



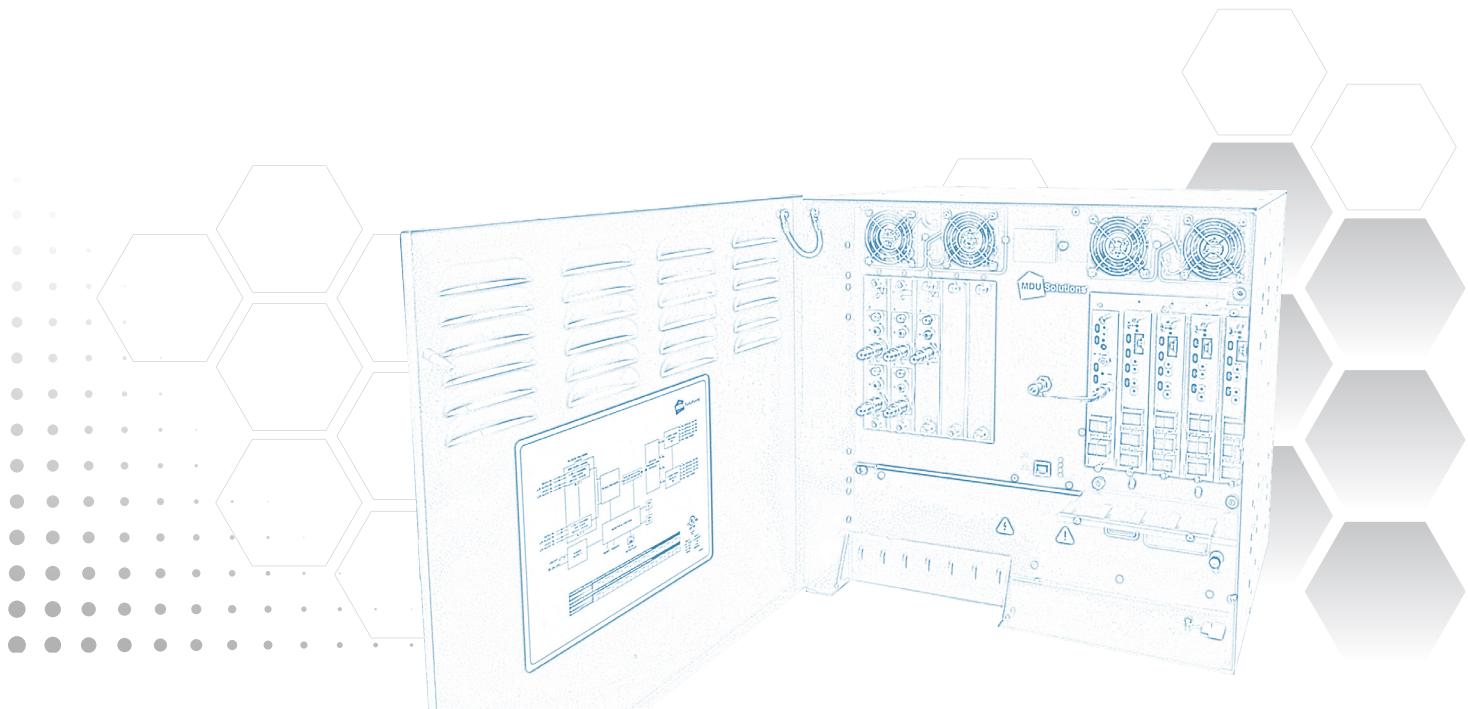
End-of-Sale as of
December 31, 2017

DVISf

Patent Pending

DVISf - Fiber Optic Digital Video Insertion System for Verizon FiOS® Networks

Installation & Operation Manual



Although every effort has been taken to ensure the accuracy of this document it may be necessary, without notice, to make amendments or correct omissions. Specifications subject to change without notice.

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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:

SAFETY GROUND: The connection to earth of the supplementary grounding conductor shall be in compliance with the appropriate rules for terminating bonding jumpers in Part V of Article 250 of the National Electrical Code, ANSI/NFPA 70, and Section 10 of Part I of the Canadian Electrical Code, Part I, CSA C22.1.

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.

PROVISION OF POWER SOCKET. The power socket or receptacle shall be installed near the equipment and be readily accessible to connect the equipment without the use of an extension cord.

POWER SUPPLY CORD PROTECTION: Care must be taken during installation to route or arrange the power supply cord to prevent and avoid the possibility of damage to the cord by external objects. Pay particular attention to the exit point from the device and plug.

POWER SUPPLY CORD ROUTING: The power supply cord shall not be attached to the building surface, nor run through walls, ceilings, floors and similar openings in the building structure.

FUSING: This device is equipped with a fuse; replace the fuse only with the same type. Refer to replacement text on the unit for correct fuse type.

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

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.

BATTERY REMOVAL AND REPLACEMENT: Replace the battery with Panasonic Part No. CR2032 or exact replacement only.

CAUTION: Use of a different battery type may present a risk of fire or explosion.

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.

1.1 Laser Safety

AVOID DIRECT EXPOSURE: EDFA emit invisible laser radiation that may cause permanent eye damage. Avoid direct exposure to the laser output. The output power of light with wavelengths in the infrared range may exceed +19 dBm (100 mW).

OPERATE EDFA WITH CONNECTOR INSTALLED: Operate the EDFA only with an optical fiber connector installed in the optical connector. EDFA output should never be activated without an attached fiber. This will ensure that all light is confined within the fiber waveguide, virtually eliminating all risk of eye damage.

CONNECT FIBER TO DEACTIVATED EDFA: ALWAYS connect a fiber to the output of the EDFA before the EDFA output is activated.

DEACTIVATE EDFA OUTPUT TO CONNECT FIBER: EDFA output should be turned off whenever the optical connector cover is opened and there is no installed fiber.

NEVER LOOK INTO OUTPUT PORT: DO NOT look directly into the output port of the EDFA or transmitter to avoid damaging your eyes. Fiber optic laser transmitter outputs at 1550 nm are totally invisible to the unaided eye and will cause permanent damage. NEVER look into the output connector of the transmitter or EDFA or a fiber connected to a transmitter or EDFA.

NEVER LOOK INTO FIBER END: NEVER look at the end of the fiber to see if light is coming out. Fiber optic laser transmitter outputs at 1550 nm are totally invisible to the unaided eye and will cause permanent damage. NEVER look into or use any optical instrument to view the end of a fiber that may be connected directly or via an optical splitter, to a transmitter or EDFA that may be operating at any distance from the viewing end. Use extreme care with magnifying glasses, microscopes, etc.

USE POWER METER TO VERIFY OUTPUT: ALWAYS use an instrument such as an optical power meter to verify light output.

NEVER CLEAN CONNECTORS WITH ACTIVE LASER OUTPUT: NEVER clean an optical connector with optical power present.

READ PRODUCT DATA SHEET: ALWAYS read the product data sheet and the laser safety label before powering or operating the product.

USE APPROPRIATE EYE PROTECTION: Note the operation wavelength, optical output power and safety classifications. If safety goggles or other eye protection are used, be certain that the protection is effective at the wavelength emitted by the device before applying power.



**ATTENTION: PLEASE READ THE INSTRUCTIONS COMPLETELY AND CAREFULLY BEFORE
INSTALLING OR OPERATING THE UNIT! ALL OPERATION STEPS SHOULD BE CARRIED
OUT IN THE PRESCRIBED SEQUENCE! USING THE EQUIPMENT IMPROPERLY CAN CAUSE
SERIOUS DANGER FOR PERSONS OR DAMAGE THE DEVICES.**

SYSTEM DESCRIPTION

2. System Description

2.1 In this Chapter

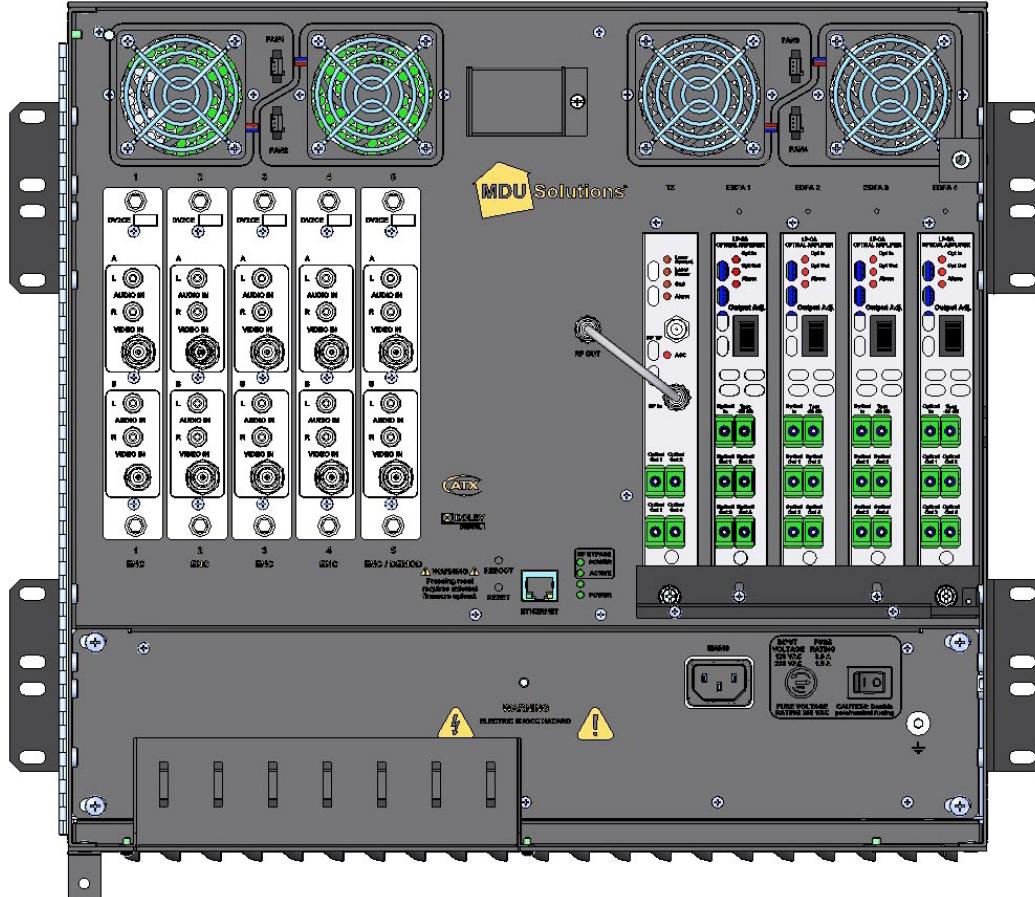
- “Model Description”
- “The DVISf Digital Audio/Video Insertion System”
- “Optical Insertion Operation”
- “Key Features”
- “Simplified Block Diagram of DVISf Product”
- “Available Hardware”

In this chapter we introduce the key features of the ATX Networks Digital Video/Audio Insertion System (DVISf) and describe some attributes that make the DVISf device a powerful addition to the Verizon PON architecture.

2.2 Model Description

DVISf

The DVISf device contains up to 10 channels of MPEG2 encoding, integrated Optical transmitter and up to EDFAs. This model is used in applications where up to 10 channels of in-house video are required in commercial sites such as stadiums, hospitals and other health care facilities where in-house educational channels are implemented. The integrated optical ITU Grid transmitter and associated EDFAs simplifies the distribution of the inserted programs into the Verizon PON Network.



For full capabilities see “DVISf Specifications” on page 12-1

2.3 The DVISf Digital Audio/Video Insertion System

The DVISf device is a network-edge local content insertion device for digital video networks where distribution and insertion is optical. It encodes local baseband analog content into a digital format for use in a property provisioned with digital only TVs, STBs or DTAs and a cable system with PON architecture where analog spectrum is not available.

Target applications include:

- Security or surveillance camera feeds (MDUs, retirement homes)
- Text/character generator or local information channel (hotels, conference centers, gated communities)
- Distribution of ‘in-house’ or private channels throughout a cable system plant or property (e.g., sports stadiums, network studios)

All deployments of digital signals in a modern cable TV system are presented with challenges which did not exist in the former analog deployments. Specific challenges are faced when MDUs and institutions within the cable plant require locally inserted content which must be received by the installed base of cable TV set top boxes (STB). The DVISf unit can be used in these properties to encode local analog video cameras, message boards, instructional and advertising channels into MPEG2 streams and insert the content into a blank EIA channel or perform digital drop and insert into pre-existing QAM carriers. The flexible architecture of the DVISf product makes it an ideal candidate for any number of programs that an MDU or similar property is likely to require.

2.4 Optical Insertion Operation

The DVISf product supports installation into a PON topology. The equipment contains an integrated optical transmitter and up to four EDFAs. The unit may be used to insert a single QAM channel into an optical network where the RF spectrum of the target insertion channel has been left unoccupied. Optical channels from the broadcast transmitter and the DVISf narrow-cast transmitter are combined using passive optical splitters. When the 1550 nm ITU band is received at the PON the DVISf QAM channel will be present in an unoccupied EIA channel on the cable system. Availability of optical transmitters with a wide range of ITU Grid channels allows placing the inserted optical carrier in relation to occupied 1550 nm spectrum.

2.5 Key Features

2.5.1 Flexible MPEG2 Digital Program Insertion

Designed for deployment in PON architectures, the DVISf product is capable of inserting digital programs into an EIA RF channel where there is no pre-existing carrier on the broadcast Optical Network. The integrated QAM modulator is pre-set to 825 MHz for the Verizon PON Architecture.

2.5.2 Remote Monitoring Via SNMP

The DVISf product fully supports Simple Network Management Protocol (SNMP) which allows the monitoring of the built in alarm points by a remote SNMP management console. The available DVISf MIB may be compiled into the remote Management Console to provide notification of the triggering of any alarm either across a private network or the internet if available. Upon triggering of a predefined alarm, a trap is automatically sent by the unit to a listening SNMP management console.

The traps sent from the DVISf equipment are as follows:

- Internal Temperature beyond Threshold.
- Cooling Fan Failure.
- Video Status Changed (for each of up to 10 channels).

2.5.3 Simplified Mass Deployment and Backup with Configuration Export

The DVISf product allows the operator to export the programmed configuration as a file. The exported file may be used for backup and archive purposes or to allow fast and easy deployment of multiple DVISf units with similar configuration. The file may be imported to any number of units requiring similar settings, thus saving the time to manually program each unit before deployment.

2.5.4 IPv4 Network Address Support

The DVISf unit uses IPv4 IP addressing and maybe configured with any valid IPv4 address to allow access from private networks or from across the internet. For security against internet intrusion, the device forces assignment of a username and password which may be changed at any time.

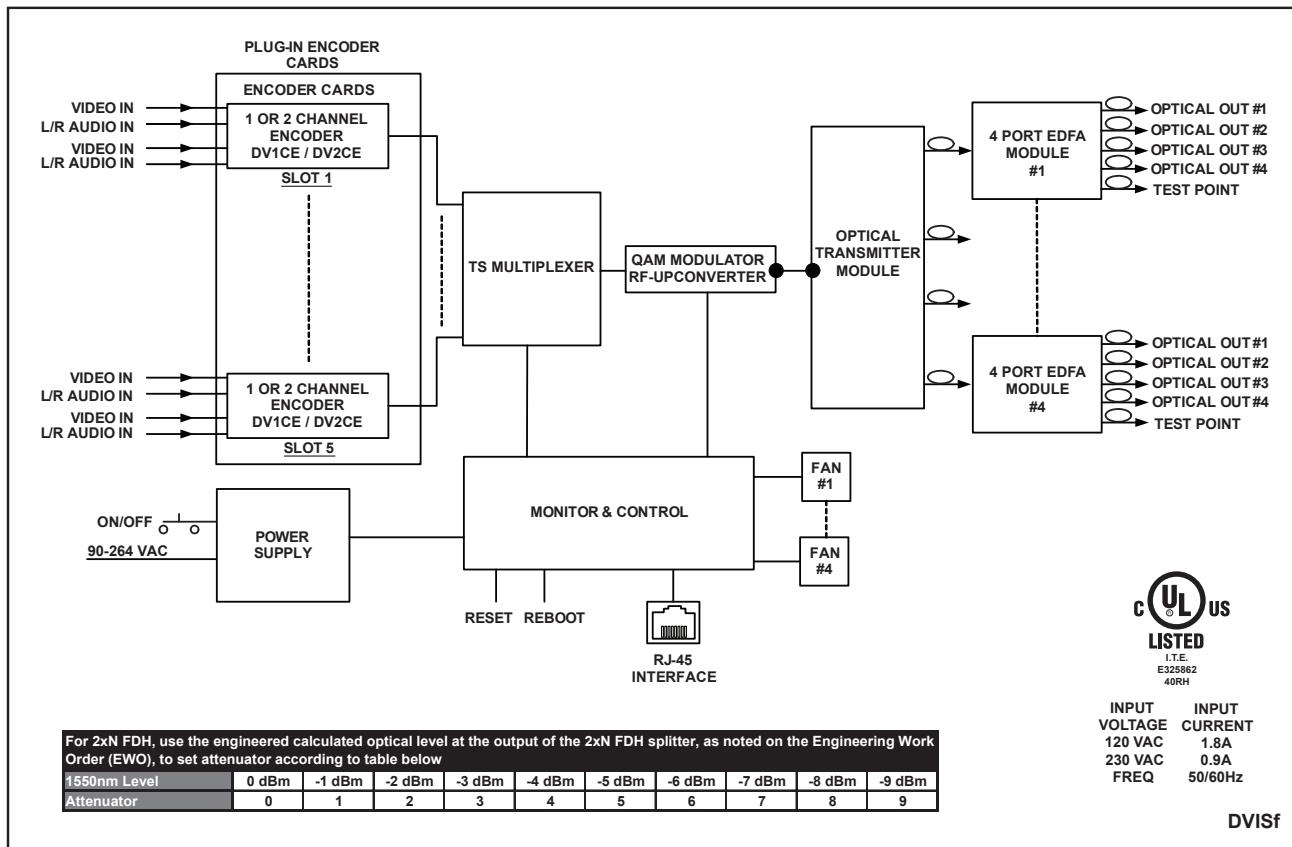
2.5.5 Powerful Management Interface

Management and configuration of the DVISf equipment is through a built-in web server which presents the configuration pages in an intuitive tabbed interface. Access to the Management Interface may be configured to allow remotely connecting across any private network or over the Internet if a connection is made available. For Internet security, a username and password provides controlled access against unauthorized persons.

2.5.6 MDU Application Secure Enclosure

The DVISf equipment is constructed in a durable and lockable enclosure designed for the typical MDU wall mount installation environment. Integral cooling fans allow the equipment to be installed and operate in a wide range of uncontrolled environmental conditions where room cooling is not available. All controls and modules are securely located inside the cabinet.

2.6 Simplified Block Diagram of DVISf Product



2.7 Available Hardware

More information on available hardware options and accessories may be obtained from ATX Networks Customer service. See ["Service & Support" on page 13-1](#) for contact phone numbers. Please refer to ["Specifications" on page 12-1](#) for detailed information on the DVISf system.

