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## **ADAC<sub>f</sub> / ADAC**

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**ADAC<sub>f</sub>/ADAC - Active Digital Access Control Fiber**

**INSTALLATION & OPERATION MANUAL**

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# SAFETY

## 1. Safety

**WARNING! FAILURE TO FOLLOW THE SAFETY PRECAUTIONS LISTED BELOW MAY RESULT IN PROPERTY DAMAGE OR PERSONAL INJURY. PLEASE READ AND COMPLY WITH THE FOLLOWING:**

**WATER AND MOISTURE:** Care should be taken to prevent entry of splashed or dripping water, other liquids, and physical objects through enclosure openings.

**DAMAGE:** Do not operate the device if damage to any components is suspected.

**POWER SOURCES:** Only connect the unit to a power supply of the type and capacity specified in the operating instructions or as marked on the device.



**NOTE:** a) For 120 VAC operation, use the power cord supplied for operation from a 120 VAC source.  
b) For 230 VAC operation, use the power cord supplied for operation from a 230 VAC source.

**GROUNDING OR POLARIZATION:** Electrical grounding and polarization means must not be defeated.

**POWER CORD PROTECTION:** Route power supply cord to prevent damage by external objects. Pay particular attention to the exit point from the device and plug.

**FUSING:** This device is equipped with a fused receptacle, replace the fuse only with the same type. Refer to replacement text on the unit for correct fuse type. It is recommended that the duplex wall receptacle be current limited to 15 A maximum.



**NOTE:** a) Replace fuse in units operating on 120 VAC supply by fuse rated 3.0 A, 250 V, slo blo.  
b) Replace fuse in units operating on 230 VAC supply by fuse rated 1.5 A, 250 V, slo blo.

**CAUTION:** For continued protection against the risk of fire, replace only with the same type and rating of fuse.

**POWER SUPPLY REMOVAL:** Disconnect power (AC or DC) from the equipment before removing it for replacement or service. This is accomplished by unplugging the power cord from the power outlet.

**SERVICE:** Do not attempt to service the device beyond procedures provided the operating instructions. All other servicing should be referred to qualified service personnel.

**MODIFICATIONS:** Modifications should not be made to the device or any of its components for applications other than those specified in the operating instructions.

**SAFETY CODES AND REGULATIONS:** The device should be installed and operated in compliance with all applicable local safety by-laws, codes and regulations.

