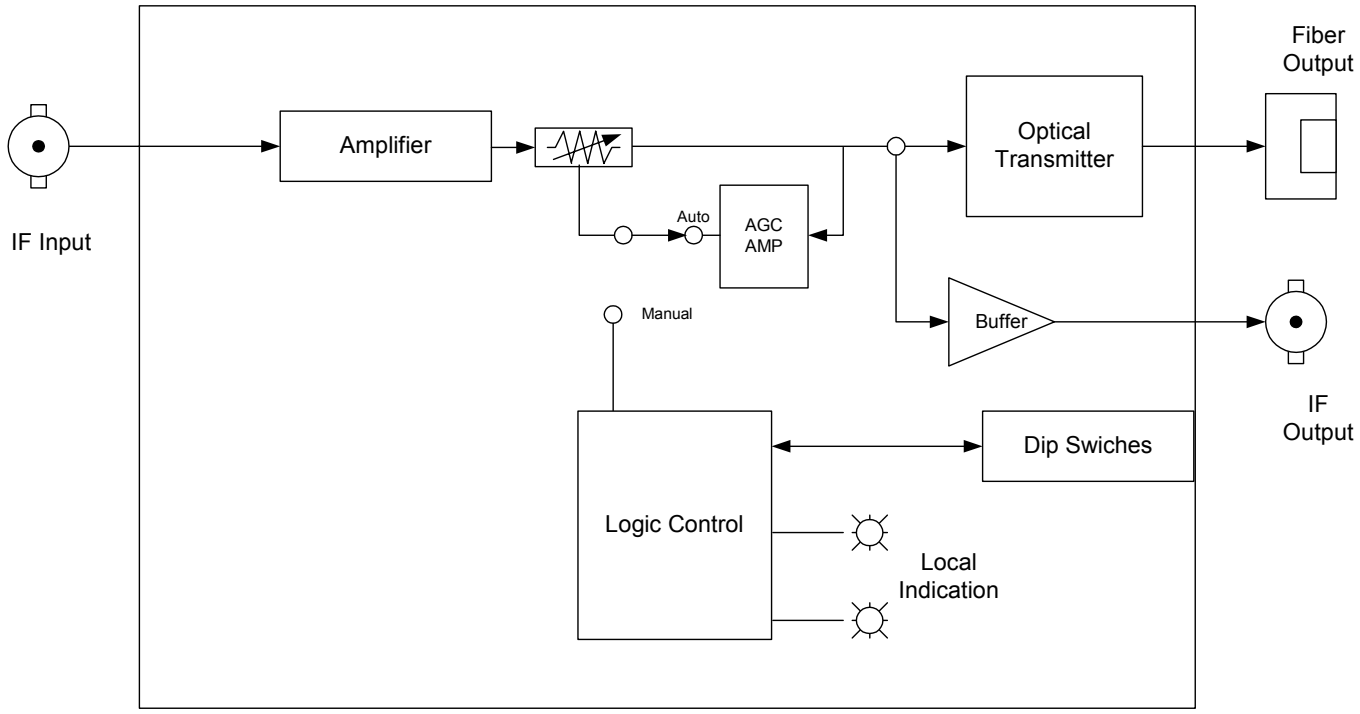

Figure 1: 7705IFT Block Diagram

7705IFR Features

- Supports manual and automatic gain control
- Two IF outputs for extra signal distribution or monitoring functions
- IF output independent of optical loss (within AGC range)