2.7.1 Ordering Information

Part Number	Description
DVF*ExO ⁽¹⁾	Optical AVV Insertion Unit with * Encoders (* = Number of Encoders, ie. 1, 2, ...10), x Optical Outputs (x = 1-10, 12, 13 or 16) and ^ Wavelength (^ = ITU 22, 23...46), includes 19"/23" Universal Mounting Brackets (1 & 2 Output Versions use DVF1E EDFA Module(s))
DV1CE ⁽¹⁾	Separate 1-channel Encoder Plug-in Card (1 Video + 2 Audio Inputs) for Subsequent Plug-in Installation
DV2CE ⁽¹⁾	Separate 2-channel Encoder Plug-in Card (2 Video + 4 Audio Inputs) for Subsequent Plug-in Installation
DVFTX [^]	Optical Transmitter Module for DVISf Base Unit, four 2.5 dBm Output Ports, ^ ITU Wavelength (^ = 22,23...46), SC/APC Connectors
DVF1E	1-port EDFA Module with -30 dB Tap Port, SC/APC Connectors; 10-19 dBm
DVF4E	4-port EDFA Module with -24 dB Tap Port, SC/APC Connectors; 10-19 dBm
DVFAN	Replacement/Spare Fan for DVISf
DVFPWRSUP	Replacement/Spare Power Supply for DVISf

NOTE:

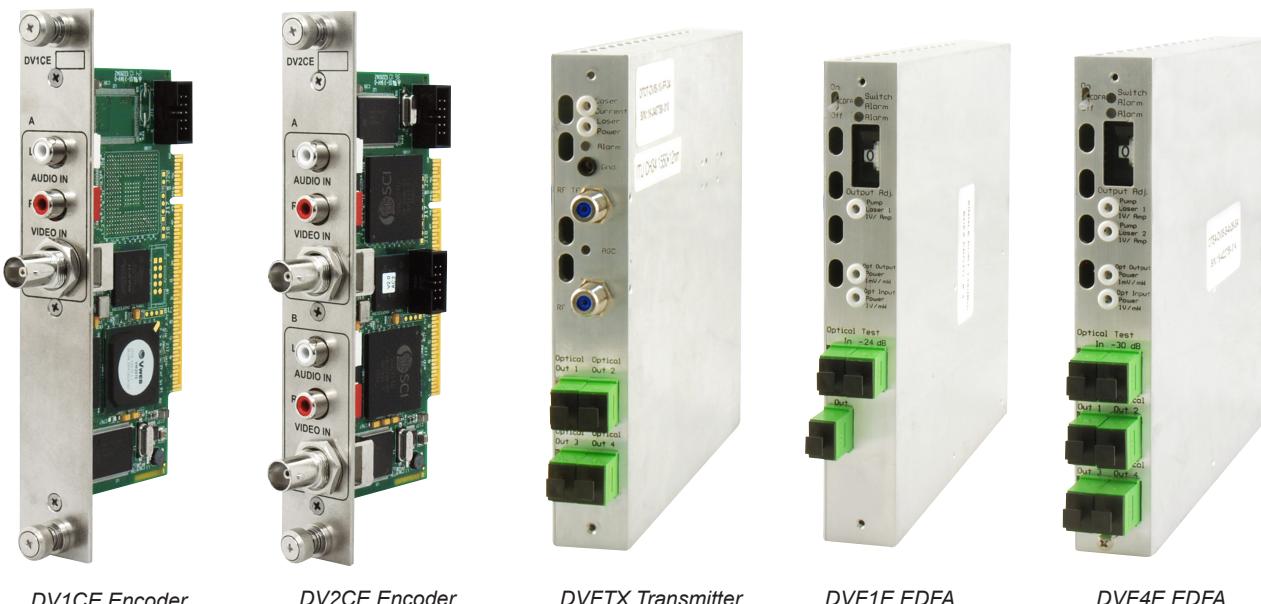
(1) To order PAL/MPEG-1 Layer II Encoding, add letter M to the end of part number.

Part Number	Optical Outputs	Tx Module	1 Port EDFA	4 Port EDFA	EDFA Modules	Max Number of ONTs
DVF*E1O [^]	1	✓	✓	∅	1	512
DVF*E2O [^]	2	✓	✓	∅	2	1024
DVF*E3O [^]	3	✓	✓	∅	3	1536
DVF*E4O [^]	4	✓	∅	✓	1	2048
DVF*E5O [^]	5	✓	✓	✓	2	2560
DVF*E6O [^]	6	✓	✓	✓	3	3072
DVF*E7O [^]	7	✓	✓	✓	4	3584
DVF*E8O [^]	8	✓	∅	✓	2	4096
DVF*E9O [^]	9	✓	✓	✓	3	4608
DVF*E10O [^]	10	✓	✓	✓	4	5120
DVF*E12O [^]	12	✓	∅	✓	3	6144
DVF*E13O [^]	13	✓	✓	✓	4	6656
DVF*E16O [^]	16	✓	∅	✓	4	8192

NOTES:

* = Number of Encoders (1,2...10)
 ^ = Wavelength (ITU 22,23...46)

2.7.2 Available Modules



DV1CE Encoder

DV2CE Encoder

DVFTX Transmitter

DVF1E EDFA

DVF4E EDFA

INSTALLATION

3. Installation

3.1 In this Chapter

- “Equipment Safety Grounding.”
- “Mounting the DVISf Cabinet”
- “Environment and Power”
- “Audio & Video Connections”
- “Ethernet Network”
- “Optical Configuration”

This chapter outlines the most important aspects of the installation of the DVISf equipment and summarizes the site considerations that the installer must take into account when choosing a location for the unit.

3.2 Recommended Installation Environment

The DVISf cabinet may be mounted in a variety of positions as required by site conditions although the intention was that the cabinet be installed with the vents at the bottom and fans at the top.



NOTE: *This equipment is intended for installation in a RESTRICTED ACCESS LOCATION only. Not for use in a computer room as defined in the Standard for Protection of Electronic Computer/Data Processing Equipment, ANSI/NFPA 75. This equipment is intended for use in a fixed position and should be installed securely before operation is undertaken.*

3.2.1 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.

3.3 Equipment Safety Grounding.

It is imperative that the DVISf housing be connected to a permanent building ground in a manner that will ensure that the exposed metal parts are constantly connected to ground even when the power cord may be disconnected temporarily. A grounding lug is provided on the front panel to conveniently effect such a connection. The following guidelines are provided to clarify the requirements for the installation to meet UL, CUL and CB standards. The use of the words “Ground” and “Earth” as well as “Grounding” and “Earthing” may be used interchangeably and in this context, have the same meaning.



3.3.1 Connection to Earth

The supplementary equipment grounding conductor is to be installed between the DVISf front panel ground connector and earth, that is, in addition to the equipment ground conductor in the power supply cord.

3.3.2 Conductor Size

The supplementary equipment grounding conductor may not be smaller in size than the branch-circuit supply conductors or a minimum #14 AWG. The supplementary equipment grounding conductor is to be connected at the front panel terminal provided, and connected to earth in a manner that will retain the earth connection when the power supply cord is unplugged. The connection to earth of the supplementary grounding conductor shall be in compliance with the appropriate rules for terminating bonding jumpers in Part V of Article 250 of the National Electrical Code, ANSI/NFPA 70, and Section 10 of Part I of the Canadian Electrical Code, Part I, CSA C22.1.

3.3.3 Conductor Termination

Termination of the supplementary equipment grounding conductor may be made to building steel, to a metal electrical raceway system, or to any grounded item that is permanently and reliably connected to the electrical service equipment earth.

3.3.4 Conductor Type

Bare, covered or insulated grounding conductors are acceptable. A covered or insulated grounding conductor shall have a continuous outer finish that is either green, or green with one or more yellow stripes.

3.4 Mounting the DVISf Cabinet

The DVISf unit is provided with universal mounting brackets which allow the cabinet to be mounted in a standard 19" EIA equipment rack or flat against a wall or panel board. The two bracket configurations are illustrated below.



Rack Mount Bracket Configuration



Panel Mount Bracket Configuration

3.4.1 Panel Mounting the DVISf Cabinet

The DVISf unit is intended to be mounted flat against the backboard so be sure to provide sufficient area. The dimensions are:

DVISf Unit 15.76"H x 17.04"W x 15"D (40.03 cm H x 43.28 cm W x 38.1cm D)

A reasonable amount of space will be required in front of and behind unit. The equipment is designed with fan forced cooling which exhausts to the front of the unit, so be sure to avoid blocking airflow at the front of the unit and mount in such a manner to provide a source of ambient cool air at the front air intake of the unit. When determining the best location for this equipment, consider also that the site technician will need access to the front of the DVISf for accessing connections, maintenance and configuration. Wood screws required to mount the DVISf equipment to a backboard are not supplied.

3.4.2 Panel Mounting Precautions

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 (50°C).

Reduced Air Flow:

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

Mechanical Loading:

Mounting of the equipment should be according to the installation instructions so that a hazardous condition is not created due to improper mechanical loading. Do not use the DVISf product to mechanically support other equipment.

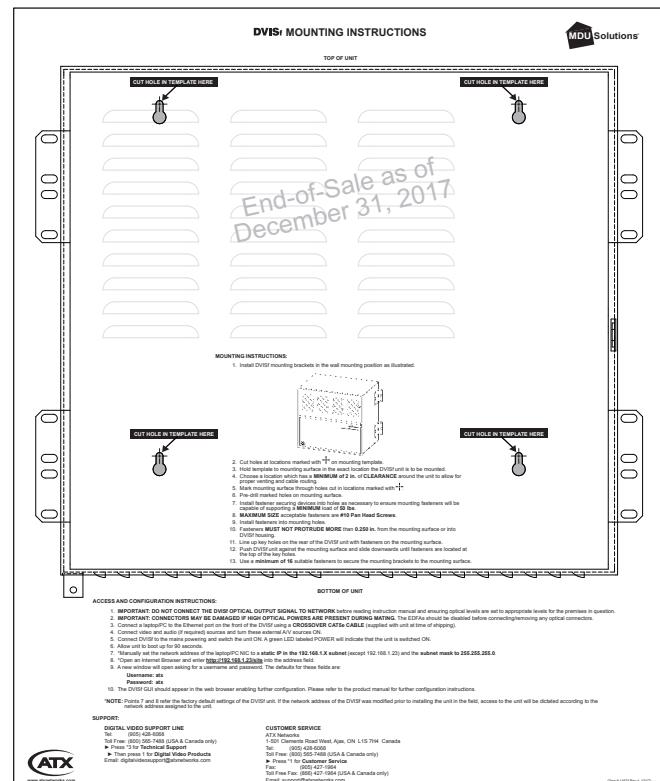
Circuit Overloading:

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 over-current protection and supply wiring. Consider equipment nameplate ratings when addressing this concern.

3.4.3 Using the Installation Template

Each shipped DVISf product is provided with a full size template to assist with installation. The unit is mounted on a wall or backboard panel using supplied auxiliary brackets. The mounting template simplifies installing the mounting fasteners in the correct locations especially if mounting to a concrete structure where holes need to be pre-drilled. If you do not have a template either call ATX, see ["Service & Support" on page 13-1](#), and request one or download from the ATX website ([atxnetworks.com](#)) in the Resources & Support Section, User Documents sub-section. If you don't have the ability to print these, a workable template may be made with a large sheet of paper or cardboard.

1. Install DVISf mounting brackets in the wall mounting position.
2. Cut holes at locations marked on mounting template.
3. Hold template to mounting surface in the exact location the DVISf unit is to be mounted.
4. Choose a location to allow a **MINIMUM** of 2 in. of **CLEARANCE** around the unit in order for proper venting and space for cables.
5. Mark mounting surface through holes cut in locations marked.
6. Pre-drill marked holes on mounting surface.
7. Install fastener securing devices into holes as necessary to ensure mounting fasteners will be capable of supporting a **MINIMUM** load of 50 lbs.
8. **MAXIMUM SIZE** acceptable fasteners are #10 Pan Head Screws.
9. Install fasteners into mounting holes.
10. Fasteners **MUST NOT PROTRUDE MORE** than 0.250 in. from the mounting surface or into DVISf housing.
11. Line up key holes on the rear of the DVISf unit with fasteners on the mounting surface.
12. Push DVISf unit against the mounting surface and slide downwards until fasteners are located at the top of the key holes.
13. Use a minimum of 16 suitable fasteners to secure the mounting brackets to the mounting surface.



3.5 Environment and Power

3.5.1 Airflow and Cooling

Ambient temperature

The DVISf equipment must be installed in a room where the ambient air temperature does not exceed +122°F (+50°C). This is a maximum temperature that must not be exceeded but the preferred temperature range is one where people feel most comfortable.

Non-Condensing environment

The DVISf equipment must be installed in an environment that is non-condensing. This means that a relative humidity of less than 95% must be maintained. Lower humidity is better and the preferred humidity range is one where people feel most comfortable.

Fan control

The DVISf product is designed to operate to specification in an ambient room temperature of 0°C to +50°C (+32°F to +122°F). Sufficient airflow through the unit must be maintained regardless of the mounting location. It is imperative that other equipment or materials of any type do not block free airflow at the front of the DVISf unit.

The DVISf product does not contain air filters so there is no need to provide ongoing maintenance of filters.

3.5.2 Provisioning of Electrical Power

Power cord protection

Measures must be taken during installation to route or arrange the power supply cord to prevent physical damage to the cord and to avoid the possibility of future damage occurring. The power supply cord shall be installed and routed such that, throughout its length, the cord and its points of connection are not strained in any way. Route the power cord through the large opening provided for A/V cable routing and over the right side of the cable management bar.

Power Cord Attachment:

The unit power supply cord shall **not** be attached to the building surface, bundled with audio, video or RF coaxial cables, nor run through walls, ceilings, floors and similar openings in the building structure. The power cord may be secured against strain at the DVISf cabinet by attaching it to the cable management bar with a small cable tie as shown in the photo.

Provision of Electrical Power Outlet:

An electrical power outlet of appropriate type and rating shall be provided near the location where the DVISf unit is installed such that the provided power supply cord may be routed in an appropriate manner, without the use of extension cords, between the receptacle and the DVISf cabinet. Alternately, the DVISf cabinet shall be installed in close proximity to an existing electrical outlet such that the requirements of this paragraph are achieved.

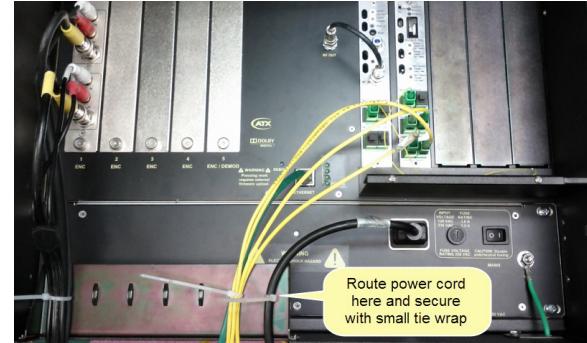
IEC Power Input Cord

The power input receptacle is a standard IEC connector similar to that commonly used on computers and monitors. The power cord provided with the DVISf product is a North American configuration with a NEMA 5-15 grounded plug for 110 VAC. If it is necessary to operate the product on 220 VAC, the installer must obtain an IEC cord with a NEMA 6-15 grounded plug for use in North America. This may be obtained from ATX Networks or locally.

Input Power Requirements

When installing the DVISf equipment, it is the responsibility of the installer to determine that sufficient capacity is available in the electrical circuit feeding the unit to avoid overloading the supply circuit. Each DVISf model will require power to be supplied from a properly grounded outlet. The installer shall determine that the power outlet, its wiring and receptacle is in compliance with local and/or national electrical codes as applicable. The input power requirement is constant over the range of input voltages. At higher input voltages, the current consumption is lower than it is at lower voltages where the input current is higher.

Input Power: 165 Watts



Route and Secure Power Cord

Input Voltage Range

The DVISf product is designed with an autosensing switching type power supply which can operate on a wide range of input voltages. There is no need to configure the power supply to operate on any voltage within this range:

Input Voltage: 90 VAC to 264 VAC

Fusing

The DVISf power supply is protected from over current conditions with a slow blow fuse. Replace with similar type and rating to avoid over-current circuit damage. The following table describes the fuse if replacement ever becomes necessary.

DVISf Fuse Replacement Criteria				
Input Voltage	Fuse application	Fuse Type	Ampere rating	Fuse size
110 VAC	AC IN	Slow Blow	3	5 x 20 mm glass tube
220 VAC	AC IN	Slow Blow	1.5	5 x 20 mm glass tube
110 VAC	Internal Power Supply	Fast Blow	4	5 x 20 mm glass tube
220 VAC	Internal Power Supply	Fast Blow	4	5 x 20 mm glass tube

3.6 Audio & Video Connections

3.6.1 Video Cable Recommendation

It is recommended to utilize double or triple shielded 75 Ω coaxial cables with RCA connectors or adapters for video signals. UL approved coaxial cables that are in general use in Cable TV systems will usually be satisfactory. Observe fire and smoke rating of cables and the installation environment to ensure compliance with all local codes. Cables shall be routed such that terminal connections are not strained.

3.6.2 Video Port Connectors

The MPEG encoders are provided with a BNC connector for video input. For convenience a BNC to RCA adapter is provided on each video input port as this is a common requirement in many installations.

3.6.3 Video Input Levels

Video Input level is expected to be 1 volt P-P although a higher and lower signal voltage may be tolerated by adjusting the video level control in the Management interface. See **Brightness** in ["Video Output Configuration" on page 5-3](#) for a possible work around for low level video.

3.6.4 Audio Cable Recommendation

It is recommended to utilize double or triple shielded 75 Ω coaxial cables with RCA connectors or adapters for audio signals. UL approved coaxial cables that are in general use in Cable TV systems will usually be satisfactory. Observe fire and smoke rating of cables and the installation environment to ensure compliance with all local codes. Cables shall be routed such that terminal connections are not strained.

3.6.5 Audio Port Connectors

The Audio connectors provided on the encoders are RCA type. Many adapter types are available to convert these RCA connections to the type that may be encountered at a property.

3.6.6 Audio Input Impedance & Level

The audio input is high impedance unbalanced. Be sure to match the audio source to the DVISf audio connection. If balanced audio is encountered it is often possible to obtain good results by using only the + side of the feed.

3.7 RF Cable Link

The coaxial RF cable link between the QAM modulator output and the Optical transmitter input is factory installed and required to be connected between the provided terminal connectors at all times. The link may be disconnected only to allow removal of the optical transmitter for servicing. It is not intended that this link be extended or bypassed in any way to extend the signals in a permanent manner outside of the DVISf cabinet except to a portable Cable TV field meter for test purposes. Similarly, the RF output test point on the optical transmitter may not be extended in a permanent manner by any means to a point outside the DVISf cabinet except to a portable Cable TV field meter for test purposes.

3.8 Ethernet Network

3.8.1 Ethernet Port

An Ethernet network port is provided to allow local and remote access to the DVISf product over the internet or a private intranet.

Information about use of the Ethernet port may be found at:

- Setting port IP addresses ["Network Settings" on page 8-3](#)
- ["Connecting DVISf to the Management Computer" on page 4-5](#)

The Ethernet port is DTE, similar to a PC Ethernet port and will require a crossover cable to connect to a PC. Connection to a router or switch may be made with a standard straight through cable. Port speed is 10/100 Base-T and will auto negotiate the connection based on the connected equipment.

3.8.2 Ethernet cable type

Connect DVISf to:	Router or switch	Computer
Cable Type	Straight Through	Crossover

Cables of high quality meeting Cat5e or Cat6 are recommended.