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## PRODUCT OVERVIEW

### 2. Product Overview

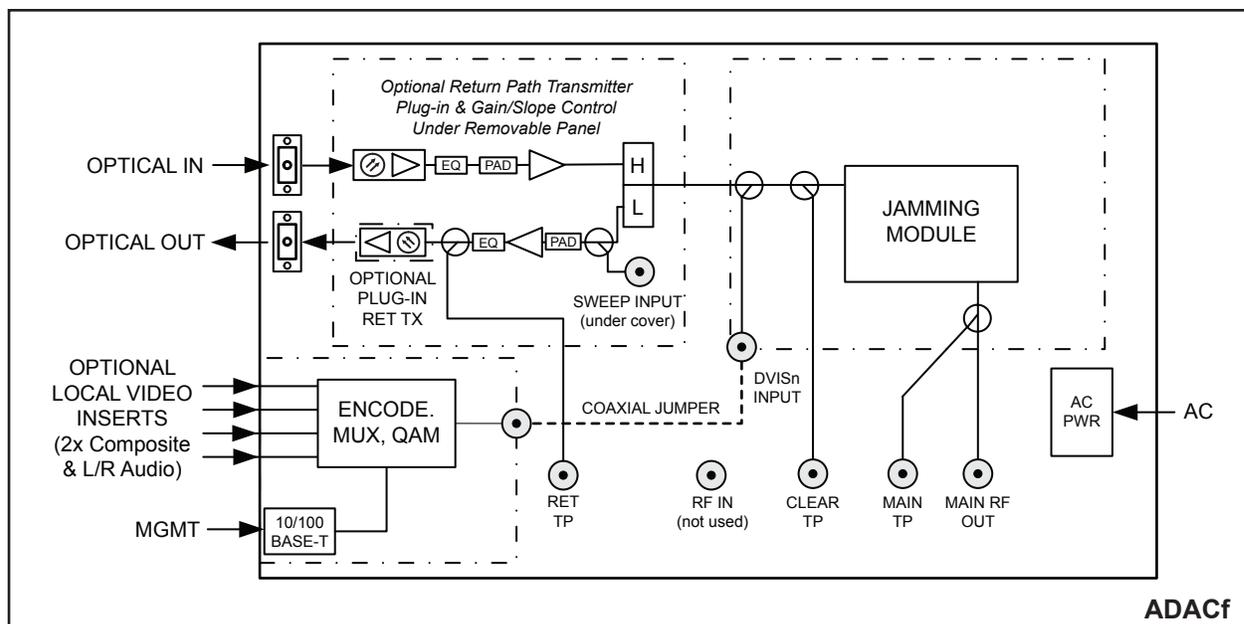


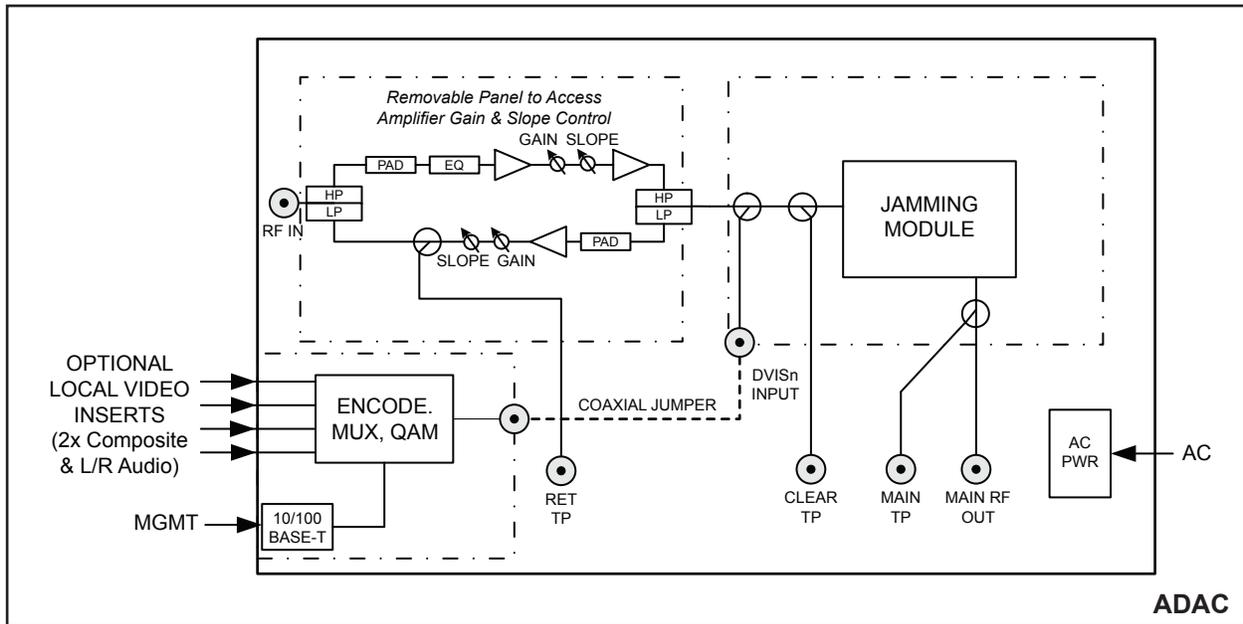
Figure 1: ADACf Unit

ADACf series products are network-edge content interdiction and local content insertion devices for digital video networks. ADACf utilizes a configurable active interdiction system allowing the content provider to tailor content delivered to the customer. ADACf optically ingests content from the operators HFC network and provides distribution level RF output after interdiction alleviating the need for additional actives or passives. Optional local content insertion and optical return path provides the content provider a scalable solution that can be configured to meet customer's needs as they evolve and as content requirements change.

- Designed for use in the hospitality and MDU environment
- Integrated solution which alleviates the need for separate optical node, filters and distribution amplifier
- Interdiction system easily configured with simple DIP switch controls
- Distribution level RF output (+45 dBmV)
- Optional local content insertion utilizing DVISn Nano product
- Optional plug-in optical return path laser provides easy to implement return communication to the headend

