



DigiVu[®]

DigiVu[®] CD

DigiVu[®] Mini

**Multichannel MPEG-2/H.264 Encoder/Multiplexer
QAM & IP Output**

INSTALLATION & OPERATION MANUAL

General Guide Notes

Manual Release Date: March 2016

Firmware Version

Some features described in this manual require the latest firmware to be installed on the DigiVu devices. Check with ATX Networks technical support or the related support web site for your model of DigiVu for the latest release of firmware. The firmware version installed may be found on the 'Maintenance' tab of the GUI. At the time of publication of this manual the most current released firmware version is:

System	4.21-3.19-10.46
DV1HDA Card	1.3.0
DVGIGE Card	2.0-1.15

Organization of This Manual

This manual is generally organized based on the tabbed GUI with an individual chapter dedicated to describing the configurable features of each tab. Further chapters outline activities related to the DigiVu operation such as installation, troubleshooting, etc.



FYI: *In this guide, reference to DigiVu infers DigiVu 3RU, DigiVu CD 3RU and DigiVu Mini 1RU unless the model is specifically stated. Reference to DVIS is synonymous with DigiVu as these products run on the same firmware..*

Cross Reference Hyperlink Usage

Hyperlinks are used liberally throughout the guide to assist the reader in finding related information if the reader is viewing the Adobe PDF file directly. Hyperlinks may be identified by their blue text. Most links are to related pages within the document, but some reference outside documents if the reader needs that additional information. The Table of Contents is entirely hyperlinked and bookmarks are available but the bookmark feature must be turned on in your Reader application.

Symbol Usage

Throughout the manual, some symbols are used to call the readers attention to an important point. The following symbols are in use:



NOTE: *This symbol usage will call the reader's attention to an important operation feature of the equipment which may be safety related or an operation that may cause a service outage.*



FYI: *This symbol indicates that there is helpful related information available in this note or elsewhere in the guide.*

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 115 VAC operation, use the power cord supplied for operation from a 115 VAC source.

(b) For 230 VAC operation, use the power cord supplied for operation from a 230 VAC source.

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

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

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

NOTE: (a) Replace fuse in units operating on 115 VAC supply by fuse rated 3.0 A, 250 V, slo blo.

(b) Replace fuse in units operating on 230 VAC supply by fuse rated 1.5 A, 250 V, slo blo.

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

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

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

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

BATTERY DISPOSAL: Recycle or dispose of batteries in accordance with the battery manufacturer's instructions and local/national disposal and recycling regulations. Please call 1-800-8-BATTERY or go to the website at www.call2recycle.org for information on recycling or disposing of your used battery.

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.

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.

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.

EQUIPMENT NOTICE: Use in Norway and Sweden:

Equipment connected to the protective earthing of the building installation through the mains connection or through other equipment with a connection to protective earthing - and to a cable distribution system using coaxial cable, may in some circumstances create a fire hazard. Connection to a cable distribution system has therefore to be provided through a device providing electrical isolation below a certain frequency range (galvanic isolator, per EN 60728-11: a galvanic isolator shall provide electrical insulation below 5 MHz. The insulation shall withstand a dielectric strength of 1,5 kV r.m.s., 50 Hz or 60 Hz, for 1 min.).

Utrustning som är kopplad till skyddsjord via jordat vägguttag och/eller via annan utrustning och samtidigt är kopplad till kabel-TV nät kan i vissa fall medföra risk för brand. För att undvika detta skall vid anslutning av utrustningen till kabel-TV nät galvanisk isolator finnas mellan utrustningen och kabel-TV nätet.

SYSTEM DESCRIPTION

2. System Description

DigiVu series products are cost effective and space efficient encoding, multiplexing and transmission platforms ideal for digital simulcast applications, digital delivery of PEG, hub site specific programming, local channel insertion or headend encoding. Several SD/HD baseband programs can be directly encoded/multiplexed and output in QAM or IP format, eliminating the need for stacking and/or combining several units for multiple program encoding. Models exist with two and six card slots, accepting various combinations of available cards. HTTP based GUI allows easy set-up and control without the need for proprietary software installation Remote access and SNMP monitoring are available via integrated RJ45 Ethernet interface.

In this chapter we introduce the key features and describe the attributes that make the DigiVu Device a powerful addition to any digital cable TV network.

2.1 Chapter Contents

- “Models Covered by this Guide”
- “The DigiVu® Encoder”
- “Key Features”
- “Simplified Block Diagrams”
- “Front and Rear Panels”
- “Card Slot Numbering”
- “Available Encoder Cards”
- “Available Input/Output Cards”

2.2 Models Covered by this Guide

There are three models in the DigiVu series, all have QAM output by default, but each has different channel capacity.



FYI: In this guide, reference to DigiVu infers DigiVu 3RU, DigiVu CD 3RU and DigiVu Mini 1RU unless the model is specifically stated. Reference to DVIS is synonymous with DigiVu as these products run on the same firmware..

2.2.1 DigiVu® 3RU

This is the 3RU model with up to 10 channels of SD MPEG-2 encoding or 5 channels of HD/SD MPEG-2/H.264. The output is a single QAM. GbE IP output is available but number of encoded channels is reduced for IP output, as one card slot is used for the IP output card. This is a popular model in applications where up to 10SD/5HD channels of cost effective video are required in commercial sites such as headends, MDUs, stadiums, hospitals and other health care facilities where in-house educational channels are implemented.

Distinguishing Features:

- 3RU Chassis.
- 6 card slots for encoders or I/O cards. (Not all slots can be used for all card types.)
- Up to 10 integrated SD MPEG-2 encoded programs using dual encoder cards.
- Up to 5 integrated SD/HD MPEG-2/H.264 encoded programs.



Figure 2-1: 3RU DigiVu®

2.2.2 DigiVu® CD 3RU

This is very much the same as DigiVu with the addition of an integrated channel dropping filter. This is a 3RU model with up to 10 channels of SD MPEG-2 encoding or 5 channels of HD/SD MPEG-2/H.264 where an existing cable TV channel lineup requires that a channel be removed before inserting the new QAM channel. The output is a single QAM. GbE IP output is available but the number of encoded channels is reduced for IP output, as one card slot is used for the IP output card. This is a popular model in applications where up to 10SD/5HD channels of cost effective video are required in commercial sites such as headends, MDUs, stadiums, hospitals and other health care facilities where in-house educational channels are implemented.



Figure 2-2: 3RU DigiVu® CD

Distinguishing Features:

- 3RU Chassis.
- Integrated (optional) Channel Dropping Filter.
- 6 card slots for encoders or I/O cards. (Not all slots can be used for all card types)
- Up to 10 integrated SD MPEG-2 encoded programs using dual encoder cards.
- Up to 5 integrated SD/HD MPEG-2/H.264 encoded programs.

2.2.3 DigiVu® Mini 1RU

This is the Mini 1RU model with up to 4 channels of HD/SD MPEG-2/H.264. The output is single QAM. GbE IP output is available but the number of encoded channels is reduced for IP output, as one card slot is used for the IP output IP card. This is a popular model in applications where up to 4SD/2HD channels of cost effective video are required in commercial sites such as headends, MDUs, stadiums, hospitals and other health care facilities where in-house educational channels are implemented.



Figure 2-3: 1RU DigiVu® Mini

Distinguishing Features:

- 1RU Chassis.
- 2 card slots for encoders or I/O cards.
- Up to 4 integrated SD MPEG-2 encoded programs using dual encoder cards.
- Up to 2 integrated SD/HD MPEG-2/H.264 programs encoded.

2.3 The DigiVu® Encoder

DigiVu series products are headend or network-edge local content encoding devices for digital video networks. They encode local baseband analog content into a digital format at the headend or within a property provisioned with digital only TVs, STBs or DTAs where analog spectrum is not available or where digital content is needed in addition to analog content.

Target applications include:

- Cost-effective encoding, multiplexing & transmission (QAM and/or GigE).
- Headend application of digital simulcast or digital delivery of PEG.
- Hub site specific programming.
- 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 property (e.g., sports stadiums, network studios).

In addition to headend/hub applications, 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 DigiVu can be used in these properties to encode local analog video cameras, message boards, instructional and advertising channels into HD/SD MPEG-2/H.264 streams. The resulting stream content may be inserted into a blank EIA channel or may perform digital drop and insert into pre-existing clear QAM carriers or also perform Add/Drop Multiplexing within a QAM channel. The flexible architecture of the product makes it an ideal candidate for any number of programs that a headend, hub, MDU or similar property is likely to require.

2.4 Key Features

2.4.1 Flexible Digital Program Insertion

Designed for deployment in both RF and IP environments, the DigiVu system is capable of inserting digital programs into an EIA RF channel where there is no pre-existing carrier or it may be used with an integrated channel deletion filter (DigiVu CD Model) and any EIA channel may be effectively removed making way for a new QAM created by the DigiVu. The integrated QAM modulator may be set to any frequency between 54 and 870 MHz (extended range 15 - 975 MHz with some restrictions) in 1 kHz steps and fully supports STD, IRC and HRC channel plans. For IP distribution/insertion installations, Ethernet transport streams may be created as either unicast or multicast, MPTS/SPTS with any address within the valid IPv4 address and port range.

2.4.2 Support for SD/HD MPEG-2/H.264 Encoding

The DigiVu and DigiVu Mini platforms may be ordered with or field upgraded with card slot plug-in SD or HD video encoders. Each single channel HD plug-in card may be configured for SD or HD and can encode MPEG-2 or H.264 profiles. If SD programs only will need to be encoded, there are affordable single and dual channel SD encoder cards available. Both SD and HD programs may be mixed on any output multiplex (IP or QAM) for best bandwidth efficiency. Up to 2 HD programs may be multiplexed to a QAM in the DigiVu Mini platform and up to 5 HD programs on the DigiVu platform. For platforms with IP outputs, DigiVu Mini may output 1 HD program while the DigiVu may output up to 4 HD programs.

2.4.3 Gigabit Ethernet Output

The DigiVu systems may be provisioned with an optional gigabit Ethernet output card. The Ethernet card has 2 electrical Ethernet ports (RJ45) as well as 2 SFP ports into which may be installed multimode fiber optic SFPs for reliable trunk connection to distribution switches. A variety of SFP interface types such as single mode and multimode fiber are supported and may be installed as required by system architecture. The Ethernet output may be provisioned to be the sole output of the unit or simultaneous RF and Ethernet are supported. IP output streams may be provisioned with VLAN tagging and Pro-MPEG FEC. If configured with IP output only (RF Disabled), then the IP programs may be all SPTS streams.

2.4.4 Integrated Add/Drop Multiplexing

Both DigiVu platforms have integral transport stream multiplexers which creates a new QAM or IP multiplex or alternately may be used in an add/drop application along with an optional plug-in demodulator card to insert programs into an existing QAM, clear or encrypted, replacing only the programs that are desired. If the program that is dropped was encrypted, the replacement program stream will be in the clear. The add/drop application utilizes the QAM demodulator to analyze the MPEG stream and selectively insert or "drop and insert" local programs in a flexible manner.

2.4.5 Remote Monitoring Via SNMP

The 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 DigiVu MIB may be compiled into the remote Management Console to provide notification of the triggering of alarms either across a private network or the internet if available. Upon triggering of a predefined alarm, a trap is automatically sent by the DigiVu equipment to a listening SNMP management console.

2.4.6 Flexible Transport Stream Re-Multiplexing

Flexibility is provided in configuring the re-multiplexed transport stream in an add/drop application. The inserted program may be assigned any valid PID or MPEG program number and the encoder may be set to any of a wide range of valid CBR video and audio encoding rates. A built in MPEG-2 stream analyzer (demodulator card required for this feature) for incoming MPEG programs assists in making the correct selections for replacing programs easy and intuitive. MPEG tables PAT and PMT along with all PID values are automatically generated to ensure that downstream STB can reliably tune the inserted multiplex and minimum craft experience is required to implement a system. Dynamic PID monitoring avoids outages due to program table updates.

2.4.7 Scalable Architecture is Field Upgradable

Encoder cards which accommodate one or two channels of SD MPEG-2 or one channel of HD/SD MPEG-2/H.264 encoding may be installed as required so the system may be grown as needs grow. Hot swappable cards make upgrading the DigiVu encoder capability faster while keeping outages to a minimum. The RF Demodulator card may be installed in any available slot as future requirements dictate even if the initial installation did not originally include it. IP output capabilities may also be added when required by installing a Gigabit Ethernet card in slots 2 (DigiVu Mini) or 5 (DigiVu and DigiVu CD).

2.4.8 Mass Deployment and Backup with Configuration Export

The DigiVu platforms allow 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 DigiVu units with similar configuration thus

saving the time to manually program each unit before deployment.



NOTE: Care has to be taken not to overwrite the existing DigiVu IP address when loading exported settings to remote units. This is avoided with factory default settings but may happen with user configured settings.

2.4.9 IPv4 Network Address Support

All DigiVu platforms support 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 DigiVu unit forces assignment of a username and password which may be changed at any time.

2.4.10 Optional Channel Deletion Filter (DigiVu® CD)

In applications where all cable plant channels have pre-existing QAM carriers, The DigiVu CD may be configured with an optional channel deletion filter which allows the removal of any EIA channel and all of it's RF content with minimal adjacent channel affect, allowing a new QAM channel to be inserted.

2.4.11 Powerful GUI

Management and configuration of the DigiVu system is through a built-in web server which presents the configuration pages in an intuitive tabbed format interface. Access to the GUI may be configured to allow remotely connecting across any private network or over the Internet if a connection is made available, usually with a DOCSIS Cable Modem. For internet security, a username and password provides controlled access against unauthorized persons.

2.4.12 Rack Mounting Enclosure

The DigiVu platform is constructed for deployment in a 19" rack 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.

2.5 Simplified Block Diagrams

2.5.1 QAM Output

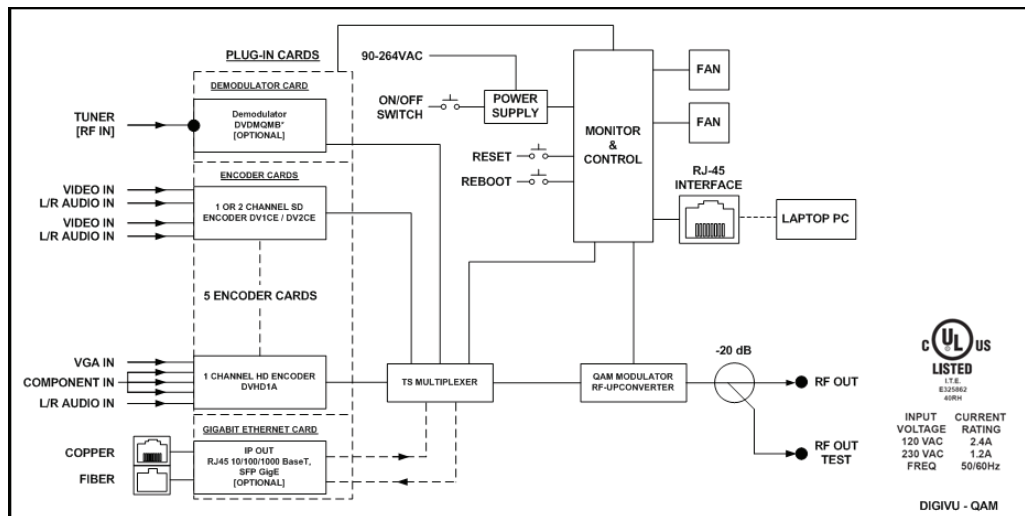


Figure 2-4: Simplified Block Diagram - QAM Output

2.5.2 IP Output

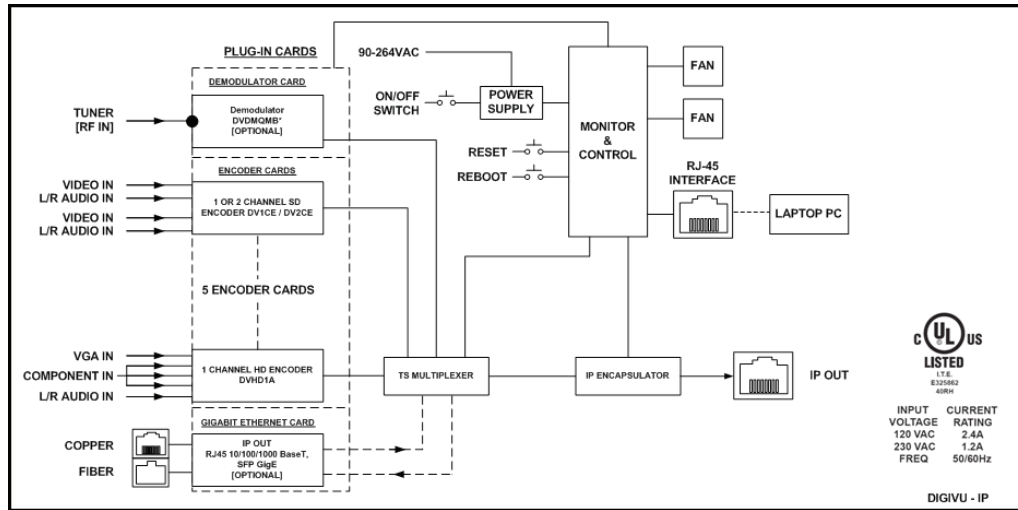


Figure 2-5: Simplified Block Diagram - IP Output

2.5.3 DigiVu® CD (With RF Bypass)

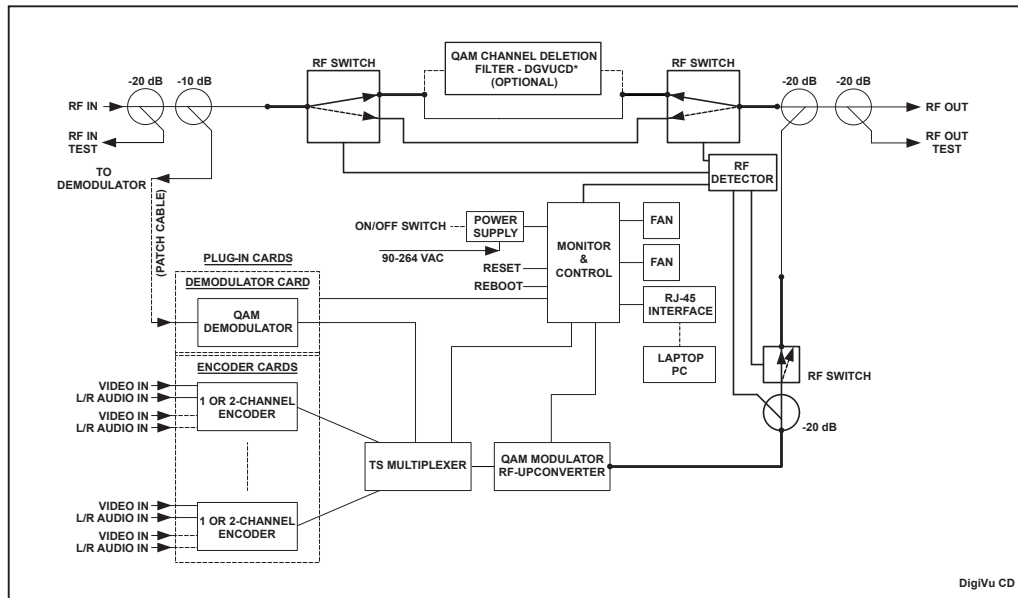


Figure 2-6: Simplified Block Diagram with RF Bypass - DigiVu® CD

2.6 Front and Rear Panels

2.6.1 DigiVu® Front

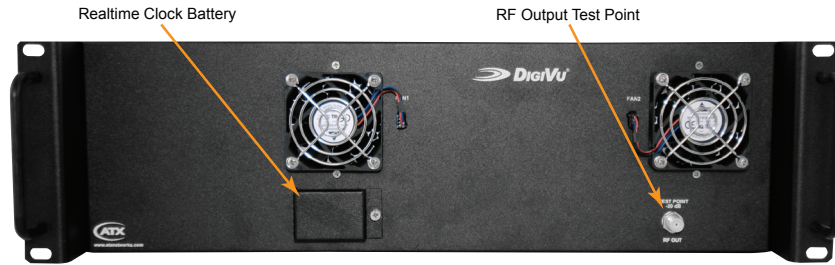


Figure 2-7: DigiVu® Front

2.6.2 DigiVu® Rear

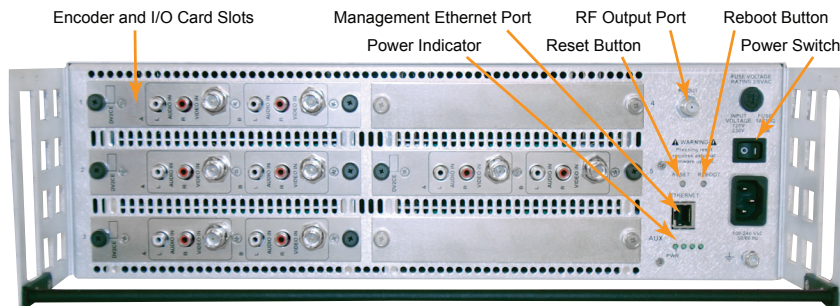


Figure 2-8: DigiVu® Rear

2.6.3 DigiVu® CD Front

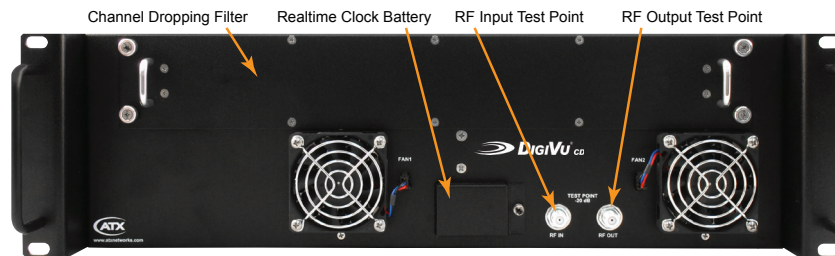


Figure 2-9: DigiVu® CD Front

2.6.4 DigiVu® CD Rear

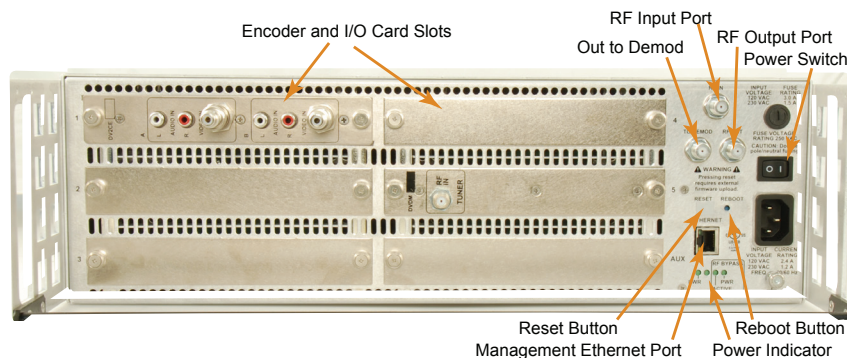


Figure 2-10: DigiVu® CD Rear

2.6.5 DigiVu® Mini Front

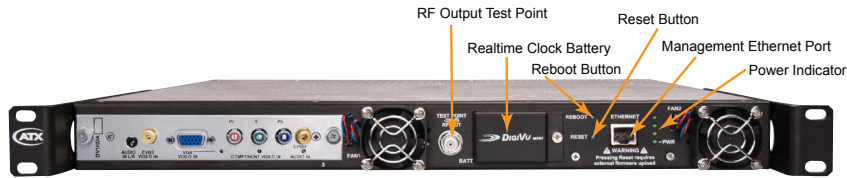


Figure 2-11: DigiVu® Mini Front

2.6.6 DigiVu® Mini Rear



Figure 2-12: DigiVu® Mini Rear

2.7 Card Slot Numbering

All plug-in cards are installed in a slot on the rear panel which are numbered 1 through 5 plus AUX (6th slot) on the DigiVu and DigiVu CD, see Figure 2-13, and numbered 1 & 2 on the DigiVu Mini, see Figure 2-14. See the card support table below for correct card insertion. Be careful to align the circuit board of the card with the internal card guides when re-inserting the cards.