3.9 Installing Modules

For information on removing or installing modules, see ["Field Replacement of Modules" on page 10-1](#)

3.10 Optical Configuration

- Determine number of outputs required from the DVISf device for the insertion application & ensure the appropriate model is selected from the part numbers list below:

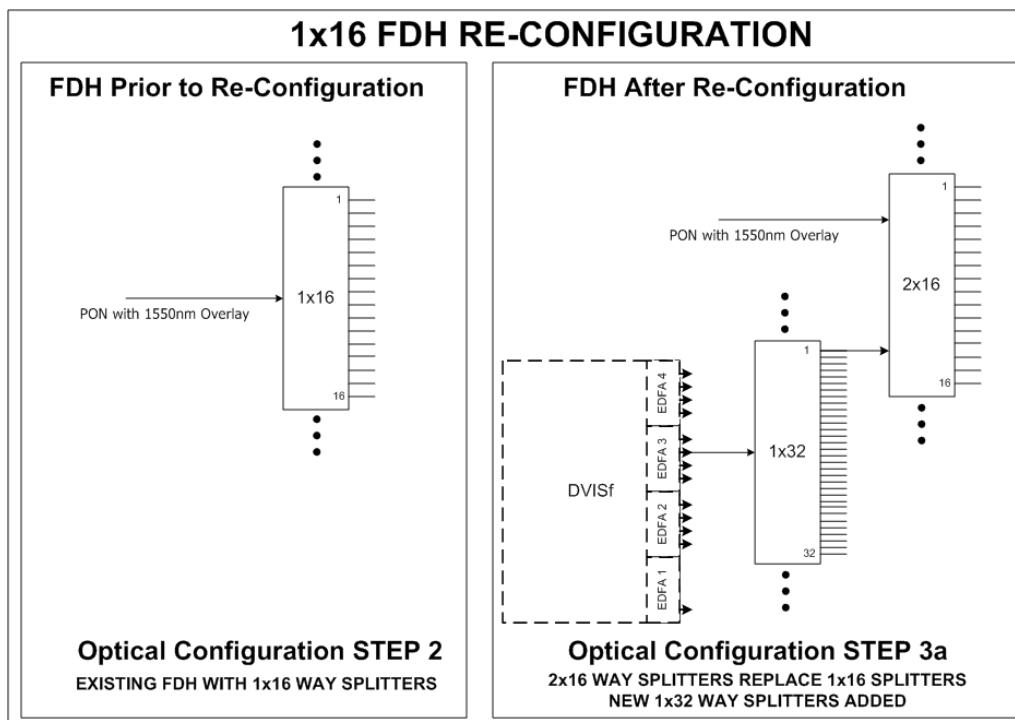
Part Number	Optical Outputs	Tx Module	1 Port EDFA	4 Port EDFA	EDFA Modules	Max Number of ONTs
DVF*E10^	1	✓	✓	∅	1	512
DVF*E20^	2	✓	✓	∅	2	1024
DVF*E30^	3	✓	✓	∅	3	1536
DVF*E40^	4	✓	∅	✓	1	2048
DVF*E50^	5	✓	✓	✓	2	2560
DVF*E60^	6	✓	✓	✓	3	3072
DVF*E70^	7	✓	✓	✓	4	3584
DVF*E80^	8	✓	∅	✓	2	4096
DVF*E90^	9	✓	✓	✓	3	4608
DVF*E100^	10	✓	✓	✓	4	5120
DVF*E120^	12	✓	∅	✓	3	6144
DVF*E130^	13	✓	✓	✓	4	6656
DVF*E160^	16	✓	∅	✓	4	8192

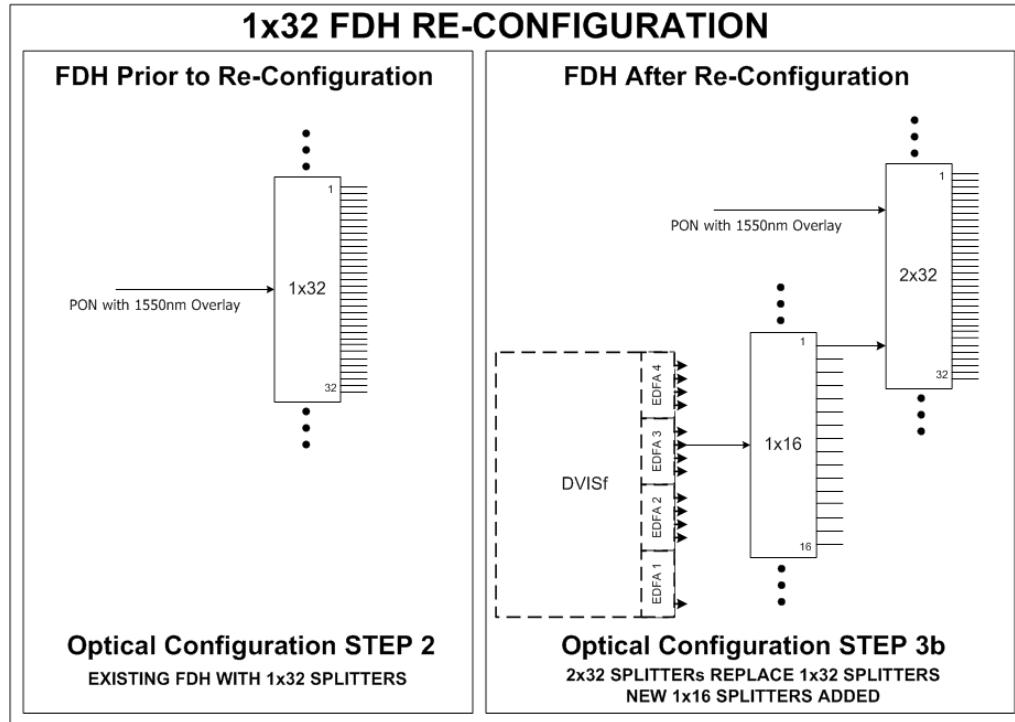
NOTES:

* = Number of Encoders (1,2...10)
^ = Wavelength (ITU 22,23...46)

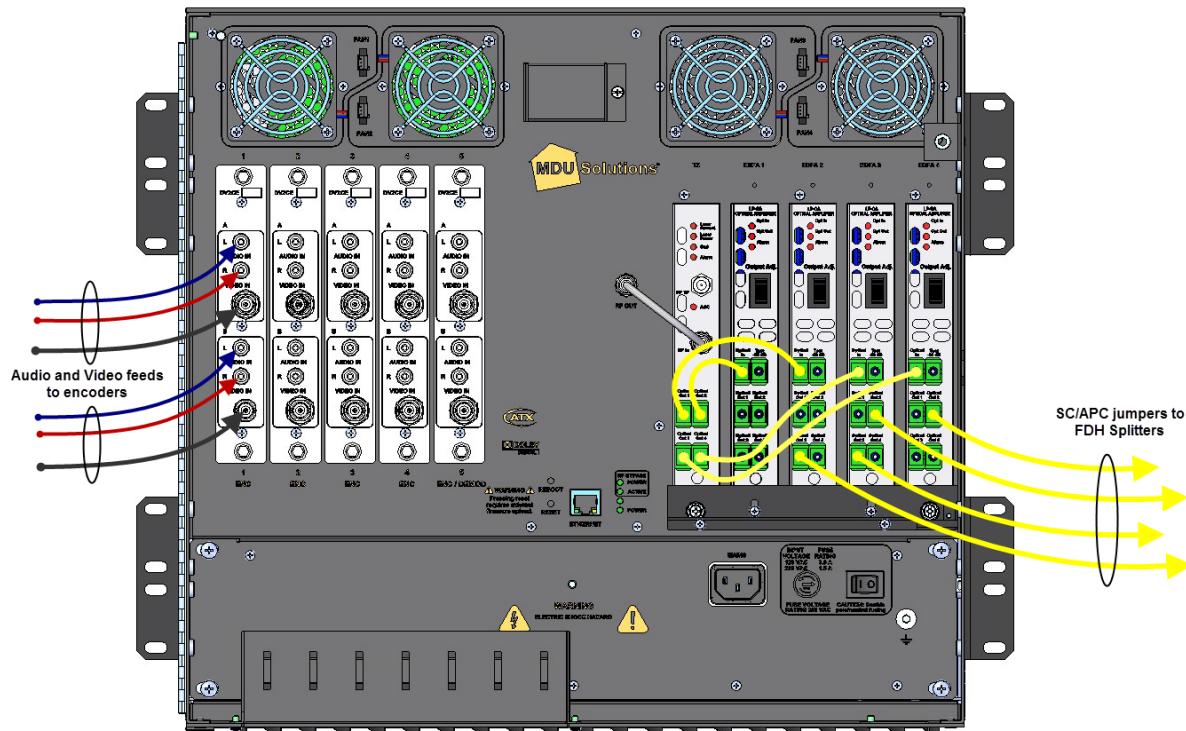
- Determine FDH splitting configuration. FDH will have 1x16 or 1x32 way optical splitters installed.
- Replace optical splitters according to the following criteria:
 - If the FDH is currently configured with 1x16 splitters:
 - Replace each existing 1x16 splitter with a 2x16 splitter
 - Install one new 1x32 splitter for each optical output of the DVISf
 - If the FDH is currently configured with 1x32 splitters:
 - Replace each existing 1x32 splitter with a 2x32 splitter
 - Install one new 1x16 splitter for each optical output of the DVISf

The following diagrams illustrate the changes for the 2 FDH splitter options before and after modification for the DVISf unit.





4. Install DVISf Cabinet
 - Mount the DVISf unit in a 19" EIA equipment rack or on a panel board using brackets installed as shown in ["Mounting the DVISf Cabinet" on page 3-2](#)
5. Make Front Panel Connections
 - Connect Audio and Video sources to encoders.
 - Ensure the factory installed RF jumper is connected from the RF Output Port to the DVFTX RF Input Port.





NOTE: ENSURE THE PUMP ENABLE switch is in the DISABLED POSITION FOR EACH EDFA if DVISf unit is powered on.

- Use SC/APC jumpers to connect each EDFA input to one of the optical output ports of the DVFTX.

6. The engineered calculated optical level at the output of the 2xN FDH Splitter, as noted on the Engineering Work Order (EWO) will be used to set the EDFA output level. The EDFA front panel attenuator control must be adjusted for each individual EDFA using the thumb wheel rotary switch, according the table below.

For 2xN FDH, use the engineered calculated optical level at the output of the 2xN FDH splitter, as noted on the Engineering Work Order (EWO), to set attenuator according to table below

1550nm Level	0 dBm	-1 dBm	-2 dBm	-3 dBm	-4 dBm	-5 dBm	-6 dBm	-7 dBm	-8 dBm	-9 dBm
Attenuator	0	1	2	3	4	5	6	7	8	9

- Connect each EDFA output to a 1x16 (or 1x32) splitter input using SC/APC jumpers..
- Connect each output of the 1x16 (or 1x32) splitters to the input of a 2x16 (or 2x32) splitter.
- Power on the DVISf equipment and log on to the Management Interface see ["Management Interface Start-up" on page 4-1](#).
- Verify MPEG Encoder configuration** is correct for all encoders on the Encoder Settings Tab.
- Verify RF Output Configuration** by navigating to the **RF Output Tab**. Check that the RF Frequency is set to 825000 kHz and attenuation is set to 20 dB (or other prescribed value).
- Connect a QAM analyzer to the RF Output Test Point on the DVFTX and ensure that the QAM can be tuned at 825 MHz and is at a level of +20 to +25 dBmV.
- Confirm that the **Status and AGC LEDs** on DVFTX transmitter are green. If LEDs are not green, see the table ["DVFTX Indicator LEDs" on page 11-1](#) for further information and action required.
- Enable each EDFA and ensure both alarm LEDs are green. If either LED is not green see ["EDFA Indicator LEDs" on page 11-1](#) for further information and action required.
- Verify that all encoders are producing video output on a STB.
- Troubleshoot if any condition is discovered that is not in compliance with the installation instructions outlined above.

ATX DVIS Settings

Encoder Settings

Encoder (port) Number:	1	<input type="button" value="Detect Encoder"/>
Encoder Type:	<input checked="" type="checkbox"/>	
Encoder Active:	<input checked="" type="checkbox"/>	
Input Parameters		
Input Video Standard:	NTSC	
Audio Sampling Rate:	48	(Khz)
Output Parameters		
MPEG2 Video Rate: [1000-8000]	3000	(kbps)
Video Resolution:	352x480	
Brightness: [0-255]	138	
Contrast: [0-127]	63	
Saturation: [0-127]	66	
Enable Audio:	Enable	

Ports View

Port 1	Port 2	Port 3	Port 4	Port 5	Port 6	Port 7	Port 8	Port 9	Port 10	Port 11	Port 12	Port 13	Port 14	Port 15	Port 16
VMWEB_NA	VMWEB_NA	None													
Active	Active	InActive													
NTSC															
48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48

Verify MPEG Encoder Configuration

ATX DVIS Settings

RF Settings

RF Frequency: [15000-975000]	825000	(Khz)
QAM Mode:	256	
QAM Modulation Type:	QAM-B	
Symbol Rate: [2000-7000]	5360	(Ksps)
RF Attenuation: [0-26]	20	(1db)
Interleaving:	IU 128/1	

Verify RF Output Configuration

3.11 Cable Management Bar

The cable management bar may be used to organize and provide strain relief to cables entering the cabinet. Be careful to not over tighten cable ties to avoid distorting the coaxial cables which could result in return loss discontinuities.

3.11.1 Moving the Cable Management Bar

The cable management bar can be mounted to the exterior of the DVISf 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 DVISf 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 on the cabinet bottom panel using the four screws.



Cable Management Bar Removed



Cable Management Bar Inverted Outward

3.11.2 Power Supply Access

As shipped, the DVISf cable management bar blocks access to the power supply. This is not an issue unless, in the unlikely event, the power supply needs to be changed. It is left up to the installer as to which position of the cable bar best suits the installation.

MANAGEMENT INTERFACE

4. Management Interface

4.1 In this Chapter

- “DVISf Configuration Pages”
- “Minimum Computer Requirements”
- “Starting the Management Interface”
- “Connecting DVISf Unit to the Management Computer” on page 4-5
- “Factory Default IP Address Settings”
- “Default Username and Password”

The DVISf products are provided with many configurable settings which allow customizing of the DVISf unit to the installation environment. Access to the DVISf configuration, referred to as the **Management Interface**, is via an integrated web server so a web browser may be used to view and change settings. The DVISf Management Interface may be accessed remotely over the Internet or any private intranet if such access is made available.

In this chapter we discuss the requirements for the computer required to manage the DVISf system, how to connect to the DVISf equipment to allow access to the Management Interface and how to configure your computer if you are unfamiliar with that.

ATX DVIS Settings Tabbed Interface Ver. 6.0.2.16

Encoder Settings Mux RF Output IP Output Maintenance Demod & Mux Settings DVIS Update Profiles: North-America Log

Encoder Setting

Encoder (port) Number: Detect Encoder

Encoder Type: Encoder Configuration Controls

Encoder Active:

Input Parameters

Input Video Standard:

Audio Sampling Rate:

Output Parameters

MPEG2 Video Rate: [1000-8000]

Video Resolution:

Brightness: [0-255]

Contrast: [0-127]

Saturation: [0-127]

Enable Audio:

Audio Codec:

Audio Rate:

Audio Volume: [0 - 255]

VBI Value:

Program Identification

Program Number: [1-65535]

Program Name: [Max.12 Chars]

Video PID: [21-8190]

Audio PID: [21-8190]

PCR PID: [21-8190]

PMT PID: [21-8190]

Ports View

Port 1	Port 2	Port 3	Port 4	Port 5	Port 6	Port 7	Port 8	Port 9	Port 10
VWEB_NA	VWEB_NA	None	None	Demod	Demod	None	None	None	None
Active	Active	InActive							
NTSC	NTSC	NTSC	NTSC	NTSC	NTSC	NTSC	NTSC	NTSC	NTSC
48	48	48	48	48	48	48	48	48	48
4000	2585	2000	3528	3528	3528	3528	3528	3000	3000
352x480	352x480	352x480	352x480	352x480	352x480	352x480	352x480	352x480	352x480
138	138	138	138	138	138	138	138	138	138
63	63	63	63	63	63	63	63	63	63
66	66	66	66	66	66	66	66	66	66
Enable	Enable	Enable	Enable	Enable	Enable	Enable	Enable	Enable	Enable
AC-3	AC-3	AC-3	AC-3	AC-3	AC-3	AC-3	AC-3	AC-3	AC-3
256	256	256	256	256	256	256	256	256	256
150	150	150	150	150	150	150	150	150	150
none	none	none	none	none	none	none	none	none	none

Move To Table >>

Consolidated Encoder Configuration

223	224	225	226	227	228	229	230	999	1111
VIDEO00	VIDEO01	VIDEO02	VIDEO03	VIDEO04	VIDEO05	VIDEO06	VIDEO07	VIDEO08	VIDEO09
103	106	109	112	115	118	121	124	900	1000
104	107	110	113	116	119	122	125	901	1001
103	106	109	112	115	118	121	124	900	1000
102	105	108	111	114	117	120	123	999	1111

Refresh Port Refresh All Ports Submit All Ports

The DVISf Management Interface default view

4.2 DVISf Configuration Pages

4.2.1 Summary of Page Functionality

A brief outline and description of the seven DVISf main configuration tabs follows:

Tab Name	Page Properties
“Encoder Settings”	Displays the MPEG-2 Encoder configurable settings and the Ports View which is the complete list of installed modules and their stored configuration.
“Mux”	Displays the configurable settings affecting the output multiplex and settings affecting legacy STB.
“RF Output”	Displays the configurable settings affecting the QAM output type and frequency and RF output level.
IP Output	This page will not be active in the Verizon application.
“Maintenance”	Displays the configurable settings for the Management Interface Ethernet network, cooling status and facilitates exporting configurations for backup and mass deployment.
Demod & Mux Settings	This page will not be active in the Verizon application.
“DVIS Update”	Facilitates importing firmware updates as well as import of a previously exported configuration file.

Description of DVISf Configuration Tabs

4.2.2 Page Navigation With a Pointing Device

On the view of each page you will note much of the background is white. Within each page there are gray background dialog boxes which are the editable fields. These fields take the form of editable dialogs, tick boxes and drop down lists. Simply place your cursor with a left mouse click inside the dialog box and enter a value if there is not one, edit an existing value or select a drop down pre-configured value.

4.2.3 Page Navigation Without a Pointing Device

If you have no mouse or pointing device you may navigate with the **<Tab>** key. Clicking the **<Tab>** key will present a dotted outline on the screen surrounding the currently selected element. Only elements that are hyperlinks or editable fields will become selected. The selection starts at the top of the page with the Encoder Settings Tab and proceeds to the remaining main tabs then on down the page through encoder settings. A dotted outline will indicate which element is selected. If the selected element is a multi-item dialog, the **<Up Arrow>** and **<Down Arrow>** will allow selection of the desired item. Drop down boxes work the same with the Arrow keys scrolling through the item list. To select the element click **<Enter>**. This would be useful when navigating to a different configuration View page or a hyperlink to navigate to the detailed information that the hyperlink may offer. When on a configuration tab page, it is possible to scroll back up the page of selections with the **<Shift>+<Tab>** keys.

While it is possible to do your configuration in this manner, it is not recommended except in a situation where the Management Computer’s pointing device has failed.

4.3 Minimum Computer Requirements

The computer used to access the DVISf configuration settings is referred to as the **Management Computer**. It is recommended that the Management Computer meet the minimum requirements listed below. ATX Networks does not endorse the use of any specific operating system software however the listed combination of software has been thoroughly tested with the DVISf product and is known to work without issue. The operator is free to utilize whatever software combination is desired, however the responsibility to ensure correct operation of the alternate software is his/hers alone.



NOTE: *The extensive use of Java script in the DVISf interface may cause web browsers other than Internet Explorer® to incorrectly or incompletely display DVISf web pages.*

4.3.1 Recommended Computer

- Computer running Windows® or other OS.
- Ethernet Network port available.
- Internet Explorer web browser.
- Adobe® Reader® for reading this manual.