#### 2.1 Functional Diagram





## 2.2 Components & Interfaces

### 2.2.1 Front Panel

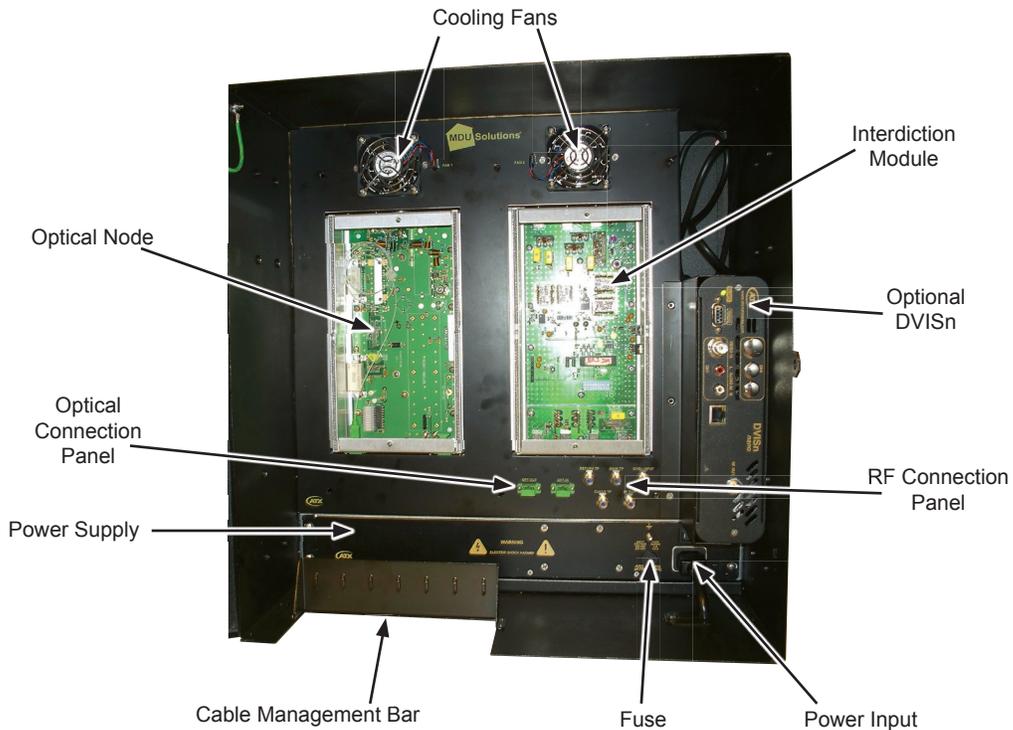


Figure 2: Front Panel

### 2.2.2 Input & Outputs



Figure 3: RF Connections

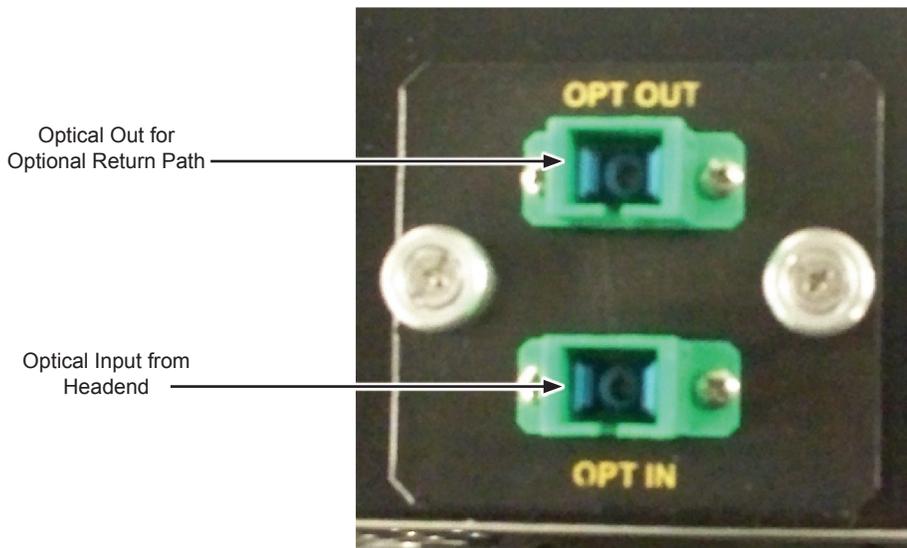


Figure 4: Optical Connections

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# INSTALLATION

## 3. INSTALLATION

### 3.1 Preparation

Carefully unpack the equipment from the shipping box. If the box or equipment is damaged, notify the freight company to make a damage claim. If you suspect that there is a problem with the equipment that may preclude safe operation, do not install or operate it.



**NOTE:** This equipment is intended for installation in a **RESTRICTED ACCESS LOCATION** only.



**NOTE:** Not for use in a computer room as defined in the *Standard for Protection of Electronic Computer/Data Processing Equipment, ANSI/NFPA 75*.



**NOTE:** This equipment is intended for use in a fixed position and should be installed securely before operation is initiated.

### 3.2 Wall Mounting Precautions

#### 3.2.1 Elevated Operating Ambient

If installed in a closed environment that may exceed room ambient temperature, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature specified by the manufacturer (50°C).

#### 3.2.2 Reduced Air Flow

Installation should allow at least 2" spacing around the equipment to ensure that airflow required for safe operation is not compromised.

#### 3.2.3 Mechanical Loading

Mounting of the equipment should be according to the installation instructions so that a hazardous condition is not created due to uneven mechanical loading.

#### 3.2.4 Circuit Overloading

Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuit will have on overcurrent protection and supply wiring. Consider equipment nameplate ratings when addressing this concern.

#### 3.2.5 Reliable Earthing

Reliable earthing of equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g. the use of power strips).

### 3.3 Mounting Instructions

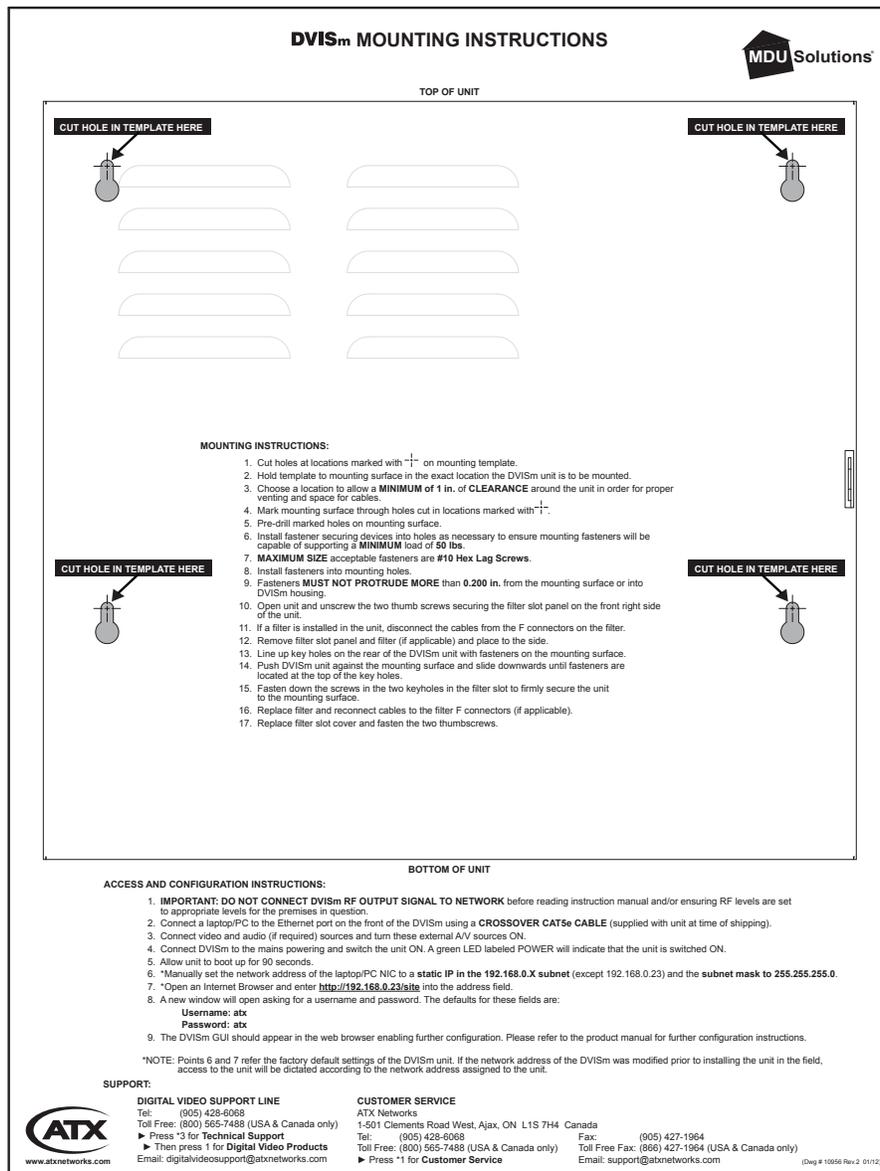


Figure 5: ADACf Mounting Template

1. Remove the DVISM mounting template from the carton and cut small holes at locations marked with  $\dagger$ .
2. Choose a mounting location that allows minimum 5 cm (2 in.) clearance around the unit in order for proper venting and space for cables.
3. Using masking tape or similar, secure the template to the mounting surface in the exact location the unit is to be mounted.
4. Mark mounting fastener locations on the mounting surface through the holes cut in step 1, then remove the template.
5. Pre-drill mounting holes at the marked locations on the mounting surface.
6. In the holes, install mounting fasteners capable of supporting 50 lb minimum load. Maximum fastener size is #10 hex lag screw and they must not protrude more than 0.5 cm (0.200 in.) into the ADACf housing.