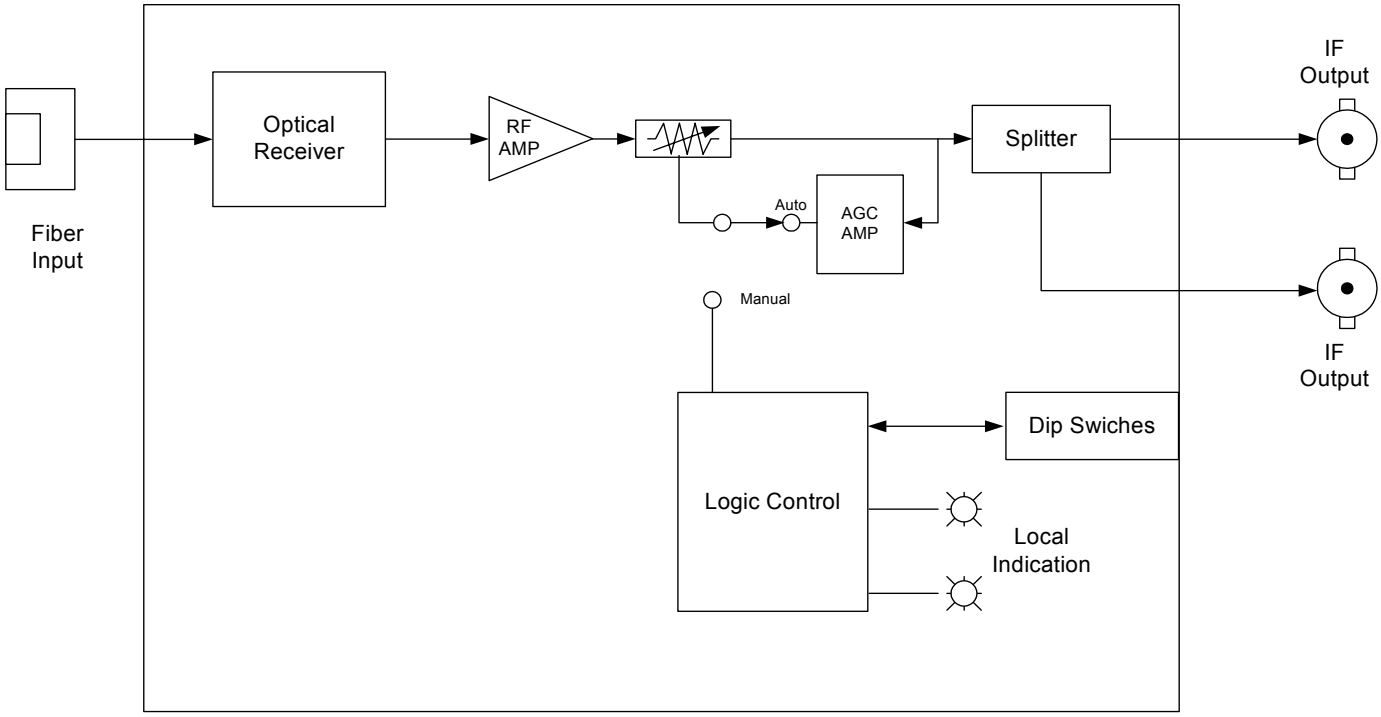

Figure 2: 7705IFR Block Diagram

2. INSTALLATION

Each of the modules in the 7705IF series comes standard with a companion +3RU rear plate. The rear plate must be specified during the time of order. SC/PC, ST/PC or FC/PC optical connector are available for these modules and must be specified during the time of order. For information on mounting the rear plate and inserting the module into the frame, see the 7700FR manual for detailed instructions.

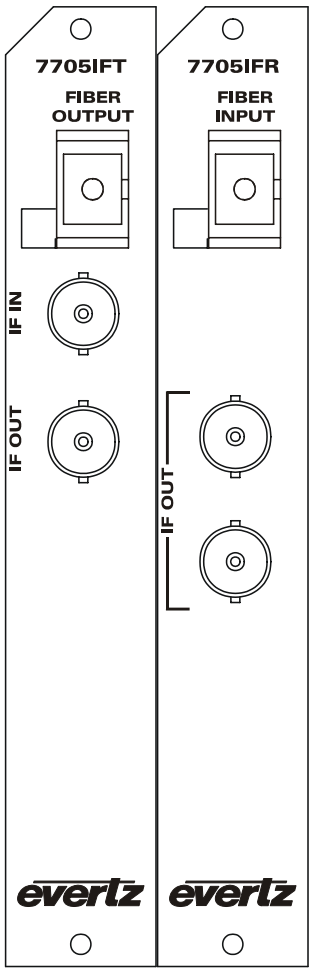

Figure 3: Rear Panels

2.1. 7705IFT CONNECTIONS

IF IN Input BNC connector for IF satellite signals

IF OUT Output BNC is an IF output for monitoring or further signal distribution of your IF satellite signals.

FIBER OUTPUT SC/PC, ST/PC or FC/PC female connector with the optical output from the 7705IFT as shown in section 3.1.3. This connector should be connected to the FIBER IN connector of a 7705IFR module at the destination end with a suitable fiber optic cable. The 7705IFT transmits on the wavelength marked on the rear panel.

2.2. 7705IFR CONNECTIONS

FIBER INPUT SC/PC, ST/PC or FC/PC female connector with the optical input to the 7705IFR as shown in section 2.7.2. This connector should be connected to the FIBER OUT connector of a 7705IFT module at the origination end with a suitable fiber optic cable.

IF OUT Two output BNC connectors for distributing IF satellite signals. The BNC nearest the bottom of the rear panel is the primary output and will provide slightly better performance than the secondary output located directly under the fiber optic input.