4.3.2 Web Browsers Supported

Microsoft® Internet Explorer

The DVISf may be accessed with multiple brands of web browser software however some incompatibilities may exist. While ATX Networks does not endorse the use of any specific brand of web browser, experience has shown that Microsoft Internet Explorer may provide the best performance.

4.4 Starting the Management Interface

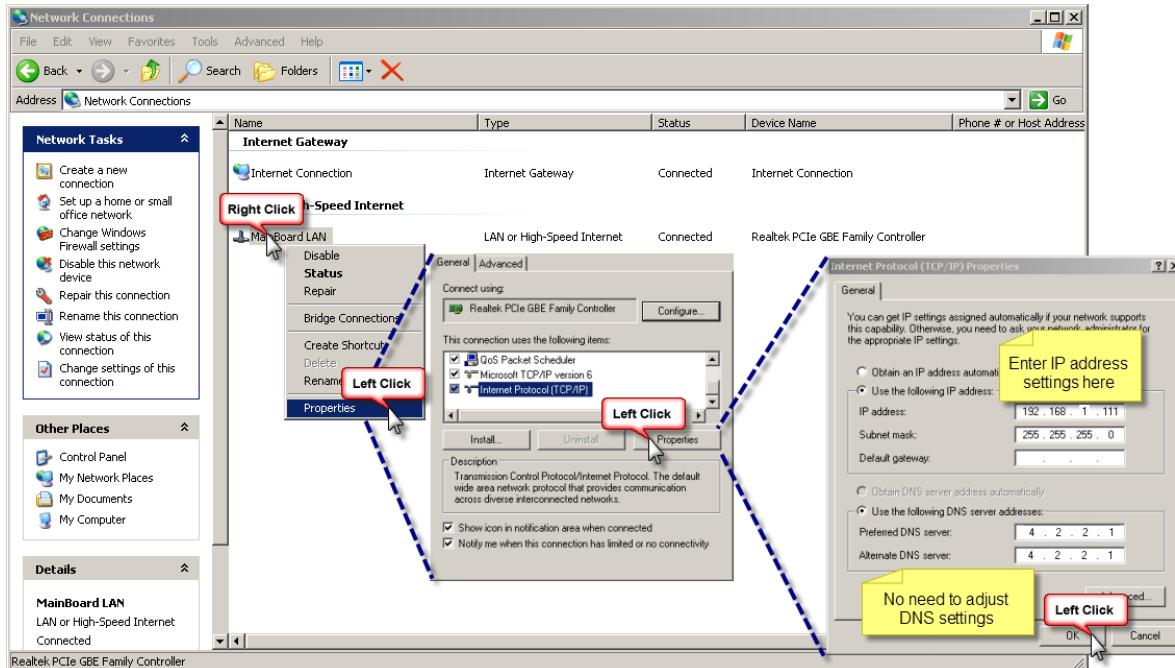
Configuration of the DVISf unit requires a laptop or desktop PC, referred to here as the **Management Computer**, running Microsoft Windows or other OS with an available Ethernet network port. If connecting directly to the DVISf equipment, the Management Computer must be set to operate on the same subnet as the DVISf unit for access to the DVISf Management Interface.

The following procedures are for Microsoft Windows XP and a default IP address setting on the DVISf of 192.168.1.23



NOTE: If you are using a different Operating System or the network address on the DVISf unit has been changed from default, adjust the procedures to suit the address or software you are using.

1. Connect the Management Computer's Ethernet adapter to the DVISf Ethernet port using a Cat5e cable. Link lights should illuminate indicating that the cable connection is correct and working.
2. Set the Management Computer's Ethernet interface to a static IP address on the 192.168.1.x subnet, as described below:



Setting the Management Computer IP Address



NOTE: If the Management Computer currently has network settings that will need to be used again after the DVISf is configured, this would be a good time to make note of the current settings if you don't already know them, so the network adapter may be readily returned to these values again.

- a) From the Control Panel, open **Network Connections** and select the connection associated with the wired Ethernet adapter to be used for connecting to the DVISf unit (e.g., Local Area Connection).
- b) Right click on the connection then select **Properties**.
- c) Select **Internet Protocol (TCP/IP)** and click **Properties**.
- d) Click the selection box beside **Use the following IP address**.
- e) In the **IP address** field, enter 192.168.1.x (where x represents any number from 1-253 except 23).
- f) Click in the **Subnet mask** field and the subnet 255.255.255.0 is automatically entered.
- g) Click **OK** and then **OK** again in the previous window.

3. On the Management Computer, open a web browser and enter **http://192.168.1.23/site** in the address field.
4. You should get the following window on the left requesting the username and password. Once logged in you receive the default DVISf Settings page, shown on the right.:



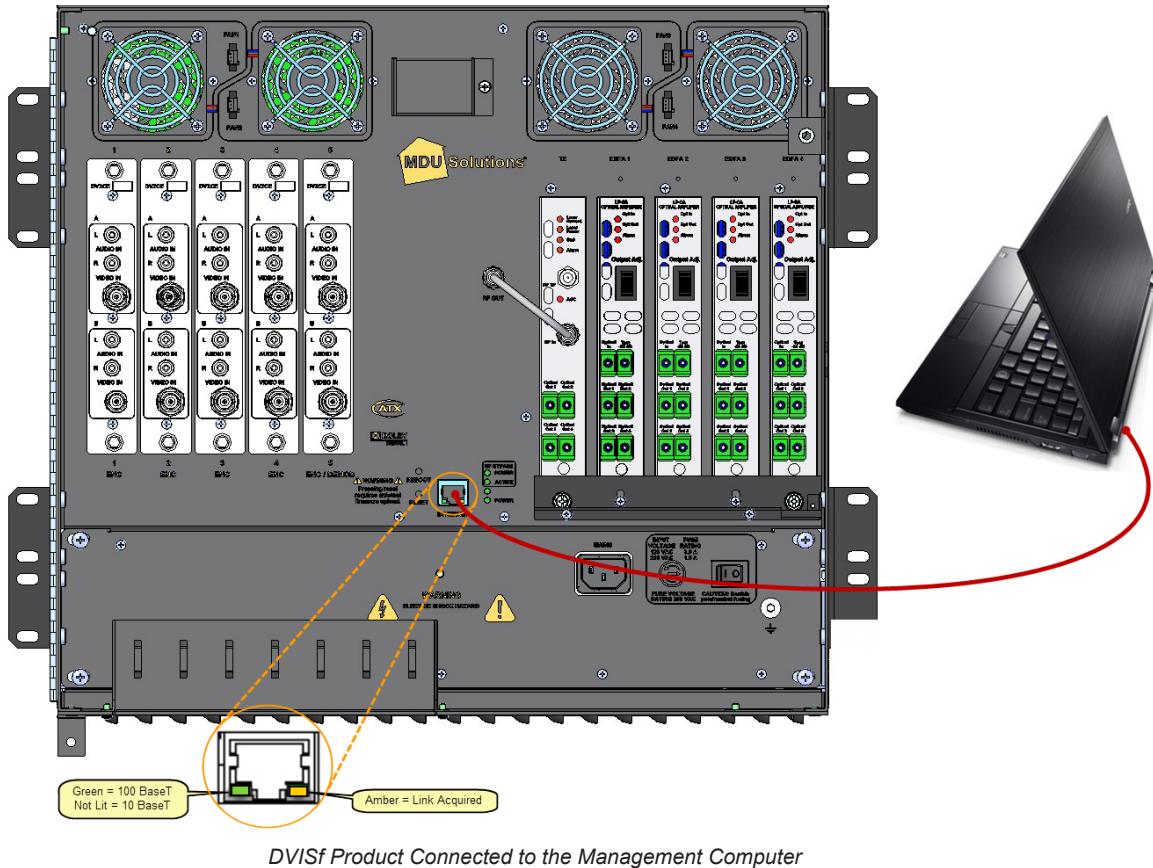
DVISf Login dialog

Default DVISf view

Factory Default Username and Password	
Username	Password
atx	atx

4.5 Connecting DVISf Unit to the Management Computer

The DVISf product is provided with a 10/100 Base-T Ethernet network port on the front panel for connecting to the Management Interface for initial configuration and ongoing monitoring and maintenance.



The Management Ethernet network port on the DVISf is DTE, similar to a PC Ethernet port. A crossover Ethernet cable, provided with the equipment on shipment, will be required to connect the DVISf to a PC.

The network port will automatically negotiate a speed of 10 or 100 Mb/s depending on the capabilities of the PC network port. Lights next to the DVISf Ethernet port will illuminate when a link is negotiated.

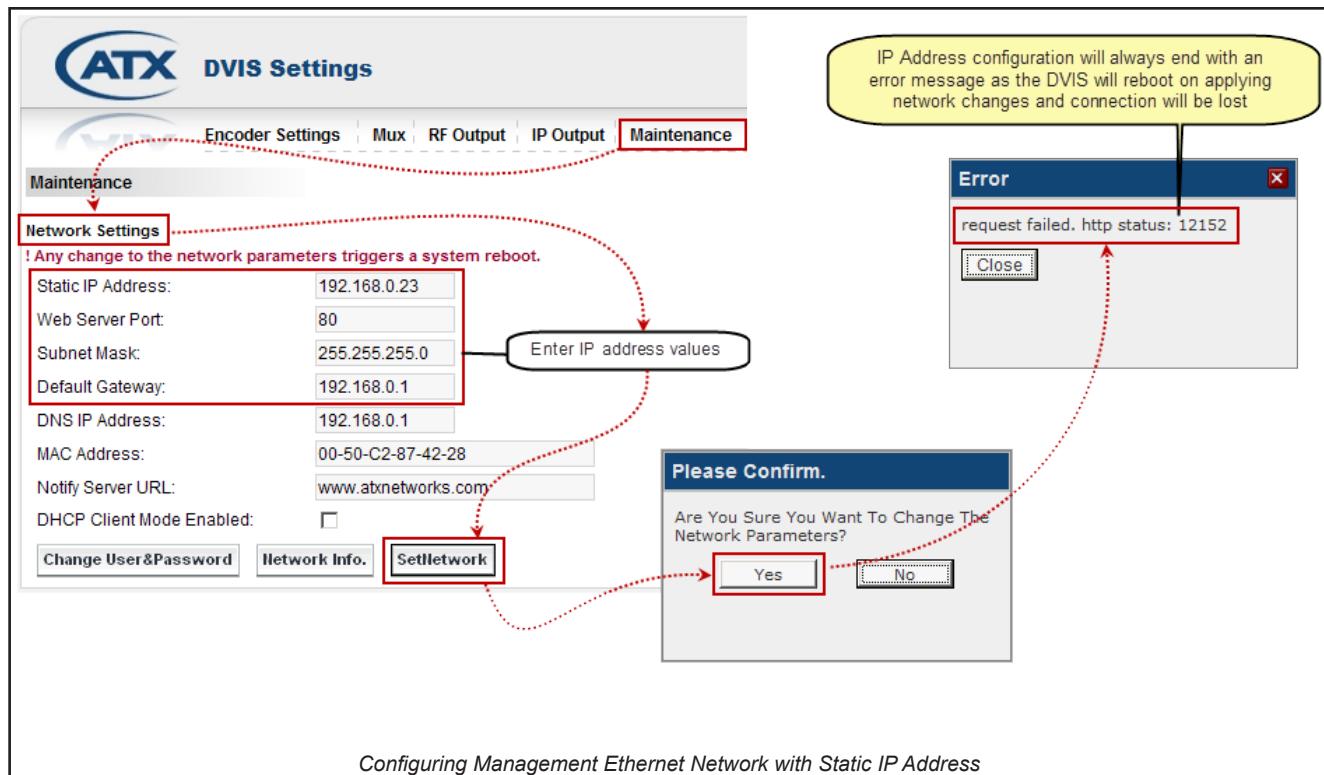


NOTE: If connectivity problems between the PC network port and the DVISf occur, (Ethernet link light does not illuminate) check to be sure that you are using a known good network cable.

If the DVISf product is to be connected to a local cable modem for remote configuration or monitoring, a standard CAT 5 type cable will be required for the connection to the modem. The cable required for connection to the cable modem is normally supplied with the modem.

4.5.1 Static IP Address Assignment

If the DVISf equipment can be plugged directly into to an Ethernet based device (router, switch, cable modem, etc.) that supports clients with public static IP addresses (or static IP addresses that route to the public internet), the following procedure can be followed to assign the DVISf unit a static IP address.



1. Click the **Maintenance** tab in the DVISf Management Interface and navigate to the **Network Settings** section.
2. Fill in the following fields with appropriate values:
 - **Static IP Address** - An IP address on the network that has been assigned to the DVISf unit by the network administrator.
 - **Subnet Mask** - The mask to match the IP Address assigned above.
 - **Default Gateway** - The IP Address of the router that the DVISf unit is connected to.
3. Click **Set Network**.
4. In the confirmation window that appears, click **Yes** to confirm the change to the network parameters. The DVISf equipment will reboot and fans will shut down. An error message will be displayed in the browser. If Internet Explorer is being used, a message box displaying 'request failed. http status 12152' will appear for one second then another error message. The error messages indicate that the DVISf network settings have been modified and therefore connectivity to the Management Computer has been lost.
5. Wait two minutes or until the product's fans restart then open a new browser session with the DVISf unit using the new IP address that was entered.

4.5.2 Connecting Remotely to the DVISf Product

In order to connect to the DVISf product remotely you need the IP address that the DVISf network port has been set to. Depending on the method of setting the IP address, acquire the address in the following ways. If you know the address skip to ["Static IP Address Assigned" on page 4-8](#) below.

Dynamic IP Address Acquired via Cable Modem

In order to reconnect to the DVISf Management Interface after it has been connected to a cable modem, it is necessary to determine the IP address the DVISf unit has acquired from the DHCP server. There are two ways to achieve this:

- **Get it from the DHCP Server:**

Log into the appropriate billing system interface and access the account associated with the cable modem being used. The account can typically be found by searching according to cable modem MAC address, which is labeled on the modem. Once you can access the cable modem account, verify that a client with the MAC address noted above, is listed as connected in the cable modem client table. Record the IP address assigned to the DVISf MAC address in the cable modem client table.



NOTE: *In some systems, the time for the billing or modem management system to update with the most recent cable modem client table information may take a few minutes to a few hours. If you have alternative means to find out the IP address assigned to the client with the DVISf MAC address more rapidly, you can save time as the DVISf is available for remote access as soon as the new IP address is acquired, regardless of whether the billing or modem management system has this information.*

- **Get it from the Cable Modem:**

Log into the cable modem interface if it is accessible. Each cable modem has a built-in a web server to allow troubleshooting and this interface will display the acquired IP address. The internal cable modem web page is often located at 192.168.100.1

Once you have the assigned public IP address of the DVISf unit:

1. Open an Internet Explorer web browser and in the address bar type <http://xxx.xxx.xxx.xxx/site> replacing the x's with the IP address of the DVISf unit.
2. When the login screen appears, enter the **Username** and **Password** for the unit.

Factory Default Username and Password	
Username	Password
atx	atx

3. Upon validation of the login and password, the DVISf Management Interface opens and displays the **DVIS Settings** page. The DVISf product is ready to be managed remotely.

Static IP Address Assigned

1. Login to a computer with internet access. If you are using the same computer that was used for direct connection to the DVISf product, remember to restore the computer's network settings to the appropriate values (the settings used prior to changes made for connection to the DVISf).
2. Open a new Internet Explorer browser window to establish a fresh session, entering the IP address of the DVISf product in the address window.
3. You should be able to establish a browser session with the product on the static IP address assigned.
4. You should then be presented with the following screen on the left, prompting you to log in:



DVISf Login dialog

The image shows the DVISf Management Interface. The top navigation bar includes 'Encoder Settings', 'Mux', 'RF Output', 'IP Output', 'Maintenance', 'Demod & Mux Settings', 'DVIS Update', 'Profiles: North-America', and 'Log'. The 'Encoder Setting' tab is active, showing fields for 'Encoder (port) Number' (set to 1), 'Encoder Type' (set to 'Detect Encoder'), and 'Encoder Active' (checked). The 'Input Parameters' section includes 'Input Video Standard' (set to 'NTSC'), 'Audio Sampling Rate' (set to '48'), and 'Output Parameters' with various settings like 'MPEG2 Video Rate' (set to '4000'), 'Video Resolution' (set to '352x480'), and 'Contrast' (set to '63'). The 'Ports View' section on the right lists ports 1 through 10 with their respective settings for various parameters like NTSC, Brightness, Contrast, and VBI Value. Buttons for 'Move To Table', 'Refresh Port', 'Refresh All Ports', and 'Submit All Ports' are at the bottom.

Default Screen when logged in

When the login screen appears, enter an appropriate **User Name** and **Password** for the unit from the table below. When the login username and password are successfully entered, the default screen, above, will be presented.

4.6 Factory Default IP Address Settings

The Management Interface for the DVISf product is web based and will require a locally connected computer to complete the configuration. The network port through which access to the web server is available has been factory pre-configured with the following network settings. By default, the IP address mode is static IP with the following values; DHCP is disabled.

Factory Default IP Addresses	
IP Address	192.168.1.23
Subnet Mask	255.255.255.0
Web Server Port	80
Gateway	192.168.1.1

4.7 Default Username and Password

Factory Default Username and Password	
Username	Password
atx	atx



NOTE: If the DVISf unit has previously been configured with a different Username and Password, use the appropriate values for this unit. When the Username and Password are changed in the DVISf product, the factory default values are lost. There is no “back door” Username and Password.

4.8 Resetting the Username or Password

If the username or password have been changed and subsequently forgotten, there is a way to recover the DVISf product without loss of programmed configuration. A firmware reset file is available which can workaround this problem. You should contact ATX Networks at the numbers listed under [“Contact ATX Networks” on page 13-1](#) for assistance.

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ENCODER CONFIGURATION

5. Encoder Settings Tab - Configuration

5.1 In this Chapter

- “Encoder Types”
- “Encoder Setting”

In this chapter we detail the configuration controls which are used to adjust settings to achieve the encoder performance that is required. All DVISf system settings are discussed along with limits and some suggestions as to what values are most applicable and why.

5.2 Encoder Types

There are two types of encoder available, briefly described below. The full specifications for encoders are detailed in the chapter “[MPEG Encoder Specifications](#)” on page 12-2. The selection of encoder card is based on number of channels of encoding required. The DVISf product will automatically detect the type of hardware encoder that is plugged in and report that type in the Management Interface. The options available to be configured in the Management Interface will be adjusted to only those available to the specific installed encoder.

VWEB_NA Single Channel

This is the currently shipping single channel ATSC North American encoder version with support for a wide array of video resolutions and AC-3 audio bit rates. There is support for ATSC closed captioning which may be turned on or off as required.

VWEB_NA Dual Channel

This is the currently shipping dual channel ATSC North American encoder version with support for a wide array of video resolutions and AC-3 audio bit rates. There is support for ATSC closed captioning which may be turned on or off as required.

5.3 Encoder Settings tab

This page displays the configuration of all of the installed MPEG-2 video/audio encoders and allows adjustment of the currently set values. The process for making changes to an encoders settings follows.

5.3.1 Encoder Configuration procedure:

1. Select the port number that represents the encoder that is desired to be adjusted from the drop down box labeled **Encoder (port) Number:**
2. Make any adjustments required for the selected encoder in each of the dialogs or drop downs in the left column.
3. Click **Move to Table**. This effectively stores the changes for the selected encoder **but does not apply the settings**.
4. When all encoders have been adjusted as needed, click **Submit All Ports** to apply all of the settings changes simultaneously.



NOTE: This is a service affecting operation and an outage will occur as a result.