### 3.4 Cable Management Bar

The cable management bar can be mounted to the exterior of the ADACf chassis to facilitate removal of the power supply. To mount the cable bar below the unit:

1. Remove the four pan head Phillips screws from the under-side of the ADACf cabinet bottom panel.
2. Remove the cable bar.
3. Position the cable bar facing downwards underneath the unit.
4. Fasten the cable bar into place from the top side of the ADACf cabinet bottom panel using the four screws.

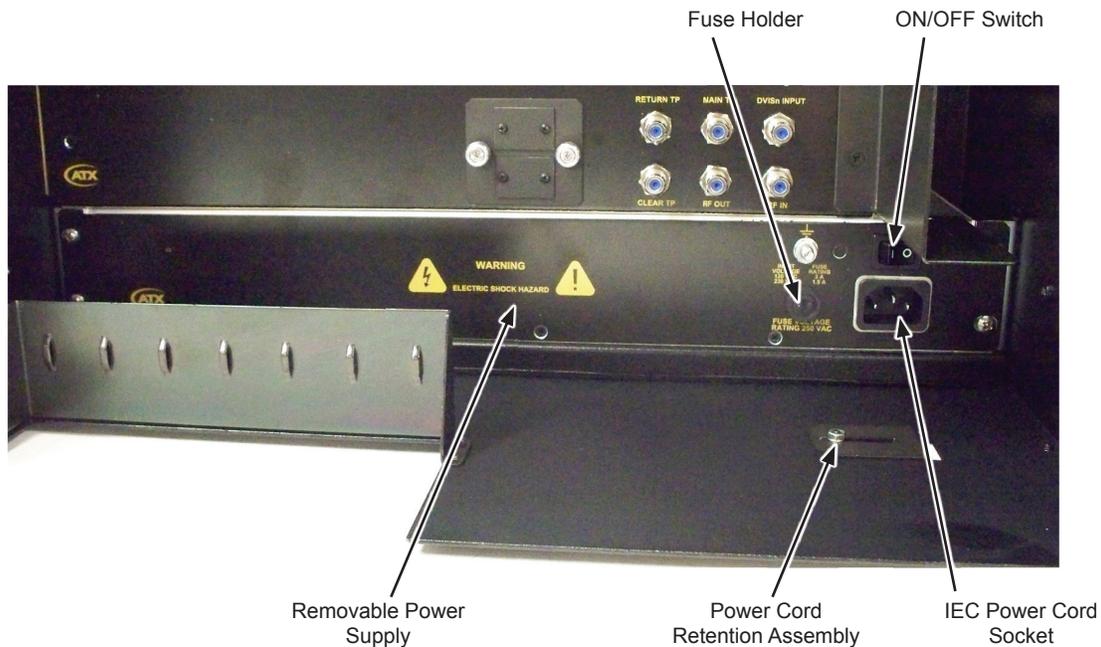


Figure 6: Cable Bar



Figure 7: Cable Bar Mounted on Exterior

### 3.5 Power Supply



**Figure 8: ADACf Power Supply**

The ADACf uses a removable fused auto-switching power supply which is accessible from the front panel. This power supply provides power to the optical node, interdiction module, cooling fans and the optical DVISn local content insert module.

The ADACf is protected by a 3 Amp fuse located in the fuse-holder on the front of the power supply. The fuse can be accessed and replaced if a condition causes the fuse to fail.

Utilizing the included IEC power cord, feed the female end of the IEC power cord through the power cord retention assembly located at the bottom right hand side of the ADACf cabinet. Connect the female end of the power cord to the IEC power socket located on the bottom right of the power supply. Tighten the power cord retention assembly inside the ADACf cabinet to prevent the power cord from being accidentally disconnected.

Once the power cord has been secured and connected to the ADACf power supply, the ADACf can be activated by the ON/OFF 2-way rocker switch located above the power cord interface.

## SET-UP & CONFIGURATION

### 4. SET-UP & CONFIGURATION

#### 4.1 Optical Connections

Connect the forward path optical input (from the cable headend) to the optical interface labeled OPT IN. Ensure that all optical connectors have been properly cleaned before making any connections.



**NOTE:** *If an optical return path laser has been installed in the ADACf, connect the fiber connector which is to be utilized to communicate back to the cable headend to the optical interface labeled OPT OUT.*

The optical input range of the ADACf is -4 dBm to +4 dBm. The recommended operating range of the ADACf is -2 dBm to +2 dBm. Optimum performance of the ADACf is specified with 1mW (0 dBm) of optical input power to achieve the stated specifications. Optical inputs which are less than -2 dBm or above +2 dBm will result in slightly decreased RF performance of the ADACf.

A 10 bar LED located inside the unit provides a quick indication of forward optical input power. When the LED lights GREEN, you are within the recommended operating range of the node (-2 dBm to +2 dBm) as shown in the figure below. When the LED lights either YELLOW or RED you are outside of the recommended operating range and should decrease or increase optical input power as needed until the LED displays GREEN. See Figure 9 below.