NOTE: The 6th card slot in the DigiVu 3RU platforms is for power only to cards which do not require management, as this slot does not show up in the GUI. Currently, this slot is exclusively used for the 2-Way A/V Splitter card but the A/V Splitter card may be installed in any slot if required.

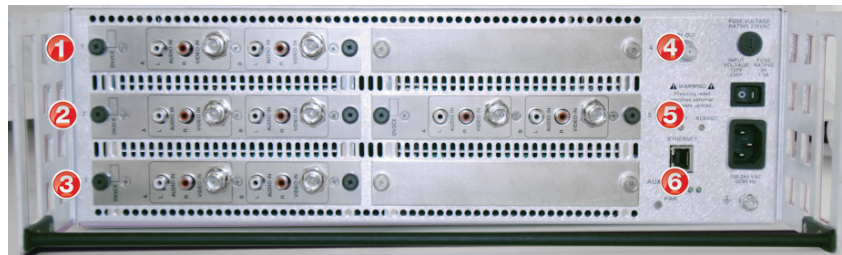


Figure 2-13: DigiVu® 3RU Card Slot Numbers



Figure 2-14: DigiVu® 1RU Card Slot Numbers



FYI: For information on the way the GUI displays installed cards see “6.5.1 Port Numbering Convention” on page 6-3.

2.7.1 Card Slot Support

DigiVu®, DigiVu® CD & DigiVu® Mini Card Support		
Card Type	DigiVu & DigiVu CD Supports in Slots	DigiVu Mini Supports in Slots
Single Channel HD Encoder	1, 2, 3, 4, 5	1, 2
Single Channel SD Encoder	1, 2, 3, 4, 5	1, 2
Dual Channel SD Encoder	1, 2, 3, 4, 5	1, 2
Demodulator	1, 2, 3, 4, 5	1, 2
Gigabit Ethernet	5	2
2-Way Audio/Video Splitter	1, 2, 3, 4, 5, AUX	1, 2



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

2.8 Available Encoder Cards

2.8.1 DV1CE & DV1CEM Single Channel SD Card

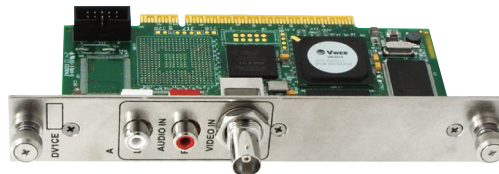


Figure 2-15: Single Channel SD Encoder

2.8.2 DV2CE & DV2CEM Dual Channel SD Card



Figure 2-16: Dual Channel SD Encoder

2.8.3 DV1HDA Single Channel HD/SD Card



Figure 2-17: Single Channel HD/SD Encoder

2.9 Available Input/Output Cards

2.9.1 DV1DA Distribution Amplifier

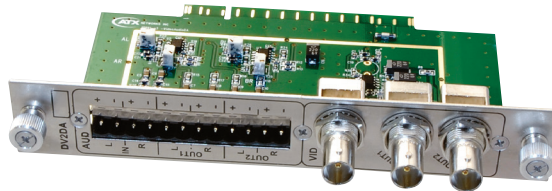


Figure 2-18: 2-Output A/V Distribution Amplifier

2.9.2 DVDMQMB & DVDMQMAC QAM Modulator

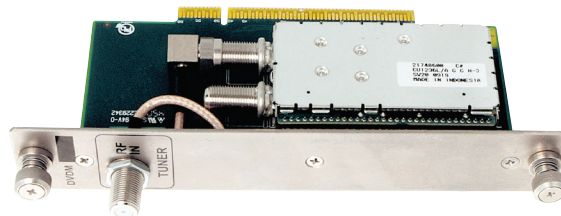


Figure 2-19: QAM Demodulator

2.9.3 DVGIGE Gigabit Ethernet Card

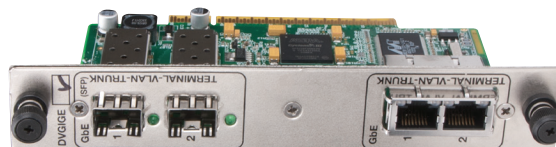


Figure 2-20: Gigabit Ethernet Output Card

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FIELD APPLICATIONS

3. Field Applications

In this chapter we illustrate some of the common field applications for the DigiVu systems. This listing is not exhaustive and does not show every combination of channel or program encoding/insertion. Reference to DigiVu infers all DigiVu platforms unless a specific model is stated.



FYI: In this guide, reference to DigiVu infers DigiVu 3RU, DigiVu CD 3RU and DigiVu Mini 1RU unless the model is specifically stated. Reference to DVIS is synonymous with DigiVu as these products run on the same firmware.

3.1 Chapter Contents

- “Summary of Insertion Applications”
- “Analog Channel Insertion vs Digital Channel Insertion”
- “QAM Insertion Without Decoding”
- “Insertion Into Under-utilized QAM (Add/Drop)”
- “IP Video Content Insertion”
- “Local Content Back Haul Over IP”

3.2 Summary of Insertion Applications

3.2.1 Insertion of a Carrier Into a Blank or Empty Channel Spectrum

It is possible to insert the DigiVu QAM carrier into spectrum space left intentionally blank without the use of a channel deletion filter. Generally the two scenarios for insertion are in between existing adjacent system channels and at the upper edge of the cable system passband.

See [“QAM Insertion Without Decoding” on page 3-3](#)

3.2.2 Insertion of a Carrier with use of a Deletion Filter to Remove an Existing Carrier

Using the optional channel deletion filter, the target system channel may be effectively removed to make space for the inserted channel. In this case, adjacent system channels are minimally affected through the DigiVu “Brick Wall” channel dropping filter technology.

See [“Insertion into Locally Deleted QAM” on page 3-4](#)

3.2.3 Digital Program Insertion into an Existing QAM with Existing Programs

This application is intended for ‘in the clear’ or encrypted QAM channels that have programming that is able to be sacrificed or for QAM channels that are designed for this program insertion feature. Encrypted programs will be replaced with an ‘in the clear’ program.

See [“Insertion into Under-utilized QAM \(Add/Drop\)” on page 3-4](#)

3.2.4 IP Video Content Insertion

This application uses the DigiVu encoding capability with IP output to locally insert programming into an IPTV property or remote hub for distribution or Headend encoding application.

See [“IP Video Content Insertion” on page 3-5](#)

3.2.5 Video Back Haul Schemes

These applications uses the DigiVu encoding capability with IP output, QAM output to haul a special remote origination program to a hub for distribution.

[“Local Content Back Haul Over IP” on page 3-6](#)

3.3 Analog Channel Insertion vs Digital Channel Insertion

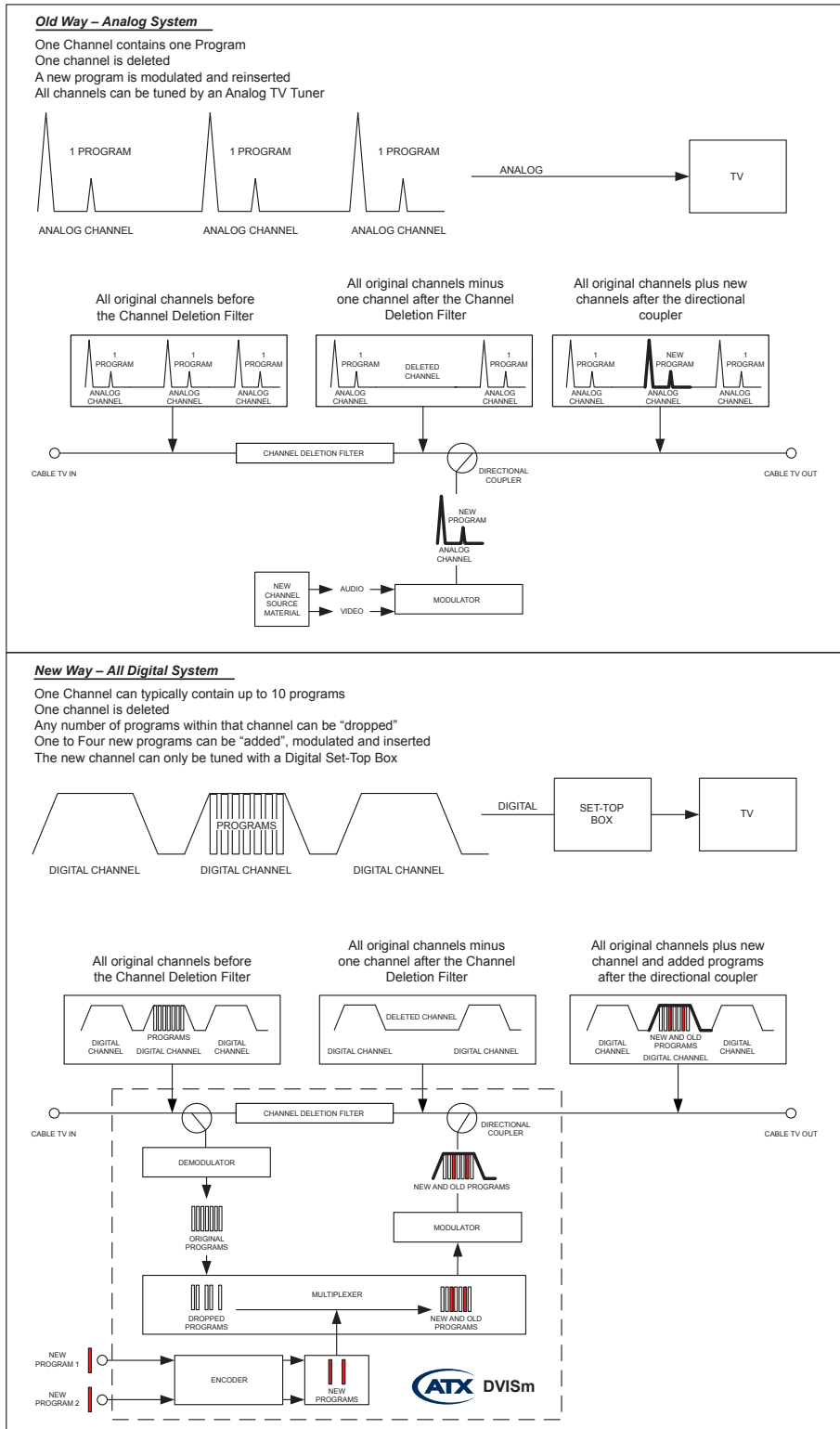


Figure 3-1: Analog Channel Insertion vs Digital Channel Insertion

3.4 QAM Insertion Without Decoding

3.4.1 Insertion Into Empty Channel

DigiVu series products can be used to insert local programming into the cable system where there is empty spectrum (no QAM or analog channel). This can be spectrum in the middle of other channels or above the HFC plant end frequency (at the “band edge”). In these scenarios, a channel is allocated on the system where no carrier is sent from the headend and every property in the system where the DigiVu is installed may insert a QAM without the use of a channel deletion filter. When RF spectrum is available for this application and/or there are a large number of insertion systems installed, the cost of a channel deletion filter may be saved at every property.

3.4.2 Insertion Into Channel at Band Edge

There are two main scenarios for this deployment:

- Regular 870 MHz plant has some empty channels remaining unused just below 870 MHz. The new QAM channel is inserted on one of these empty channels.
- Plant is built to 750 so at least 100 MHz of plant is available with empty channels. The new QAM is inserted in this upper band above the 750 plant.

In each case, some extra loss may be incurred through passives that are near or past their usable bandwidth but in such a case, only a very few passives are affecting the new QAM channel and the DigiVu output may be increased slightly to compensate if required.

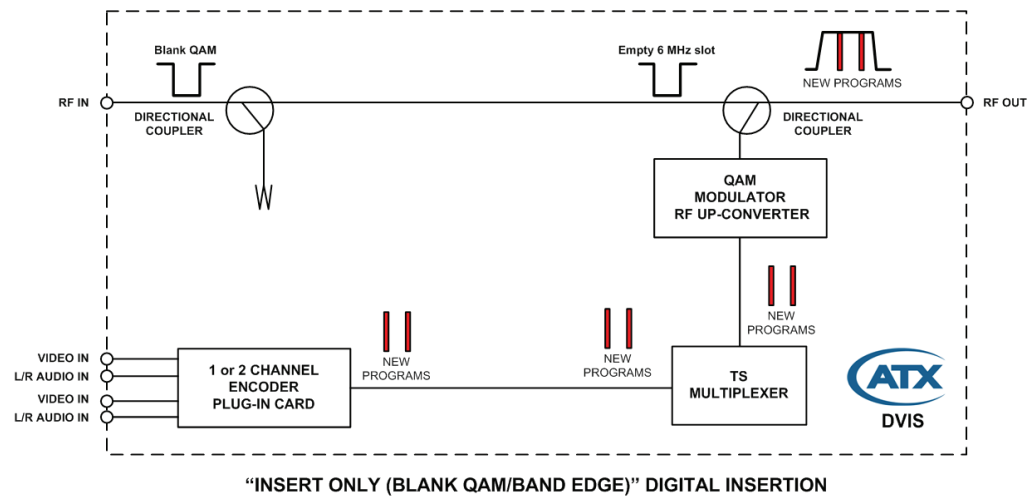


Figure 3-2: Insertion Into Channel at Band Edge

3.4.3 Insertion Into Locally Deleted QAM

The DigiVu CD product can be used to insert local programming into an EIA channel where the cable system carries a channel but providing customers with the programming on that channel is discretionary. In this scenario, a system EIA channel is deleted using an optional channel deletion filter with very good adjacent channel performance and deep rejection of the intended deletion channel. This filter is available from ATX Networks and is an integral part of the design of the DigiVu CD. In this case, the DigiVu CD will create a totally new QAM channel and insert it into the blank spectrum following the output of the filter.

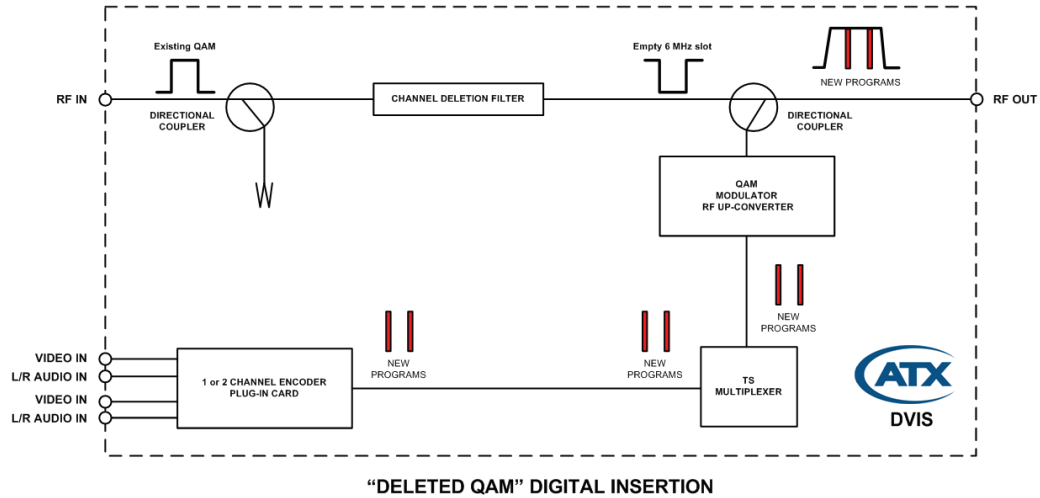


Figure 3-3: DigiVu® CD - Insertion into Locally Deleted QAM

3.5 Insertion Into Under-utilized QAM (Add/Drop)

3.5.1 Locally Add/Drop Programs in a QAM

The DigiVu CD can be used to insert local programming into the actual data stream of a QAM by dropping specific programs from an existing QAM channel and replacing them with local content. This application requires optional DEMOD Card and Channel Deletion Filter. In this application, the original system EIA channel is filtered out and a new QAM channel inserted

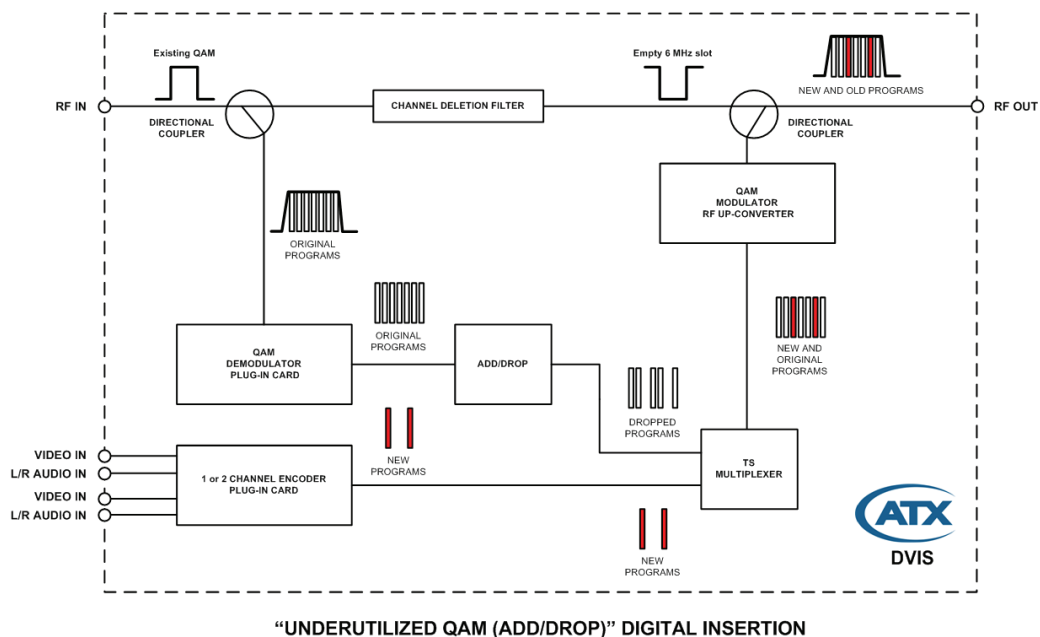


Figure 3-4: Locally Add/Drop Programs in a QAM

in its place, however, before deletion the incoming QAM channel is demodulated and de-multiplexed. This allows insertion of local content in a more granular manner, right at the program level. Any incoming programs may be selected to be deleted even an encrypted program, and in their place, SD or HD programs may be inserted. Replaced programs will be 'in the clear'. This has the benefit of retaining programs in the QAM that must remain and using the deleted program space to provide the local content to the property. Only content payload is manipulated (dropped/replaced/added). All other data/tables from incoming QAM is passed through without affecting it.

3.6 IP Video Content Insertion

The DigiVu platform with GbE output card may be used to insert IP video content directly to a network switch for transmission on the plant in a hotel or other hospitality environment or transported via Edge QAM and optical for remote delivery.

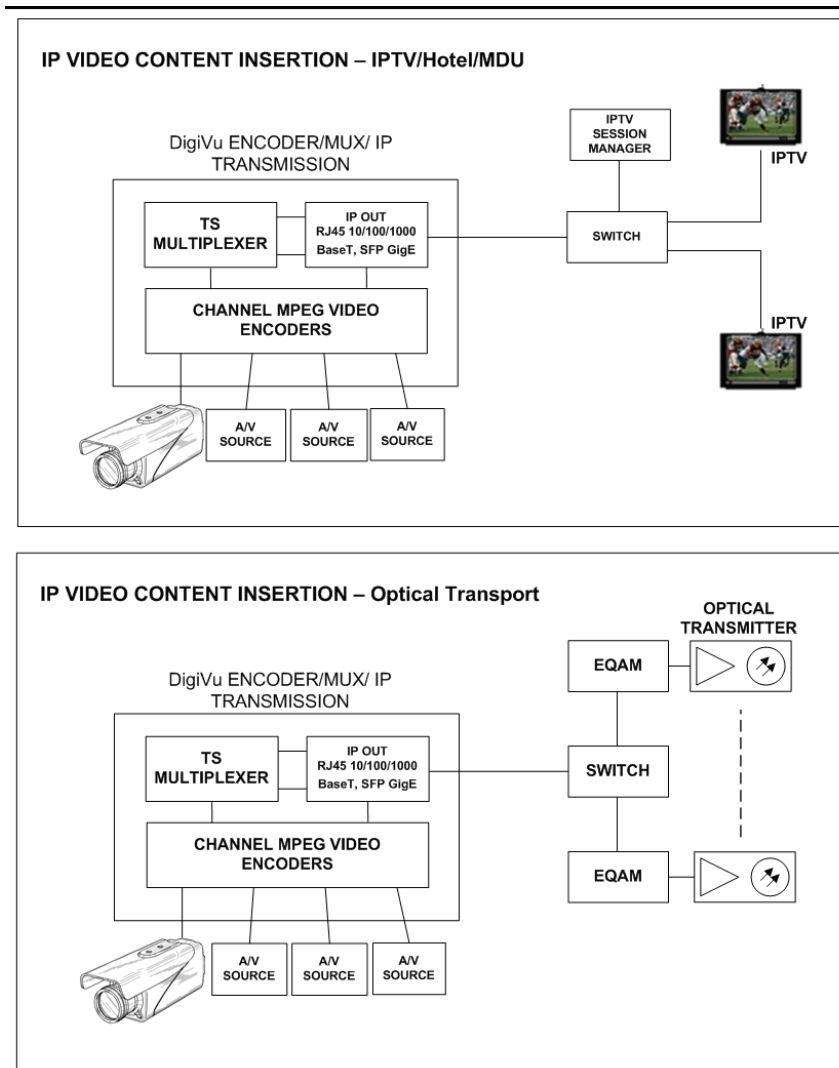


Figure 3-5: IP Video Content Insertion

3.7 Local Content Back Haul Over IP

DigiVu systems may be used for IP back haul where there is a source of video at a point in the plant such as a remote studio or special program origination location and the video is needed at a hub for reinsertion into the plant. There are two main applications as illustrated in Figure 3-6.

1. Fiber Back Haul

This provides guaranteed signal quality, link speed and bandwidth. In this case, a single mode SFP may be used to transport the IP stream on the fiber.

2. DOCSIS modem Back Haul

Not always possible to guarantee link speed and bandwidth which could vary, therefore encoded signal quality must be lower due to lower upstream bandwidth. In this case a DOCSIS modem with high rate upload speed is used to transmit the video over IP to the hub, where it is re-inserted.