Encoder Setting

Select Encoder here

Encoder Settings

Mux

Maintenance

Encoder (port) Number: 1

Encoder Type: Detect Encoder

Encoder Active:

Input Parameters

Input Video Standard:

Adjust encoder configuration (Khz)

Output Parameters

MPEG2 Video Rate: [1000-8000]

Video Resolution:

Brightness: [0-255]

Contrast: [0-127]

Saturation: [0-127]

Enable Audio:

Audio Codec:

Audio Rate:

Audio Volume: [0 - 255]

VBI Value:

Ports View

Port 1	VWEB_NA	Active
NTSC	N	48
3000	3	
352x480	3	
120	120	120
50	50	50
50	50	50
Enable	Enable	Enable
AC-3	AC-3	AC-3
256	256	256
160	160	160
none	none	none

Move to Table

>>

Moving encoder configuration changes to the table

5.3.2 Encoder Setting

General

These controls are used to select the encoder that it is desired to change the settings for. As each encoder is selected by way of the drop down dialog box, the appropriate encoder port is highlighted in the **Ports View**.

Port Numbering Convention

Each physical encoder slot in the DVISf is assigned a pair of port numbers; there can be up to two encoders per installed card. The first physical slot is assigned ports 1 & 2, the second slot is assigned ports 3 & 4 etc. If an encoder card has only one encoder installed, the port that would have been occupied by the second encoder is reported in the GUI as "None". The following table illustrates the relationship between slots and ports:

DVISf Port/Slot Numbering Convention	
Port Number in GUI	Physical DVISf Card Slot
Port 1	Slot 1 – Input A
Port 2	Slot 1 – Input B
Port 3	Slot 2 – Input A
Port 4	Slot 2 – Input B
Port 5	Slot 3 – Input A
Port 6	Slot 3 – Input B
Port 7	Slot 4 – Input A
Port 8	Slot 4 – Input B
Port 9	Slot 5 – Input A
Port 10	Slot 5 – Input B

Encoder Settings

- Encoder (port) Number:
Select the port number from the drop down box representing the encoder that you wish to adjust the settings for.
- Encoder Type:
In the **Ports View** display, the type of encoder installed is indicated. The possible card types that may be reported here are:
 - None
 - VWEB_NA (North America, AC-3 encoding)
- Detect Encoder (Control)
 - Slot Previously Empty
If an encoder slot was previously empty and a new encoder card was hot plugged into the slot, the DVISf unit must be made aware of it as it will not take any action without instruction. Click the **Detect Encoder** button to force the DVISf unit to detect the encoder card just installed. The control will be greyed out on any encoder selected that has already been detected, see "Slot Previously occupied", below.
 - Slot previously occupied
If an encoder slot was previously occupied and a different card was hot plugged into the slot, the DVISf unit must be made aware of it but the control is greyed out. In this case, click the **Refresh All Ports** button to force the DVISf unit to detect the encoder card just installed. The control will be remain greyed out on any encoder selected that has already been detected.
- Encoder Active:
This check box lets you switch each encoder on and off. On the right side of the page in the **Ports View** display, it shows which encoders are active and inactive.

Video Input Configuration

The DVISf product accepts video signals that conform to NTSC standards. Select the profile **North-America** at the top right of the Management Interface.

- Input Video Standard:
Automatically selected as NTSC for the North America profile.
- Audio Sampling Rate:
This value is preset at 48 kHz and is the number of samples per second (in kHz) taken from an analog signal to make a digital signal.

5.3.3 Video Output Configuration

This group of configuration settings affect the video and audio program stream properties.

MPEG2 Video Rate: [1000-8000](Kbps)

The video program elementary stream bit rate is entered in Kbps and must be between 1000 and 8000. This setting may be adjusted based on the quality of the resulting picture that is required. Increasing the bit rate increases the resulting picture quality but consumes more bandwidth. The entered value must be balanced against the number of other programs in the output Mux and the total amount of room within the Mux for each program.

Video Resolution:

Video resolution refers to the number of discrete picture elements (pixels) in each horizontal line and the number of displayed horizontal lines in the picture. (e.g. 720 pixels per line x 480 lines). The available video resolution settings depend on the type of encoder installed see “[MPEG Encoder Specifications](#)” on page 12-2. Higher picture resolutions require a higher video bit rate for the same picture quality and conversely, a lower resolution picture can be encoded with a lower bit rate. Depending on the quality required and the resolution of the source video, such as a lobby camera, lowering the resolution and bit rate may be used and more channels may be added in available bandwidth.

Brightness: [0-255]

This dialog allows modification of the video signal to increase or decrease brightness. There are 256 levels available (0-255) The default value is preset at 120, about the middle of the available range. This setting should not normally require changing.

Contrast: [0-127]

This dialog allows modification of the video signal to increase or decrease picture contrast. There are 128 levels available (0-127) The default value is preset at 50, about the middle of the available range. This setting should not normally require changing.

Saturation: [0-127]

This dialog allows modification of the video signal to increase or decrease colour saturation. There are 128 levels available (0-127) The default value is preset at 50, about the middle of the available range. This setting should not normally require changing.

Enable Audio:

The audio codec may be disabled if the specific application of the DVISf does not require an audio program such as a lobby camera. Disabling the audio codec will result in silence at the receiving TV. Use the drop down box to select the required setting. The default is Enable.

Audio Codec:

This setting is automatically set to the value appropriate for the selected profile. A codec converts an audio baseband signal to a specific streaming audio format. For North America, AC-3 codec is specified by ATSC standards. Note that while the AC-3 standard supports surround sound, the DVISf encoder for AC-3 produces only two channel stereo. (It does not itself support Dolby surround sound).

Audio Rate: 256384 (Kbps)

This drop down displays the audio bit rate options available for each installed encoder. Sampling rate at which an audio signal is encoded. The higher the bit rate, the better the sound quality. Each encoder supports a range of commonly used bit rates. See “[MPEG Encoder Specifications](#)” on page 12-2 for detailed information on bit rates supported.

Audio Volume: [0 - 255]

This control allows adjustment of the volume level of the audio program. The default setting is 150, about the middle of the range. This value often does not need to be changed from its default value. This does not affect the input baseband audio signal level.

VBI Value:

This tick box enables Closed Caption support in the VBI (Vertical Blanking Interval). Only the value appropriate to the installed

encoder will be available in the drop down. The DVISf video encoders **do not create a closed caption**, they capture existing closed captions on incoming video and convert them to a digital format. Selecting **ATSC_CC** enables the processing of closed captioning data for the North American ATSC profile.

5.3.4 Program Identification

This section allows configuration of the program specific settings of the MPEG program streams. The PID values may often be left at their default values as these are mostly transparent to the end user and can usually be almost any value. The Program Number is the most likely value that may need adjustment if programs within a Mux have to be assigned a specific MPEG Program number for decoding.

Program Number: [1-65535]

This is the MPEG Program Number that identifies a program from others within a multiplex and is often used to allow selection and decoding at the receiving device. It is a unique number that is assigned to each program within a multiplex and may require setting according to the systems channel map. The decoding device may display this program number for program selection.

Program Name: [Max. 12 Chars]

The name (up to 12 characters) assigned to a program may be entered here. This name may or may not be supported in the end customer decoding device.

Video PID: [21-8190]

The video PID (Packet Identifier) is a decimal number that uniquely identifies a video transport stream in an MPTS (multi-program transport stream) so that it can be filtered and routed appropriately. This value often does not need to be changed from its default value as it is automatically reported in the PMT table.

Audio PID: [21-8190]

The audio PID (Packet Identifier) is a decimal number that uniquely identifies an audio transport stream in an MPTS (multi-program transport stream) so that it can be filtered and routed appropriately. This value often does not need to be changed from its default value as it is automatically reported in the PMT table.

PCR PID: [21-8190]

The PCR (Program Clock Reference) PID (Packet Identifier) is a decimal number that uniquely identifies the time base for synchronization of individual frames or fields of the video stream and their associated audio. This value often does not need to be changed from its default value as it is automatically reported in the transport stream.

PMT PID: [21-8190]

The PMT (Program Map Table) PID (Packet Identifier) is a decimal number that uniquely identifies a PMT table in an MPTS (multi-program transport stream). The PMT contains a data structure specifying which PIDs carry the video, audio and data stream that collectively constitute the broadcast program. This value often does not need to be changed from its default value as it is automatically reported in the PAT table.

5.4 Encoder Page Controls

Refresh Port (Control)

This control reads the DVISf stored settings and refreshes the page with the values. This also will read the encoder card types installed and populate the display with the discovered types. This is useful when an encoder card type has been changed or a new encoder card installed.

This is not a service affecting operation.

Submit All Ports (Control)

 **NOTE:** This is a service affecting operation and an outage will occur as a result.

This control applies all of the changes made on the **Encoder Settings** tab and makes the changes part of the working configuration of the DVISf. If changes have been made and the Submit All Ports is not clicked before navigating away from the page, all changes will be lost.

MUX CONFIGURATION

6. Mux Tab - Configuration

6.1 In this Chapter

- “Mux Settings”
- “Legacy STB Settings”
- “No Video Slide Enable”

In this chapter we detail the controls which are used to adjust settings for the DVIS product installation environment. All DVIS product settings are discussed along with limits and some suggestions as to what values are most applicable and why.

This is the configuration page where output Multiplex properties are set. There are a small number of settings available to be changed on this page in the Verizon PON Architecture. The DVISf equipment will arrive from the factory with the correct configuration but the default configuration is reviewed here for clarity.

6.2 Mux Settings

6.2.1 Transport Stream ID:[1-65535]

A transport stream is a cable or RF transmission format that allows multiplexing of digital video and audio using a strict protocol that employs packet-based multiplexing. A Transport Stream ID is a number unique to each transport stream that identifies its origin. A default value of 1 is set and usually this does not need to be changed except in complex installations. The supported values are 1 - 65535.

Service Provider Name:

An option that is not applicable to the Verizon PON application. This setting is not used.

Output Selection:

This check box selects which output ports are active. Select **RF Only** For Verizon PON application.

Add & Drop Mode:

Do not check this box for Verizon PON application.

Dynamic PSI Monitoring:

Do not check this box for Verizon PON application.

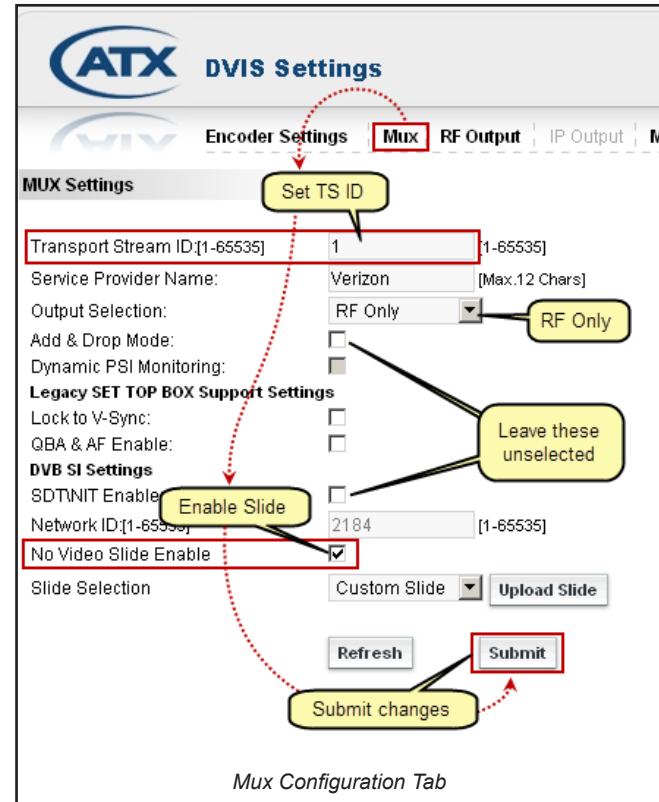
6.3 Legacy STB Settings

6.3.1 Lock to V-Sync:

The default setting is “Lock to Internal Sync”; the check box is un-selected. Issues with vertical sync quality will usually manifest as constant or occasional vertical rolling of the image. The quality of the baseband vertical sync signal can be impacted by a number of factors including source quality, cable length, connectors and the presence of distribution amps. Using the internally generated timing signals is usually the most reliable method of sync recovery but in some circumstances better results may be achieved by using the external baseband sync signal if vertical rolling is experienced. In this case click the selection box. This setting is not directly related to legacy STBs.

6.3.2 QBA & AF Enable:

Selects whether QBA and AF are enabled. May be required only for some legacy set top boxes. Default is un-selected.



6.3.3 DVB SI Settings

SDT\NIT Enable

Do not check this box for Verizon PON application.

Network ID

Not applicable to the Verizon PON application. This value is greyed out.

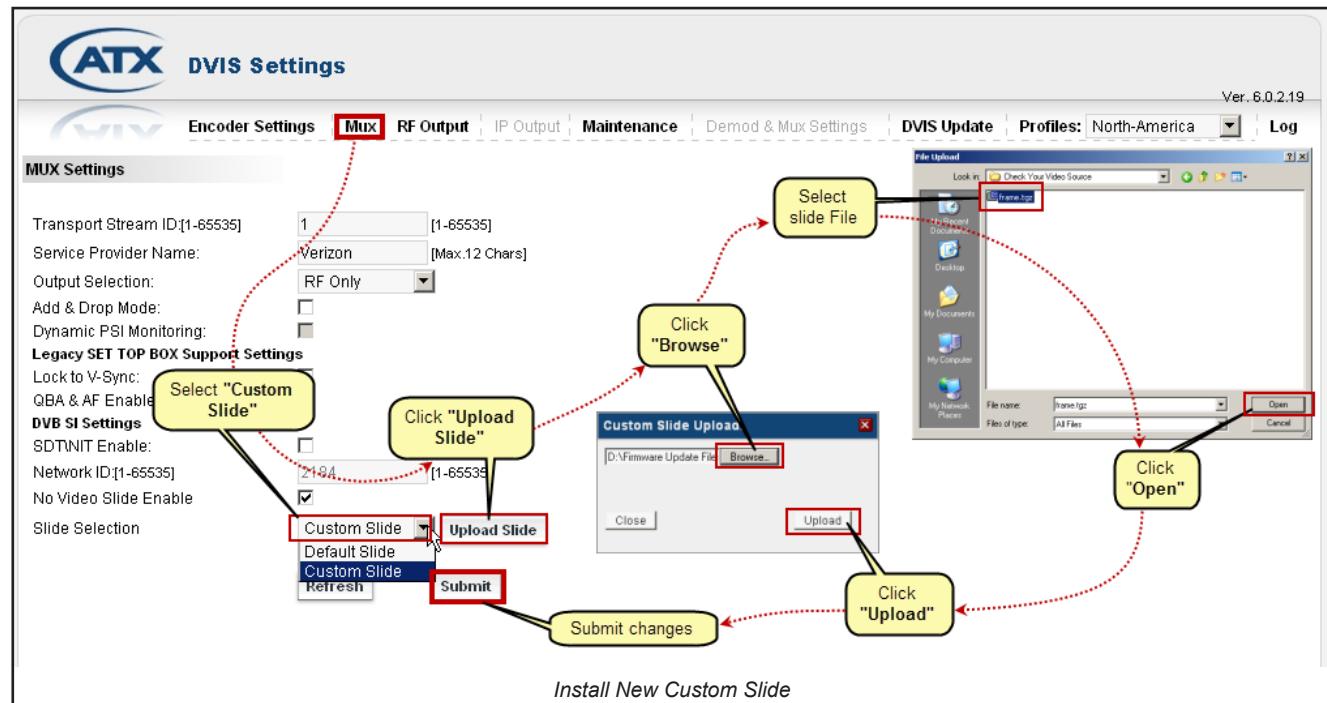
6.4 No Video Slide Enable

This selection box enables the slide that will appear upon a loss of valid video to the encoder cards. There is a built in slide that will display by default, or a custom slide may be uploaded. If the check box is not selected, no slide will be displayed on a loss of video input to encoders. A web based tool is available to create custom slides which may be loaded to the DVISf system.



6.5 Install a New Custom Slide

New slides may be created with the ATX Networks web based tool. The new slide may be uploaded into the DVISf product by following the directions below:



Example Custom Slide

6.6 Mux Page Controls

6.6.1 Refresh (Control)

This control reads the unit's stored settings and refreshes the page with the values. This also will force the DVISf unit to read the encoder card types installed and populate the display with the discovered types. This is useful when an encoder card type has been changed or a new encoder card installed.

This is not a service affecting operation.

6.6.2 Submit (Control)

 **NOTE:** *This is a service affecting operation and an outage will occur as a result.*

This control applies all of the changes made on the Mux tab and makes the changes part of the working configuration of the DVISf unit. If changes have been made and the Submit All Ports is not clicked before navigating away from the page, all changes will be lost. This attribute may be used to throw away changes made if you change your mind.

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RF OUTPUT CONFIGURATION

7. RF Output Tab - Configuration

7.1 In this Chapter

- “RF Settings”

In this chapter we discuss the RF output settings for the Verizon PON Architecture. This is the page from which QAM RF output settings are configured.

DVIS Settings

Encoder Settings **Mux** **RF Output** **IP C**

RF Settings

RF Frequency: [15000-975000] (KHz)

QAM Mode:

QAM Modulation Type:

Symbol Rate: [2000-7000] (Ksps)

RF Attenuation: [0-26] (dB)

Interleaving:

Refresh **Submit**

RF Output Configuration Tab

7.2 RF Settings

Settings affecting the QAM RF output of the DVIS product are configured here.

RF Frequency: [15000-975000] (KHz)

Enter the QAM output channel center frequency of 825000 kHz without any decimals or commas for the Verizon PON Architecture. The limits of tuning are 15 MHz to 975 MHz.

QAM Mode:

Select the 256 QAM constellation for the Verizon PON application.

QAM Modulation Type:

The type of QAM modulation is QAM-B for use in the Verizon PON Architecture.

Symbol Rate: [2000-7000]

There is no adjustment allowed for QAM-B Modulation type. Information only.

RF Attenuation: [0-26]

The DVIS product internal RF output attenuator may be adjusted to lower the QAM RF output level by up to 26 dB in 1 dB

steps. The output level of the QAM carrier from the QAM modulator is 57.5 dB +/- 1.5 dB with this attenuator set at 0 dB. The 26 dB range should be found sufficient for most applications encountered.

Interleaving:

Select **I/J 128/1** for the Verizon PON application.

7.3 RF Output Page Controls

Refresh (Control):

This control reads the DVISf stored settings and refreshes the page with the values. This also will read the encoder card types installed and populate the display with the discovered types. This is useful when an encoder card type has been changed or a new encoder card installed.

This is not a service affecting operation.

Submit (Control):

 **NOTE:** *This is a service affecting operation and an outage will occur as a result.*

This control applies all of the changes made on the **RF Output** tab and makes the changes part of the working configuration of the DVISf unit. If changes have been made and the Submit All Ports is not clicked before navigating away from the page, all changes will be lost.

MAINTENANCE CONFIGURATION

8. Maintenance Tab - Configuration

8.1 In this Chapter

- “DVISf Hardware Status”
- “SNMP Settings”
- “Network Settings”
- “Change Username & Password”

In this chapter we detail the controls which are used to adjust settings to achieve the performance that is required. All DVISf system settings are discussed along with limits and some suggestions as to what values are most applicable and why. From this page, the Management Interface network configuration settings of the DVISf system may be set. Password and Username access to the product is also changed from this screen.

8.2 DVISf Information

Product ID:

This is the DVISf serial number.

Version:

The firmware version installed on the DVISf. This is the version to check if a new firmware version is required or recommended. (Ignore the version number on the top right corner of the Management Interface display. That's the version of the web GUI) The numbers displayed here directly relate to the firmware version that will be posted to the ATX Networks support site.