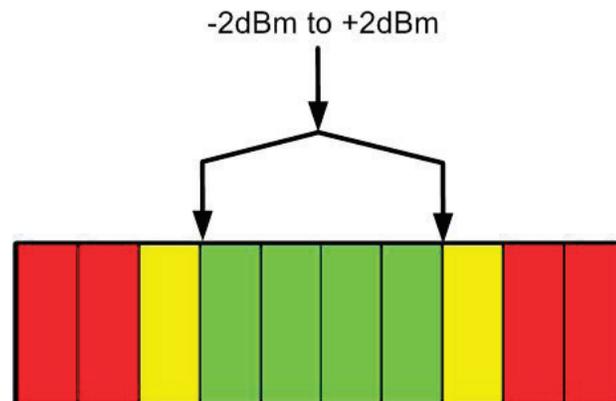


Figure 9: Optical Node Input Power LED

After connection of the forward and optional return optical connections into the ADACf and verifying the correct optical input power, RF slope and gain adjustments can be made to help achieve the required output slope and output RF levels. Gain for both the forward and the return can be controlled by adjusting the values of the plug in SXP style attenuator pads on the motherboard. The appropriate locations are shown on the below logical schematic labeled Figure 10.

The forward path accommodates Interstage Equalization which can be controlled by adjusting the QAIE style equalizer located on the motherboard and whose location is shown in the logical schematic in Figure 10. Utilize the -30 dB test point to measure the FWD path gain and slope.

The return path EQ can also be adjusted to provide optimal performance by changing the value of the plug-in QES 42 style return EQ.

A -20 dB Sweep Input test point, located inside the unit can also be utilized for setting up the return path. The -20 dB Sweep Input test point is shown below and is labeled accordingly on the motherboard of the unit.

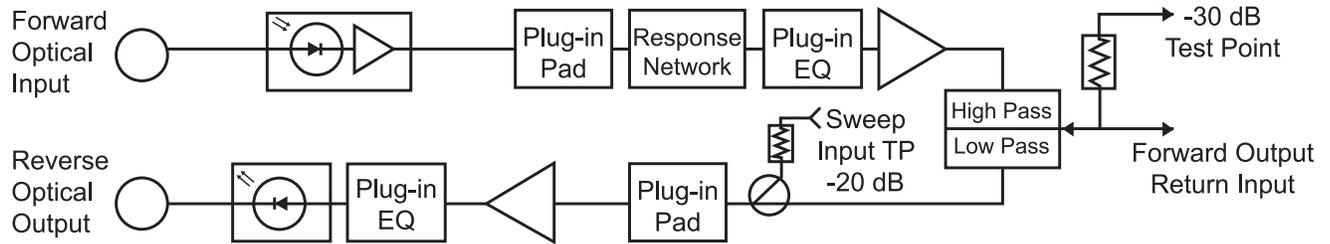
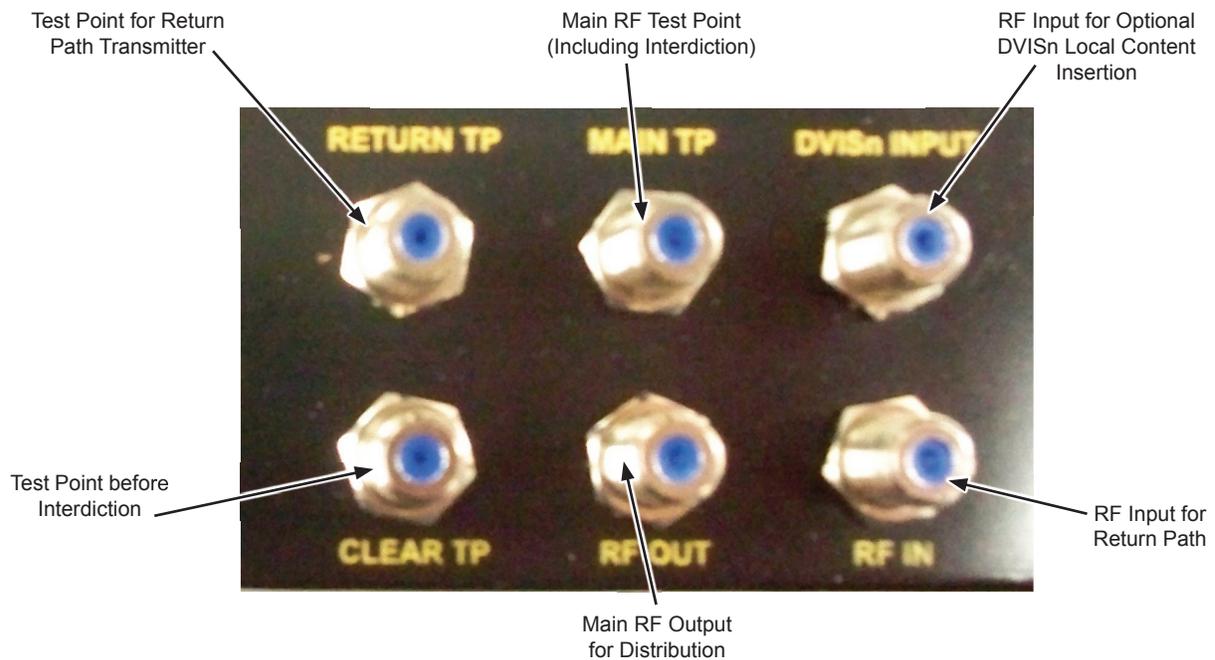


Figure 10: Optical Node Schematic

## 4.2 RF Connections



1. After powering up the ADACf and making the appropriate optical connections, continue the set-up by making the applicable RF connections. Note that all RF connections are screw-on F-Type 75 Ohm connectors.
2. Connect the RF coaxial cable that is to distribute the output of the ADACf to the RF connector labeled RF OUT. This connector is the main RF output of the ADACf and provides distribution level RF out of +45 dBmV.
3. Main TP can be used to measure the RF levels of the ADACf's RF OUT to verify proper RF levels.
4. CLEAR TP can be used to measure RF levels BEFORE the signal is routed through the interdiction module. There will be no interdiction/jamming of the signal as measured at this point.
5. RF IN is used to provide RF input signal to the optional return path transmitter.
6. RETURN TP is used to measure the RF input level of the optional return path transmitter.
7. DVISn INPUT is utilized when the optional DVISn (Nano) is installed to provide local content insertion. For operation and configuration of the DVISn, please see the instructions included with the DVISn.