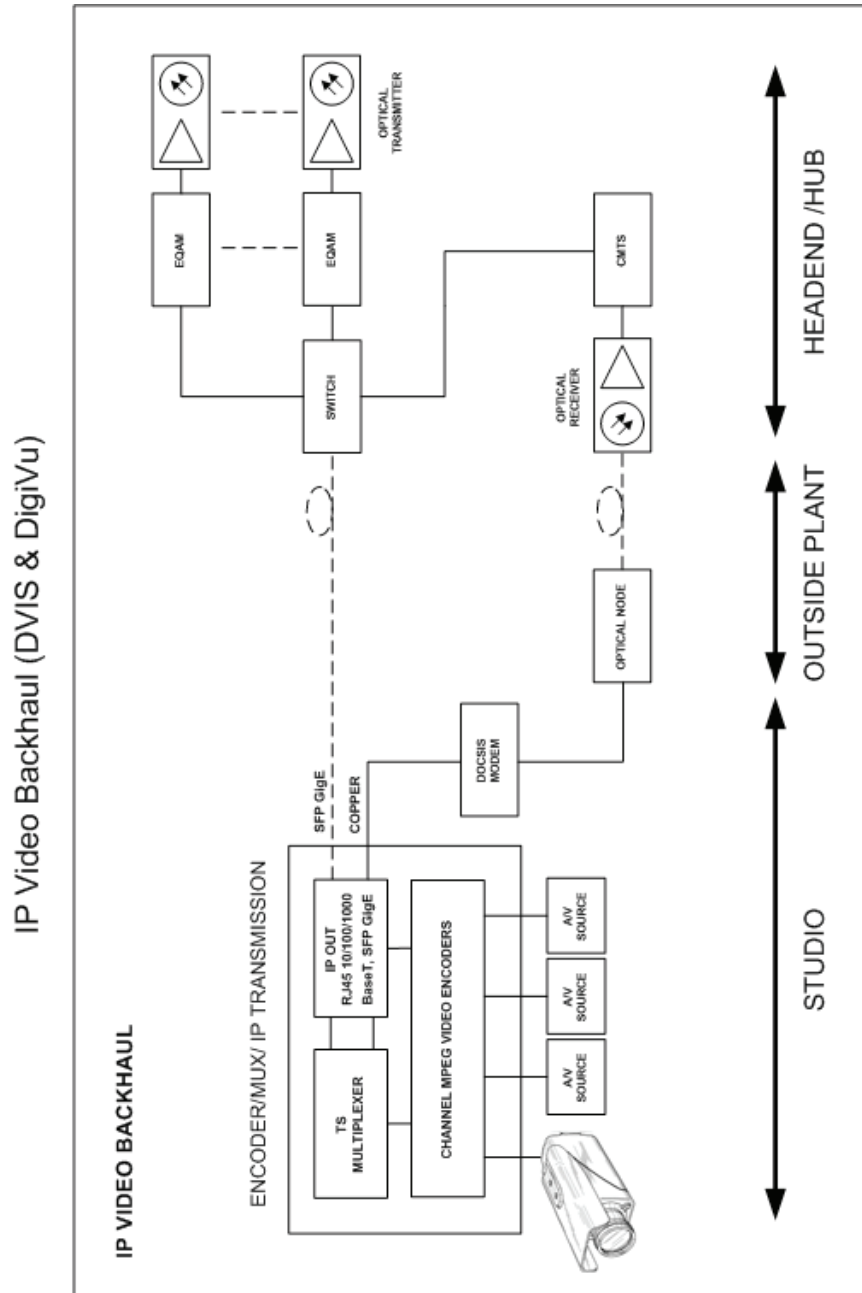


Figure 3-6: Local Content Back Haul Over IP

INSTALLATION

4. Installation

This chapter outlines the most important aspects of the installation and summarizes the site considerations that the installer must take into account when choosing a location for the unit. Reference to DigiVu infers both DigiVu and DigiVu Mini unless specifically stated.



FYI: In this guide, reference to DigiVu infers DigiVu 3RU, DigiVu CD 3RU and DigiVu Mini 1RU unless the model is specifically stated. Reference to DVIS is synonymous with DigiVu as these products run on the same firmware.

4.1 Chapter Contents

- “Recommended Installation Environment”
- “Equipment Safety Grounding”
- “RF Cable Sheath Grounding”
- “Mounting”
- “Environment Considerations”
- “RF Cabling”
- “Ethernet Network”
- “Installing Modules”

4.2 Recommended Installation Environment

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 compromise safe operation, do not install or operate it.



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.

4.3 Equipment Safety Grounding

It is imperative that the chassis 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.

4.3.1 Connection to Earth

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

4.3.2 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 back 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.



Figure 4-1: Safety Ground Lug

4.3.3 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.

4.3.4 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.

4.4 RF Cable Sheath Grounding

4.4.1 Requirement to Ground the Coaxial Cable Sheath

In addition to the supplementary ground to the equipment, it is also required to ground the sheath of the RF coaxial cable at its point of entrance to the building. If the chassis is installed at a location removed from the point of coaxial cable entrance, it is the installer's responsibility to ensure that the grounding of the sheath has already been performed in accordance with electrical code directives.

4.4.2 Size of Grounding Conductor

The size of grounding conductor and the manner of attachment to the coaxial cable should be in accordance with the national electrical safety regulations in effect in the country in which the installation is located.

4.4.3 Minimize Coaxial Cable Sheath Currents

Care should be taken when grounding the coaxial cable sheath to ensure that circulating currents are minimized to prevent interference on the RF signal. This ground loop condition may be minimized by connecting the coaxial cable sheath grounding conductor to the same building ground point as the chassis safety ground conductor attachment.

4.5 Mounting

4.5.1 Rack Mounting

The chassis is intended to be mounted in a standard 19" EIA equipment rack. A reasonable amount of space will be required in front of and behind to allow installation and servicing. The equipment is designed with fan forced cooling which exhausts to the top and side of the unit. Avoid blocking airflow at the top and sides and mount in such a manner to provide a source of ambient cool air at the front fan air intake grill. Provide at least one open rack space above the chassis. Consider also that the site technician will need access to the front and back of the unit for accessing connections, maintenance and configuration when determining the best mounting location.

4.5.2 Mounting Precautions



FYI: See ["Equipment Safety Grounding"](#) on page 4-1 for detailed information on grounding.

1. **Elevated Operating Ambient:**
If installed in a closed environment that may exceed room ambient temperature, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature specified (50°C).
2. **Reduced Air Flow:**
Installation should allow at least 2" spacing around the equipment to ensure that airflow required for proper operation is not compromised. At least one blank rack space above the unit should be allowed.
3. **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 DigiVu to mechanically support other equipment.
4. **Circuit Overloading:**
Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuit will have on over-current protection and supply wiring. Consider equipment nameplate ratings when addressing this concern.
5. **Reliable Earthing:**
The chassis must be connected to a reliable ground or earth connection with an adequately sized copper conductor. See ["4.3 Equipment Safety Grounding"](#) on page 4-1.

4.6 Environment Considerations

4.6.1 Ambient Temperature

The chassis 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.

4.6.2 Non-condensing Environment

The environment must be 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.

4.6.3 Fan Control

The equipment 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 and top/back of the chassis. There are no internal air filters so there is no need to provide ongoing maintenance of filters.

4.7 Provisioning Electrical Power

4.7.1 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.

4.7.2 Power Cord Attachment:

The 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.

4.7.3 Provision of Electrical Power Outlet:

An electrical power outlet of appropriate type and rating shall be provided near the location where the chassis 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 chassis. Alternately, the chassis shall be installed in close proximity to an existing electrical outlet such that the requirements of this paragraph are achieved.

4.7.4 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 is dependant on the shipping address of the equipment. If shipped in North America a cord with a NEMA 5-15 grounded plug for 115 VAC is provided. If it is necessary to operate the equipment on 230 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. If shipped outside of North America, the equipment will be shipped with an IEC cord set appropriate for the locale.

4.7.5 Input Power Requirements

When installing 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 model will require power according to its specifications to be supplied from a properly grounded outlet. The installer should determine that the power outlet, its wiring and receptacle is in compliance with the local electrical codes.

4.7.6 Input Power

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.

4.7.7 Input Voltage Range

The equipment is supplied with an autosensing switching type power supply which can operate on input voltages from 90 VAC to 264 VAC. There is no need to configure the power supply to operate on any voltage within this range.

4.7.8 Fusing

The internal 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.

Fuse Replacement Criteria - All Models					
Input Voltage	Model	Fuse application	Fuse Type	Ampere rating	Fuse size
115 VAC	All	AC IN	Slow Blow	3	5 x 20 mm glass tube
230 VAC	All	AC IN	Slow Blow	1.5	5 x 20 mm glass tube

4.8 RF Cabling

RF cabling to the chassis should be either RG6/u or RG59/u style double or triple shield coaxial cable of a type UL approved for Cable TV applications. There is no restriction on using RG6/u cable on the F Fittings. Connectors should be **very lightly** wrench tightened according to Cable Service Provider's company policy.



NOTE: Final connection of the RF output to the distribution network should only be completed when the installer has completed configuration. An incompatible configuration, if it was installed or configured elsewhere, may create a situation where output RF Levels are incompatible with the premises. This may result in unintended service outages.

4.8.1 RF Output Connector

The accompanying graphic illustrates the rear panel. A diagram, "Simplified Block Diagrams" on page 2-4 may be referenced for details of interconnections.

4.8.2 RF Input Levels

If the DigiVu chassis has been fitted with a demodulator module, then the input signal level presented to the RF input of the module must be in the range of +5 to +14 dBmV per digital carrier as measured with a digital field meter. If local conditions dictate that a higher or lower signal level is available, the installer must install appropriate external attenuation or may install a coupler to ensure the input specification is met. External RF attenuators and couplers that may be necessary depend on site conditions and are not supplied.

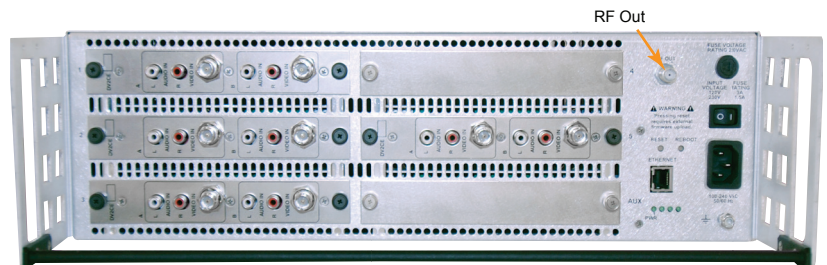


Figure 4-2: DigiVu® Rear Panel RF Output

4.8.3 RF Output Level

The RF output connector is 75 Ω "F" Type female. The output level from the QAM modulator is 57.5 +/- 1.5 dBmV. The GUI provides an internal adjustable attenuator of up to 26 dB in 1 dB steps to reduce this level to match application specific RF levels. Try to adjust the modulator output QAM level to closely match adjacent channels on the final system combining network.

4.9 Audio & Video Connections

4.9.1 Video Cable Recommendation

Coaxial

It is recommended to utilize double or triple shielded 75 Ω coaxial cables with BNC or RCA (depending on encoder card) 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 and connectors and adapters attached such that terminal connections are not strained.

VGA

Usually a pre-manufactured VGA cable is used if this is the input signal type. Lengths up to about 50 meters may be available but specify a plenum rated cable if the cables of this length which leave the equipment room will be installed. Cables shall be routed and connectors and adapters attached such that terminal connections are not strained.

4.9.2 Video Port Connectors

The MPEG-2 encoders are provided with a BNC female connector for SD video input . For convenience a BNC male to RCA female adapter is provided on each video input port as this is a common requirement in many installations.

The MPEG-2/H.264 encoders are provided with 3 x RCA female connector (component) and DE-15 female connector (VGA).

4.9.3 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 GUI. See “[Brightness: \[0-255\]](#)” on page 6-6 for a possible work around for low level video.

4.9.4 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 and connectors and adapters attached such that terminal connections are not strained.

4.9.5 Audio Port Connectors

The Audio connectors provided are RCA female type, except L/R baseband audio on HD/SD card which uses a TRS 3.5mm female connector. This card is shipped with a 3.5mm female to 2 x RCA female adapter. Many adapter types are available to convert these RCA connections to the type that may be encountered at a property. Use good quality shielded cable for all audio applications.

4.9.6 Audio Input Impedance & Level

The audio input is high impedance unbalanced. Be sure to match the audio source to the DigiVu audio connection. Usually double or triple shielded 75 Ω coaxial cables may be used with satisfactory results. If balanced audio is encountered it is often possible to obtain good results by using only the + side of the feed.

4.10 Ethernet Network

4.10.1 Ethernet Port

A front panel Ethernet network port is provided on the DigiVu Mini 1RU version. The DigiVu 3RU versions both have the Ethernet port on the back panel. This port is to allow local and remote access to the equipment over the internet or a private intranet.



Figure 4-3: Management Port on the DigiVu® Mini

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

Setting port IP addresses “[Network Settings](#)” on page 9-6

“[Connecting to the Management Computer](#)” on page 5-4

“[Connecting to a Local Cable Modem](#)” on page 5-5

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 fastest common speed of the DigiVu and connected equipment.

4.10.2 Ethernet Cable Type

Connect DigiVu® to:	Router or Switch	Computer
Cable Type	Straight Through	Crossover

Cables of high quality meeting Cat5e or Cat6 are recommended. A crossover cable is supplied with every DigiVu unit.

4.11 Installing Modules

For information on removing or installing modules, see “[Field Replacement of Plug-in Cards](#)” on page 13-2.

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THE GUI

5. The GUI

The DigiVu has many configurable settings which allow customizing of the product to the installation environment. Access to the DigiVu configuration, referred to as the **GUI**, is via an integrated web server so a web browser may be used to view and change settings. The GUI may be accessed remotely over the internet or any private intranet if such access is made available.



FYI: In this guide, reference to DigiVu infers DigiVu 3RU, DigiVu CD 3RU and DigiVu Mini 1RU unless the model is specifically stated. Reference to DVIS is synonymous with DigiVu as these products run on the same firmware.

5.1 Chapter Contents

- “Configuration Pages”
- “Minimum Computer Requirements”
- “Connecting to the GUI”
- “Connecting to the Management Computer”
- “Connecting to a Local Cable Modem”
- “Factory Default IP Address Settings”
- “Default Username and Password”
- “Resetting the Username and Password”

The screenshot shows the ATX DVIS Settings web interface. The top navigation bar includes tabs for Encoder Settings, Mux, RF Output, IP Output, Maintenance, Demod & Mux Settings, DVIS Update, Profiles, and Log. The main content area is divided into two panels:

- Encoder Setting Panel:** Contains fields for Encoder (port) Number (1), Encoder Type (Detect Encoder), Encoder Active (checked), Input Parameters (NTSC, LIR UB, Component, 48 kHz), Output Parameters (MPEG2, 3000 kbps), Video Resolution (720p, 30fps), Brightness (0-255), Contrast (0-127), Saturation (0-127), Enable Audio (checked), Audio Codec (AC-3), Audio Rate (192 kbps), Audio Volume (150), AV Sync (0 ms), offset_x (0 px), offset_y (0 px), VBI Value (none), Program Identification (111), Virtual major channel (1), Virtual minor channel (0), Source ID (1), Program Name (VIDEO0), Video PID (100), Audio PID (101), PCR PID (100), and PMT PID (111).
- Ports View Panel:** A table showing port configurations for 10 ports. A callout box labeled "Consolidated Encoder Configuration" points to the table.

Port 1	Port 2	Port 3	Port 4	Port 5	Port 6	Port 7	Port 8	Port 9	Port 10
VWEB_NA_1	None	None	None	ETH1000	ETH1000	None	None	None	None
Active	InActive	InActive	InActive	InActive	InActive	InActive	InActive	InActive	InActive
NTSC	AN_HD	AN_HD	AN_HD	AN_HD	AN_HD	AN_HD	AN_HD	AN_HD	AN_HD
LIR UB	S/PDIF	S/PDIF	S/PDIF	S/PDIF	S/PDIF	S/PDIF	S/PDIF	S/PDIF	S/PDIF
Component	Component	Component	Component	Component	Component	Component	Component	Component	Component
48	48	48	48	48	48	48	48	48	48
MPEG2	MPEG2	MPEG2	MPEG2	MPEG2	MPEG2	MPEG2	MPEG2	MPEG2	MPEG2
3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
InActive	InActive	InActive	InActive	InActive	InActive	InActive	InActive	InActive	InActive
720p,30fps	720p,30fps	720p,30fps	720p,30fps	720p,30fps	720p,30fps	720p,30fps	720p,30fps	720p,30fps	720p,30fps
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
192	192	192	192	192	192	192	192	192	192
150	150	150	150	150	150	150	150	150	150
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
none	none	none	none	none	none	none	none	none	none
111	222	333	444	555	666	777	888	999	1111
1	2	3	4	5	6	7	8	9	10
0	0	0	0	0	0	0	0	0	0
1	2	3	4	5	6	7	8	9	10
VIDEO0	VIDEO1	VIDEO2	VIDEO3	VIDEO4	VIDEO5	VIDEO6	VIDEO7	VIDEO8	VIDEO9
VIDEO0	VIDEO1	VIDEO2	VIDEO3	VIDEO4	VIDEO5	VIDEO6	VIDEO7	VIDEO8	VIDEO9
100	200	300	400	500	600	700	800	900	1000
101	201	301	401	501	601	701	801	901	1001
100	200	300	400	500	600	700	800	900	1000
111	222	333	444	555	666	777	888	999	1111

Figure 5-1: The GUI

5.2 Configuration Pages

5.2.1 Summary of Page Functionality

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

GUI Configuration Tabs	
Tab Name	Page Properties
"Encoder Settings"	Displays the HD/SD MPEG-2/H.264 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 for RF or Ethernet, activation of the Ethernet output card and settings affecting legacy STB.
"RF Output"	Displays the configurable settings affecting the QAM output type and frequency and RF output level.
"IP Output"	Displays configurable settings affecting the Gigabit Ethernet card IP output type, IP source and destination addressing including VLAN and FEC. Only active with GbE card installed
"Maintenance"	Displays configurable settings for the GUI Ethernet network, cooling status and facilitates exporting configurations for backup and mass deployment.
"Demod & Mux Settings"	Displays configurable settings affecting the demod input frequency and all add/drop configuration and MPEG stream analyzer controls. Only active with demod card installed.
"DVIS Update"	Facilitates importing of firmware updates as well as import of a previously exported configuration file.
Log	Used for troubleshooting by ATX Networks support engineers.

Figure 5-2: Description of Configuration Tabs

5.3 Minimum Computer Requirements

The computer used to access the DigiVu 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 DigiVu 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 DigiVu interface may cause web browsers other than Internet Explorer® to incorrectly or incompletely display DigiVu web pages.

5.3.1 Recommended Computer

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

5.4 Connecting to the GUI

Configuration of the DigiVu requires a laptop or desktop PC running Microsoft Windows or other OS with an available Ethernet network port (the Management Computer). If connecting directly to the unit, the Management Computer must be set to operate on the same subnet as the DigiVu for access to the DigiVu GUI.

The following procedures are for Microsoft Windows XP and a default IP address setting on the DigiVu of 192.168.0.23.



FYI: If you are using a different Operating System or the network address on the DigiVu 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 DigiVu’s Ethernet port using a Cat5e cable, see Figure 5-6. 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 192.168.0.x subnet, as described in Figure 5-3.

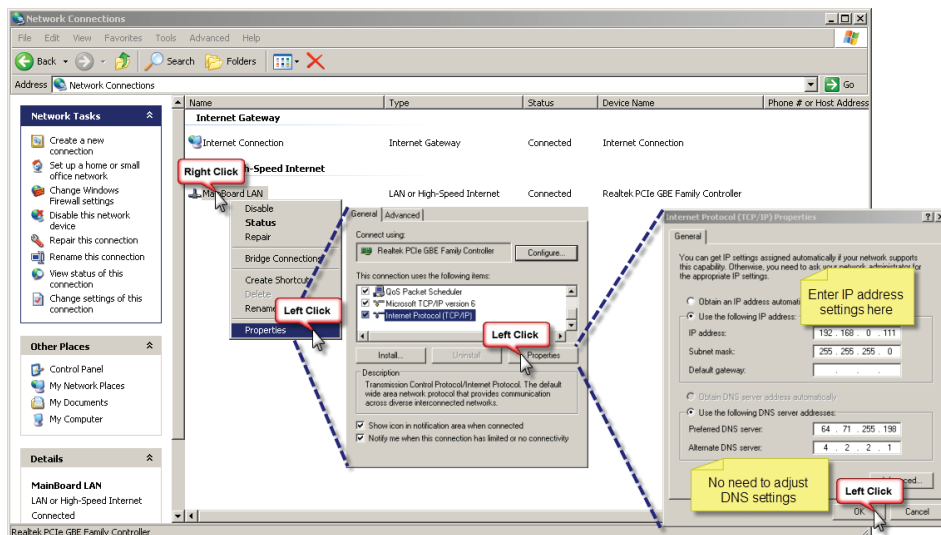


Figure 5-3: Setting the Management Computer IP Address



FYI: If the Management Computer currently has network settings that will need to be used again after the DigiVu system 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 DigiVu (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 **192.168.0.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://192.168.0.23/site** in the address field.
 4. You should get the window shown in Figure 5-4 or similar depending on browser, requesting the username and password.

Default Username and Password	
Username	Password
atx	atx

6. Once logged in you receive the default DigiVu Settings page, shown in Figure 5-5.

5.6 Connecting to a Local Cable Modem

The following procedure allows remote management using a cable modem for internet connectivity.

5.6.1 Install and Connect the Modem

1. Connect the cable modem RF input to a source of cable TV RF signals of the appropriate level.
2. Verify that the modem completes registration to the DOCSIS carriers (LED indication). If the cable modem does not lock into the DOCSIS carriers, verify that the signal at the RF input port is sufficient.

5.6.2 Log into the GUI

It is first necessary to connect the Management Computer directly through a crossover network cable to the front or back panel management port depending on the model, and configure the DigiVu IP address for remote management. See “Connecting to the GUI” on page 5-2 for details on logging into the GUI.

5.6.3 Configure the DigiVu® IP Address for Remote Management

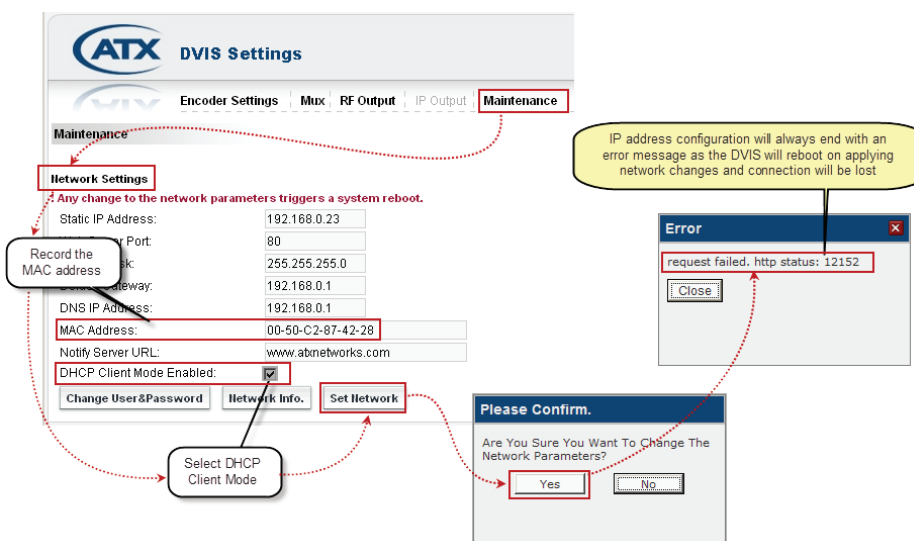


Figure 5-7: Configuring Management Ethernet for DHCP

DHCP IP Address Acquisition from Cable Modem

1. Click the 'Maintenance' tab and navigate to the 'Network Settings' section.
2. Record the DigiVu Ethernet adapter's MAC Address for future reference.
3. Select the check box marked 'DHCP Client Mode Enabled' and then click **Set Network**.
4. In the confirmation window that appears, click **Yes** to confirm the change to the network parameters.
5. The unit will reboot and fans will shut down then restart.
6. An error messages will be displayed in the browser. If Internet Explorer is being used, a message box displaying **request failed. http status 12152** for 1 second then another error message. The error message indicates that the DigiVu IP address has been modified and therefore connectivity has been lost.
7. Unplug the crossover cable from the DigiVu GUI Ethernet port and connect a straight through Ethernet cable between the cable modem and the DigiVu Ethernet port.
8. The cable modem LED indicating a valid data connection to a client should light and after approximately 30 seconds the DigiVu should obtain an IP address from the cable modem.
9. If the cable modem internal DHCP server has assigned the DigiVu an IP address, then open the cable modem web interface and find the IP address that was assigned. If the IP address is assigned by the headend DHCP server then look in the headend DHCP server for the IP address assigned to the MAC address of the DigiVu.
10. Wait 2 minutes then open a new browser session with the GUI using the new IP address that was assigned.