For help with firmware upgrades, contact ATX Networks Digital Video Support. See “[Contact ATX Networks](#)” on page 13-1 for contact phone numbers.

Information and procedures for obtaining firmware files and installing the firmware may be found at “[Firmware Upgrade & Recovery](#)” on page 9-1.

Availability of firmware for your DVISf product may be checked at the ATX Networks supports sites listed here “[Where to obtain Firmware Files](#)” on page 9-3.

DVIS Settings

Maintenance

DVIS Information

Product ID: DVIS-00000548

Version: 4.21-3.9-10.20

DVIS Hardware Status

Start Fans Above: [0 to 75] 22 (C*)

Alarm Temperature: [0 to 75] 50 (C*)

Fan A Status: on

Fan B Status: on

Temperature: 19 (C*)

SNMP Settings

SNMP Server: 192.168.0.65

SNMP Port: 161

Remote Update Server

Remote Update Server: 192.168.0.55

Remote Server Port: 80

Schedule Remote Update:

Schedule Day: Every day

Schedule Hour: 12:00 (HH:MM 00:00-23:59)

Network Settings

! Any change to the network parameters triggers a system reboot.

Static IP Address: 192.168.0.23

Web Server Port: 80

Subnet Mask: 255.255.255.0

Default Gateway: 192.168.0.1

DNS IP Address: 192.168.0.1

MAC Address: 00-50-C2-87-42-28

Notify Server URL: www.abnetworks.com

DHCP Client Mode Enabled:

Change User&Password **Network Info** **Set Network**

DVISf Maintenance Tab

8.3 DVISf Hardware Status

Start Fans Above: [0 to 75]

Temperature at which the fans begin operating. This may be set manually to any temperature between 0-75 °C though the default value of 20 °C is recommended.

Alarm Temperature: [0 to 75]

Temperature at which an alarm is initiated. This may be manually set to any temperature between 0-75 °C. This is the temperature at which an SNMP trap is sent to the SNMP manager, if installed and configured.



NOTE: *Setting this temperature artificially low is not recommended. When the DVISf internal temperature reaches this limit, internal power is switched to a lower power mode and the DVISf will remain in this mode to prevent damage to the hardware until the temperature drops below the set level. This is intended to avert a major hardware failure due to excess heat buildup.*

Fan A Status:

Shows whether the fan is On, Off, or Out of Order (indicating fan failure).

Fan B Status:

Shows whether the fan is On, Off, or Out of Order (indicating fan failure).

Temperature:

Current internal temperature of the unit (°C).

8.4 SNMP Settings

The DVISf product supports sending SNMP (Simple Network Management Protocol) traps to a remote SNMP manager. This lets TCP/IP-based network management clients use a TCP/IP-based internetwork to exchange information about the configuration and status of nodes. A MIB is required to be compiled into the remote manager in order for it to understand the SNMP traps.

SNMP Server:

This is the IP address of the remote Management Console which is the computer that will receive traps sent by the DVISf unit and is the computer with SNMP software installed. This is the system which will receive the SNMP traps. Only one SNMP manager may be specified.

SNMP Port:

By default, the DVISf unit assigns port 161 for sending and receiving requests. This is the default and commonly used port for SNMP messaging. SNMP uses UDP (User Datagram Protocol).

SNMP MIB:

If you want to implement SNMP monitoring you will need the SNMP MIB. Get this by requesting it from ATX Networks. Contact Technical support at the numbers listed in ["Contact ATX Networks" on page 13-1](#)

Remote Update Server

Feature not currently implemented.

Remote Update Server:

Feature not currently implemented.

Remote Server Port:

Feature not currently implemented.

Schedule Remote Update:

Feature not currently implemented.

Schedule Day:

Feature not currently implemented.

Schedule Hour:

Feature not currently implemented.

8.5 Maintenance Page Controls

Force Update (Control):

Feature not currently implemented.

Go to Sleep (Control):

This control causes the DVISf equipment to go into a low power mode which reduces the internal temperature buildup.

Board Time (Control):

This control allows the real time and date to be set so that time stamps on the logs will reflect real time. This only needs to be set once as the CMOS backup battery installed in the DVISf equipment will keep the clock running during any power outages.

Export Settings (Control):

This control allows the operator to export the programmed configuration as a file. The exported file may be used for backup and archive purposes or to allow fast and easy deployment of multiple DVISf units with similar configuration. The file may be imported to any number of DVISf units requiring similar settings, thus saving the time to manually program each unit before deployment.

Refresh (Control):

This control reads the DVISf system's stored settings and refreshes the page with the values. This also will read the encoder card types installed and populate the display with the discovered types. This is useful when an encoder card type has been changed or a new encoder card installed.

This is not a service affecting operation.

Submit (Control):

NOTE: *This is a service affecting operation and an outage will occur as a result.*



This control applies all of the changes made on the Encoder Settings View and makes the changes part of the working configuration of the DVISf. If changes have been made and the Submit All Ports is not clicked before navigating away from the page, all changes will be lost.

8.6 Network Settings

This section defines the setting for the Ethernet management port on the DVISf unit front panel.

Static IP Address:

An IP (Internet Protocol) address is a numerical identification assigned to devices participating in a computer network utilizing the Internet Protocol for communication between nodes. When a computer is configured with a Static IP address it always uses the same IP address. When a computer is configured with Dynamic IP addressing it automatically procures an IP address from a DHCP server when required. If the installation requires a static IP address that value would be entered here. This value is greyed out when DHCP Client Mode is enabled. The greyed out address is not the address procured from the DHCP server. The address range that is supported as well as the default IP address settings are outlined in the following tables:

IP Address Range Supported		
IP Class	Start Address	End Address
A	10.0.0.0	127.255.255.255
B	128.0.0.0	191.255.255.255
C	192.0.0.0	223.255.255.255

Factory Default IP Addresses	
IP Address	192.168.1.23
Subnet Mask	255.255.255.0
Web Server Port	80
Gateway	192.168.1.1

Web Server Port:

This is the TCP/IP port that is used to remotely access the DVISf unit. The default value is port 80 which is the well known port for HTTP protocol web servers and is the default value used by a web browser if no port is specified. For additional security or to allow the DVISf product to work properly behind some firewall configurations, the port used for access may need to be changed. If the port is changed to 8000, for example, the product would then be accessed by a web browser with the following address notation: <http://xxx.xxx.xxx.xxx:8000> where the actual public IP address replaces the x's.

Subnet Mask:

A subnet mask must be set to define what part of the network address is applicable to the subnet that the DVISf unit exists on. This should be set according to the overall network design. The default value of 255.255.255.0 will work fine with the default DVISf product private network address of 192.168.1.23.

Default Gateway:

This is the address of a router that the DVISf product is connected to and is installed between the product and access to the internet or intranet. If there is no router or internet access this value is irrelevant.

DNS IP Address:

DNS (Domain Name System) servers translate human-readable domain names into machine-readable IP addresses and the reverse. This is a feature that is related to the firmware update server which is not yet implemented, so this value may be ignored.

MAC Address:

A MAC (Media Access Control) address is a unique identifier assigned to network adapters or network interface cards (NICs) by the manufacturer to uniquely identify them on a LAN. It is used to identify the DVISf unit on the network to a DHCP server and to other computers. It is hard coded into the unit at the factory and cannot be changed. The MAC address is used by a cable modem to acquire an IP address in DHCP mode.

Notify Server URL:

This feature is not yet implemented.

DHCP Client Mode Enabled:

DHCP (Dynamic Host Configuration Protocol) automates obtaining an IP address. DHCP is commonly used with cable modems so likely this will need to be enabled if a cable modem will be connected to the management port for remotely accessing the DVISf product.



NOTE: Once DHCP is enabled and an IP address is assigned you will need to externally determine what the IP address was set to in order to access the DVISf unit again through the management Ethernet port and you may need to set your computer to the corresponding subnet as well depending on how you gain access to the unit on the network. Your Network Administrator may be able to help with this.

8.7 Change Username & Password

For security purposes, the DVISf product has a username and password which must be entered for access to the Management Interface. The username and passwords may be changed through the dialog that opens with this control. After changing the username and/or password, the DVISf unit must be rebooted in order for the changes to become effective. After the reboot, the new username and password must be used. The username and password may not be set to null. (No entry or blank).

Forgotten Username & Password

If the username or password have been changed and subsequently forgotten, there is a way to recover the DVISf unit without loss of programmed configuration. A firmware reset file is available which can workaround this problem. Contact ATX Networks at the numbers listed under ["Contact ATX Networks" on page 13-1](#) for assistance.

8.8 Network Controls

Network Info (Control):

This button opens an information window that summarizes Ethernet network information such as Packets received and transmitted, the link status, data collisions and the number of RX and TX bytes. This is for information only.

Set Network (Control):

If network addresses have been changed, they need to be saved and applied to the DVISf unit in order to take effect. This button applies the network configuration changes.



***NOTE:** If the network address has been changed, after clicking “Set Network” you will need to open a new browser session with the new address entered in Internet Explorer.*

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FIRMWARE UPGRADE & RECOVERY

9. Firmware Upgrade & Recovery

9.1 In this Chapter

- “DVIS Product Update Process”
- “Identifying currently installed firmware version”
- “Backing up your configuration”
- “Firmware Upgrade”
- “Restore a Configuration Backup”

In this chapter we explain the DVISf firmware update process, where to get firmware files and how to perform the upgrade. We also discuss the procedure for recovering the DVISf product to a previous firmware version if it is ever necessary.

9.2 DVIS Product Update Process

New system software for the DVISf product is provided in an archive file format of zip and will be made available on the ATX Networks support site for the DVISf product, see “[Where to obtain Firmware Files](#)” on page 9-3 to obtain the firmware.

9.2.1 Files Available for download

The file on the web site is a compressed file and it will be necessary to extract the contents with a decompression utility. If you do not have a program to extract the file, a free utility may be obtained at <http://downloads.sourceforge.net/sevenzip/7z920.exe>. It is not necessary to un-compress the tgz package as the DVISf product directly accepts the file in tgz format. The name of the zip file and the tgz file inside will be the same except for the extension and both will be named with the firmware version number.

9.3 Types of upgrades available

There are three fundamental types of firmware files:

System Reset Files

System reset files are intended to reset the DVISf system back to a previous firmware version. This could be used to remedy some issues with a DVISf installation where internal files have become corrupted. This is unlikely to be required but the feature is available to remedy some unforeseen conditions that could occur. Installation of this file is initiated by pressing the **Reset** button on the DVISf unit front panel. A system reset will install the DVISf firmware for an earlier version which will then need to be upgraded with an upgrade file. There is no criteria for installed version of firmware to use a system reset file, this file will work with any DVISf software installed version. Pressing the front panel **Reset** button will set the DVISf unit IP address to its factory default of 192.168.0.23.

Password Reset Files

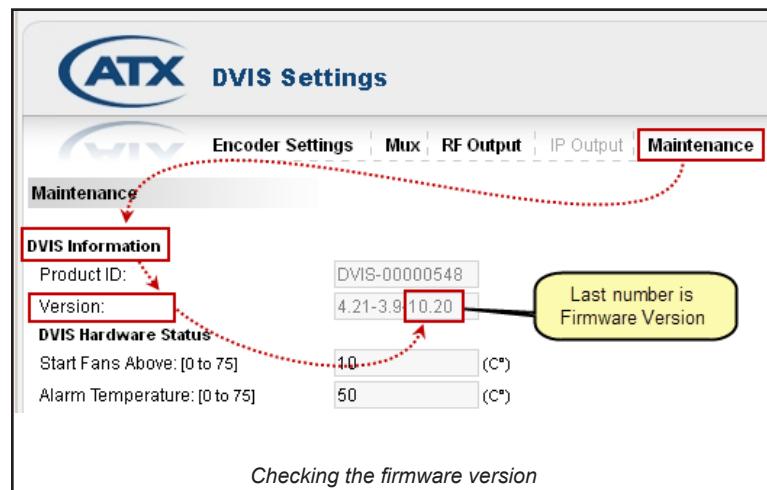
It is possible to recover a lost password without losing the programmed configuration. A special file is available to reset the username and password back to factory defaults. This file must be requested from ATX Networks Support. Contact them for further information at the numbers listed in “[Contact ATX Networks](#)” on page 13-1. This will require pressing the front panel **Reset** button and this will set the DVISf unit IP address to its factory default of 192.168.0.23.

System Upgrade Files

This is a file that is used to bring the DVISf product up to the latest firmware revision. It will be applied directly to a unit that has current firmware **within the range specified by the installation instructions** on the ATX Support web site. For the situation where a system reset was done, this upgrade file would be applied next to finalize the DVISf firmware at the latest version.

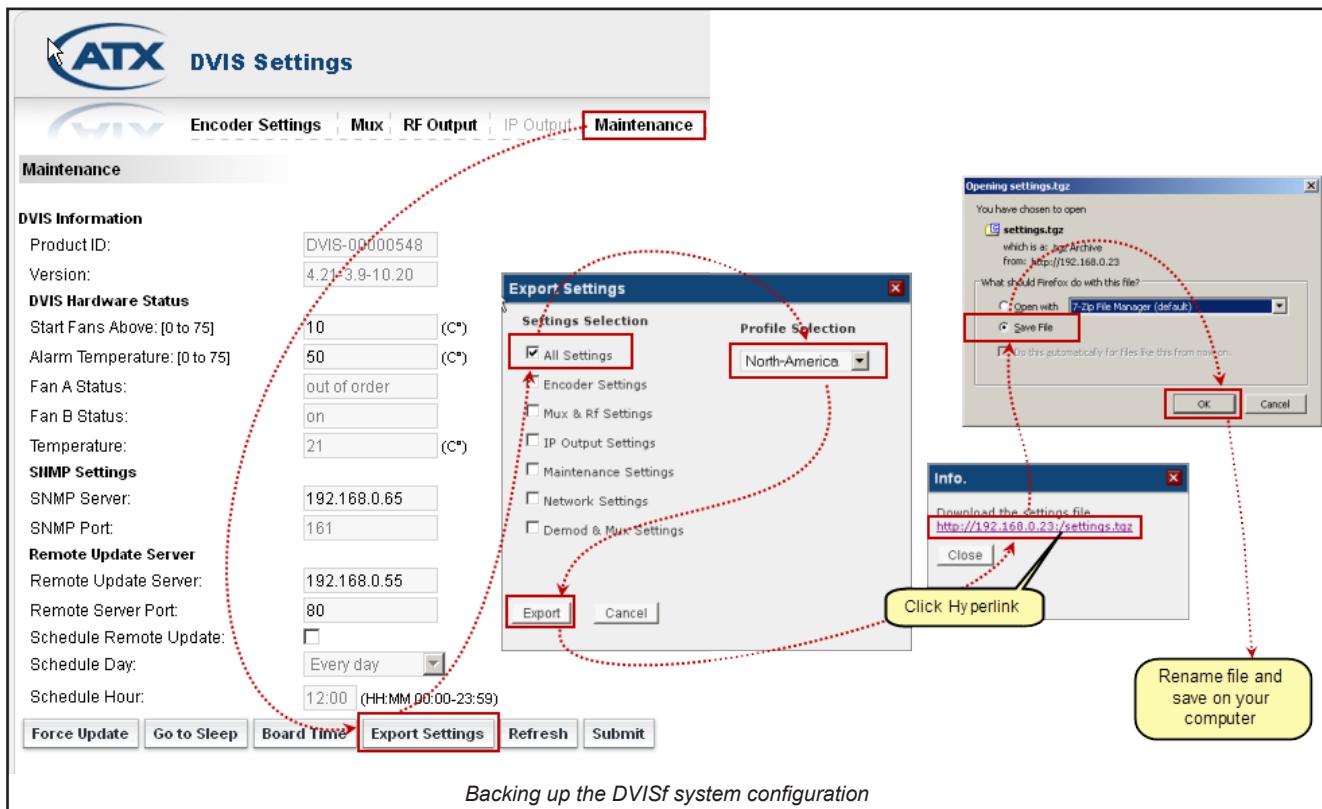
9.4 Identifying currently installed firmware version

The currently installed firmware version is displayed in the DVISf Management Interface under the **Maintenance** tab, as shown here. Each firmware upgrade will be posted along with the range of installed firmware that it is applicable to. This is the location to check your installed version to verify it is a qualifies to accept the upgrade.



9.5 Backing up your configuration

It is not intended that a firmware upgrade will affect the configuration of the DVISf system, but as with any software upgrade, it is recommended to make a backup before starting. The DVISf product has the ability to export the programmed configuration as a file, which could be kept as a backup or used for mass deployment of a common configuration. It is strongly recommended to make this backup prior to upgrading firmware. Making this backup is not service affecting and it is recommended that a backup be made whenever the DVISf system configuration changes. From the **Maintenance** tab the DVISf configuration settings may be exported. The screen shot construction below illustrates what to do.



9.6 Firmware Upgrade

The following firmware upgrade process is the general format that will be followed. Each firmware upgrade may have specific criteria that will need to be adhered to and those criteria will be posted with the upgrade.



***NOTE:** This manual does not contain specific up to date information for each release. Please read the instructions posted with each firmware release on the support web site.*

9.6.1 Where to Obtain Firmware Files

Updated firmware files are released by ATX Networks periodically to add features or to address potential issues with released firmware operation. The firmware files, when released, will always be posted to the ATX website (atxnetworks.com) in the Resources & Support section, Software Downloads sub-section. Along with the firmware file you will find specific instructions on updating the firmware. The instructions given in this guide are general in nature and cannot be guaranteed to be precisely applicable to every firmware release, so always refer to the instructions for the latest procedures specific to the posted firmware release.

If further information is required during any phase of the firmware upgrade, or you have concerns or questions about the firmware or its applicability to your DVISf, contact ATX Networks Digital Video Support. See ["Contact ATX Networks" on page 13-1](#) for contact information.

9.6.2 Save Firmware Update to Management Computer

The firmware upgrade file, when available, is on the ATX Networks support site. Save the firmware update file in a convenient location on the Management Computer. The actual upgrade file is in .tgz format and is named with the same name as the version of the update although it may be contained in a zip wrapper.