2.3. CARE AND HANDLING OF OPTICAL FIBER

2.3.1. Safety

CLASS 1 LASER PRODUCT

Background colour: yellow
Triangular band: black
Symbol: black

2.3.2. Assembly

Assembly or repair of the laser sub-module is done only at Evertz facility and performed only by Evertz technical personnel.

2.3.3. Labelling

Certification and Identification labels are combined into one label. As there is no enough room on the product to place the label it is reproduced here in the manuals.

- There is no date of manufacture on this label as it can be traced by bar code label placed on the PCB of each Evertz plug-in product
- Model number is 7705IFTA13

Reproduction of 7705IFTA Certification and Identification Label

2.3.4. Handling And Connecting Fibers

Never touch the end face of an optical fiber. Always keep dust caps on optical fiber connectors when not connected and always remember to properly clean the optical end facet of a connector before making a connection.

The transmission characteristics of the fiber are dependent on the shape of the optical core and therefore care must be taken to prevent fiber damage due to heavy objects or abrupt fiber bending. Evertz recommends that you maintain a minimum bending radius of 5 cm to avoid fiber-bending loss that will decrease the maximum attainable distance of the fiber cable. The Evertz fiber optic modules come with cable lockout devices, to prevent the user from damaging the fiber by installing a module into a slot in the frame that does not have a suitable I/O module.

3. SPECIFICATIONS

3.1. 7705 IFT SPECIFICATIONS

3.1.1. IF Input

Connector: BNC per IEC 60169-8 Amendment 2
I/O Impedance: 75 Ω (50 Ω optional)
Input Signal Range: -40 to -20dBm for AGC operation
Return Loss: 15dB

3.1.2. IF Output

Number of outputs: 1
Connector: BNC per IEC 60169-8 Amendment 2
I/O Impedance: 75 Ω (50 Ω optional)
Return Loss: 15dB
Output Signal Range AGC Mode: -20dBm ± 0.5dBm (Within AGC Range)
Output Signal Range Manual Mode: (Input signal) + 20dB ± 1dB

3.1.3. Optical Output

Number of outputs: 1
Connector: Female SC/PC, ST/PC, FC/PC
Operating Wavelength:
Standard: 1310nm, 1550nm (nominal)
CWDM: 1270nm to 1610nm
Optical Power:
1310nm FP: 0dBm ±1dBm
1310nm, 1550nm & CWDM DFB: +2dBm ±1dBm
Fiber Size: 9 μm core / 125 μm overall

3.1.4. Electrical

Voltage: +12VDC
Power: 6 Watts
EMI/IFI: Complies with FCC regulations for class A devices
Complies with EU EMC directive.

3.1.5. Physical

7700 or 7701 frame mounting:
Number of slots: 1

3.2. 7705IFR SPECIFICATIONS

3.2.1. IF Output

Number of outputs: 2
Connector: BNC per IEC 60169-8 Amendment 2
I/O Impedance: 75 Ω (50 Ω optional)
Return Loss: 14dB (30 to 200MHz)
Output Signal Range AGC Mode: -20dBm ± 0.5dBm (Within AGC Range)
Output Signal Range Manual Mode: (Input signal) + 10dB ± 1dB
AGC Hold Range: -40 to -20dBm (Measured with with 1m of fiber between transmitting and 7705IFR receiving module)
Intermodulation Products:
7705IFR -40dBc
Flatness: ± 1.5dB (30MHz to 200MHz)
Carrier to Noise: 35dB @ 36MHz BW for –12dBm input optical power

3.2.2. Optical Input

Number of inputs: 1
Connector: Female SC/PC, ST/PC, FC/PC
Operating Wavelength: 1270nm - 1610nm
Maximum Input Power:
Standard: +2dBm
Optical Sensitivity:
Standard: -14dBm @ 35dB S/N @ 36MHz BW

3.2.3. Electrical

Voltage: +12VDC
Power: 5 Watts
EMI/IFI: Complies with FCC regulations for class A devices
Complies with EU EMC directive.

3.2.4. Physical

7700 or 7701 frame mounting:
Number of slots: 1

4. STATUS INDICATORS AND DISPLAYS

4.1. 7705IFT STATUS INDICATORS

The 7705IFT module has 9 LED Status indicators on the front card edge to show operational status of the card at a glance.

Two large LEDs on the front of the board indicate the general health of the module

LOCAL FAULT: This Red LED indicates poor module health and will be illuminated if a board power fault exists (i.e.: a blown fuse) or if the laser is nearing the end of the life cycle. The LOCAL FAULT indication can also be reported to the frame through the FRAME STATUS jumper.