5.6.4 Static IP Address Assignment

If the DigiVu can be plugged directly into an Ethernet based device, a router, switch, cable modem, that supports clients with public static IP addresses (or static IP addresses that may be routed to the public internet), the following procedure can be taken to assign a static IP address.

1. Open the 'Maintenance' tab in the GUI and scroll to the 'Network Settings' section.

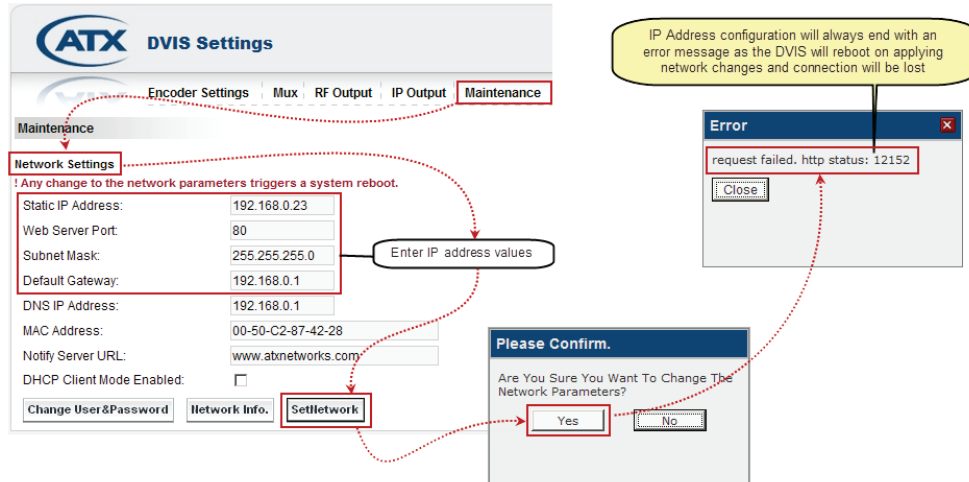


Figure 5-8: Configuring Management Ethernet for Static IP Address

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

5.6.5 Connecting Remotely

In order to connect to the DigiVu chassis remotely you need the IP address that the 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 ["5.6.4 Static IP Address Assignment"](#) on page 5-6.

5.6.6 Dynamic IP Address Acquired via Cable Modem

In order to reconnect to the GUI after it is connected to a cable modem, it is necessary to determine the IP address the 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, see the section ["5.6.3 Configure the DigiVu® IP Address for Remote Management"](#) on page 5-5 is listed as connected in the cable modem client table. Record the IP address assigned to the DigiVu unit MAC address in the cable modem client table.
- Get it from the Cable Modem:

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



FYI: 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 DigiVu MAC address more rapidly, you can save time as the DigiVu 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.

Once you have the assigned public IP address of the DigiVu:

1. Open an Internet Explorer web browser and in the address bar enter 'http://xxx.xxx.xxx.xxx/site' replacing the x's with the IP address of the 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 GUI opens and displays the 'DVIS Settings' page. The unit is ready to be managed remotely.

5.6.7 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 DigiVu, remember to restore the computer's network settings to the appropriate values (the settings used prior to changes made for connection to the DigiVu or other settings, as appropriate).
2. Open a new Internet Explorer browser window to establish a fresh internet session entering the IP address of the DigiVu GUI in the address window.
3. You should be presented with the following screen on the left, prompting you to log in:

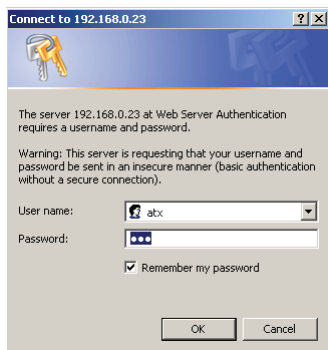


Figure 5-9: Prompt for Username & Password

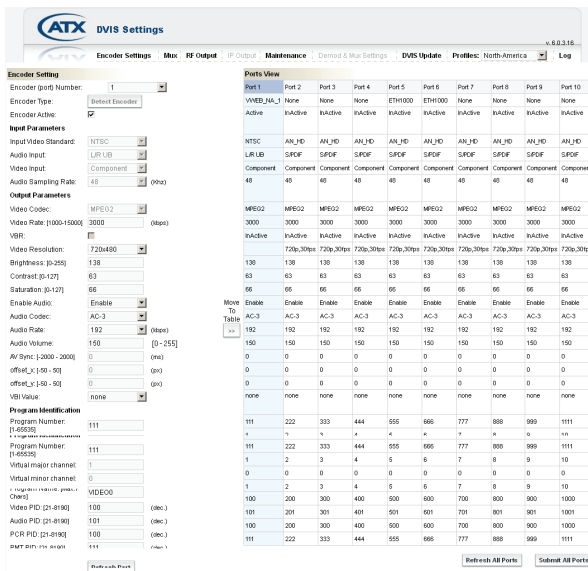


Figure 5-10: Default Screen when Logged In

When the login screen, above left, appears prompting you to log in, 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 right, will be presented.

5.7 Factory Default IP Address Settings

The GUI 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; DHCP is disabled.



FYI: When entering the default IP address of the DigiVu in a web browser, always be sure to enter **192.168.0.23/site** or **xxx.xxx.xxx.xxx/site** replacing your unit's IP address in place of the x's

Factory Default IP Addresses	
IP Address	192.168.0.23
Subnet Mask	255.255.255.0
Web Server Port	80
Gateway	192.168.0.1

5.8 Default Username and Password

Factory Default Username & Password	
Username	Password
atx	atx



FYI: If the DigiVu equipment 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 unit, the factory default values are lost. Contact ATX Technical Support for reverting username/password to default values.

5.9 Resetting the Username and Password

If the Username or Password have been changed and subsequently forgotten, a firmware reset file is available which can workaround this problem without loss of programmed configuration. Contact ATX Networks for assistance then see [“12.9 Username & Password Reset Process”](#) on page 12-8 for a description of the process.

ENCODER SETTINGS TAB

6. Encoder Settings Tab

In this chapter we detail the configuration controls which are used to adjust settings to achieve the encoder performance that is required. All GUI settings are discussed along with limits and some suggestions as to what values are most applicable and why. With the selection of some encoder types it will be seen that some parameters are greyed out, meaning that these parameters are either not relevant or are preset. Reference to DigiVu infers both DigiVu and DigiVu Mini unless specifically stated.



FYI: In this guide, reference to DigiVu infers DigiVu 3RU, DigiVu CD 3RU and DigiVu Mini 1RU unless the model is specifically stated. Reference to DVIS is synonymous with DigiVu as these products run on the same firmware.

6.1 Chapter Contents

- “SD Encoder Cards”
- “HD Encoder Card”
- “Input and Output Cards”
- “Encoder Settings Tab”
- “Encoder Configuration Quick Guide”
- “Input Parameters”
- “Output Parameters”
- “Program Identification”

The screenshot displays the ATX DVIS Settings Encoder Settings tab. The interface includes several configuration sections:

- Encoder Setting:** Encoder (port) Number: 1, Encoder Type: Detect Encoder, Encoder Active:
- Input Parameters:** Input Video Standard: NTSC, Audio Input: L/R UB, Video Input: comp, Audio Sampling Rate: 48 (kHz)
- Output Parameters:** Video Codec: MPEG2, Video Rate: 3000 (kpbs), VBR: , Video Resolution: 528x480, Brightness: 138, Contrast: 63, Saturation: 66, Enable Audio: Enable, Audio Codec: AC-3, Audio Rate: 192 (kpbs), Audio Volume: 150, AV Sync: 0 (ms), offset_x: 0 (px), offset_y: 0 (px), VBI Value: none
- Program Identification:** Program Number: 111, Virtual major channel: 1, Virtual minor channel: 0, Source ID: 1, Program Name: VIDEO0, Video PID: 100 (dec), Audio PID: 101 (dec), PCR PID: 100 (dec), PMT PID: 111 (dec)
- Ports View Table:** A table with 10 columns (Port 1 to Port 10) and 10 rows. The first row is labeled 'VWEB_NA_1'. The table contains various status and configuration values for each port.

Figure 6-1: Encoder Settings Tab

6.2 SD Encoder Cards

There are three types of SD encoder available, briefly described below. The selection of encoder card is principally based on functionality required. The type of hardware encoder that is plugged in will automatically be detected and reported in the GUI. The options presented to be configured will be adjusted to only those available to the specific installed encoder.

6.2.1 NXP

- Available as single and dual channel encoder card.

This is the legacy SD MPEG-2 encoder model for both ETSI (European standard) and ATSC (North American standard). It is no longer available for purchase but may be encountered in existing installations. This encoder supported fewer video resolutions and audio bit rates than the current VWEB encoder. It also did not support Closed Captioning.

6.2.2 DV1CE & DV2CE

- Available as single and dual channel encoder card.

This is the currently shipping ATSC SD MPEG-2 encoder 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.

6.2.3 DV1CEM & DV2CEM

- Available as single and dual channel encoder card.

This is the currently shipped PAL SD MPEG-2 encoder with support for a wide array of video resolutions and MPEG-1 audio bit rates.

6.3 HD Encoder Card

There is a single channel HD encoder available. The type of hardware encoder that is plugged in will automatically be detected and reported in the GUI. The options presented to be configured will be adjusted to only those available to the specific installed encoder.

6.3.1 DV1HDA

- Available as single channel encoder card only.

This single program HD/SD encoder supports both MPEG-2 or H.264 encoding. The following table outlines the multiplexing capabilities for HD encoded programs per QAM channel or IP multiplex.



FYI: It is important to note that the Video Resolution of this card must be set to match the input source.

Maximum Programs Encoded per Platform		
Platform	QAM Output	IP Output
DigiVu® 3RU	5 HD Programs	4 HD Programs
DigiVu® CD 3RU	5 HD Programs	4 HD Programs
DigiVu® Mini 1RU	2 HD Programs	1 HD Program



FYI: The ability to output 5 HD programs per QAM depends on encoding format and bit rate. The DigiVu and DigiVu CD may be limited to just 2 HD programs per QAM with a high encoder bit rate setting.

6.4 Input and Output Cards

There are other cards available that may be used for some specialty applications. The cards are briefly described below.

6.4.1 DVDMQMB & DVDMQMAC QAM Demodulator

This card must be used if an add/drop configuration is required. May be installed in any card slot except #1.

6.4.2 DVGIGE Gigabit Ethernet Output

This card is used in applications where Ethernet output of the DigiVu is required and is supported only in specific slots. The recommended slot to use is always the highest available which will usually be slot #2 in the DigiVu Mini 1RU model and slot

#5 in the DigiVu and DigiVu CD 3RU models.

6.4.3 DV1HDA Distribution Amplifier/ 2-Way Baseband A/V Splitter

The splitter is used in applications where only one video/audio source is available but two encoders or one encoder and one analog RF modulator must be fed by the same source. This splitter creates two baseband A/V outputs from one input. This may be used in any available slot but should be installed in the AUX slot in the DigiVu and DigiVu CD 3RU models. The splitter card is an un-managed card (no settings to be adjusted or changed in the GUI) and only requires power and that is the purpose of the AUX slot.

6.5 Encoder Settings Tab

This page displays the configuration of all of the installed HD/SD MPEG-2/H.264 video/audio encoders and allows adjustment of the currently set values. If other types of cards are installed, such as a demod or gigabit Ethernet card, they will be reported under the heading “Encoder Type” but are not configurable on this page, so ignore the settings reported below these cards. The **Encoder Number** control is used to select the encoder that is desired to change the settings for, then as each encoder is selected by way of the drop down dialog box, the appropriate encoder port is highlighted in the **Ports View**. The general process for making changes to an encoders settings is as follows:

6.5.1 Port Numbering Convention

DigiVu 3RU Models

Each DigiVu physical encoder slot is assigned a pair of port numbers in the GUI and 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”.

DigiVu Mini 1RU

The Mini is slightly different than the 3RU models in that the second physical card slot is associated to the GUI ports 5&6. This is for support of the DVGIGE card that is not supported in Ports 3&4. In this case, ports 3&4 will be reported in the GUI as “None”. If a DVGIGE card is installed in a 1RU model, it would always be installed in slot 2.

The following table illustrates the relationship between slots and ports for both the 3RU and 1RU models:

Port Numbering Convention				
Port Number in GUI	Physical Card Slot DigiVu® / DigiVu® CD		Physical Card Slot DigiVu® Mini	
	Single Encoder	Dual Encoder	Single Encoder	Dual Encoder
Port 1	Slot 1	Slot 1 – Input A	Slot 1	Slot 1 – Input A
Port 2		Slot 1 – Input B		Slot 1 – Input B
Port 3	Slot 2	Slot 2 – Input A	Ports 3&4 show up in GUI but there is no physical associated slot.	
Port 4		Slot 2 – Input B		
Port 5	Slot 3	Slot 3 – Input A	Slot 2	Slot 2 – Input A
Port 6		Slot 3 – Input B		Slot 2 – Input B
Port 7	Slot 4	Slot 4 – Input A	Ports 7-10 show up in GUI but there are no physical associated slots.	
Port 8		Slot 4 – Input B		
Port 9	Slot 5	Slot 5 - Input A		
Port 10		Slot 5 - Input B		

6.6 Encoder Configuration Quick Guide

6.6.1 Quick Guide to Encoder Configuration:

Refer to Figure 6-2 for clarification of this procedure.

1. Select the encoder port number that represents the encoder that is desired to be configured 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 stores the changes for the selected encoder but does not apply the settings.
4. Repeat from step 2 for each encoder requiring configuration.
5. When all encoders have been configured as needed, click **Submit All Ports** to apply all of the settings changes simultaneously.



NOTE: The result of clicking 'Submit All Ports' is service affecting.

The screenshot shows the ATX DVIS Settings interface. On the left, the 'Encoder Setting' panel is active, showing configuration options for Encoder (port) Number (set to 1), Input Parameters (NTSC, L/R UB, comp, 48 KHz), Output Parameters (MPEG2, 3000 kbps, 720x480), and Program Identification (111, 100, 101, 100, 111). On the right, the 'Ports View' table displays settings for 10 ports. A red dashed line traces the steps: selecting port 1, configuring its parameters, clicking 'Move to Table', and finally clicking 'Submit All Ports' at the bottom right. A 'Refresh All Ports' button is also visible.

Port 1	Port 2	Port 3	Port 4	Port 5	Port 6	Port 7	Port 8	Port 9	Port 10
VWEB_NA	None	None	None	Demod_nxp	Demod_nxp	None	None	None	None
InActive	InActive	InActive	InActive	InActive	InActive	InActive	InActive	InActive	InActive
NTSC	AN_HD	AN_HD	AN_HD	AN_HD	AN_HD	AN_HD	AN_HD	AN_HD	AN_HD
S/PDIF	S/PDIF	S/PDIF	S/PDIF	S/PDIF	S/PDIF	S/PDIF	S/PDIF	S/PDIF	S/PDIF
comp	comp	comp	comp	comp	comp	comp	comp	comp	comp
48	48	48	48	48	48	48	48	48	48
MPEG2	MPEG2	MPEG2	MPEG2	MPEG2	MPEG2	MPEG2	MPEG2	MPEG2	MPEG2
3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
InActive	InActive	InActive	InActive	InActive	InActive	InActive	InActive	InActive	InActive
720p,30fps	720p,30fps	720p,30fps	720p,30fps	720p,30fps	720p,30fps	720p,30fps	720p,30fps	720p,30fps	720p,30fps
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
192	192	192	192	192	192	192	192	192	192
150	150	150	150	150	150	150	150	150	150
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
none	none	none	none	none	none	none	none	none	none
111	222	333	444	555	666	777	888	999	1111
1	2	3	4	5	6	7	8	9	10
0	0	0	0	0	0	0	0	0	0
1	2	3	4	5	6	7	8	9	10
VIDEO0	VIDEO1	VIDEO2	VIDEO3	VIDEO4	VIDEO5	VIDEO6	VIDEO7	VIDEO8	VIDEO9
100	200	300	400	500	600	700	800	900	1000
101	201	301	401	501	601	701	801	901	1001
100	200	300	400	500	600	700	800	900	1000
111	222	333	444	555	666	777	888	999	1111

Figure 6-2: Quick Guide to Encoder Configuration



NOTE: When operating in Add & Drop Mode, a number of encoder settings on this screen are greyed out as they are set elsewhere. See "Demod & Mux Settings" on page 10-4.

6.7 Encoder Setting

6.7.1 Encoder (port) Number:

Select the encoder port number from the drop down box representing the encoder that you wish to adjust the settings for. The applicable/selected column becomes highlighted in **Ports View**.

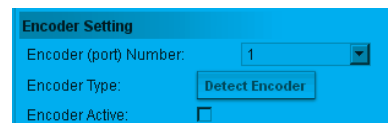


Figure 6-3: Encoder Setting

6.7.2 Encoder Type:

In the 'Ports View' section, the type of encoder installed is indicated. The types of SD encoders that may be encountered here were discussed in "SD Encoder Cards" on page 6-2 as well as the type of HD encoder in "HD Encoder Card" on page 6-2. If another type of card is installed this will also be identified. These cards were briefly discussed in section "Input and Output Cards" on page 6-2. Disregard the configuration reported for all cards except encoders. The possible card types that may be reported here are:

- VWEB_NA (NTSC Video SD MPEG-2, AC-3 audio)
- VWEB_NA_1 (NTSC Video SD MPEG-2, AC-3 audio)
- VWEB_EU (PAL Video SD MPEG-2, MPEG-1 L2 audio)
- VWEB_EU_1 (PAL Video SD MPEG-2, MPEG-1 L2 audio)
- NXP (Legacy NTSC/PAL Video MPEG-2 w/AC-3 & MPEG1 audio)
- ETH1000 (GigE Output Card)
- AN_HD (HD/SD MPEG-2/H.264 encoding)
- Demod_nxp (Legacy Demod Card)
- Demod_dnq (Demod Card)

6.7.3 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 GUI must be made aware of the change as it will not take any action without instruction. Click the **Detect Encoder** button to force a detection of the encoder card just installed. The control will be greyed out on any encoder selected that has already been detected.

- Slot Previously Occupied

If an encoder slot was previously occupied and a different card was hot plugged into the slot the DigiVu must be made aware of it but the control is greyed out. In this case, click the **Refresh All Ports** button at the bottom of the GUI page to force the DigiVu to detect the encoder card just installed. The control will remain greyed out on any encoder selected that has already been detected.

6.7.4 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, encoders are shown as active or inactive.

6.8 Input Parameters

This group of settings are for configuration of any input variables on some encoders, such as Video Input on the HD encoder. Some of these are preset by the GUI depending on the encoder card and in this case, is for information only.

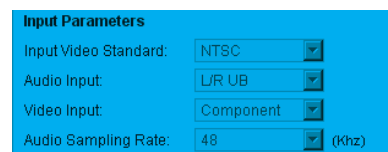


Figure 6-4: Input Parameters

6.8.1 Input Video Standard:

Automatically selected as NTSC or PAL as appropriate for the SD encoder card installed. If an HD encoder is installed, this displays AN_HD.

6.8.2 Audio Input:

Selects between input types if more than one is available for the selected card. For the HD encoder the selectable input types are L/R UB analog audio or S/PDIF. The S/PDIF input supports AC-3 only and PCM is not supported. For the SD encoders the input type is L/R UB.

6.8.3 Video Input:

Selects between input types if more than one is available for the selected card. For the HD encoder the input types are VGA, and Component. For the SD Encoders the input type is Composite.

6.8.4 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.

6.9 Output Parameters

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

6.9.1 Video Codec:

For encoder cards with more than one type of encoding profile, this allows selection of the required profile. For the HD encoder card the profile types are MPEG-2 and H.264. For the SD encoders, the profile is MPEG-2 for ATSC and ETSI.

6.9.2 Video Rate: [1000-20000]



FYI: When the unit is operating in Add & Drop Mode, this setting is greyed out as it is set in the configuration view "Demod & Mux Settings" on page 10-4

The video program elementary stream bit rate is entered in kbps and must be between 1000 and 8000 for SD programs, between 1000 and 20000 for H.264 HD programs and between 1000 and 20000 for MPEG-2 HD programs. 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.



FYI: Although the HD resolution support is able to be set as low as 1000 kbps, this low bit rate will not result in suitable quality and is only intended for the SD resolutions that this HD card supports. Suitable quality for HD programs will be obtained at a bit rate of 6000 kbps or higher.

6.9.3 VBR:

Not functional at this time. Future implementation.

6.9.4 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. 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. For all SD encoder cards, the Video Resolution setting determines the output resolution, however, for the HD encoder card (for HD encoding resolutions), the Video Resolution setting must be set to match the input resolution.



FYI: It is important to note that the Video Resolution of the HD encoder card (for HD encoding resolutions) must be set to match the input source resolution.

6.9.5 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 138. This setting should not normally require changing.

6.9.6 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 63. This setting should not normally require changing.

Output Parameters	
Video Codec:	MPEG2
Video Rate: [1000-15000]	3000 (kbps)
VBR:	<input type="checkbox"/>
Video Resolution:	720x480
Brightness: [0-255]	138
Contrast: [0-127]	63
Saturation: [0-127]	66
Enable Audio:	Enable
Audio Codec:	AC-3
Audio Rate:	192 (kbps)
Audio Volume:	150 [0 - 255]
AV Sync: [-2000 - 2000]	2 (ms)
offset_x: [-50 - 50]	0 (px)
offset_y: [-50 - 50]	0 (px)
VBI Value:	none

Figure 6-5: Output Parameters

6.9.7 Saturation: [0-127]

This dialog allows modification of the video signal to increase or decrease color saturation. There are 128 levels available (0-127) The default value is preset at 66. This setting should not normally require changing. For HD this is not applicable.

6.9.8 Enable Audio:

The audio codec may be disabled if the specific application of the DigiVu 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.

6.9.9 Audio Codec:

This setting is automatically set to the value appropriate for the detected SD encoder card. A codec converts an audio baseband signal to a specific streaming audio format. The AC-3 codec supported in DigiVu is 2.0 (two channel stereo). The supported audio codec depends on the encoder card installed.

6.9.10 Audio Rate:

This drop down displays the audio bit rate options available for each installed encoder. This is the data rate at which an audio signal is encoded. Each encoder supports commonly used bit rates which range from 192 - 384 kbps. The recommended audio rate is 192 kbps for stereo audio.

6.9.11 Audio Volume:

This control influences the volume level of the incoming baseband audio signal into the encoder card. This value typically does not need to be changed from it's default value but some guidance is provided if audio volume is not satisfactory with standard settings.

Setting Audio Volume

- SD Encoder - The scale is 0 - 255 with the default setting of 150.
The value represents a relative volume output and is not an absolute level. If the volume as heard on a TV or other receiving device is too high or too low, increase the value to increase the output volume or decrease the value to decrease the output volume. Be careful to not increase the volume excessively as the encoding of extreme high volumes will cause instability.
- HD Encoder - The scale is in dB with a default setting of 0 dB.
The value represents a relative volume output and is not an absolute level. If the volume as heard on a TV or other receiving device is too low, increase the setting to a positive number to increase the output volume. An increase of 10 dB will double the output volume. Be careful to not increase the volume excessively as the encoding of extreme high volumes will cause instability.

6.9.12 AV Sync:

This adjusts audio/video lip-sync up to +/- 2000 ms if program audio is not in synchronization with the video. With each adjustment of this value, click **Add to Table** then **Submit all Ports** for the value to become effective, see [Figure 6-2](#) for guidance. If needed, the correct value is found by trial and error.

6.9.13 Offset_X:

This setting allows the adjustment of the horizontal position of VGA input signals only. With each adjustment of this value, click **Add to Table** then **Submit all Ports** for the value to become effective, see [Figure 6-2](#) for guidance. The picture may be shifted by +/- 50 pixels.