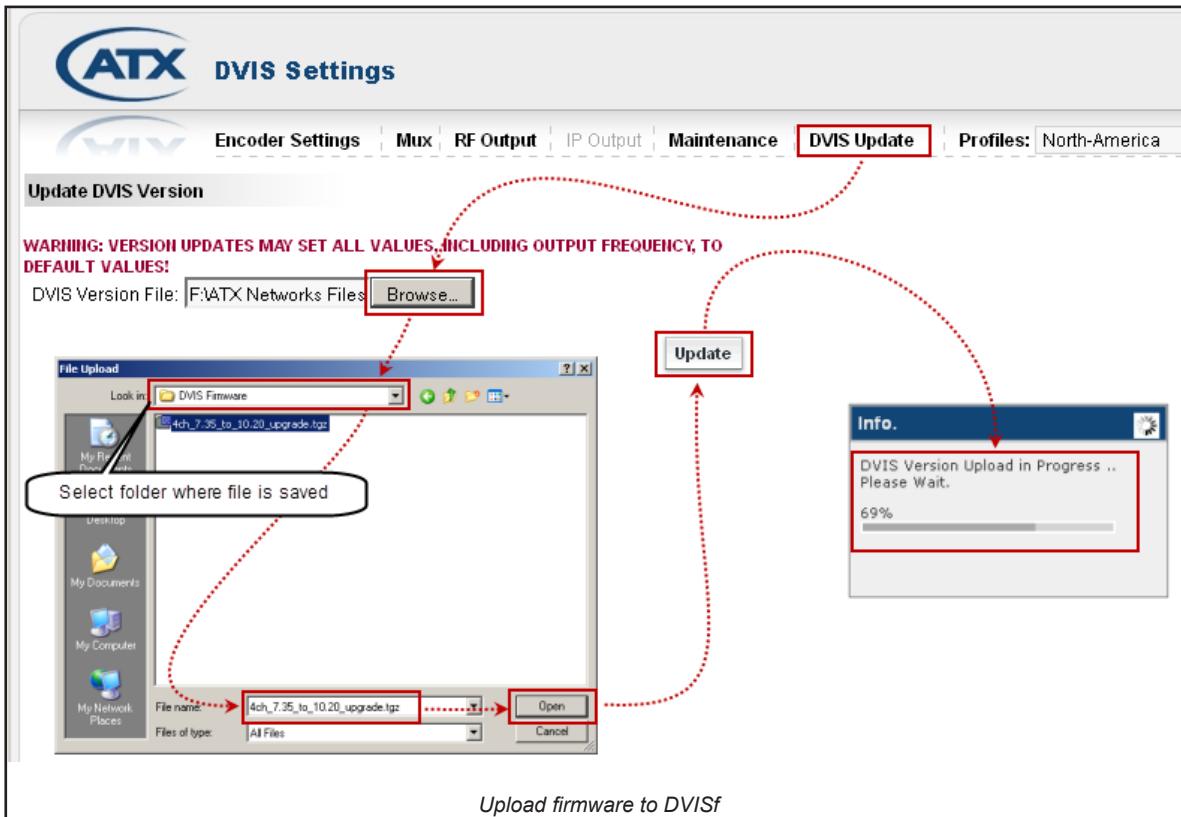
9.6.3 Connect Management Computer to DVISf

Set the computer that you will use for the upgrade to the same subnet as the DVISf unit in order to access the DVISf Management Interface. For example, if the network address for the DVISf unit is set to the factory default setting of 192.168.1.23 and you are using a Windows® based computer then set the computer to an address between 192.168.1.24 and 192.168.1.255.

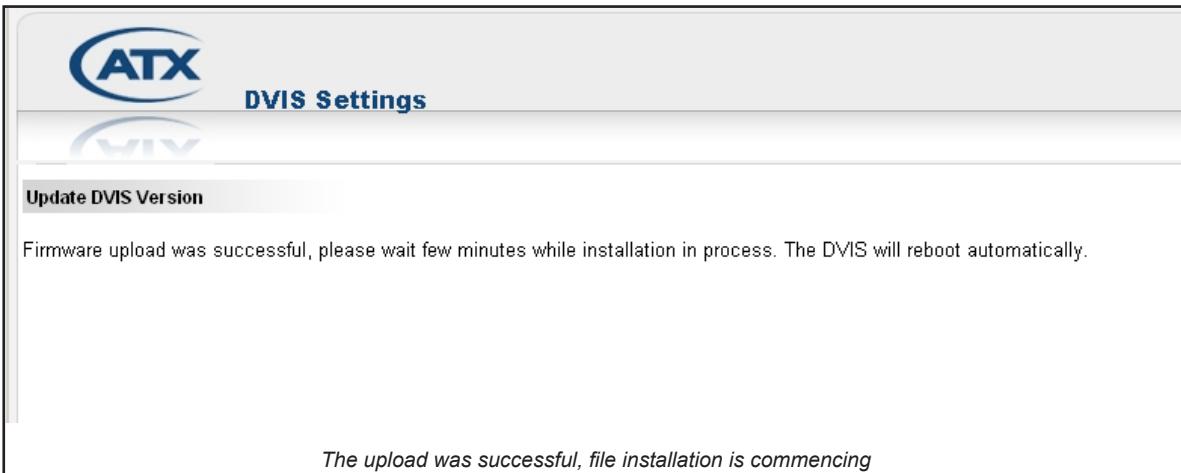
If you do not know how to set the Management Computer to the same subnet as the DVISf product, see ["Starting the Management Interface" on page 4-3](#) for a tutorial on setting the IP address.

9.6.4 Upload Firmware to the DVISf Product

1. Select the **DVIS Update** tab. The **Update DVIS Version** screen will appear.
2. Click **Browse**, navigate to the folder on your computer where you saved the .tgz file and click **Open**. The file name and location appear in the selection box.
3. Click **Update** to begin uploading the file to the DVISf.
4. A progress bar indicates the percentage file upload completion (0 to 100%).



5. When file upload is complete the DVISf will present the **Upload Done** Screen, shown below.

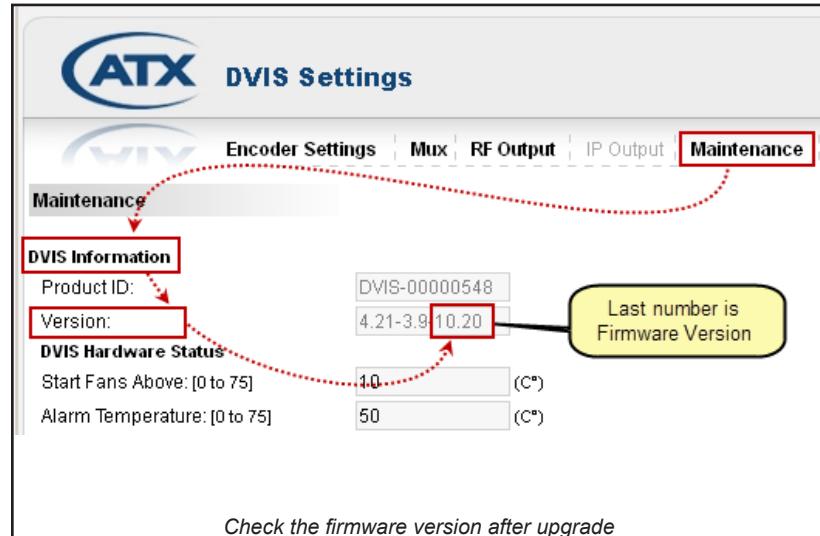


6. When the upload has finished, file installation begins automatically.
7. Close the browser.

8. When installation has completed (which can take up to 10 minutes), the DVISf unit reboots (indicated when the fans shut off for a few seconds and then restart).
9. Wait 5 minutes after the fan restarts for the reboot to complete.
10. Open Internet Explorer and enter <http://192.168.1.23/site> in the address field. When the login screen appears, enter **atx** for both the Username and Password. The DVISf Settings screen appears.
11. Select the **Maintenance** tab and verify that Version number is the same as the number in the name of the firmware update file.



DVISf Login dialog



Check the firmware version after upgrade

12. If the installed firmware version agrees with the name of the file, the firmware update is complete.

9.7 Firmware Recovery to Previous Version

System reset files are intended to reset the DVISf system back to a previous firmware version and IP address of 192.168.0.23. This could be used to remedy some issues with a DVISf software installation where internal files have become corrupted. This is highly unlikely to be required but the feature is available to remedy some unforeseen conditions that could occur. The **RESET** button on the front panel is located beside the Ethernet port and is covered by a small adhesive covering to prevent inadvertent use. The recovery files may be applicable to certain installed firmware versions. Check the details posted on the ATX Support site for the pre-conditions.



NOTE: *Do not depress the RESET button on the DVISf front panel unless you have the firmware recovery file available.*



NOTE: *By default, depressing the reset button will change the DVISf IP address to 192.168.0.23 so it will be necessary to configure a computer on the same subnet to allow uploading the file, using an address for your computer between 192.168.0.24 and 192.168.0.255.*

9.7.1 Save Firmware Update to Management Computer

Go to the ATX website (atxnetworks.com) in the Resources & Support section, Software Downloads sub-section to download the recovery firmware file and save the firmware update file in a convenient location on the Management Computer. This file is in .zip format and its name contains the version code for this update.

Extract the recovery firmware file within the zip archive and save it in a convenient location on the Management Computer. The actual recovery file is in .tgz format and is itself an archive format. It should not be modified in any way or extracted further.

9.7.2 Set Management Computer subnet to match DVISf Unit

Set the computer that you will use for the upgrade to the same subnet as the DVISf unit in order to access the Management Interface. The network address for the unit will be set to the factory default setting of 192.168.0.23 so configure the computer to an address between 192.168.0.24 and 192.168.0.255.

If you do not know how to set the Management Computer to the same subnet as the DVISf product, see ["Starting the](#)

[Management Interface](#)” on page 4-3 for a tutorial on setting the IP address.

9.7.3 Reset the DVISf product

Using a pen or similar small pointed object, press and hold **RESET** on the DVISf unit front panel for approximately 5 seconds to place the unit in **RESET/RECOVERY** mode. You can recognise the condition when both fans stop operating, then after a few seconds one fan restarts (this assumes that the fans were already running). Wait about one minute for the equipment to restart.

9.7.4 Connect to Management Interface.

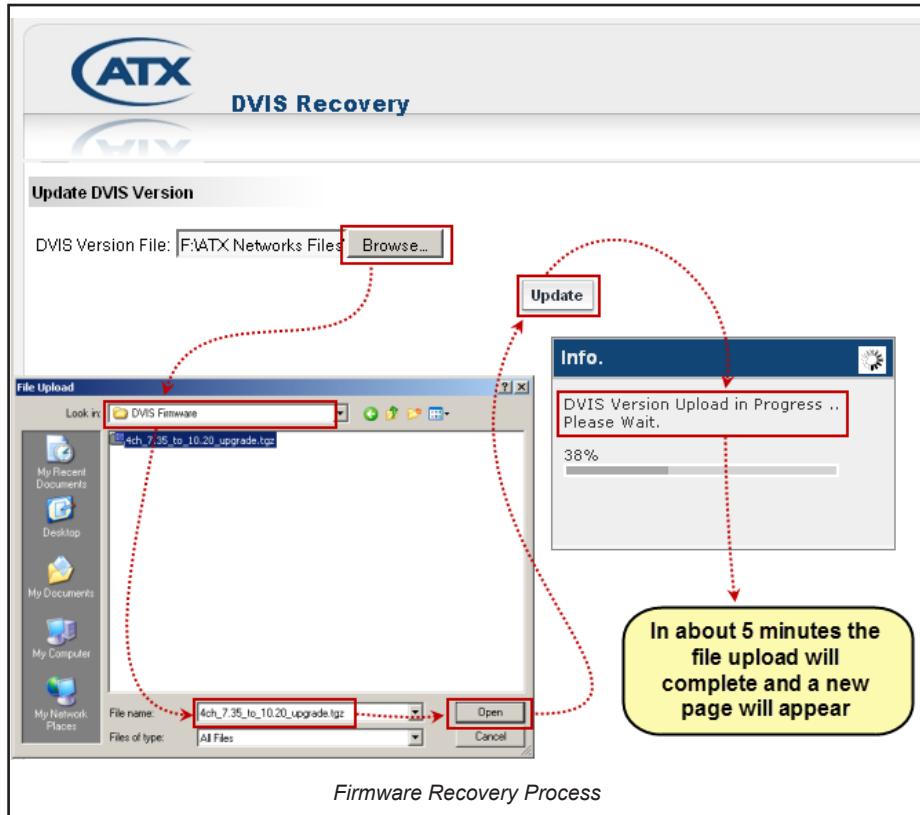
1. Open **Internet Explorer** and enter **http://192.168.0.23/site** in the address field.
2. When the login screen appears, enter **atx** for both the Username and Password.
3. Upon validation of the login and password, the DVIS Recovery screen appears.



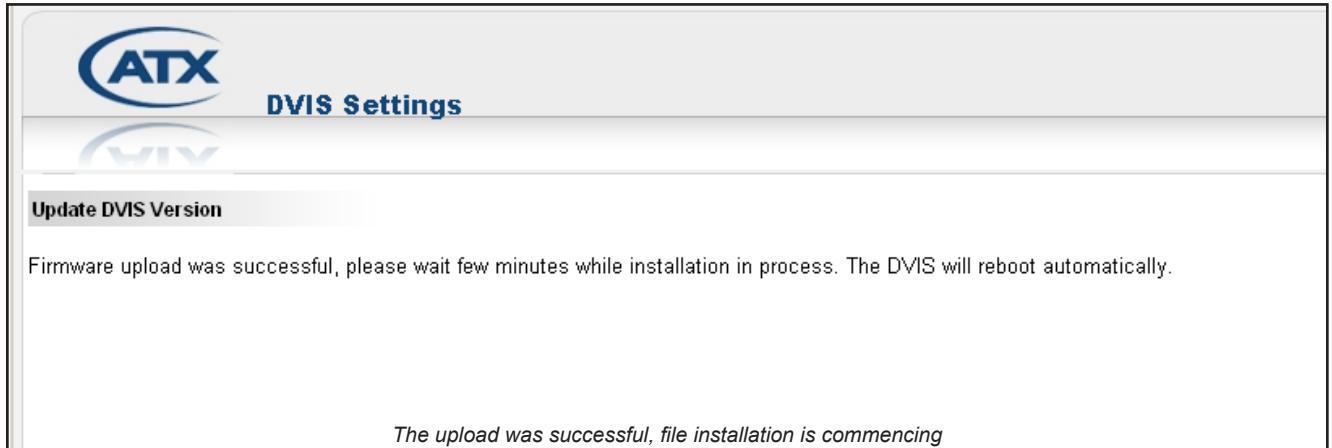
DVISf Login Screen

9.7.5 Restore Firmware

1. Click **Browse**, navigate to the location of the saved recovery files and select the **recovery.tgz** file. The file name and location appear in the selection box.
2. Click **Update** to begin uploading the file to the unit. A progress bar indicates the percentage completion (0 to 100%).



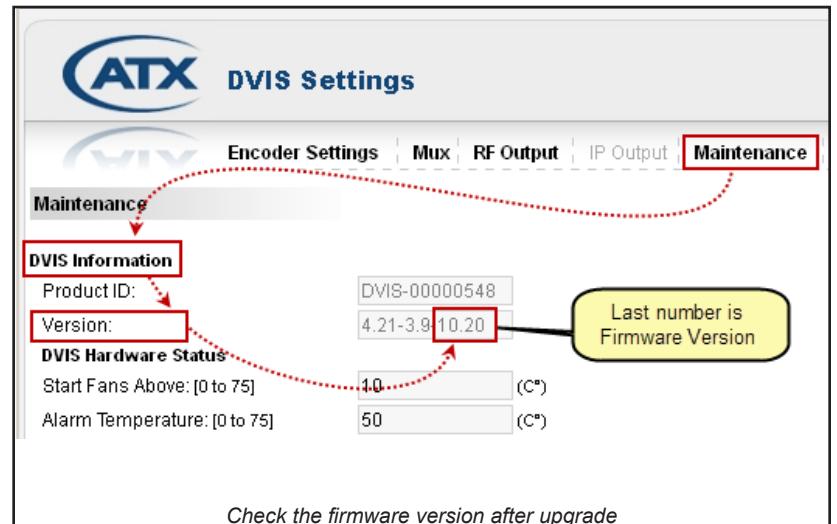
When the upload is finished, the following page appears in the Web browser and file installation on the unit begins automatically.



3. Close the Web browser.
4. When installation has completed (which can take several minutes), the unit reboots (indicated when the fan shuts off for a few seconds and then restarts). After a few seconds the second fan restarts.
5. Wait an additional 90 seconds, reopen the Web browser and enter <http://192.168.0.23/site> in the address field. When the login screen appears, enter **atx** for both the Username and Password. The DVIS Settings screen appears.



DVISf Login dialog



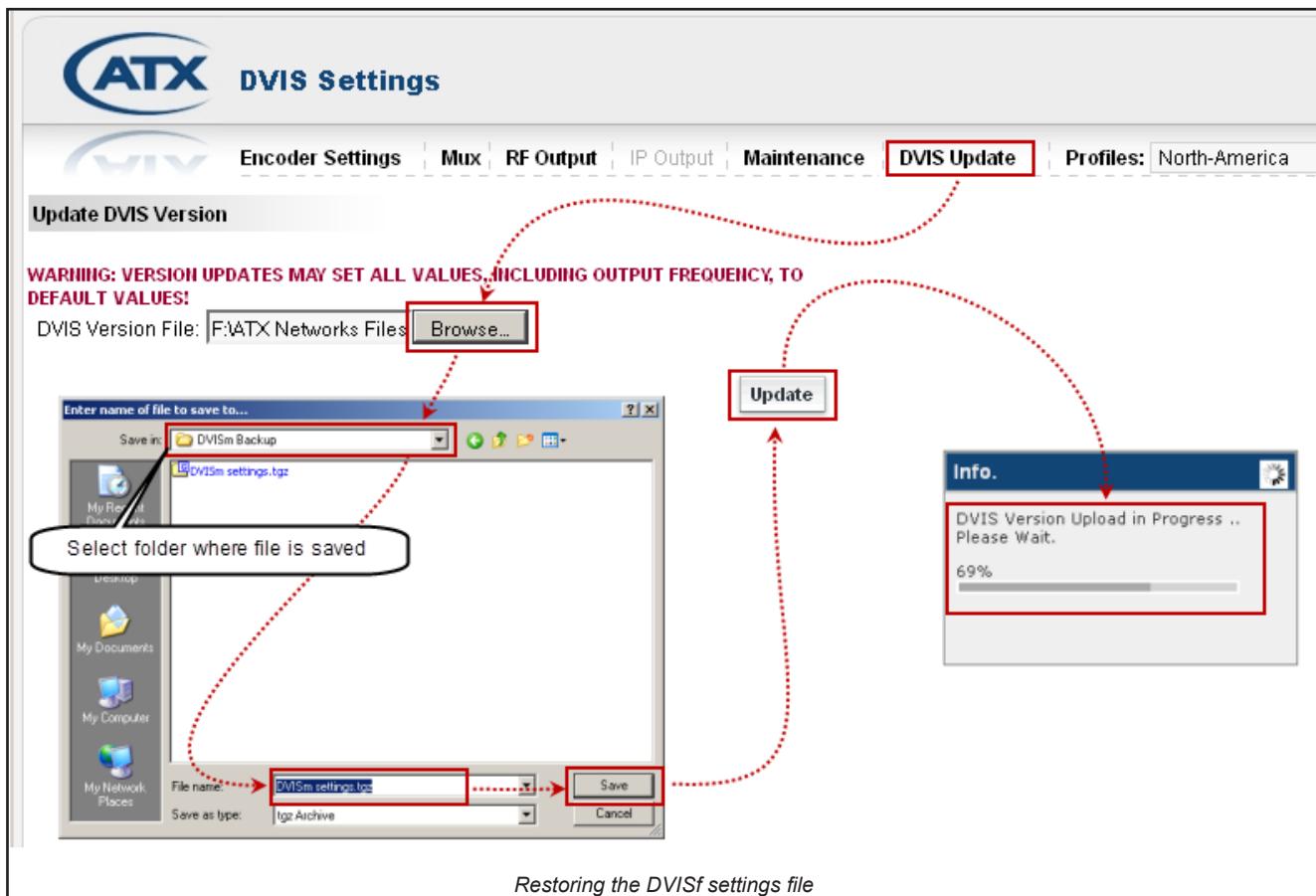
6. Select the **Maintenance** tab and verify that reported version is the same as the version of the update file.
7. Restore the IP address of 192.168.1.23 or the correct IP address for this unit.