MODULE OK: This Green LED indicates good module health. It will be On when the board power is good.

There are 7 small LEDs on the card edge. Six of which indicate the status of the incoming IF signal, laser status and AGC/manual operation.

IF HIGH: This red LED (LED1) will be On when the incoming IF signal is higher than the set upper IF Threshold trip point.

IF OK: This green LED (LED2) will be On when the incoming IF signal is within the set upper and lower IF Threshold trip points.

IF LOW: This yellow LED (LED3) will be On when the incoming IF signal is lower than the set lower IF Threshold trip point.

LASER FAIL: This red LED (LED4) will be On when the laser is at the end of its life. This is a sign that the laser should be replaced immediately.

LASER OK: This green LED (LED5) will be On when the output laser is operating with its normal output power.

LED 6: The LED (LED6) is not used on this product.

AGC ON: This Green Led (LED 7) is On when AGC Mode is enabled and Off when Manual mode is enabled. To enable AGC mode, set DIP switch 4 to the OFF position (away from PCB). To disable AGC and set to manual mode, set DIP switch 4 to the ON position (towards PCB).

4.2. 7705IFR STATUS INDICATORS

The 7705IFR modules have 9 LED Status indicators on the front card edge to show operational status of the card at a glance.

Two large LEDs on the front of the board indicate the general health of the module

LOCAL FAULT: This Red LED indicates poor module health and will be On during the absence of a valid optical input signal, or if a local input power fault exists (i.e.: a blown fuse). The LOCAL FAULT indication can also be reported to the frame through the FRAME STATUS jumper.

MODULE OK: This Green LED indicates good module health. It will be On when a valid optical input signal is present, and the board power is good.

There are 7 small LEDs that indicate the status of the output IF signal, and optical input signal.

IF HIGH: This red LED (LED1) will be On when the output IF signal is higher than the set upper IF output threshold trip level.

IF OK: This green LED (LED2) will be On when the output IF signal is within the set upper and lower threshold trip levels.

IF LOW: This yellow LED (LED3) will be On when the output IF signal is lower than the set lower IF output threshold trip level.

OPTICAL INPUT OK: This green LED (LED 5) will be On when the input optical power is within the rated input range.

OPTICAL INPUT LOW: This yellow LED (LED6) will be On when the optical power is lower than the rated input range.

AGC ON: This green (LED7) is on when AGC mode is enabled and Off when manual mode is enabled. To enable AGC mode, set DIP switch 4 to the OFF position (away from PCB). To disable AGC and set to manual mode, set DIP switch 4 to the ON position (towards PCB).

5. DIP SWITCH CONTROLS

5.1. IFT DIP SWITCH CONTROLS

The 7705IFT modules are equipped with a 4 position DIP switch at the front card edge. All positions are assigned sequentially such that switch 1 is located at the top of the DIP switch (farthest from the card ejector). Table 1 gives an overview of the front DIP switch functions and section 2.6.1 describes the front DIP switch function in more detail. The On (closed) position is down, or closest to the printed circuit board. The Off (open) position is up, or farthest from the printed circuit board.

DIP Switch	Function
1	
2	
3	
4	AGC Disable

Table 1: Front DIP Switch Functions

5.1.1. Configuring IFT for AGC or Manual mode

The 7705IFT input IF stage has an automatic gain control (AGC) that adjusts to varying input IF levels. If the input IF level differs from –20dBm the AGC will adjust the level so that the level presented to the optical link is maintained at –20dBm. To set the unit in AGC (Automatic Gain Control) mode, set Dip 4 to the Off (away from PCB) position, conversely, to set the unit in Manual mode, set Dip 4 to the On (towards PCB) position. In manual mode the gain is fixed at 20dB.

NOTE: In order to conduct a frequency response sweep, the 7705IF cards must be set and configured to Manual Mode and not AGC mode

5.2. IFR DIP SWITCH CONTROLS

The 7705IFR modules are equipped with a 4 position DIP switch at the front card edge. All positions are assigned sequentially such that switch 1 is located at the top of the DIP switch (farthest from the card ejector). The On (closed) position is down, or closest to the printed circuit board. The Off (open) position is up, or farthest from the printed circuit board.

DIP Switch	Function
1	
2	
3	
4	AGC Disable

Table 2: Front DIP Switch Functions

5.2.1. Configuring IFR for AGC or Manual mode

The DIP switches control the gain mode of the IF output section of the 7705IFR. The 7705IFR output IF stage has an automatic gain control (AGC) that adjusts to varying input optical levels. To set the unit in AGC (Automatic Gain Control) mode, set Dip 4 to the Off (away from PCB) position. To set the unit in Manual mode, set Dip 4 to the On (towards PCB) position. In manual mode, the gain is fixed at 10dB.