6.9.14 Offset_Y:

This setting allows the adjustment of the vertical position of VGA input signals only. With each adjustment of this value, click **Add to Table** then **Submit all Ports** for the value to become effective, see [Figure 6-2](#) for guidance. The picture may be shifted by +/- 50 pixels.

6.9.15 VBI Value:

This tick box enables Closed Caption (CC) support in the Vertical Blanking Interval (VBI). Only the value appropriate to the installed encoder will be available in the drop down. The video encoders do not create a closed caption, they capture existing closed captions on incoming video and convert them to a digital format.

- ATSC_CC Enables the processing CC data for ATSC (In cards VWEB_NA, VWEB_NA_1, DV1HDA).
- ETSI_CC Enables the processing of CC data for the ETSI (not currently implemented).
- NONE Disables the closed caption function.

6.10 Program Identification

This section allows configuration of the program specific settings of the MPEG-2 transport stream. The PID values may often be left at their default values. The 'Program Number' must be set appropriately. The remaining parameters may or may not need to be set as it is application specific.

Program Identification	
Program Number: [1-65535]	<input type="text" value="111"/>
Virtual major channel:	<input type="text" value="1"/>
Virtual minor channel:	<input type="text" value="0"/>
Source ID:	<input type="text" value="1"/>
Program Name: [Max.7 Chars]	<input type="text" value="VIDEO0"/>
Video PID: [21-8190]	<input type="text" value="100"/> (dec.)
Audio PID: [21-8190]	<input type="text" value="101"/> (dec.)
PCR PID: [21-8190]	<input type="text" value="100"/> (dec.)
PMT PID: [21-8190]	<input type="text" value="111"/> (dec.)

Figure 6-6: Program Identification

6.10.1 Program Number: [1-65535]

This is the MPEG-2 Program Number that identifies a program from others within a multiplex and is 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 system channel map. The decoding device may display this program number for program selection.

6.10.2 Virtual Major Channel:



FYI: For virtual Major/Minor channels to be detected and acted upon by an appropriate end user device, it is required to enable the 'PSIP' feature on the MUX tab. See "7.4 DVB® SI Settings" on page 7-2 to enable this feature.



FYI: This parameter is only detected or used by end user devices that support PSIP tables.

For a program in a QAM channel, this is the major channel which is often also the EIA channel.

6.10.3 Virtual Minor Channel:



FYI: For virtual Major/Minor channels to be detected and acted upon by an appropriate end user device, it is required to enable the 'PSIP' feature on the MUX tab. See "7.4 DVB® SI Settings" on page 7-2 to enable this feature.



FYI: This parameter is only detected or used by end user devices that support PSIP tables.

For a program in a QAM channel, this is the program number within the previously defined Major channel. This is the program number within the multiplex.

6.10.4 Source ID:

A source ID may be assigned here if the DigiVu application required it. This is not mandatory.

6.10.5 Program Name: [Max. 12 Chars]



FYI: For Program Name to be detected and acted upon by an appropriate end user device, it is required to enable the DVB-SI feature on the MUX tab. See "7.4 DVB® SI Settings" on page 7-2 to enable this feature.

The name (up to 12 characters) assigned to a program may be entered here. To enable, it is required to select the DVB-SI option in MUX page. This name may or may not be supported in the end customer decoding device.

6.10.6 Video PID: [21-8190]

The video PID (Packet Identifier) is a decimal number that uniquely identifies a video transport stream in an MPEG-2 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.

6.10.7 Audio PID: [21-8190]

The audio PID (Packet Identifier) is a decimal number that uniquely identifies an audio transport stream in an MPEG-2 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.

6.10.8 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. Typically it always takes the same value as the video PID.

6.10.9 PMT PID: [21-8190]

The PMT (Program Map Table) PID (Packet Identifier) is a decimal number that uniquely identifies a PMT table in an MPEG-2 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.

6.11 Platform Control Buttons



Figure 6-7: Control Buttons

6.11.1 Refresh Port

This control reads the DigiVu 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.

6.11.2 Submit All Ports



NOTE: *This is a service affecting operation.*

This control applies all of the changes made on the 'Encoder Settings' tab and makes the changes part of the working configuration of the DigiVu system. If changes have been made, click 'Submit' button before navigating away from the page, to avoid all changes being lost. This attribute may be used to throw away changes made if you change your mind.

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MUX TAB

7. Mux Tab

In this chapter we detail the multiplexer controls for the specific installation environment. All settings are discussed along with limits and some suggestions as to what values are most applicable and why. If there is a Gigabit Ethernet output card installed, this is the page where the Ethernet output is enabled. The Ethernet and RF outputs may be flexibly set to either RF, Ethernet, or both simultaneous output types. While the Ethernet output is enabled here, it is not configured on this page. See “IP Output Tab” on page 11-1 for Ethernet configuration.



FYI: In this guide, reference to DigiVu infers DigiVu 3RU, DigiVu CD 3RU and DigiVu Mini 1RU unless the model is specifically stated. Reference to DVIS is synonymous with DigiVu as these products run on the same firmware.

7.1 Chapter Contents

- “MUX Settings”
- “Legacy STB Settings”
- “DVB® SI Settings”
- “No Video Slide Enable”

Figure 7-1: Mux Configuration Tab

7.2 MUX Settings

7.2.1 Transport Stream ID: [1-65535]

A Transport Stream ID is a unique number describing the transport stream. The default value is 1 and supported values are 1 - 65535.

7.2.2 Service Provider Name:

An optional entry used to identify the provider of the service. This may or may not be supported or displayed by the end customer decoder device.

Figure 7-2: MUX Settings

7.2.3 Output Selection:

This check box selects which outputs are active. Ethernet may not be activated if there is no Ethernet output card installed in slot 2 or 5. IF SPTS IP output is desired, the only mode this is supported under is 'Ethernet Only'. The supported selections are:

- RF Only
- Ethernet only
- RF & Ethernet



FYI: The Ethernet output is enabled here but is configured on the "IP Output Tab". See "IP Output Tab" on page 11-1 for further details.

7.2.4 Add & Drop Mode:

This check box selects whether the 'Demod & Mux Settings' tab is enabled. The 'Demod & Mux Settings' are required if a demodulator is installed. After activation see "Demod & Mux Settings Tab" on page 10-1. After checking the box click **Submit** button to apply the change.

7.2.5 Dynamic PSI Monitoring:

Selects whether Dynamic PSI (Program Specific Information) monitoring is enabled. This will instruct the unit to monitor the incoming PSI tables for changes and reanalyze the stream when they occur. This feature is active in add/drop mode only.

7.3 Legacy STB Settings

7.3.1 Lock to V-Sync:

The default setting is 'Lock to Internal Sync'; the check box is not 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 maybe 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.

Legacy SET TOP BOX Support Settings
 Lock to V-Sync:
 QBA & AF Enable:

Figure 7-3: Legacy STB Settings

7.3.2 QBA & AF Enable:

Selects whether QBA and AF are enabled. Necessary only for some legacy set top boxes. Default; the check box is not selected.

7.4 DVB® SI Settings

These settings are not always required to be used for typical operation. They provide additional features if required by system operator.

DVB SI Settings
 DVB-SI/PSIP:
 Network ID [1-65535] [1-65535]
 No Video Slide Enable

Figure 7-4: DVB SI Settings Section

7.4.1 DVB® -SI/PSIP:

This setting is a drop down menu with preset options.

- None
- DVB-SI

This selection enables support for passing/updating the SDT (Service Description Table) and NIT (Network Information Table) tables through the multiplexer in a drop & insert application as well as creation of SDT/NIT tables in encoding mode. It may be necessary in some installations to enable these tables to be received by the end user when tuned to the DigiVu programs. In add/drop applications the SDT/NIT tables must be existing in the incoming QAM. If the tables do not exist, do not attempt to enable this feature.

- PSIP

This selection enables insertion of Virtual Channel information as per PSIP standard, see "6.10 Program Identification" on page 6-8.

7.4.2 Network ID: [1-65535]

This is the Network ID as listed in NIT.

7.5 No Video Slide Enable

This 'No Video' feature allows a slide to be shown to the viewer on an SD channel that loses video input to the encoder card. There is a pre-configured default slide, Figure 7-5, but a custom slide may also be uploaded to the system, see "7.5.4 Custom Slides".



NOTE: This feature is only available for use with SD encoder cards DV1CE, DV2CE, DV1CEM & DV2CEM. This will not work with the current HD encoder card.

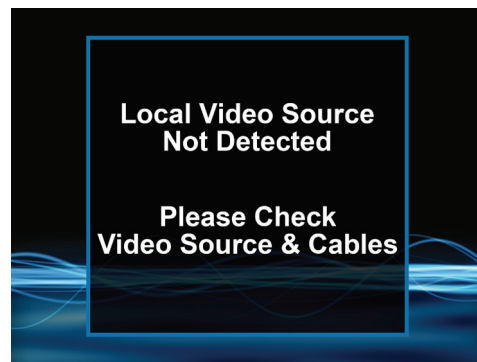


Figure 7-5: Default 'No Video' Slide

7.5.1 If Checked

On loss of video to an SD encoder, the DigiVu displays a built-in or custom slide graphic on the program output of encoders. One slide will display on all active encoders.

7.5.2 If Not Checked

On loss of video to an SD encoder, the DigiVu will have no output program to display. Depending on end display equipment it may show up as a black or blue screen or some default screen from end display device.

7.5.3 Built-in Slide

The default built-in slide provided displays a message indicating that a video source is not detected and advises that the video source and cables should be checked. This feature is useful to avoid blank channels in the lineup when local video sources fail. It indicates that the DigiVu is functioning and RF output is present indicating that other customer premise equipment should be checked first. In some situations this may help prevent unnecessary service calls for the DigiVu platform. Once this feature is enabled by ticking the box, a menu is activated which allows selection of either the default slide or a custom slide.

7.5.4 Custom Slides

Custom SD slides should first be created using our online tool available in the Resources & Support Section, sub-section Calculators & Utilities at atxnworks.com. The web tool is called "Video Loop Creation Tool". Once the slide is created, it has to be exported (saved on local PC) and then uploaded into the DigiVu using the 'Upload Slide' button. Click the **Submit** button to save and apply the image slide settings.

7.6 Platform Control Buttons

7.6.1 Refresh

This control reads the product's stored settings and refreshes the page with the values. This also will force the product 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.

7.6.2 Submit



NOTE: This is a service affecting operation.

This control applies all of the changes made on the 'Mux' tab and makes the changes part of the working configuration of the DigiVu system. If changes have been made click **Submit** button before navigating away from the page, to avoid all changes being lost. This attribute may be used to throw away changes made if you change your mind.



Figure 7-6: Platform Control Buttons

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RF OUTPUT TAB

8. RF Output Tab

In this chapter we discuss the RF output configuration. This is the page from which all QAM RF output settings are changed or configured. Reference to DigiVu infers the discussion applies to DigiVu 3RU, DigiVu CD and DigiVu Mini unless specifically stated.



FYI: In this guide, reference to DigiVu infers DigiVu 3RU, DigiVu CD 3RU and DigiVu Mini 1RU unless the model is specifically stated. Reference to DVIS is synonymous with DigiVu as these products run on the same firmware.

Figure 8-1: RF Output Configuration Tab

8.1 RF Settings

Settings affecting the QAM RF output of the DigiVu are configured on this page. QAM output configuration settings and operation is based on [ITU-T Recommendation J.83](#) standards.

8.1.1 RF Frequency: [15000-975000] (kHz)

Enter the required QAM output channel center frequency here in kHz without any decimals or commas. This supports STD, IRC and HRC channel plans. The limits of tuning are 30 MHz to 960 Mhz.



NOTE: Uniform RF performance (as per published spec) is available between 30 MHz and 960 MHz. The areas close to lowest/highest tunable range fall in the roll-off of the operating range and RF parameters (for instance MER) are starting to degrade in these two border areas. Depending on desired application this might or might not be acceptable. It should be tested under such application to obtain relevant data about suitability.

8.1.2 QAM Mode:

Select the appropriate QAM constellation. The available selection is dependant on the selected QAM modulation type as outlined below:

North America - QAM-B	Europe/Japan - QAM A/C
64 & 256 QAM	16, 32, 64, 128 & 256 QAM

Figure 8-2: RF Settings Section

8.1.3 QAM Modulation Type:

The type of QAM modulation is selected here and is dependant mostly on locale. In general, the following applies:

- QAM-B is defined in [ITU-T standard J.83 Annex B](#) for use in North America and other territories following same standard.
- QAM A/C is defined in [ITU-T standard J.83 Annex A and J.83 Annex C](#) for general use in Europe, Japan and other territories following same standard.

8.1.4 Symbol Rate: [2000-7000]

The values presented as preset options depend on the QAM modulation type selected. QAM-B has two predefined values, but QAM-A/C allows a user defined setting along with some common predefined values. All DigiVu models support symbol rates between 2000 and 7000 symbols per second.

Default Values of Symbols/Sec for each QAM Type		
QAM-B		QAM-A/C
5360 ksps	256 QAM	User Defined
		2608 ksps
5056 ksps	64 QAM	3478 ksps
		4347 ksps
		5217 ksps
		6086 ksps
		6956 ksps

8.1.5 RF Attenuation: [0-26]

The DigiVu 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 is 57.5 dB +/- 1.5 dB with this attenuator set at 0 dB.

8.1.6 Interleaving:

This setting is only available for the QAM-B mode. The interleaving may be adjusted if required, though it will not normally require changing from the default value of 'I/J 128/1'.

- Supported values listed here are defined by the standard:
I/J 64/2, I/J 32/4, I/J 16/8, I/J 8/16, I/J 128/1, I/J 128/2, I/J 128/3, I/J 128/4, I/J 128/5, I/J 128/6, I/J 128/7, I/J 128/8



FYI: The interleaving in QAM-A/C is fixed in the standard to 1/J 12/17 and is therefore not listed in the GUI.

8.2 Platform Control Buttons



Figure 8-3: Platform Control Buttons

8.2.1 Refresh

This control reads the DigiVu 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.

8.2.2 Submit



NOTE: This is a service affecting operation

This control applies all of the changes made on the 'RF Output' tab and makes the changes part of the working configuration of the DigiVu system. If changes have been made click **Submit** button before navigating away from the page, to avoid all changes being lost. This attribute may be used to throw away changes made if you change your mind.

MAINTENANCE TAB

9. Maintenance Tab

From this page, the GUI network configuration settings may be set. Password and Username access is also changed from this page.



FYI: In this guide, reference to DigiVu infers DigiVu 3RU, DigiVu CD 3RU and DigiVu Mini 1RU unless the model is specifically stated. Reference to DVIS is synonymous with DigiVu as these products run on the same firmware.

9.1 Chapter Contents

- “DVIS Information”
- “DVIS Hardware Status”
- “SNMP Settings”
- “Export Settings”
- “Network Settings”

ATX DVIS Settings

Encoder Settings | Mux | RF Output | IP Output | **Maintenance**

Maintenance

DVIS Information

Product ID: DVIS-00000548

Version: 4.21-3.9-10.20 **Firmware Version**

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 **Cooling system status**

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) **System configuration backup**

Force Update | Go to Sleep | Board Time | **Export Settings** | Refresh | Submit

Network Settings

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

Static IP Address: 192.168.0.23

Web Server Port: 80 **Management network configuration**

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 **Manage Username and Password**

Figure 9-1: Maintenance Tab

9.2 DVIS Information

9.2.1 Product ID:

This is the hardware serial number.

9.2.2 Version:

The system firmware version installed in the DigiVu. This is the version to check if new firmware is required or recommended. (Ignore the version number on the top right corner of the GUI display. That number is indicating the version of the GUI, not of the DigiVu system.) 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, see “[Contact ATX Networks](#)” on page 15-1 for contact phone numbers.

Information and procedures for obtaining firmware files and installing the firmware may be found at “[Firmware Upgrade & Recovery](#)” on page 12-1

Availability of firmware for your DigiVu may be checked at the ATX Networks support sites listed here “[Where to Obtain Firmware Files](#)” on page 12-3

DVIS Information	
Product ID:	DVIS-00000083
Version:	4.21-3.19-10.46

Figure 9-2: DVIS Information Section

9.3 DVIS Hardware Status

9.3.1 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 10 °C is recommended.

9.3.2 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 DigiVu equipment internal temperature reaches this limit, internal power is switched to a lower power mode and the unit 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.

9.3.3 Fan A Status:

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

9.3.4 Fan B Status:

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

9.3.5 Temperature:

Current internal temperature of the unit (°C).

DVIS Hardware Status	
Start Fans Above: [0 to 75]	10 (°C)
Alarm Temperature: [0 to 75]	50 (°C)
Fan A Status:	on
Fan B Status:	on
Temperature:	31 (°C)

Figure 9-3: DVIS Hardware Status

9.4 SNMP Settings

All DigiVu support 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.

9.4.1 SNMP MIB

The DigiVu MIB may be browsed with an SNMP Manager once it is compiled into the manager. The following values may be received by SNMP:

- “RPM measured on Fan 1”
- “RPM measured on Fan 2”
- “Channel 1 Video Status”
- “Channel 2 Video Status”
- “Channel 3 Video Status”

SNMP Settings	
SNMP Server:	192.168.0.65
SNMP Port:	161

Figure 9-4: SNMP Settings Section

- “Channel 4 Video Status”
- “Channel 5 Video Status”
- “Channel 6 Video Status”
- “Channel 7 Video Status”
- “Channel 8 Video Status”
- “Channel 9 Video Status”
- “Channel 10 Video Status”

9.4.2 Traps Reported by SNMP

- Temperature beyond Threshold (MAJOR)
- Fan Failure (MAJOR)
- Video Status changed channel 1 (MAJOR)
- Video Status changed channel 2 (MAJOR)
- Video Status changed channel 3 (MAJOR)
- Video Status changed channel 4 (MAJOR)
- Video Status changed channel 5 (MAJOR)
- Video Status changed channel 6 (MAJOR)
- Video Status changed channel 7 (MAJOR)
- Video Status changed channel 8 (MAJOR)
- Video Status changed channel 9 (MAJOR)
- Video Status changed channel 10 (MAJOR)

SNMP Server:

This is the IP address of the remote Management Console which is the computer that will receive traps sent by the DigiVu 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.

9.4.3 SNMP Port:

By default, the DigiVu 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).

9.4.4 SNMP MIB

If you want to implement SNMP monitoring you will need the SNMP MIB. Get this by requesting it from ATX Networks technical support at the numbers listed in [“Contact ATX Networks” on page 15-1](#).

9.5 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.

Remote Update Server	
Remote Update Server:	192.168.0.55
Remote Server Port:	80
Schedule Remote Update:	<input type="checkbox"/>
Schedule Day:	Every day
Schedule Hour:	12:00 (HH:MM 00:00-23:59)

Figure 9-5: Remote Update Server

9.6 Platform Control Buttons



Figure 9-6: Maintenance Control Buttons

9.6.1 Force Update

Feature not currently implemented.

9.6.2 Go to Sleep

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



NOTE: This is a service affecting operation.

9.6.3 Board Time

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

need to be changed from time to time, see “13.1 Field Replacement of Realtime Clock Battery” on page 13-1.

9.6.4 Refresh

This control reads the DigiVu’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.

9.6.5 Submit



NOTE: This is a service affecting operation

This control applies all of the changes made on the ‘Maintenance’ tab (except for ‘Network Settings’ which are applied separately) and makes the changes part of the working configuration of the DigiVu system. If changes have been made click **Submit** button before navigating away from the page, to avoid all changes being lost. This attribute may be used to throw away changes made if you change your mind.

9.6.6 Export Settings

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 DigiVu 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. The process of exporting the configuration file is shown in Figure 9-9.



Figure 9-7: Export Settings Button

9.6.7 Import Settings

Importing a settings file is done with the same upload utility used for upgrading firmware. For information on importing a settings file, see “12.6 Firmware Upgrade Process” on page 12-3.

9.6.8 Import/Export Firmware Versions Must Match

Because different firmware versions might contain different features and therefore different fields for setting parameters, export and upload will only work reliably and correctly if the originating and receiving DigiVu are running the same firmware version. It is obvious that there will be problems if originating and receiving device don’t have same feature set and it will not be known by the device how to configure settings.

9.6.9 Settings Selection

The DigiVu platform provides several choices for the granularity of the amount of data to be saved when settings are exported. To start the settings export process, click the **Export Settings** button. When the export settings dialog is opened, see Figure 9-8, a number of choices are provided to allow just the required data to be exported. One may be tempted to just select ‘All Settings’ as this may intuitively seem the best choice but carefully consider the circumstances of the machine receiving the data. If it intended to use the data as a backup which will be restored to the same DigiVu in the same network, this is the best choice. If the receiving DigiVu is another machine in another location, the choice of data exported must be made with careful consideration. An explanation of the data that will be exported with each selection is outlined here:

1. All Settings

All settings of the entire DigiVu platform. Perfect for a backup database.



WARNING:—If a remote re-configuration of a DigiVu (the target DigiVu) is performed while connected through an IP network, the ‘All Settings’ check box has to be unchecked. Otherwise, the exported ‘Network Settings’ of the source DigiVu (the source of the exported file) will load into the target DigiVu and those settings will be incorrect unless the target and the source DigiVu are the same machine. Every remotely accessible device has unique ‘Network Settings’ which will be overwritten if we check this box. The result will be that internet access to the remote DigiVu is lost and someone has to visit it locally to reset the Network Settings appropriately for network access.

2. Encoder Settings

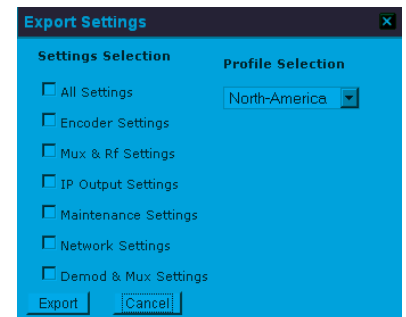


Figure 9-8: Settings Selection

- All settings from 'Encoder Settings' page get exported and later loaded in the other DigiVu.
3. MUX and RF Settings
All settings from 'MUX and RF Output' pages get exported and later loaded in the other DigiVu.
 4. IP Output Settings
All settings from 'IP Output' page get exported and later loaded in the other DigiVu.
 5. Maintenance Settings
All settings from 'Maintenance' page other than Network settings get exported and later loaded in the other DigiVu.
 6. Network Settings
All settings from 'Network Settings' section on the Maintenance page get exported and later loaded in the other DigiVu.
 7. Demod and MUX Settings
All settings from the 'Demod and MUX Settings' page get exported and later loaded in other DigiVu.



NOTE: Because the 'Demod and MUX Settings' page uses data from an incoming QAM in a specific QAM RF distribution network, exporting and loading these parameters only makes sense if the 'receiving' DigiVu operates in the exact same QAM RF network. Otherwise in a different QAM RF network this export settings file won't work because the QAM channels, programs, frequencies, etc. could be different, therefore incorrect values will be loaded.



NOTE: In order to generate settings in the 'Demod & MUX Settings' page it is required to connect the DigiVu to the QAM RF network to collect data as required for the Demod & MUX page. Parameters in all other GUI pages are generated directly in DigiVu, but parameters in the Demod & MUX Settings page are a combination of real-life received/analyzed data and modification performed by the DigiVu. It is important to note that the Demod & MUX page data always and only can be created in the system in question and cannot be generated in a lab/office located elsewhere.

9.6.10 Quick Guide to Export Settings

The screen capture construction in Figure 9-9 may be used to clarify these instructions.