9.8 Restore a Configuration Backup

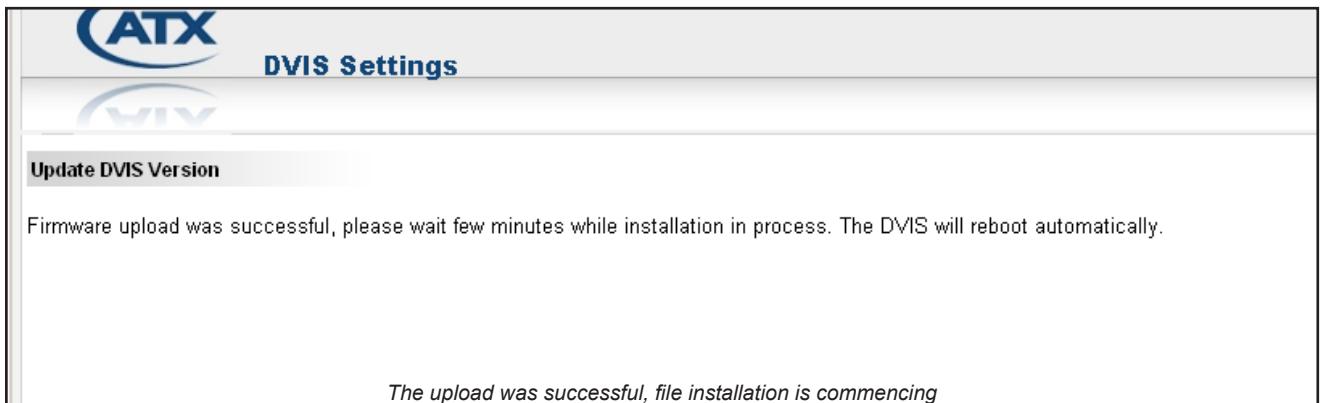
If you saved a backup file or are performing a mass deployment of a number of DVISf products with identical configurations, you can restore the saved configuration from the exported file. The file is in tgz format and would have been named **settings.tgz** if you accepted the name that the DVISf product suggested when exported. We recommend renaming the file for easier identification.

Restoring the backup file is done in the same manner as a firmware upgrade from the **DVIS Update** tab. See the following screen capture construction for the procedure:

1. Select the **DVIS Update** tab. The **Update DVIS Version** screen will appear.
2. Click **Browse**, navigate to the folder on your computer where you saved the **settings.tgz** file (or whatever name you may have given it) and click **Open**. The file name and location appear in the selection box.
3. Click **Update** to begin uploading the file to the DVISf. A progress bar indicates the percentage file upload completion (0 to 100%).



4. When file upload is complete the DVISf unit will present the **Upload Done** Screen, shown below.



5. When the upload has finished, file installation begins automatically.
6. Close the browser.
7. When file installation has completed (which can take about one minute), the unit reboots (indicated when the fans shut off for a few seconds and then restart).
8. Wait two minutes after the fan restarts for the reboot to complete.
9. Open Internet Explorer and enter <http://192.168.1.23/site> (or substitute the actual IP address) in the address field. When the login screen appears, enter **atx** for both the Username and Password. The DVIS Settings screen appears.
10. Configuration settings defined by the **settings.tgz** file have been restored.

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FIELD REPLACEMENT OF MODULES

10. Field Replacement of Modules

10.1 Field Replacement of CMOS Battery

The DVISf product has a CMOS backup battery access door on the front panel. This battery maintains continuity of the clock on the DVISf unit main board in the event of power outages. The CMOS battery is Lithium and has an expected life of 20+ years under normal system operation. Replace this battery with a 3 volt CR 2032 or exact replacement type.

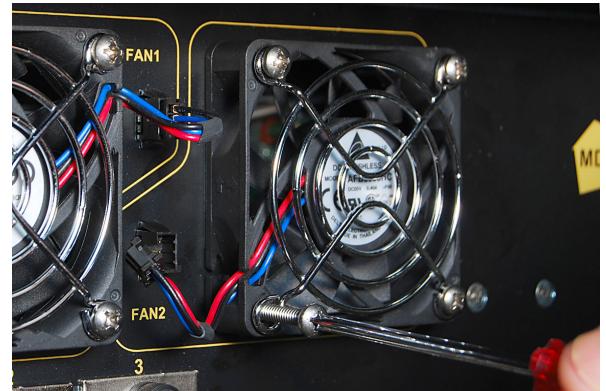
10.2 Field Replacement of Cooling Fans

10.2.1 Remove Fan

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

10.2.2 Replace Fan

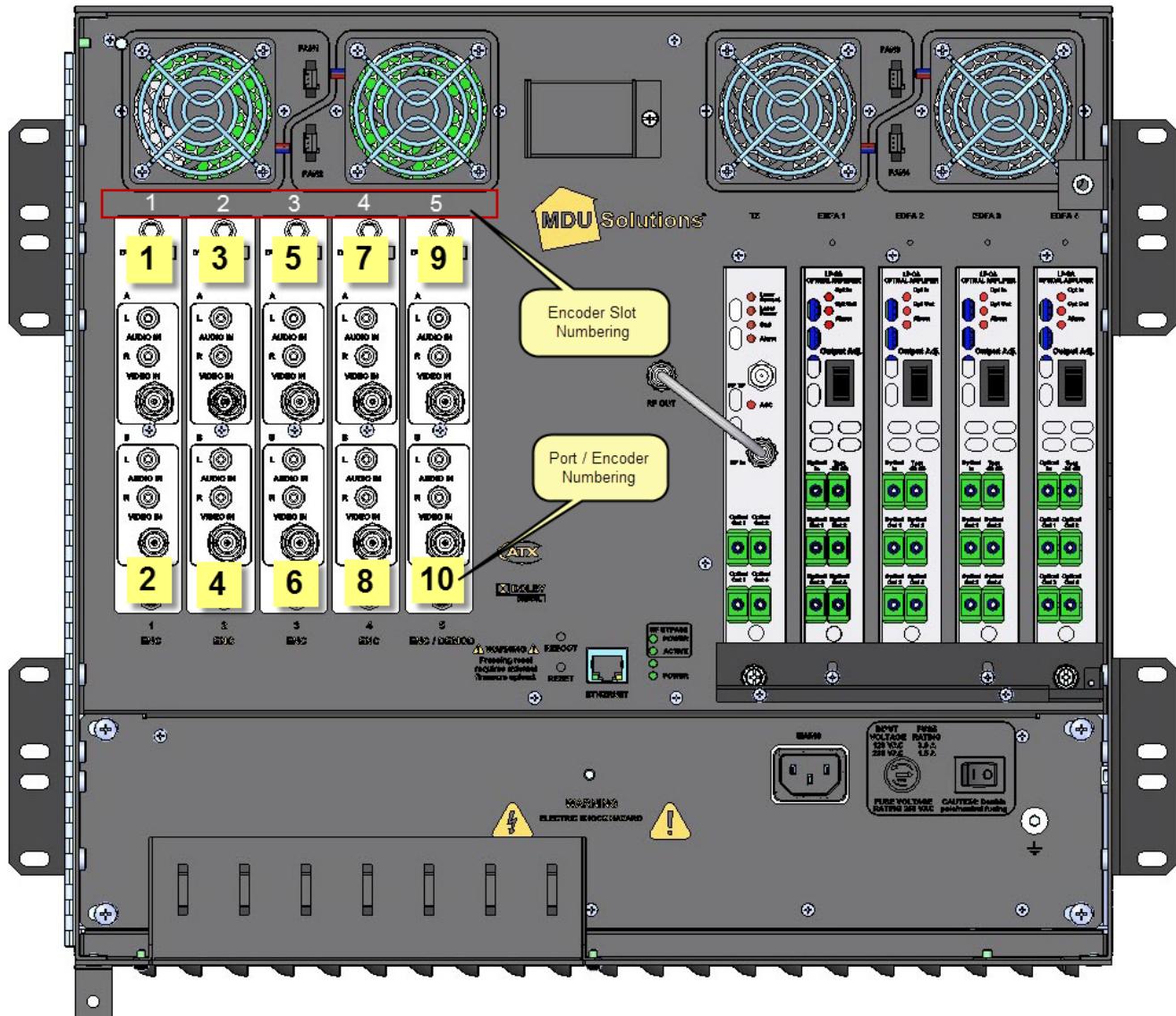
1. Hold the fan in position, insert the four retaining screws and tighten using a Phillips screwdriver.
2. Insert the connector into the adjacent receptacle.



Disconnect and Remove Cooling Fan

10.3 Field Replacement of Plug-in Cards

Each accessory card is installed in a slot numbered from the left side. The first slots are labeled ENC1, ENC2 etc. See the card support table below for card/slot support. Be careful to align the circuit board of the card with the yellow paint indication above the card when re-inserting the cards.



DVISf Front Panel Shown (requires new picture)

DVISf Encoder Card Support	
Card Type	DVISf Supports in Slots
Single Channel Encoder	1, 2, 3, 4, 5
Dual Channel Encoder	1, 2, 3, 4, 5



NOTE: All cards are hot pluggable. There is no need to interrupt power to change cards.

10.3.1 Card Removal.

1. Disconnect any cables attached to the card.
2. Loosen the thumbscrews at the top and bottom of the card.
3. Gently slide the card out of the slot.

10.3.2 Card Insertion

1. Align the card edges with the yellow guidelines above and below the card slot.
2. Gently slide the card into the slot until the rear edge of the card is seated in the connector at the back of the card slot.
3. Tighten the thumbscrews at the top and bottom of the card.



Release Screw and Gently Pull Card Out



To Replace - Align Card with Yellow Card Slot Marker

1.

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TROUBLESHOOTING

11. Troubleshooting

11.1 In this Chapter

This chapter lists the Management Interface error codes and optical component error indicators that may be given by the DVISf product under some circumstances. These codes may be used by the cable system operator to better understand the problem that was encountered and to help the ATX support engineer to assist in troubleshooting the DVIS product problem.

11.2 Optical Troubleshooting

Use these table in troubleshooting optical transmitter or EDFA red LED indicators. See also [“Optical Configuration” on page 3-7](#) for instructions on setup of the transmitter and EDFA.

11.2.1 EDFA

EDFA Indicator LEDs			
LED	Color	Indication	Action
Switch Alarm	Red	EDFA is Disabled	If all cables and connectors are secure use switch to enable EDFA laser.
	Green	EDFA is Enabled	EDFA is enabled. Disable before connecting or removing any cables.
Alarm	Green	Laser is Active	Optical output is active. Follow safety precautions.
	Red	Laser is Inactive	There is a ninety second delay after the DVISf is powered before the laser will be activated.
			Check EDFA enable switch is in the correct position.
			Check Optical Input is +2 to +5 dBm. The test point voltage should read between 1.6V and 3.2V.
			Check all fans are operational. If the cooling fans fail the laser can not be activated so as to prevent overheating.

11.2.2 Optical Transmitter

DVFTX Indicator LEDs			
LED	Color	Indication	Action
Status	Red	Fault	Verify RF input is present and AGC status LED is green.
	Green	Correct operation	None required.
AGC	Orange	RF Input low	Decrease attenuation in DVISf Management Interface in 1 dB increments until extinguished. See “RF Settings” on page 7-1 .
	Green	Correct operation	None required
	Red	RF Level is high	Increase attenuation in DVISf Management Interface in 1 dB increments until extinguished. See “RF Settings” on page 7-1 .

11.3 Management Interface Error Codes

Error code	Operation	Error description
404	HTTP	Cannot load page as requested
500	HTTP	Unknown HTTP request
502	HTTP	Unknown POST request
503	Configuration	Unknown A/V port
504	Configuration	Can not access shared memory
506	configuration	Can not open configuration file

SPECIFICATIONS

12. Specifications

12.1 DVISf Product Specifications

BASE PLATFORM SPECIFICATIONS	
CHASSIS OVERVIEW	
DIMENSIONS	15.75" H x 17.05" W x 12.0" D (40.0H x 43.3W x 30.5D cm), Wall Mount, Lockable Front Door
WEIGHT (Max)	55.7 lbs (25.3 kg)
ENCODED PROGRAMS	Up to 10 into one QAM Channel, Scalable (plug-in cards with 1 or 2 encoders per card)
POWER SUPPLY	IEC Connector / 90-264 VAC, 50/60 Hz
POWER CONSUMPTION	165W
DEVICE MANAGEMENT	HTTP / SNMP Network Interface (RJ45)
OPERATING TEMPERATURE	0°C to +50°C (+32°F to +122°F)
HUMIDITY	0-95% (without condensation)
TS MULTIPLEXER	
PACKET SIZE	188 Bytes
TS SUPPORT	QBA, AF
PROGRAM NUMBER & TS NUMBER	User Settable (Program #: 1-65535; TS ID: 1-65535)
PSI / SI INFORMATION TABLE (PAT, PMT)	Automatically Generated
SETTABLE PIDs	PMT, PCR (0x0015-0x1FFE; dec. 21-8190)
QAM MODULATOR / RF UPCONVERTER	
QAM MODULATION	ITU-T J.83 Annex A/Annex B/Annex C
MODULATION FORMAT	16, 32, 64, 128, 256 QAM
RF QAM OUTPUT POWER AT RF OUT (Max)	57.5 +/- 1.5 dBmV
ATTENUATOR	0-26 dB
ATTENUATOR STEP	1.0 dB
RF QAM FREQUENCY OUTPUT RANGE ⁽¹⁾	45-870 MHz ⁽¹⁾
SUPPORTED CHANNEL PLANS	STANDARD, HRC, IRC
FREQUENCY STEP	250 kHz
RF QAM CHANNEL BANDWIDTH	6 MHz (Annex B) Max. 8 MHz (Annex A/C)
EXCESS BANDWIDTH	Annex B: 12% (256 QAM), 18% (64 QAM) Annex A: 15% Annex C: 13%
SYMBOL RATE	Annex B: Automatically Set with Selected Modulation Format 5.360537 MSymb/s - 256 QAM 5.056941 MSymb/s - 64 QAM Annex A/C: max. 7 MSymb/s
MER EQUALIZED ⁽²⁾	> 40 dB ⁽²⁾
FREQUENCY OFFSET	< 2ppm
SYMBOL RATE OFFSET	< +/- 50 Hz
CARRIER SUPPRESSION	> 55 dB
SIGNAL/NOISE	> 45 dB
SPURIOUS	-60 dB
TS PROCESSING	Null Packet Insertion & PCR Correction
FEC	ITU-T J.83 Annex B; DVB-C EN300429 & ITU-T J.83 Annex A/C
RF INTERFACES	
RF OUT	F, 75 Ω, Jumpered to Optical Transmitter Module
RF INPUT (ON TRANSMITTER MODULE)	F, 75 Ω
OPTICAL OUTPUT	
TRANSMITTER MODULE	1 F Input, 4 SC/APC outputs get jumpered to up to four 4-port EDFA modules 2.5 dBm per Output, Wavelength ITU DWDM C-Band 22-46 (user specified) ⁽³⁾ For more details, see DVFTX Specifications
4-PORT EDFA MODULE	1 SC/APC Input, 1 SC/APC Test Output (-24 dB tap port), 4 SC/APC Output Ports, Output Power: 10-19 dBm (user adjustable) DVISf base platform can accept up to four 4-port EDFA modules For more details, see DV4E Specifications
1-PORT EDFA MODULE	1 SC/APC Input, 1 SC/APC Test Output (-30 dB tap port), 1 SC/APC Output Port, Output Power: 10-19 dBm (user adjustable) DVISf base platform can accept up to four 1-port EDFA modules For more details, see DV1E Specifications
NOTES:	
(1)	Extended Tune Range 15-975 MHz. Contact ATX for details.
(2)	Measured with Rohde & Schwarz EFA (FW Ver 05.33).
(3)	See Ordering Information.

12.2 MPEG Encoder Specifications

12.2.1 DV1CE & DV2CE (VWEB_NA & VWEB_EU)

ENCODER PLUG-IN CARD SPECIFICATIONS		DV1CE	DV2CE		
VIDEO					
INPUT		CVBS, NTSC / PAL ⁽¹⁾			
INPUT INTERFACE		1x BNC, 75 Ω	2x BNC, 75 Ω		
ENCODING FORMAT		MPEG-2, 4:2:0, MP@ML			
ENCODING BIT RATE TYPE		CBR			
VIDEO ADJUSTMENTS		Brightness, Contrast, Saturation			
VIDEO PROCESSING		TBC			
RESOLUTION	HORIZONTAL	720, 704, 544, 528, 480, 352			
	VERTICAL	480, 576 ⁽¹⁾			
FRAME RATE		29.97fps, 25fps ⁽¹⁾			
VIDEO ENCODING BIT RATE		1-8 Mbps			
GOP STRUCTURE		IBBP - Length 15			
VIDEO PID SETTING		Yes (0x0015-0x1FFE; dec. 21-8190)			
CLOSED CAPTIONING		EIA-608			
AUDIO					
INPUT		Analog, Unbalanced			
INPUT INTERFACE		2x RCA (pair L/R)	4x RCA (2x pair L/R)		
ENCODING FORMAT		Dolby® Digital AC-3, MPEG-1 Layer II ⁽¹⁾			
MODES		Stereo, Mono			
SAMPLING RATE		48 kHz			
ENCODING BIT RATES		192, 256, 384 kbps			
AUDIO PID SETTING		Yes (0x0015-0x1FFE; dec. 21-8190)			
PHYSICAL					
DIMENSIONS		6.5" H x 0.75" W x 3.0" D (16.5H x 1.9W x 7.6D cm)			
WEIGHT		0.33 lbs (0.15 kg)			
NOTES:					
(1) Default format is NTSC/Dolby Digital AC-3, without PAL/MPEG-1 Layer II.					
Dolby is a registered trademark of Dolby Laboratories. Manufactured under license from Dolby Laboratories.					



DV1CE



DV2CE

Single Channel Encoder

Dual Channel Encoder

12.3 Optical Transmitter Specifications

TRANSMITTER MODULE SPECIFICATIONS		DVFTX		
INPUT				
CONNECTOR	F, 75 Ω			
LEVEL	36 dBmV (Single QAM Carrier at 50-870 MHz)			
RETURN LOSS	18 dB (min)			
OUTPUT				
CONNECTOR	SC/APC, 4 Ports			
LEVEL	2.5 +/- 1.0 dBm per Port			
RETURN LOSS	40 dB (min)			
WAVELENGTH	User Specified: ITU ch 22 to 46*			
SBS SUPPRESSION	Up to 20 dBm			
MONITOR				
STATUS	Front LED			
AGC	Front LED			
POWER	7.5W (max)			
PHYSICAL				
DIMENSIONS	6.2"H x 1.0"W x 7.0"D (15.75H x 2.54W x 17.78D cm)			
WEIGHT	2.0 lbs (0.91 kg)			
NOTE:				
* See Ordering Information.				



12.4 Single Port and Quad Port EDFA Specifications

EDFA MODULE SPECIFICATIONS		DVF4E (4-Port)	DVF1E (1-Port)
INPUT			
CONNECTOR		SC/APC	
LEVEL		2.5 to 7 dBm	
RETURN LOSS		40 dB (min)	
WAVELENGTH		1540-1560nm	
NOISE FIGURE		6 dB (max)	
OUTPUT			
CONNECTOR	SC/APC, 4 Ports		SC/APC, 1 Port
LEVEL	10-19 dBm, User Adjusted via Front Panel, All Ports Simultaneous		
RETURN LOSS		40 dB (min)	
TAP (TEST)			
CONNECTOR		SC/APC	
LEVEL	-24 dB Relative to Output Ports		-30 dB Relative to Output Port
MONITOR & CONTROL			
OPTICAL ATTENUATOR		Front Panel Rotary Switch	
ALARM		Front LED	
POWER		19W (max)	
PHYSICAL			
DIMENSIONS	6.2" H x 1.0" W x 7.0" D (15.75H x 2.54W x 17.78D cm)		
WEIGHT	2.0 lbs (0.9 kg)		



SERVICE & SUPPORT

13. Service & Support

13.1 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

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

Web: www.atxnetworks.com

13.2 Warranty Information

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

End-of-Sale as of
December 31, 2017



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