### 4.3 Interdiction Configuration

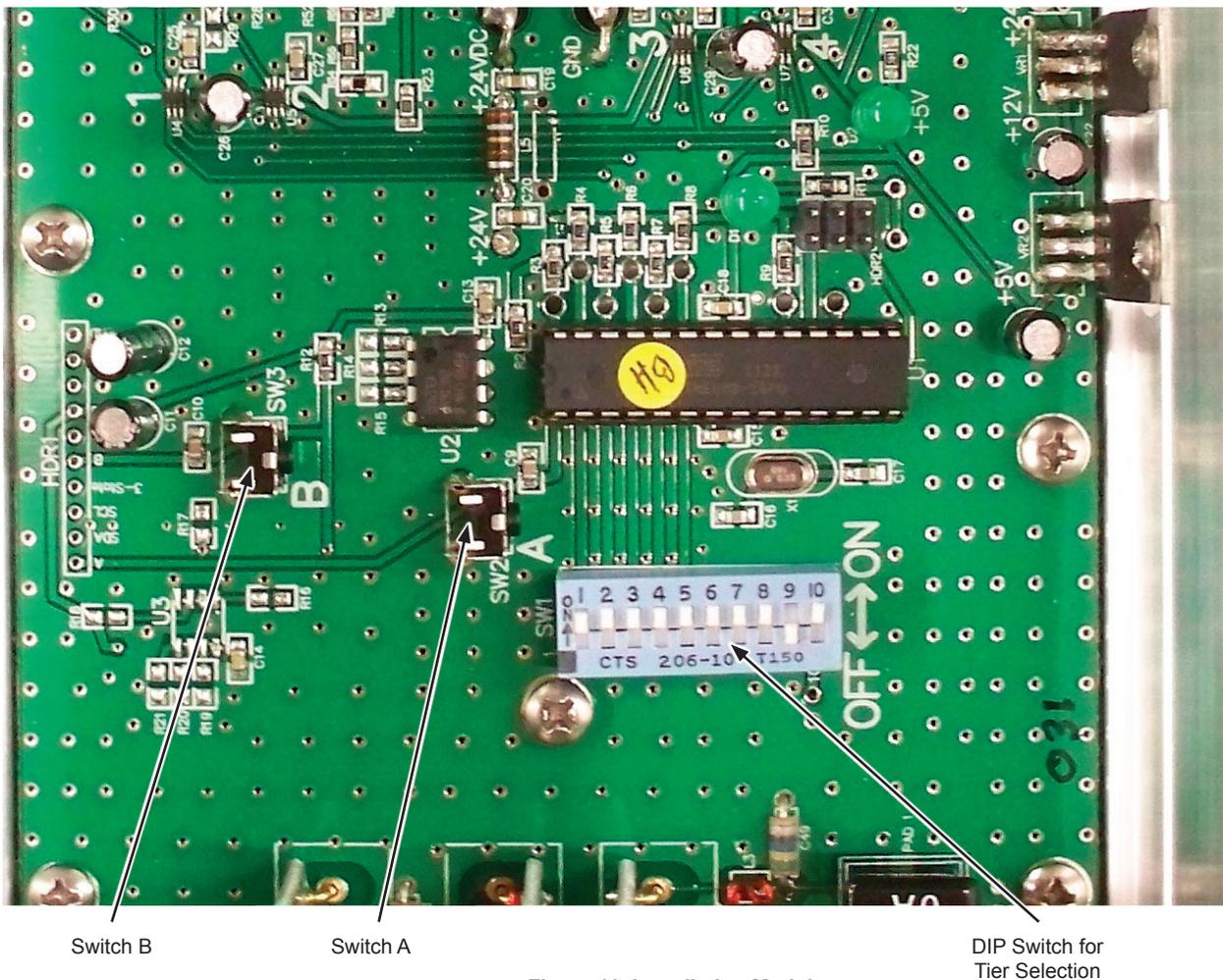
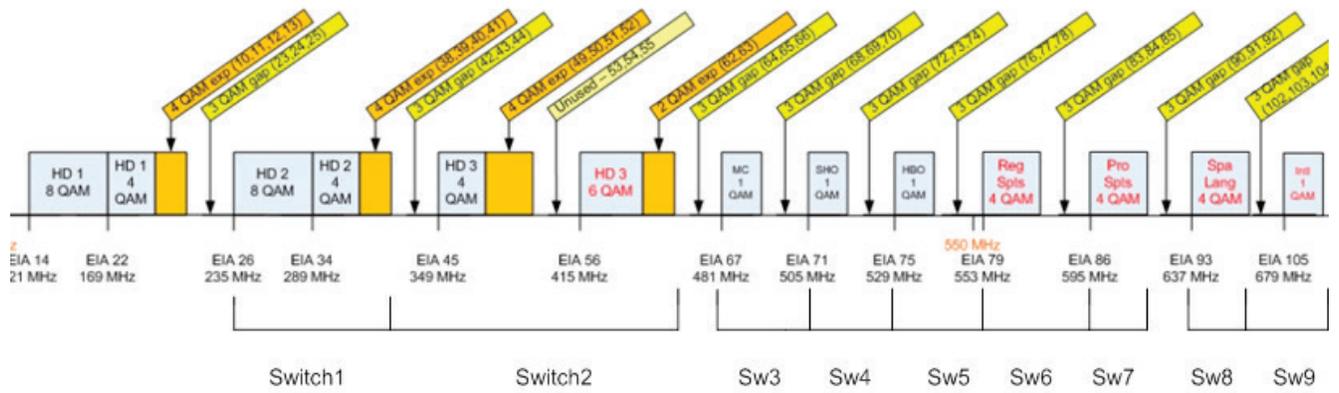