1. Click the **Maintenance** tab

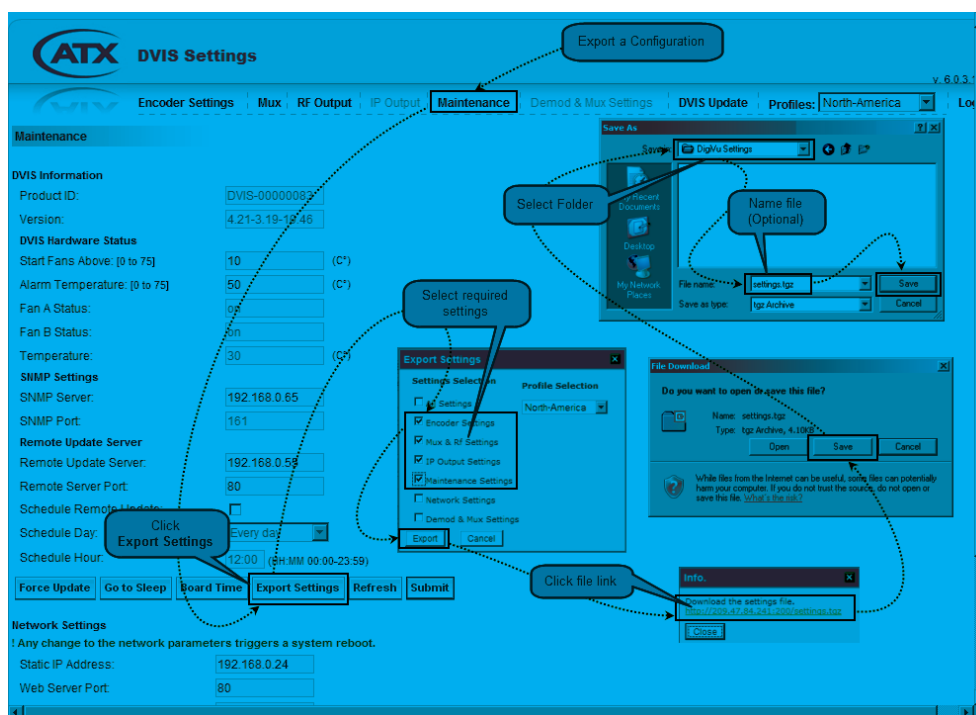


Figure 9-9: Export Settings Procedure Illustrated

2. Click **Export Settings** button.
3. A window opens allowing the selection of the dataset to be exported from this DigiVu. After selection click **Export**.
4. A new window will open with a web-link to download the settings file.
5. Click this hyper-link.
6. Another new window opens with a prompt to act on the file, (it's format depends on the browser used and it's version) asking to open or save this file.
7. Save this file in a known location on the PC. You may accept the offered file name or change it in any way you want to personalize it to identify the DigiVu it is saved from. Without renaming, every DigiVu export file will be named identically.
8. This file can be used later to be uploaded into a DigiVu through the DVIS Update page, in same way as new firmware would be loaded. The execution of such uploaded file happens in same way as when firmware files get uploaded, and after that process is done the receiving DigiVu will have same parameter settings as originating DigiVu.

9.7 Network Settings

This section defines the setting for the Ethernet GUI port on the DigiVu 1RU Mini front panel and the DigiVu 3RU back panel. The configuration of the Gigabit Ethernet card is detailed in "IP Output Tab" on page 11-1.



NOTE: Any change to network parameters triggers a reboot when applying the changes with the 'Set Network' button.

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

Static IP Address:	192.168.0.24
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-C2-97-40-57
Notify Server URL:	www.abnetworks.com
DHCP Client Mode Enabled:	<input type="checkbox"/>

Figure 9-10: NetworkSettingsSection

9.7.1 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 DHCP assigned address shows up if the button 'Network Info.', see Figure 9-13. 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	192.168.0.23
Subnet Mask	255.255.255.0
Web Server Port	80
Gateway	192.168.0.1
DNS IP Address	Not Defined

9.7.2 Web Server Port:

This is the TCP/IP port that is used to remotely access the DigiVu. 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 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

9.7.3 Subnet Mask:

A subnet mask must be set to define what part of the network address is applicable to the subnet that the DigiVu 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

private network address of 192.168.0.23

9.7.4 Default Gateway:

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

9.7.5 DNS IP Address:



NOTE: Cannot be ignored for remote access! This address must be entered, though it may be any IP address including an address that is not specifically a DNS server. A Google DNS Address that may be used is 8.8.8.8

DNS (Domain Name System) servers translate human-readable domain names into machine-readable IP addresses and the reverse. For remote access a DNS IP address must be entered.

9.7.6 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 DigiVu on the network to a DHCP server and to other computers. It is hard coded into the DigiVu at the factory and cannot be changed. For example, the MAC address is used by a cable modem to acquire an IP address in DHCP mode.

9.7.7 Notify Server URL:

This feature is not yet implemented

9.7.8 DHCP Client Mode Enabled:

DHCP (Dynamic Host Configuration Protocol) automates assigning an IP address to the management access port. DHCP is commonly used with cable modems so likely DHCP Client Mode will need to be enabled if a cable modem will be connected to the management port for remotely accessing the DigiVu.



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 DigiVu again through the Ethernet port. Further, you may need to set your computer to the corresponding subnet if you are directly connected to the DigiVu on the network. Your Network Administrator may be able to help with this. For information on setting the IP address of the PC see “5.4 Connecting to the GUI” on page 5-2.

9.8 Platform Network Control Buttons



Figure 9-11: Platform Network Control Buttons

9.8.1 Change Username & Password

For security purposes, the DigiVu has a Username and Password which must be entered for access to the GUI. The username and passwords may be changed through the dialog that opens with this control. After changing the username and/or password, the DigiVu 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). The DigiVu system provides for a single system user and password who is allowed to modify all settings. The dialogue that opens when you click Change User&Password button allows the user name and password to be modified. After changing the settings, click Send to apply the new settings. The DigiVu GUI will close and you will be requested to log in under the new credentials.

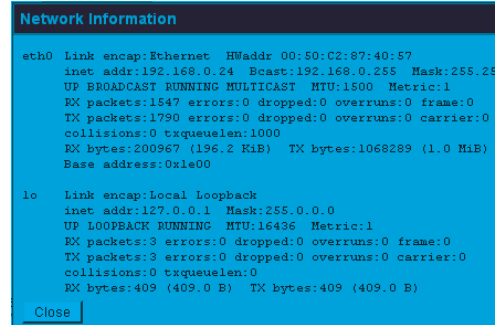


FYI: If the Username or Password have been changed and subsequently forgotten, there is a way to recover the DigiVu without loss of programmed configuration. A username/password reset file is available which can work around this problem. Contact ATX Networks technical support at the numbers listed under “Contact ATX Networks” on page 15-1 for assistance.

Figure 9-12: Change Username and Password

9.8.2 Network Info

This button opens an information window that summarizes Ethernet network information such as IP address (even DHCP assigned), packets received and transmitted, the link status, data collisions and the number of RX and TX bytes. This is for information only. An example is shown in Figure 9-13.



```

Network Information
eth0 Link encap:Ethernet HWaddr 00:50:C2:87:40:57
inet addr:192.168.0.24 Bcast:192.168.0.255 Mask:255.255.255
UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
RX packets:1547 errors:0 dropped:0 overruns:0 frame:0
TX packets:1790 errors:0 dropped:0 overruns:0 carrier:0
collisions:0 txqueuelen:1000
RX bytes:200967 (196.2 KiB) TX bytes:1068289 (1.0 MiB)
Base address:0x1e00

lo Link encap:Local Loopback
inet addr:127.0.0.1 Mask:255.0.0.0
UP LOOPBACK RUNNING MTU:16436 Metric:1
RX packets:3 errors:0 dropped:0 overruns:0 frame:0
TX packets:3 errors:0 dropped:0 overruns:0 carrier:0
collisions:0 txqueuelen:0
RX bytes:409 (409.0 B) TX bytes:409 (409.0 B)

Close

```

Figure 9-13: Network Information Window

9.8.3 Set Network



NOTE: For every pressing of the 'Set Network' button, the platform will reboot.

If any parameter in the 'Network Settings' section has been changed, they need to be saved and applied to the DigiVu in order to take effect. This is done by clicking the **Set Network** button which applies the network configuration changes. A platform reboot will always take place.



NOTE: If the network address has been changed, then the platform will reboot and you will need to open a new browser session with the new address entered in Internet Explorer. This is exactly the process described earlier in Chapter "5. The GUI" on page 5-1. For specific details see "5.6.4 Static IP Address Assignment" on page 5-6.

DEMOM & MUX TAB

10. Demod & Mux Settings Tab

In this chapter we detail the controls which are used to operate the Demodulator and Multiplexer to achieve the results that are required in an Add/Drop application. For Add/Drop applications, all add/drop settings are discussed along with limits and some suggestions as to what values are most applicable.



FYI: In this guide, reference to DigiVu infers DigiVu 3RU, DigiVu CD 3RU and DigiVu Mini 1RU unless the model is specifically stated. Reference to DVIS is synonymous with DigiVu as these products run on the same firmware.



FYI: The 'Demod and Mux' tab will be activated only if a demod card is installed. If there is no demod installed, this tab will be greyed out in the GUI.



FYI: The DigiVu platform can only accommodate one DEMOD card.

10.1 Chapter Contents

- "Quick Guide to Demod & Mux Configuration"
- "Demod & Mux Settings"
- "Demodulator Settings"
- "Demodulator Settings Buttons"
- "Add & Drop Settings"
- "Add & Drop Settings Buttons"
- "PID Display Tree"

10.2 Quick Guide to Demod & Mux Configuration

10.2.1 Activate the Demod & Mux Settings Tab

If the 'Demod & Mux Settings' tab is greyed out it will need to be activated on the 'Mux' tab. Open the Mux tab and tick the 'Add & Drop Mode' box, then click **Submit** button, see Figure 10-1.



NOTE: Clicking 'Submit' is a service affecting operation.

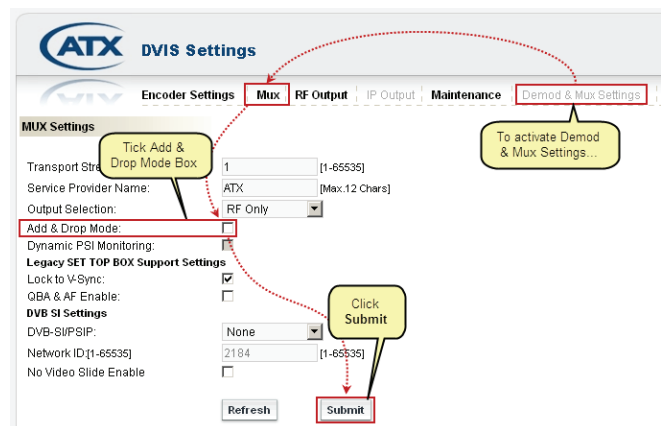


Figure 10-1: Activate Add/Drop Mode on the Mux Tab

10.2.2 Quick Guide to Tuning the Demodulator

Refer to Figure 10-2 for clarification of this process.

1. Open the 'Demod & Mux Settings' tab.
2. Depending on the QAM Demodulator type (Qam -B ATSC vs QAM A/C, ETSI), the symbol rate may need to be set first. For QAM-B the setting is automatic, for QAM A/C obtain the symbol rate from the cable system operator.
3. Click **Demodulator Settings** button.
4. Set QAM type, QAM Mode and Channel Center Frequency. These values will be copied into 'Demod Settings' when tuning is finished.
5. Click the **Tune** button. The tuning process will take some time. If the QAM can be tuned, the indicators, which are initially red, will turn green. The tuner is also determining signal quality during this time.
6. When lights have turned green and 'BER' (Bit Error Rate) value is populated (allow some time for BER data collection), click the **Apply & Close** button.
7. Click the **Analyze** button. The analyze info window opens for about 1 minute then displays 'Completed'.
8. The **PID Display Tree** is populated with the detected streams and their MPEG properties.

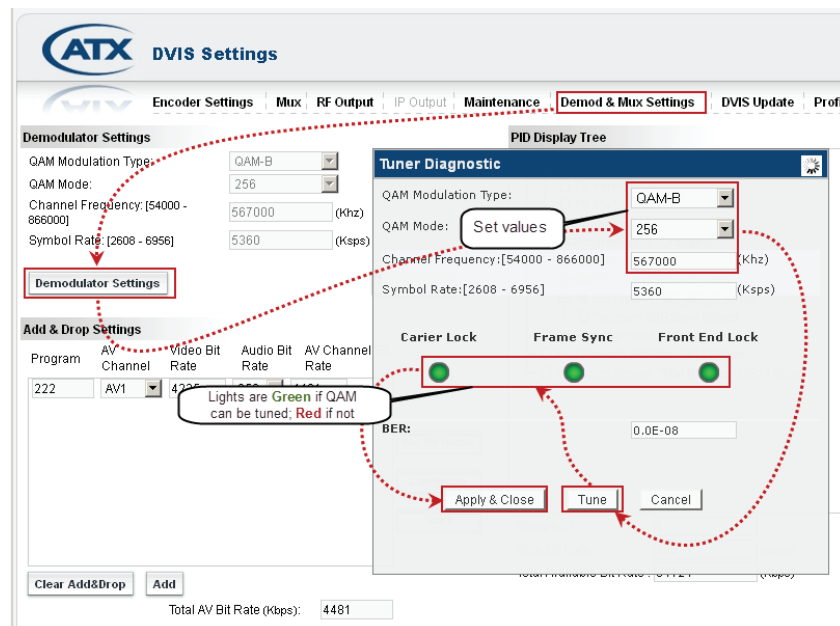


Figure 10-2: Tune the Demodulator

10.2.3 Quick Guide to Drop and Add a Program

Refer to Figure 10-3 for clarification of this procedure.

1. Left click the program to be dropped in the 'PID Display Tree' in order to highlight it
2. Right click that program and a drop down menu appears (Active, Drop).
3. Click **Drop**. A replacement program is populated in the Add & Drop Settings window area with same program number as the dropped program, The dropped program is greyed out.
4. In the 'Add & Drop Settings' section select the 'AV Channel' (the DigiVu encoder port that is physically connected to local baseband source) to be inserted; AV1 or AV2 etc. (Initially the drop downs for 'AV Channel' will show 'None').
5. Click **Set Bit Rates**. DigiVu will analyze the incoming stream and attempt to assign the highest bit rate to each added AV Channel that the available space will allow.



FYI: The bitrate computed in step 5 will be assigned to each program in 'AV Channel Bit Rate' column. Since the algorithm is assigning all available bitrate headroom, it might happen that these values are extremely high and need adjustment downward. To do so, click into the field with assigned 'Video Bit Rate' and enter an appropriate bitrate number (this number depends on several factor). Do this for all available 'AV Channels'.

6. The assigned bitrate for each encoder may be adjusted downward if necessary.
7. Select "Audio Bit Rate" for every available AV Channel. The recommended setting is 192 kbps.
8. Click **Configure** button. The settings are saved to the DigiVu configuration.
9. Click **Start** button. This starts the multiplexer add/drop process.

The screenshot shows the ATX DAVIS Settings interface. The 'Demod & Mux Settings' tab is active. The 'Demodulator Settings' section includes QAM Modulation Type (QAM-B), QAM Mode (256), Channel Frequency (567000 KHz), and Symbol Rate (5360 Ksps). The 'Add & Drop Settings' section contains a table with columns for Program, AV Channel, Video Bit Rate, Audio Bit Rate, and AV Channel Bit Rate. The table shows four programs: 111 (AV1, 4000, 192, 4192), 223 (AV2, 5000, 256, 5256), 224 (AV3, 6000, 384, 6384), and 225 (AV4, 7000, 192, 7192). The 'PID Display Tree' on the right shows a tree structure with 'Mpeg2 Transport Stream' expanded to show 'P Program=111'. A context menu is open over 'P Program=111' with options 'Active' and 'Drop'. Red dashed arrows and callouts indicate the sequence of actions: right-clicking the program, selecting 'Drop', clicking 'Set Bit Rates', 'Configure', and 'Start' buttons, and the resulting 'Info' dialog box.

Program	AV Channel	Video Bit Rate	Audio Bit Rate	AV Channel Bit Rate
111	AV1	4000	192	4192
223	AV2	5000	256	5256
224	AV3	6000	384	6384
225	AV4	7000	192	7192

Figure 10-3: Add or Drop a Program



NOTE: Clicking 'Start' is a service affecting operation

10.3 Demod & Mux Settings

The following is a description of the 'Demod & Mux Settings' configuration page. The page is divided into 3 main sections as shown in Figure 10-4:

- Demodulator Settings
- Add & Drop Settings
- PID Display Tree

Each of these screen sections are described next.

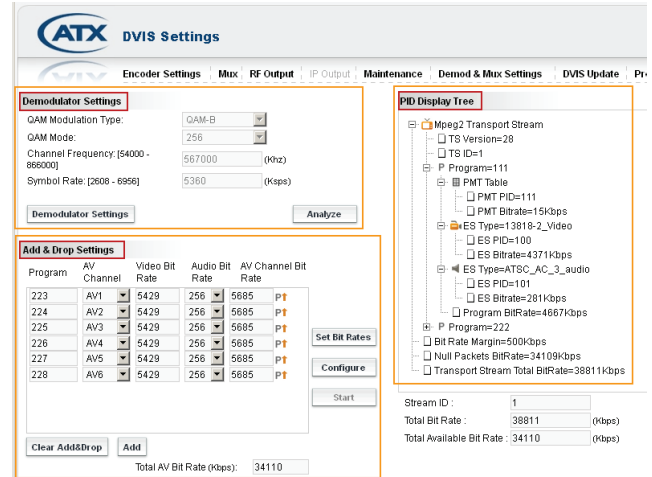


Figure 10-4: Demod and Mux Settings Configuration Page

10.4 Demodulator Settings

This area displays the parameters of the QAM demodulator. These values are adjustable in the 'Tuner Diagnostic' dialog that opens when you click the **Demodulator Settings** button. That will be discussed below. The four parameters that are displayed are:

10.4.1 QAM Modulation Type:

This is the type of QAM standard that the Demod will use and is determined mostly by locale and the Demod Card installed (two versions are available); generally QAM B for North America and QAM A/C for Europe (and appropriate territories following standards from North America/Europe/Japan).

10.4.2 QAM Mode:

Depending on the QAM Type selected above, the QAM mode is preset to a few possible values. For QAM-B available options are 64 QAM and 256 QAM. For QAM-A/C available options are 16QAM, 32QAM, 64QAM, 128QAM and 256QAM.

10.4.3 Channel Frequency: [54000 - 866000]

This is the **center frequency** of the EIA/RF/CCIR channel to be demodulated. The possible values are 47000 kHz to 897000 kHz. Do not enter any commas or other punctuation marks.

10.4.4 Symbol Rate: [2608 - 6956]

The symbol rate of the QAM channel. For QAM-B for selected QAM mode there is only one valid symbol rate which is automatically entered. For QAM-A/C, several possible symbol rates are preset and there is a possibility to enter a user defined number as well.

10.4.5 BER:

This is the measured Bit Error Rate (or Bit Error Ratio) on the tuned QAM channel. This value should be very low, preferably 0.0E-08, indicating a quality signal. If the BER is worse than 1.0E-06 an investigation into transmission problems on the cable system should be undertaken.

10.5 Demodulator Settings Buttons

10.5.1 Demodulator Settings

This control opens the **Tuner Diagnostics** window that permits changing the relevant configuration and verifying the successful tuning of the specified QAM. The screen capture construction in "[Quick Guide to Tuning the Demodulator](#)" on page 10-2 outlines the process. The window contains three indicators which are red by default when the window opens. Opening the Tuner Diagnostics window will always initially display the three indicators as red, even when the tuner is currently properly tuned and locked. This screen must be refreshed every time it is opened by clicking the **Tune** button. If the QAM demodulator cannot tune and lock on the carrier, the indicator lights remain red, however, upon successful tuning and locking of sync, all three of the lights should be green and in a few moments the BER (Bit Error rate) is measured and populated. The action of clicking the Tune button is not service affecting

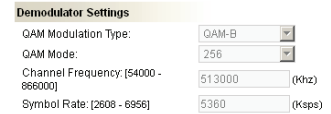


Figure 10-5: Demodulator Settings



Figure 10-6: Demodulator Settings Buttons

unless the QAM parameters have been changed since the window was opened.

10.5.2 Tune - Control

After entering or selecting the values in the dialog, click the **Tune** control. This causes the tuner to attempt to find the carrier detect frame sync and lock on the frequency. Successful tuning results in the three indicators lighting green and the tuner then attempts to evaluate the bit error rate of the channel. The BER is posted in a few moments if successful.

10.5.3 Apply and Close

When the lights are all green and the BER is posted, click **Apply & Close** to apply and save the settings and close the window. The 4 set parameters will be copied into the "Demodulator Setting" section.

10.6 Add & Drop Settings

This section displays the local encoder settings in the 'Add & Drop' mode only. This is where local encoder video and audio encoding bit rates and program numbers are set when the add/drop mode is activated. If the Add/Drop mode is not being used, encoder parameters are set on the 'Encoder Settings' page. In Add/Drop mode, some parameters can still be set in 'Encoder Settings' page, but the ones which are restricted are greyed out. Programs will automatically be added in this window when an incoming program is dropped in the 'PID Display Tree'. Other local encoder channels may be added into an incoming QAM (if enough bitrate is available) from this window as required without dropping every program from incoming QAM. Configuring local programs will force the use of the automatic bit rate configurator, the 'Set Bit Rates' button, but the bit rate assigned to

Add & Drop Settings					
Program	AV Channel	Video Bit Rate	Audio Bit Rate	AV Channel Bit Rate	
223	AV1	5429	256	5685	P↑
224	AV2	5429	256	5685	P↑
225	AV3	5429	256	5685	P↑
226	AV4	5429	256	5685	P↑
227	AV5	5429	256	5685	P↑
228	AV6	5429	256	5685	P↑

Figure 10-7: Add & Drop Settings Section

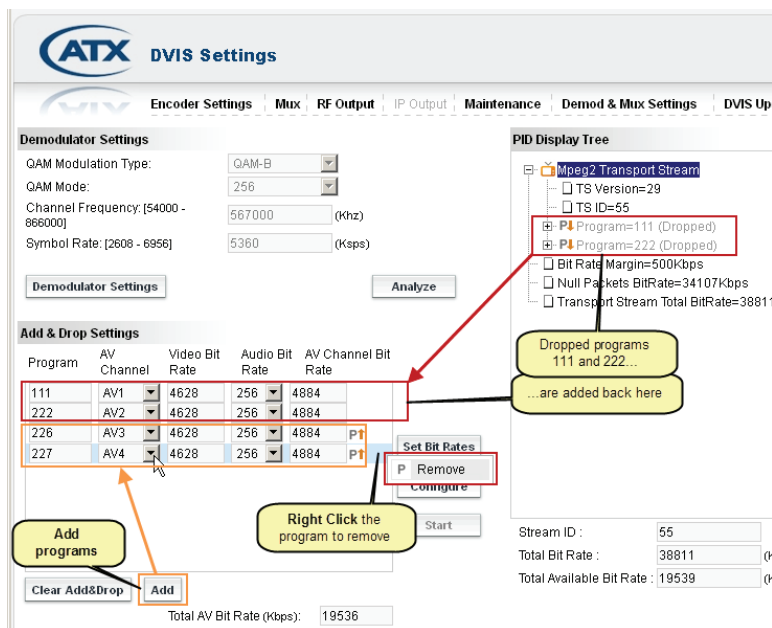


Figure 10-8: Adding and Dropping Programs

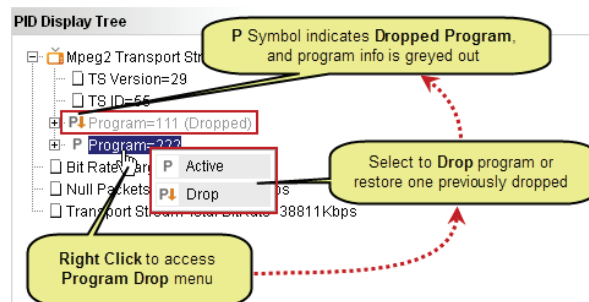


Figure 10-9: Drop or Restore a Program

an encoder could exceed the output capability of the used encoder card (for example for SD it's 8000 kbps). If this happens, change the bit rate manually to a lower value. This can happen because the algorithm assigns all available bitrate in a QAM, and if the QAM is 'empty' the available bitrate is high.