In order to conduct a frequency response sweep, the 7705IF cards must be set and configured to Manual Mode and not AGC mode.

Output IF power measurements are made with 1 m of fiber optic cable between the transmitting module and the receiving module.

6. JUMPERS

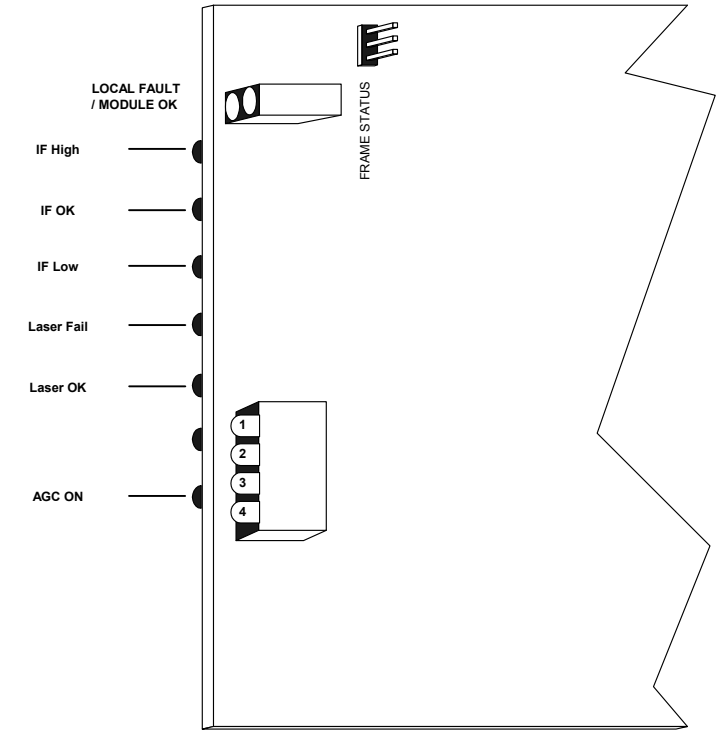

Figure 4: Location of 7705IFT Jumpers and LEDs

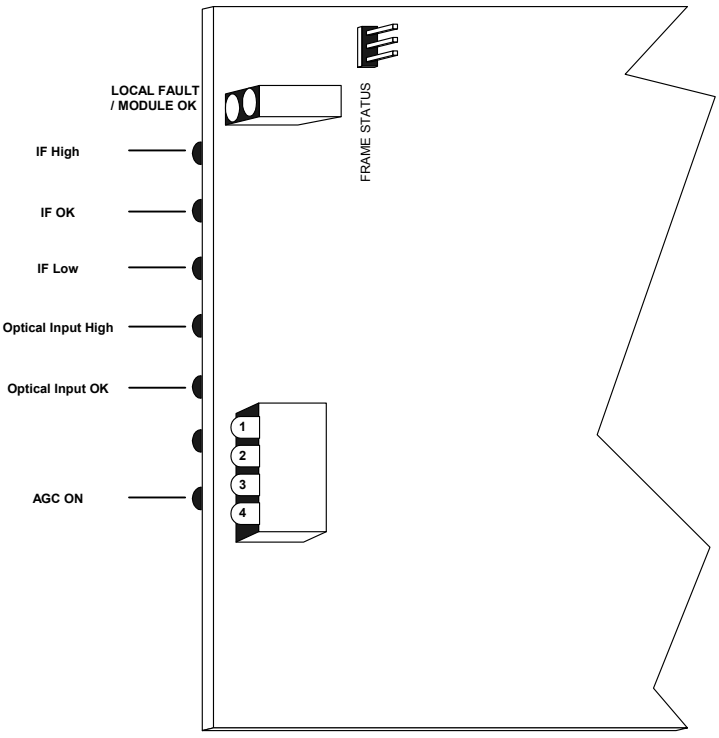

Figure 5: Location of 7705IFR Jumpers and LEDs

6.1.1. Selecting Whether Local Faults Will Be Monitored By The Global Frame Status

The FRAME STATUS jumper J3 determines whether local faults (as shown by the Local Fault indicator) will be connected to the 7700FR frame's global status bus.

FRAME STATUS To monitor faults on this module with the frame status indicators (on the Power Supply FRAME STATUS LED's and on the Frame's Fault Tally output) install this jumper in the On position. (Default)

When this jumper is installed in the Off position local faults on this module will not be monitored.