Figure 11: Interdiction Module

1. To interdict (jam) specific programming tiers (QAMs or groups of QAMs) so that the content is not visible to the viewer, the operator must select which tiers that the interdiction module will disrupt inside the channel line-up.
2. Selected tiers are linked to specific DIP switch sliding contacts on the 10 switch DIP labeled “SW1” on the circuit board.
3. Note that basic programming is always available and cannot be interdicted, therefore the Tiers which can be jammed are labeled as Tier 1, Tier 2 and so forth.
4. The DIP switches are programmed to correlate to the tier numbers. Tier 1 is controlled by slide switch 1, Tier 2 is controlled by slide switch 2 and so forth.
5. The ON position of the DIP switch means that channel/group of channels is passed thought without interdiction or jamming (i.e. the interdiction/jamming is OFF).
6. The OFF position means that interdiction or jamming is enabled (i.e. the channel/group of channels is interdicted/jammed).
7. To interdict or jam a specific tier, slide the switch number (1-9) which correlates to the tiers shown in figure 11. For example, if tier 1 is to be interdicted, use a small flat-head screwdriver to move Switch 1 to the OFF position.
8. Then press and hold Switch B
9. While pressing Switch B, momentarily press Switch A and then release both.
10. The microprocessor on the interdiction module will then program itself with the new tier/DIP switch settings.
11. Selected tiers will now be interdicted and non-interdicted tiers will pass through to the customer premise.



Appendix A: Channel Tiers & DIP Switch Correlation

## SERVICE

### 5. SERVICE

#### 5.1 Remove/Install Power Supply

1. The ADACf power supply can be replaced if it should suffer a failure.
2. To remove the power supply, turn off the ADACf by moving the ON/OFF switch to OFF then disconnect the IEC power cord from the IEC power cord socket located on the bottom right of the power supply.
3. Remove the IEC power cord from the ADACf chassis so that it does not prevent the power supply from being removed.
4. Remove the Cable Bar cable management bracket.
5. Using a Phillips Head screwdriver, loosen the four Phillips Head screws which secure the power supply to the front panel of the ADACf.
6. Slowly slide the power supply forward until it is removed from its slot in the chassis.
7. Located on the top of the power supply is an opening which provides access to the wiring connectors which supply power from the power supply of the ADACf chassis.
8. Carefully remove the four power connectors as shown in Figure 12 below. There are two fan connectors and a connector for the optical node and interdiction module.
9. Once the four connectors are removed, the power supply can be removed from the ADACf chassis and set aside.
10. To install a new power supply, repeat the above steps 1-8 in reverse order.



**NOTE:** Do not connect the IEC power cord to the power supply until the new power supply has been completely and correctly installed into the ADACf chassis!

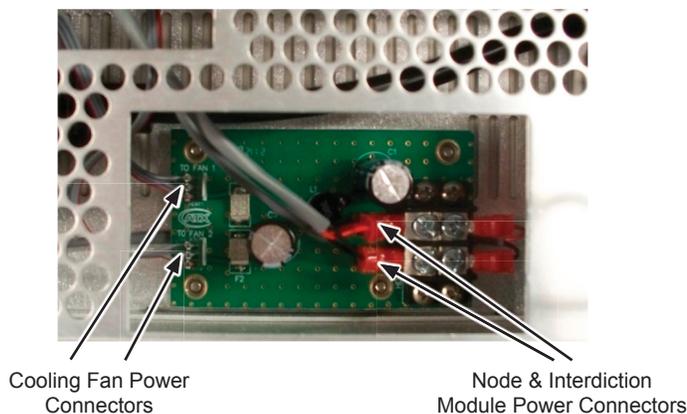
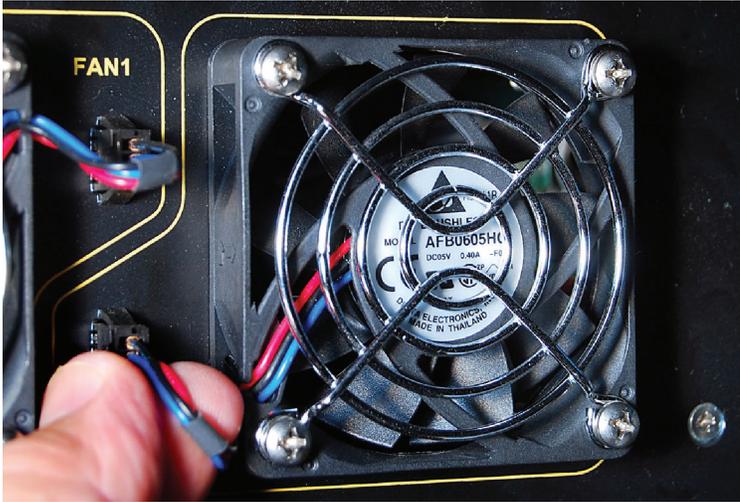


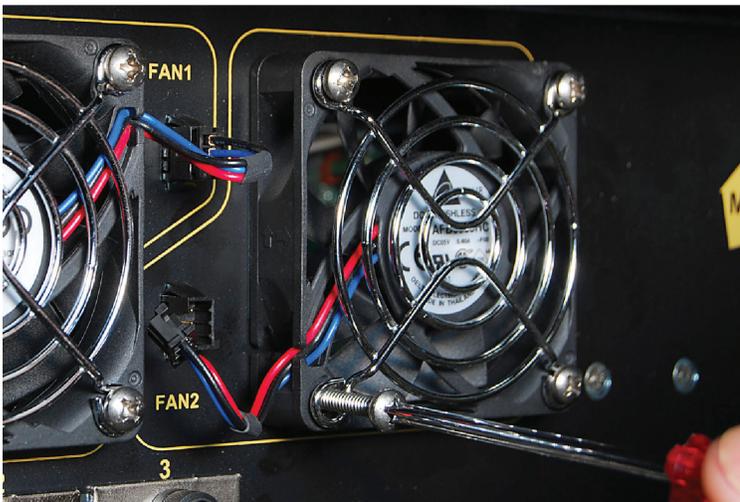
Figure 12: Remove/Install Power Supply

## 5.2 Remove/Install Fan

1. Disconnect the fan connector.



2. Using a Phillips screwdriver, remove the four screws holding the fan in place.



### Replace Fan

1. Position the fan in the indicated location, insert the four retaining screws and tighten using a Phillips screwdriver.