10.6.1 Program

This is the MPEG program number assigned to the program. This may be changed to any number as required by your system. If a program is being dropped, the program number assigned to the inserted program is the number of the dropped program. The program number assigned here will show up in 'Encoder Settings' page as greyed out numbers (in appropriate port view).

10.6.2 AV Channel

This is the number of the local encoder port. On the 'Encoder Settings' page, in the 'Ports View' section, this same encoder is referred to as a 'Port Number'. See "6.5.1 Port Numbering Convention" on page 6-3 for the port numbering. By default this value is set to 'None' which represents the program being dropped from the incoming QAM without replacement

10.6.3 Video Bit Rate

The bit rate assigned to the local encoder after clicking the **Set Bit Rates** button. This value depends on the installed encoder card. If the bit rate configurator automatically assigns a bit rate that exceeds max allowed bitrate, manually set it to less. A higher bit rate equates to higher quality video transmission but setting a high bit rate will not improve low quality video presented to the encoder input.

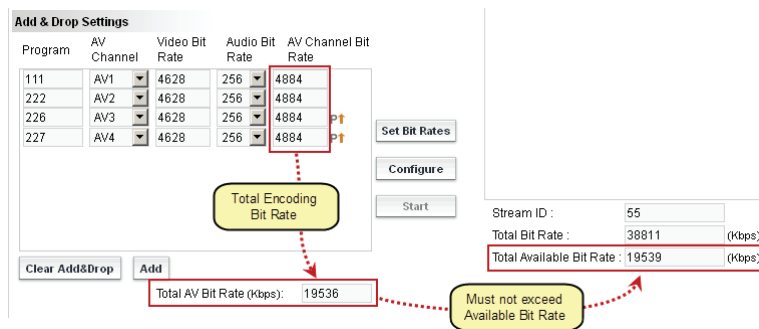


Figure 10-10: Observe MUX Bitrate

10.6.4 Audio Bit Rate

This is the bit rate of the audio program. Depending on the encoder card installed, default values will be available to be chosen as required by your system. Recommended setting is 192 kbps.

10.6.5 AV Channel Bit Rate

This is the aggregate bit rate for the overall program including the individual encoded video and the audio streams.

10.6.6 Total AV Bit Rate (kbps)

This is the aggregate total bit rate of all of the programs added in the 'Add & Drop Settings' section. The total includes the video and the audio encoder bit rates. This value may equal but must not exceed the value of 'Total Available Bit Rate' displayed below the 'PID Display Tree' section.

10.7 Add & Drop Settings Buttons

A description of the functionality of the control buttons of the 'Add & Drop Settings' feature.



Figure 10-11: Add & Drop Settings Buttons

10.7.1 Clear Add & Drop Button

If there are any programs entered into the program list, this button clears all entries. The added programs may also be removed one at a time by right clicking the programs and select **Remove** when prompted. For programs that are dropped from the 'PID Tree', they may be added once again only from the 'PID Tree' section.

10.7.2 Add Button

This enters new programs in the list that have no relationship with the incoming QAM; i.e. are not replacements for dropped

incoming programs, just newly added programs to the QAM. Programs are entered with default audio bit rates which may be changed. The video bit rate will be calculated so do not enter the desired video bit rate until after clicking the **Set Bit Rate** button.

10.7.3 Set Bit Rates Button

This control automatically calculates the video bit rate of each added program based on the bandwidth available. This is determined by measuring the transport stream null stuffing, if any, and the bit rate made available by any dropped programs. It then subtracts the audio bit rates that were specified by the added programs plus some stream headroom, and divides the remainder by the number of added programs. The result is automatically entered as the 'Video Bit Rate'. Each individual video bit rate may be changed at this point but do not allow the aggregate bit rate to exceed the 'Total Available Bit Rate' specified in the display under the 'PID Display Tree'. This is not service affecting.

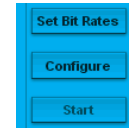


Figure 10-12: Set Bit Rates Buttons

10.7.4 Configure Button

This control saves the specified settings for the added programs to the DigiVu multiplexer. This is not service affecting.

10.7.5 Start - Control

This reads the settings saved with the 'Configure' control and applies the settings to the multiplexer.



NOTE: Clicking 'Start' is a service affecting operation

10.8 PID Display Tree

The 'PID Display Tree' is an MPEG stream analyzer display of the incoming programs detected in the received QAM transport stream PAT and PMT tables. See Figure 10-9 for an example of the PID tree display. Only programs listed in the transport stream tables will be displayed. This display makes selecting and dropping the correct program easier. Clicking on the + signs opens the stream parameters for closer inspection of individual PIDs and detected bit rates. Bit rates are read over a short period of time and are a snap shot of the stream and are valid only at the time of analysis; if they subsequently change the display is not updated.

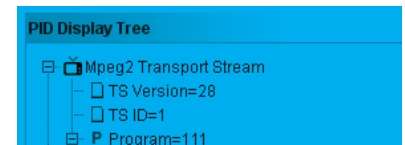


Figure 10-14: PID Display Tree Section

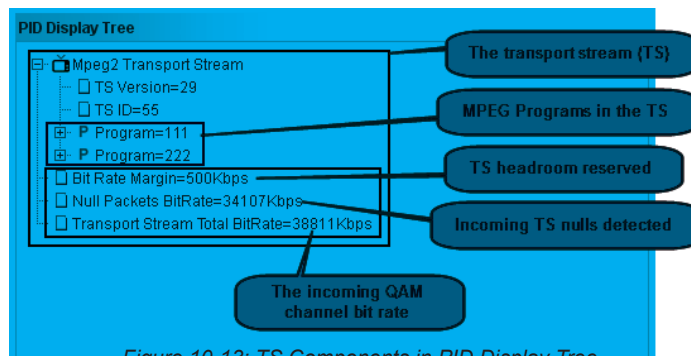


Figure 10-13: TS Components in PID Display Tree

10.8.1 MPEG-2 Transport Stream Components

The MPEG-2 Transport Stream displayed in the PID Display Tree is the QAM transport stream as demodulated by the demod card. It comprises the following components described next.

10.8.2 TS Version:

Each time the stream analyzer function is used, this number increments. It does not relate to anything about the stream itself.

10.8.3 TS ID:

This is the ID number assigned to the transport stream at its origin. This would be assigned to the stream multiplex before being modulated to the source QAM channel.

10.8.4 Bit Rate Margin

This is the margin or headroom detected in the incoming stream. This allows some small change in the aggregate bit rate of all of the TS programs without exceeding the QAM channel maximum bit rate.

10.8.5 Null Packets Bit Rate

The transport stream may not contain all MPEG stream data. If the analyzer detects null stuffing, it displays the data rate of the nulls here.

10.8.6 Transport Stream Total Bitrate

This is the bit rate of the QAM channel. In the case illustrated above, a QAM-B 256 QAM channel with a data rate of 38811 kbps.

10.8.7 Program Components

Each program listed in the stream PAT and PMT tables will be displayed along with their assigned MPEG program number. Each program is further broken down into its components:

10.8.8 PMT Table

The table that announces the PID assigned to each individual elementary stream; the Audio and Video streams. The PMT table is contained within its own data stream with a PID assigned

- PMT PID
The PID assigned to the PMT table. This cannot be changed.
- PMT Bit rate
The bit rate of the PMT table. Information only.

10.8.9 ES Type=13818-2 Video

The stream analyzer will determine the video stream type and display it here. In this example the stream is detected as 13818-2 Video. The number 13818-2 is the standard that defines MPEG-2 video. If your system carries different video, this will reflect the video detected. ES means Elementary Stream. Each program stream is comprised of one or more elementary streams.

- ES PID
The PID assigned to the Video Elementary Stream.
- ES Bit Rate
The bit rate of the Video Elementary Stream in kbps. In the illustrations, the actual bit rate displayed is the total of the payload data rate specified by the standard plus header packets

10.8.10 ES Type=ATSC_AC_3 Audio

The stream analyzer will determine the audio stream type and display it here. In the example illustrated the stream is detected as AC-3 Audio. If your system carries different audio, such as MPEG-1, the analyzer will reflect the audio stream type detected. ES means Elementary Stream. Each program is comprised of one or more elementary streams.

- ES PID
The PID assigned to the Audio Elementary Stream.
- ES Bit Rate
The bit rate of the Audio Elementary Stream in kbps. In the illustrations, the actual bit rate displayed is the total of the payload data rate specified by the standard plus header packets.

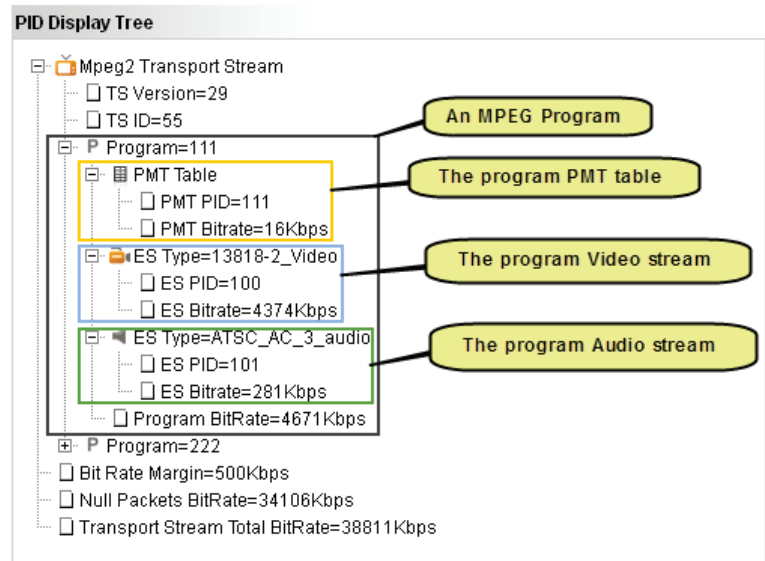


Figure 10-15: Showing Program Components in PID Display Tree

IP OUTPUT TAB

11. IP Output Tab

This chapter is about the configuration of the Gigabit Ethernet (GbE) card shown in Figure 11-1. The GbE option supports transmission by multicast or unicast of the multiplex created by the encoders. The DigiVu platform can simultaneously create a QAM and IP output with programming duplicated on both. In this case the IP output will be a single multiplex of the created programs, an MPTS. If the DigiVu is configured for IP output only, then SPTS multiplexes may be created for each program. In IP output only mode the user can select either SPTS or MPTS transmission, but not a mixture of both. See “11.13 Stream Settings” on page 11-8 to activate the SPTS feature.



FYI: Activation of the ‘IP Output’ tab requires that an IP Card be installed. If there is one installed check in the “Encoder Settings Tab” on page 6-1 to see that the IP Card is detected. The ‘IP Output’ tab must also be activated on the ‘Mux’ tab. See “7. Mux Tab” on page 7-1.



FYI: In this guide, reference to DigiVu infers DigiVu 3RU, DigiVu CD 3RU and DigiVu Mini 1RU unless the model is specifically stated. Reference to DVIS is synonymous with DigiVu as these products run on the same firmware.

11.1 Chapter Contents

- “Enabling the IP Output Tab”
- “Support for VLAN Tagging”
- “Gigabit Ethernet Card Fundamentals”
- “Quick Guide to the Gigabit Ethernet Card”
- “IP Output Configuration”
- “VLANS Settings”
- “GbE Port Numbering”
- “Two VLANs Automatically Created”
- “Stream Settings”

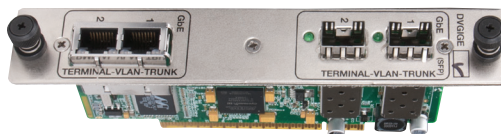


Figure 11-1: GbE Output Module

11.2 Enabling the IP Output Tab



NOTE: The Ethernet card is supported in slots 2(DigiVu Mini) and 5(DigiVu and DigiVu CD) only.

If the GbE card has just been inserted and the GUI IP Output tab is greyed out, the Ethernet functionality must first be

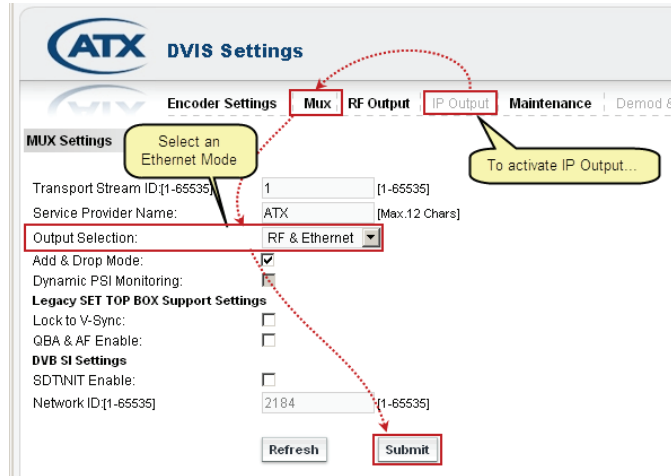


Figure 11-2: Activate the IP Output Tab

activated. That is done on the 'Mux' tab; see "Mux Settings" on page 12-1. The procedure is shown in Figure 11-2. The DigiVu can produce Ethernet only or RF only outputs or both simultaneously; features that are also activated on the 'Mux' tab.

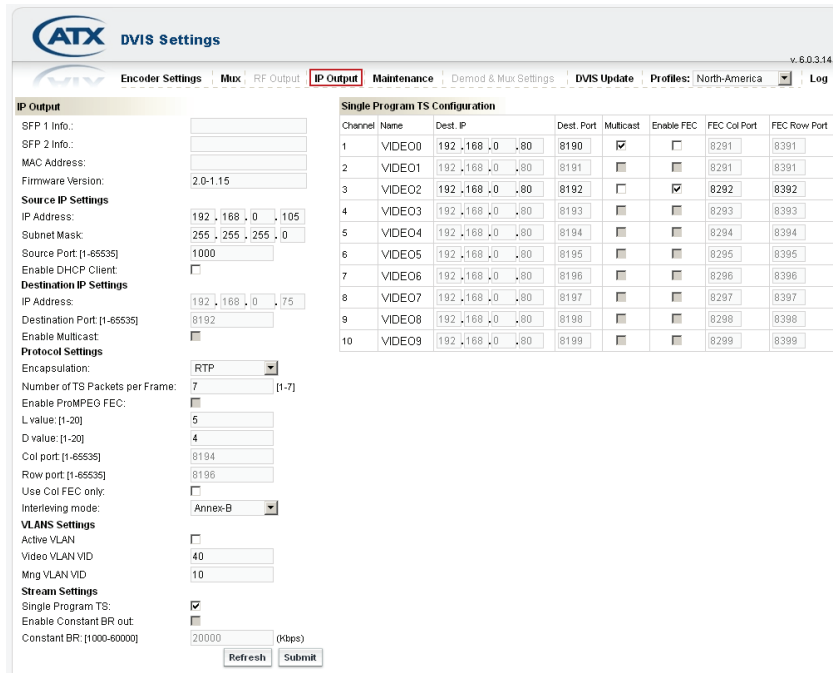


Figure 11-3: IP Output Tab

11.3 Support for VLAN Tagging

The Ethernet card supports the automatic creation of two VLANs or Virtual Local Area Networks. This feature may be used to allow both routing the streaming of the output video and access to the GUI on two separate virtual networks as if there were two separately wired physical networks installed. In VLAN tagging, the broadcast domain is extended across the VLAN as if the devices in the group were all locally connected together. VLANs also extend the DHCP server requests across the same virtual network if DHCP is used to assign network addresses. In this way the GUI and streaming IP output may be assigned addresses independently from two separate pools or DHCP servers.

Without the use of VLANs, the GUI port may be connected to any of the GbE ports since the four GbE ports are configured as an IP switch, and any other GbE port may be connected to a local switch or access network such as a cable modem. In this manner a single path to the central headend may be used to carry both management and streaming video. The disadvantage of this method is that at the central headend consolidation switch, and depending on the type of switch, the streams may all appear on the destination device port such that a management computer may have streaming video from many DigiVu devices routed to it and conversely, the video receiving device may experience undesired management traffic.

By using VLANs, the video and management access streams, while arriving together, are separated at the destination switch into two distinct VLAN groups, each routed to a specific physical port defined by the VLAN. In this way all streaming video will be routed to the video receiving device, like a CherryPicker and the management access will be routed to the management computer(s). In this way only traffic intended for a receiving device will receive it. Since broadcast domains are extended over VLANs, all of the features of a broadcast domain are extended across the VLAN as well. See “[VLANS Settings](#)” on page 11-6 for specific details on this.

11.4 Gigabit Ethernet Card Fundamentals

11.4.1 SFP Support

The card supports two SFP modules (Small Form-Factor Pluggable) allowing single mode and multi-mode optical modules to interface to the GbE ports providing long range and secure interfaces to switches, routers and remote sites. Many types and manufacturers of SFP have been tested with good results but because of the vast offering of various SFP modules, it is not possible to test all of them. It remains up to the customer to verify that his SFP will work as expected.

11.4.2 Integrated Switch

The Gigabit Ethernet card integrates a GbE switch on board allowing the card to transmit simultaneously from up to 4 Ethernet ports; 2 copper RJ45 type ports and 2 SFP ports. SFP Modules must be purchased separately and so far, SFP modules that are incompatible have not been identified.

11.4.3 Protocol Support

The card supports DHCP, ICMP and ARP protocols as well as VLAN tagging. Before unicast transmission is started the card will first attempt to find the destination MAC address of the receiving side (when using unicast transmission) using ARP protocol. When the MAC address is found, transmission begins.

11.5 Quick Guide to the Gigabit Ethernet Card

If more information is required, see the detailed configuration descriptions following this quick guide.

1. Insert the Gigabit Ethernet card into slot 2 (DigiVu Mini) or 5 (DigiVu and DigiVu CD).
2. Open the 'Mux' tab and change the 'Output Selection' to either 'Ethernet Only' or to 'RF & Ethernet'.
3. Verify insertion and detection of the card on the 'Encoder Settings' tab – Card is detected as 'ETH1000'.
4. Open the IP Output tab and configure the Gigabit Ethernet Card with the following parameters as required:
 - Source IP Settings:
 - IP Address – The IP address of the Ethernet Card physical interface. Only one required for all 4 ports.
 - Subnet Mask – Identifies the subnet of the IP address specified above.
 - Source Port – Source port that will be specified when sending the TS data.
 - Enable DHCP Client – When selected, the Gigabit Ethernet Card will obtain a dynamic IP address (Source address) from a DHCP server and use this address for all Ethernet transmissions. A source port is not obtained from a DHCP server.
 - Destination IP Settings:
 - IP Address – The IP address that the Gigabit Ethernet Card transmits to.
 - Destination Port – The virtual destination port that is used for the TS data transmission.

- Enable Multicast – When selected, the Gigabit Ethernet Card will not attempt to find the destination IP address with ARP before transmission begins.
 - Protocol Settings:
 - Encapsulation – The encapsulation type that is used for the TS data transmission.
 - Number of TS Packets Per Frame – how many TS packets will be used in each Ethernet frame.
 - Enable Pro-MPEG FEC – enables the Pro MPEG forward error correction.
 - L Value, D Value – FEC Parameters.
 - Col Port – port number to use for transmission of FEC column data.
 - Row Port – port number to use for transmission of FEC row data.
 - Use Col FEC Only – use only Column FEC for the FEC.
 - Interleaving Mode – which interleaving mode to use for the FEC.
5. Click the **Submit** button.

11.6 IP Output Configuration

11.6.1 SFP 1 Info.

This is where the GUI will report if there is an SFP installed in SFP Slot 1. If there is no SFP it will say “Not Connected”.

SFP 1 Info.:	
SFP 2 Info.:	
MAC Address:	
Firmware Version:	2.0-1.15

Figure 11-4: IP Output Configuration

11.6.2 SFP 2 Info.

This is where the GUI will report if there is an SFP installed in SFP Slot 2. If there is no SFP it will say “Not Connected”.

11.6.3 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 GbE Card on the network to a DHCP server and to other computers. It is hard coded into the GbE Card at the factory and cannot be changed. This is the Mac Address for all four output ports, collectively, of the Gigabit Ethernet Card. If DHCP is used, this is the address to use for a reservation in the DHCP server for the video output device.

11.6.4 Firmware Version:

The firmware version installed on the Gigabit Ethernet card - for information only.

11.7 Source IP Settings

This section sets the physical IP address configuration for the SFP and Electrical Ethernet ports. All ports are replicated in an integrated switch, so there is only one IP address assigned to all of the physical ports collectively.

Source IP Settings				
IP Address:	192	168	0	105
Subnet Mask:	255	255	255	0
Source Port: [1-65535]	1000			
Enable DHCP Client:	<input type="checkbox"/>			

Figure 11-5: Source IP Settings Section

11.7.1 IP Address:

A static IP address may be specified here that is assigned to the Ethernet ports, collectively. Only one address may be assigned and this will be the source address that is reported in the resulting unicast or multicast streams.

11.7.2 Subnet Mask:

If a static IP address is assigned, enter the subnet mask for the entered network address.

11.7.3 Source Port: [1-65535]

This is the source port number that may be assigned to the Ethernet ports, collectively. Only one port may be assigned and this will be the **Source Port** that is reported in the resulting unicast or multicast streams.

11.7.4 Enable DHCP Client:

The Ethernet card supports DHCP Client Mode on the Gigabit ports separately from the unit’s management port. This option enables the DHCP client on the Gigabit Card Ethernet ports only. Only a single address will be requested from the DHCP server. The source port will still need to be assigned even if DHCP client is enabled since DHCP will not assign a port number. When DHCP client is enabled, the IP address that is reported in the greyed out IP address and subnet settings above do not reflect the actual IP address obtained. If that information is required, the DHCP server should be consulted, looking for the address that was assigned to the MAC address shown above.

11.8 Destination IP Settings

This section sets the IP address that is assigned to the outgoing IP stream when working in MPTS mode. There will be only one multiplex created and only one address may be assigned. This address will be used across all of the output Ethernet ports as the four ports are on an integrated switch.




Figure 11-6: Destination IP Settings

11.8.1 IP Address:

This is the IP address that is assigned to the output unicast or multicast MPTS stream and will be reported in the resulting MPTS stream as the Destination IP Address.

11.8.2 Destination Port: [1-65535]

This is the port number that is assigned to the output unicast or multicast MPTS stream and will be reported in the resulting MPTS stream as the Destination Port Number.

11.8.3 Enable Multicast:

This check box enables the use of multicast as an output. The Ethernet card does not use the actual assigned destination IP address range to determine if unicast or multicast transmission is desired. In other words, merely assigning a multicast address in the range 224.0.0.0 through 239.255.255.255 will not cause the output to be multicast.

- If this check box is unticked
ARP protocol will be used to find and establish a unicast connection to the computer or receiving device with the destination IP address. The stream will be unicast to the destination address specified. If the address of the destination specified is not found, the transmission will default to multicast.
- If this box is ticked
The Ethernet interface will not need to find the destination IP address before beginning transmission. It will assume that there are multiple receivers of the stream. The stream will be multicast to the address specified.

11.9 Protocol Settings

In this section, some configuration settings for the IP protocol may be changed.

11.9.1 Encapsulation:

Defines the type of IP encapsulation to be used for IP transmission.

- UDP
User Datagram Protocol is a connectionless protocol (as opposed to TCP) and is commonly used to send audio and video over Ethernet. There is no ordering of the data enforced and data arriving late is ignored.

- RTP

Some routers support RTP (Real-time Data Protocol) and will pass data sent under this protocol with priority.