2. Insert the connector into the adjacent receptacle.



## 5.3 Cleaning Optical Connectors

The ADACf provides OPT IN and OPT OUT interfaces for forward path and optional return path capability. The optical connector interfaces utilize SC/APC (Angles Physical Contact) style connectors. The optical connector interfaces are mounted on a removable adapter which is secured by spring loaded captive screws to enable cleaning of the optical interfaces.

In the event that the optical connectors need to be cleaned, simply loosed the two captive screws noted on Figure 13 below and gently pull the adapter plate away from the front panel. You will now have access to the optical connectors at the rear of the adapter plate.

After cleaning the optical connectors, re-secure them into the appropriate bulkhead adapter and secure the adapter plate to the front panel with the captive screws.

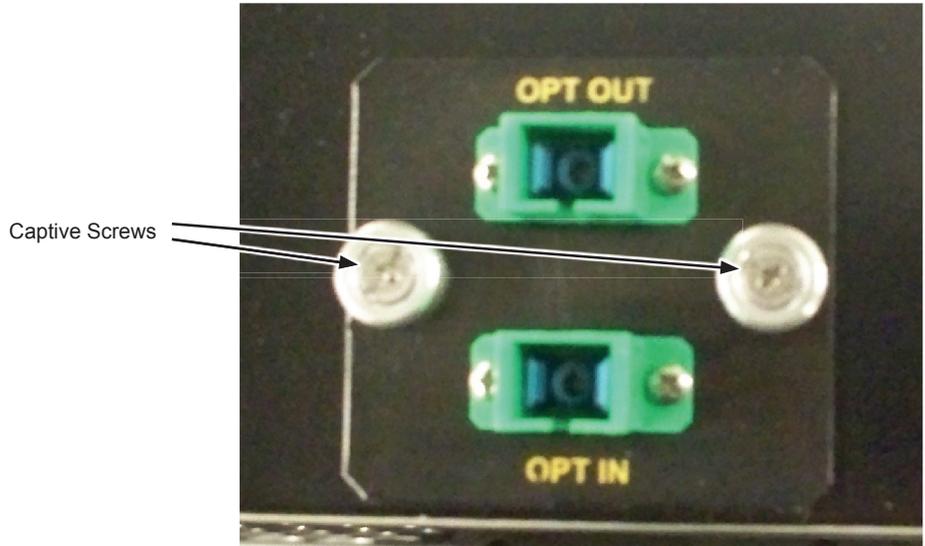


Figure 13: Optical Connectors

# SPECIFICATIONS

## 6. Specifications

SPECIFICATIONS	ADACf / ADAC
<b>RF</b>	
FREQUENCY RANGE	54-1000 MHz
OUTPUT LEVEL	+45 dBmV @ 0 dBm Optical Input
CARRIER-TO-NOISE RATIO	> 51 dB @ 0 dBm Optical Input
COMP. 2nd ORD.	-65 dBc @ 0 dBm Optical Input
COMP. TR. BT.	-67 dBc @ 0 dBm Optical Input
FLATNESS	+/- 1 dB Over Full Range
NOISE FIGURE	5.3 dB
IMPEDANCE	75 $\Omega$
OUTPUT RETURN LOSS	> 16 dB
RF OUT	F, 75 $\Omega$
RF TEST POINT (Post-Processing)	F, 75 $\Omega$ , -20 dB
RF TEST POINT (Pre-Processing)	F, 75 $\Omega$ , -20 dB
RF IN INSERTION POINT (Local Content Insertion)	F, 75 $\Omega$
RETURN TEST POINT	F, 75 $\Omega$ , -20 dB
<b>OPTICAL (ADACf Only)</b>	
FORWARD PATH OPERATING WAVELENGTH	1200-1620nm
OPTICAL INPUT RANGE	-6 to +3 dBm
OPTICAL RETURN LOSS	> 60 dB
RETURN PATH OPERATING WAVELENGTH	1310nm, 1550nm, CWDM
OPTICAL OUTPUT POWER	2mW (1310nm), 2.5mW (1550 & CWDM)
OPTICAL CONNECTOR	SC/APC
<b>ELECTRICAL &amp; ENVIRONMENTAL</b>	
OPERATING TEMPERATURE	0°C to +55°C (+32°F to +131°F)
HUMIDITY	Up to 95% Non-condensing
DIMENSIONS	18.5"H x 19.0"W x 11.0"D (46.99H x 48.26W x 27.94D cm)
WEIGHT	40.35 lbs (18.3 kg)
POWER SUPPLY	IEC Connector, 90-264 VAC, User Replaceable

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## SERVICE & SUPPORT

### 7. Service & Support

#### 7.1 Contact ATX Networks

Please contact ATX Technical Support for assistance with any ATX products. Please contact ATX Customer Service to obtain a valid RMA number for any ATX products that require service and are in or out-of-warranty before returning a failed module to the factory.

##### **Digital Video Products**

(DVIS, DigiVu, UCrypt, VersAtivePro)

##### **TECHNICAL SUPPORT**

Tel: (905) 428-6068 – press \*3 then press 1

Toll Free: (800) 565-7488 – press \*3 then press 1 (USA & Canada only)

Email: [digitalvideosupport@atxnetworks.com](mailto:digitalvideosupport@atxnetworks.com)

##### **CUSTOMER SERVICE**

ATX Networks

1-501 Clements Road West

Ajax, ON L1S 7H4 Canada

Tel: (905) 428-6068 – press \*1

Toll Free: (800) 565-7488 – press \*1 (USA & Canada only)

Fax: (905) 427-1964

Toll Free Fax: (866) 427-1964 (USA & Canada only)

Email: [support@atxnetworks.com](mailto:support@atxnetworks.com)

Web: [www.atxnetworks.com](http://www.atxnetworks.com)

#### 7.2 Warranty Information

All of ATX Networks' products have a 1-year warranty that covers manufacturer's defects or failures.



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