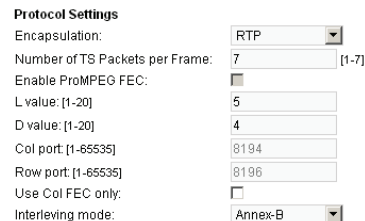


Figure 11-7: Protocol Settings Section

11.9.2 Number of TS Packets per Frame:

Here the number of MPEG packets that are encapsulated into each IP packet may be defined. The default value is seven, which is also the maximum number. Encapsulating more MPEG packets in each IP packet reduces overhead but there is more MPEG data loss with each lost IP packet. Assigning less MPEG packets per IP packet increases overhead but results in a possibly more robust stream. Seven is most commonly used.

11.9.3 Enable Pro-MPEG FEC:

The DigiVu supports transmission with Pro-MPEG FEC protocol defined by Pro-MPEG COP#3. For more information on configuring Pro-MPEG FEC see the [Pro-MPEG FEC documentation](http://www.Pro-MPEG.org/) at <http://www.Pro-MPEG.org/>

11.9.4 L value: [1-20]

Pro-MPEG FEC Values

11.9.5 D value: [1-20]

Pro-MPEG FEC Values

11.9.6 Col port: [1-65535]

Port number to use for transmission of FEC column data.

11.9.7 Row port: [1-65535]

Port number to use for transmission of FEC row data.

11.9.8 Use Col FEC only:

Use only Column FEC for the Pro-MPEG FEC

11.9.9 Interleaving Mode:

Configures which interleaving mode to use for FEC

11.10 VLANS Settings

The GbE output card supports automatic creation of 2 VLANs when this feature is activated. See “11.3 Support for VLAN Tagging” on page 11-3 for further information about the VLAN Tagging option. Figure 11-9 shows the implementation of VLANs to assist in understanding and configuring the feature.

VLANS Settings	
Active VLAN	<input type="checkbox"/>
Video VLAN VID	40
Mng VLAN VID	10

Figure 11-8: VLANS Settings Section

11.10.1 Active VLAN

This activates the use of VLANs for transport stream transmission and accessing the GUI over the Gigabit Ethernet card ports.

11.10.2 Video VLAN VID

This is the Video VLAN ID

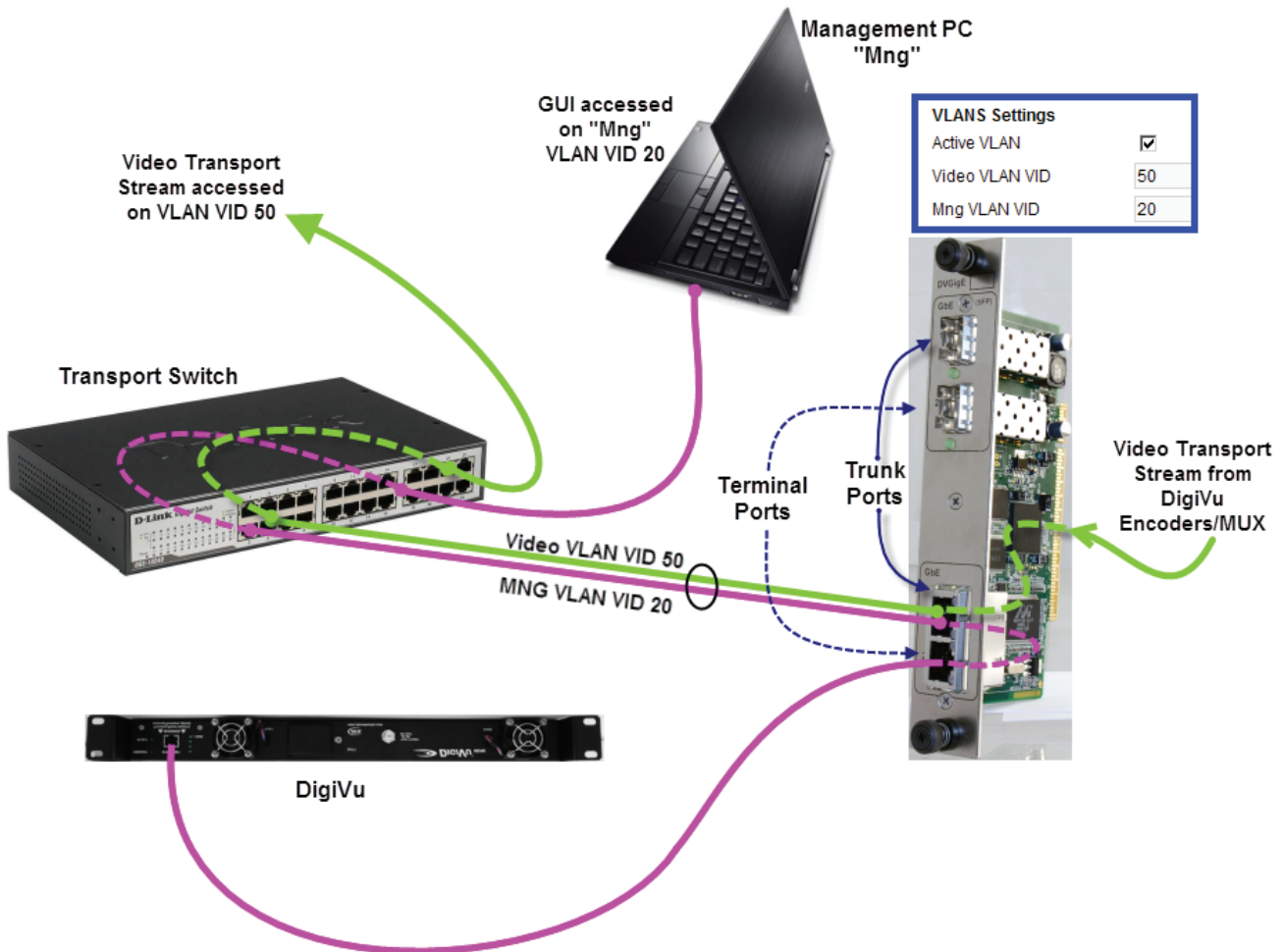


Figure 11-9: VLAN Setup and Operation

11.10.3 Mng VLAN VID

This is the GUI VLAN ID

11.11 GbE Port Numbering

Physical ports on the Gigabit Ethernet card each have a number assigned for purposes of configuring VLANs as shown in



Figure 11-10: GbE Card Port Numbering

Figure 11-9 and described here:

1. Trunk Ports are both labeled #1 on the front panel.
Trunk ports will receive/transmit only tagged Ethernet packets which will be routed to their destination according to their assigned VID. There is one each electrical and SFP (Small Form-Factor Pluggable) port which are identical functionally and interchangeable depending on the type of interface required.
2. Terminal Ports are both labeled #2 on the front panel.
Terminal ports are connected to a device (such as the management port) that does not support VLAN tagging but needs to be routed on a management VLAN. There is one each electrical and SFP port but the RJ45 port is typically used in this case.

11.12 Two VLANs Automatically Created

Enabling the VLAN option automatically creates 2 VLANs over which the streaming video and the management of the DigiVu device may be accessed over a single physical connection but kept separate at the destination switch.

1. Video LAN
The GbE video multiplex exists on this virtual LAN (it is connected to the switch through an internal port and the card connector). This means that the MUX output is connected to an internal switch in the Gige Card. MUX output then flows to both physical trunk ports; the ports labeled #1. These ports reside on the internal GbE switch so either may be used as the trunk output.
2. Management LAN
Both physical Ports #2 of the GbE card are configured on this Virtual LAN. Either of these ports connect to the Management Ethernet port through a straight wired Cat5e cable however typically only the RJ45 electrical port is used. These ports are mutually exclusive so only one or the other may be used.

11.12.1 Quick Guide to VLAN Setup

- a) Set up a remote external switch with VLAN support and VLANs enabled for the GUI and streaming video.
- b) On the DigiVu 'IP Output' tab select the **Active VLAN** check box.
- c) Set the VLAN VID for Mng (GUI) and Video VLAN VID to the same VIDs used on the external switch.
- d) Click **Submit**.
- e) Connect the management IP port (from DigiVu Mini front panel or the DiguVu 3RU back panel) to RJ45 GbE Port 2 on the GbE card using a short straight through Cat5e cable.
- f) Connect one of the trunk ports labeled #1 (depends whether you use copper or SFP) to a Trunk port on the external switch.
- g) Connect a Management PC to the 'Mng' management port at the remote external switch and login to the GUI making sure both the PC and DigiVu reside on the same subnet.

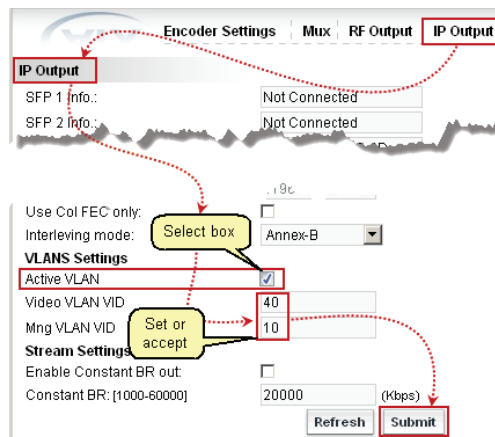


Figure 11-11: Activate and Configure VLAN

- h) Connect another PC or the receiving device to the defined video port at the external switch and set it up to capture the video over IP as was configured at the 'IP Output' tab.

11.13 Stream Settings

11.13.1 Single Program TS:

This feature allows the creation of Single Program Transport Streams (SPTS) from the IP output rather than all the programs being distributed in a single MPTS multiplex with a single IP address. This is available to be selected only when the Ethernet output alone is active. This setting is on the Mux tab. See "Output Selection:" on page 7-2 to select "Ethernet Only". The configuration of the addresses, defining the address as multicast and enabling FEC is done in a table available on this IP Output tab. Only encoders that have been activated on the Encoder Settings tab will be available to configure. For information on that see "Encoder Settings Tab" on page 6-1.

Stream Settings
 Single Program TS:
 Enable Constant BR out:
 Constant BR: [1000-60000] (Kbps)

Figure 11-12: Stream Settings Section

The screenshot shows the ATX DVIS Settings interface. The top navigation bar includes 'Encoder Settings', 'MUX', 'RF Output', and 'IP Output'. The 'MUX' tab is active, showing 'MUX Settings' with 'Output Selection' set to 'Ethernet Only'. A yellow callout bubble points to this selection with the text 'SPTS Supported on "Ethernet Only"'. Below this, there are 'Refresh' and 'Submit' buttons. An 'Info.' dialog box is open, displaying 'DVIS Configuration In Progress .. Please Wait.'. The bottom screenshot shows the 'IP Output' tab. It features 'IP Output' settings (SFP 1/2 Info, MAC Address, Firmware Version) and 'Source IP Settings' (IP Address: 192.168.0.105). The 'Stream Settings' section has 'Single Program TS' checked. A table titled 'Single Program TS Configuration' is shown with the following data:

Channel Name	Dest. IP	Dest. Port	Multicast	Enable FEC	FEC Col Port	FEC Row Port
1 VIDEO0	192.168.0.80	8180	<input checked="" type="checkbox"/>	<input type="checkbox"/>	8291	8391
2 VIDEO1	192.168.0.80	8191	<input type="checkbox"/>	<input type="checkbox"/>	8291	8391
3 VIDEO2	192.168.0.80	8192	<input checked="" type="checkbox"/>	<input type="checkbox"/>	8292	8392
4 VIDEO3	192.168.0.80	8193	<input type="checkbox"/>	<input type="checkbox"/>	8293	8393
5 VIDEO4	192.168.0.80	8194	<input type="checkbox"/>	<input type="checkbox"/>	8294	8394

Yellow callout bubbles point to 'Enable SPTS' and 'Configure SPTS' buttons. Another 'Info.' dialog box is open, displaying 'DVIS Configuration In Progress .. Please Wait.'.

Figure 11-13: Enable and Configure SPTS Feature

11.13.2 Enable Constant BR Out:

Configures the multiplexer to output a constant bit stream at a defined data rate without regard to the actual payload data rate. This may be defined if a STB or other receiving device requires a bit stream at a defined rate. If the payload is less than the number defined here, null packets will be used to stuff the IP data stream to the defined output rate.



NOTE: This only works in MPTS mode.

11.13.3 Constant BR: [1000-60000]

This is the CBR bit rate of the transport stream on the Ethernet network if a constant rate is desirable. Defining a bit rate higher than the payload will result in null stuffing of the transport stream to the bit rate specified here.



NOTE: *This only works in MPTS mode.*

11.14 Platform Control Buttons



Figure 11-14: Platform IP Control Buttons

11.14.1 Refresh Button

This control reads the stored settings and refreshes the page with the values. This also will read the card types installed and populate the display with the discovered types. This is useful when a card type has been changed or a new card is installed. This is not a service affecting operation.

11.14.2 Submit Button



NOTE: *This is a service affecting operation.*

This control applies all of the changes made on the 'IP Output' tab and makes the changes part of the working configuration of the DigiVu system. If changes have been made click Submit button before navigating away from the page, to avoid all changes being lost. This attribute may be used to throw away changes made if you change your mind.

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FIRMWARE UPGRADE & RECOVERY

12. Firmware Upgrade & Recovery

In this chapter we explain the firmware upgrade process and where to get firmware files. We also discuss the procedure for recovering to a previous firmware version or resetting the username & password if it is ever necessary.



FYI: In this guide, reference to DigiVu infers DigiVu 3RU, DigiVu CD 3RU and DigiVu Mini 1RU unless the model is specifically stated. Reference to DVIS is synonymous with DigiVu as these products run on the same firmware.

New system firmware for the DigiVu platforms is provided in an archive file format of .tgz in a zip container and will be made available on the ATX Networks support site for each model of the DigiVu family, see “Where to Obtain Firmware Files” on page 12-3 to obtain the firmware. The DigiVu family uses a common firmware and it technically does not matter which support site the firmware is obtained from. It is not necessary to un-compress the tgz package as the DigiVu has built-in facilities to accept the file in tgz format. The tgz file is provided from ATX Networks support site in a zip format, so it will be necessary to un-zip the file downloaded first. 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. If you require a program to unzip the file, an open source file archiver may be obtained for free at the <http://www.7-zip.org/download.html> site.

12.1 Chapter Contents

- “Types of Firmware Files”
- “Identifying Current Firmware Version”
- “Exporting a Configuration”
- “Where to Obtain Firmware Files”
- “Firmware Upgrade Process”
- “System Recovery Process”
- “Restore a Configuration Export”
- “Username & Password Reset Process”

12.2 Types of Firmware Files

A brief description of the files that may be found on the support web sites.

12.2.1 System Upgrade/Recovery File

This is a file that is used to bring the DigiVu up to the latest firmware revision and is referred to as a firmware upgrade. This file may be used even if the equipment has a very old version of firmware installed as it completely replaces all files on the DigiVu platform and works with any previously installed version. This file can also be used to reinstall the latest firmware revision on an already upgraded device if there is suspicion that the firmware might not be working as expected and this application of the same file would be referred to as a system recovery. This is the most commonly installed file type and is installed in the same manner regardless of the end requirement. The following attributes apply to this file type:

- Can be used to upgrade any firmware version or when existing version is unknown.
- Fully replaces existing firmware.
- Suitable only when unit is physically available (cannot be applied remotely).
- Used to recover network parameters, login credentials or after mis-configuration.
- IP parameters and login passwords are reset to factory default.
- Requires full re-configuration of all channel parameters.

12.2.2 Remote Upgrade

This file type may be applied to the equipment even if it is remotely located. This firmware may be installed over a limited range of previous firmware so check the support site for qualifying existing versions.

- Usable for minor firmware changes. Check the support site for qualifying existing versions.
- Suitable when the unit is remotely located.
- IP parameters and login credentials are not changed.

- Channel parameters are not changed.

12.2.3 Username and Password Reset File

It is possible to reset a lost username and password without losing the programmed configuration. A special file is available to reset the username and password back to factory defaults (username: atx, password: atx). This file must be requested from ATX Networks technical support.

12.3 Identifying Current Firmware Version

The currently installed firmware version is displayed in the DigiVu GUI under the 'Maintenance' tab, as shown in Figure 12-1.

12.4 Exporting a Configuration

The DigiVu 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 suggested to export the configuration prior to upgrading firmware but the exported settings may not be used to restore after a firmware upgrade since system settings may be incompatible between firmware versions. The settings file may only be restored to a DigiVu with the same version firmware as the unit from which it originates. Making this backup is not service affecting and it is recommended that the settings be exported and saved whenever the DigiVu system configuration changes. The settings file is exported from the 'Maintenance' tab. Figure 12-2 illustrates what to do.

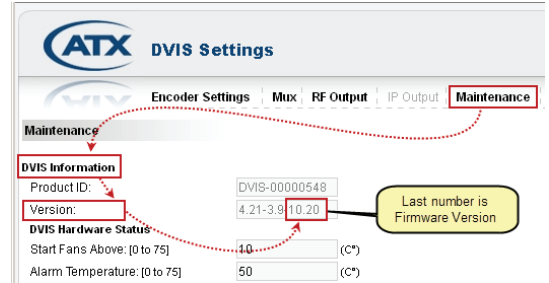


Figure 12-1: Identify the Current Firmware Version

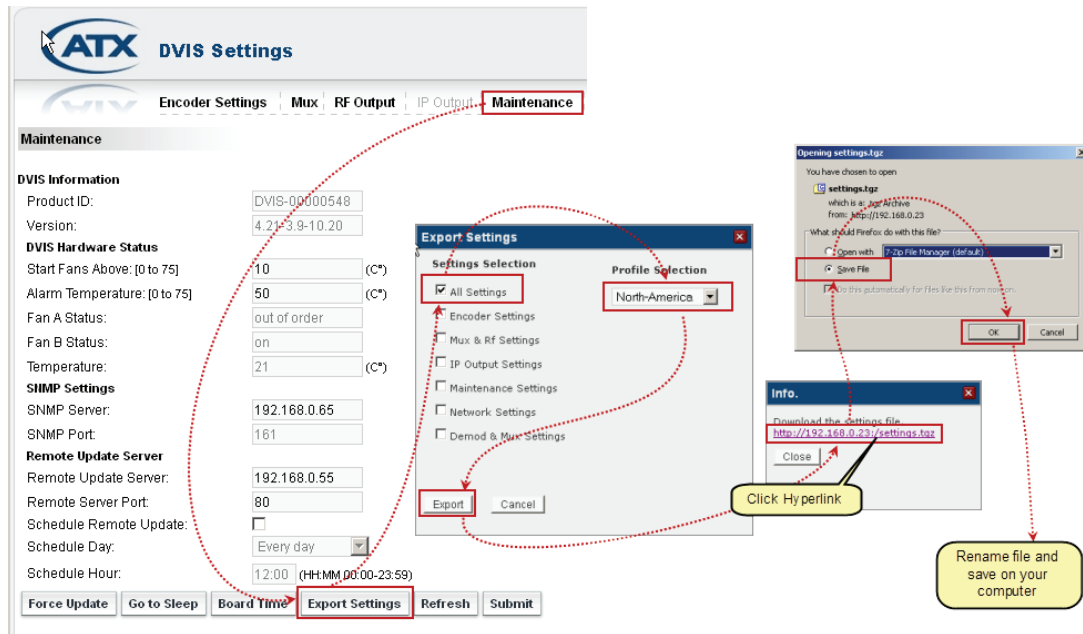


Figure 12-2: Export Your Configuration



NOTE: If a firmware upgrade is undertaken, it will not be possible to use an exported configuration made as a backup since features introduced in the newer firmware will render the backup from a previous firmware version incompatible. A backup taken will only be of use on a DigiVu with a firmware version the same as the version from which it is taken, ie. if the firmware is ever reverted back to the original version. **Only use exported configuration files on a DigiVu of identical firmware version.**

12.5 Where to Obtain Firmware Files

Firmware upgrade 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 obtained from ATX Networks Technical Support.

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 DigiVu, contact ATX Networks Digital Video Support.

12.6 Firmware Upgrade Process

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.



FYI: *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.*



NOTE: *With the exception of applying the remote upgrade file and password reset file, applying system upgrade files will cause the loss of programmed settings. Record the configuration so it may be re-programmed before applying a system upgrade/recovery file.*

12.6.1 Save Firmware File to Management Computer

Save the file obtained in a convenient location on the Management Computer. The upgrade file is named with the same name as the version of the upgrade although it may be contained in a zip wrapper. Extract the firmware file within the zip archive and save it in a convenient location on the Management Computer. This recovery file is in **.tgz** format and is itself an archive format. It should not be modified in any way or extracted further, though it may be renamed.

12.6.2 Direct Connect Management Computer to DigiVu®

If connecting to your DigiVu directly through a cable, set the computer that you will use for the upgrade to the same subnet as the DigiVu in order to access the GUI. For example, if the network address for the DigiVu is set to the factory default setting of 192.168.0.23 set the Management 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 DigiVu, see [“Connecting to the GUI” on page 5-2](#) for a tutorial on setting the IP address.

For connecting to your remote DigiVu through the Internet use the usual procedure for your situation. This setting cannot be specified here.

12.6.3 Upload Firmware

1. Select the 'DVIS Update' tab. The 'Update DVIS Version' page 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 DigiVu. See Figure 12-3.

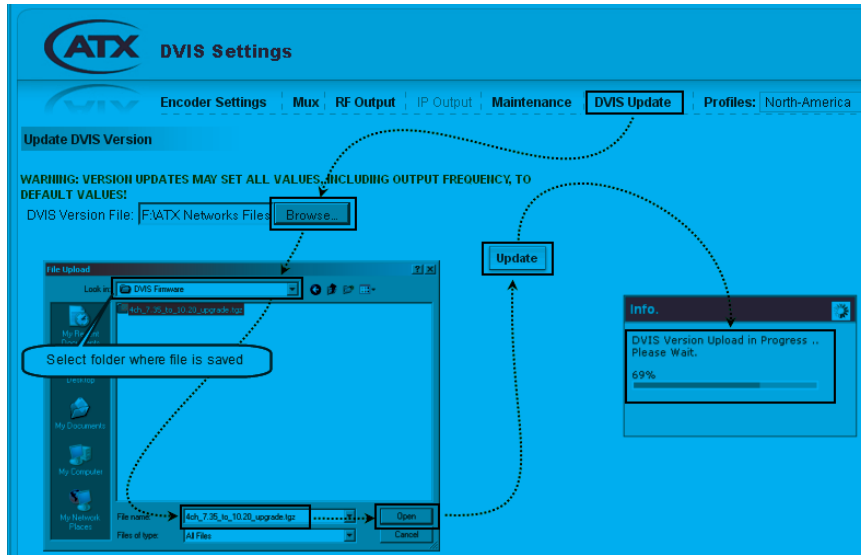


Figure 12-3: Upload Firmware

4. A progress bar indicates the percentage file upload completion (0 to 100%).
5. When file upload is complete the unit will present the 'Upload Done' page, shown in Figure 12-4.
6. When the upload has finished, file installation begins automatically. The amount of time required for the firmware file installation may vary depending on factors such as link speed and type and size of upgrade file.
7. Close the browser window.
8. When installation has completed, the unit reboots (indicated when the fans shut off for a few seconds and then restart).

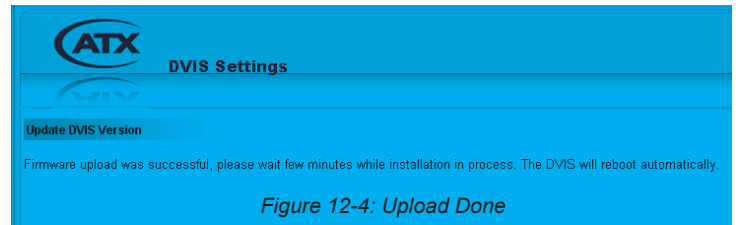


Figure 12-4: Upload Done

9. Wait 2 minutes after the fan restarts for the reboot to complete.
10. Open Internet Explorer and enter 'http://192.168.0.23/site' in the URL field. When the login screen appears, enter **atx** for both the Username and Password. The 'Encoder Settings' page appears.

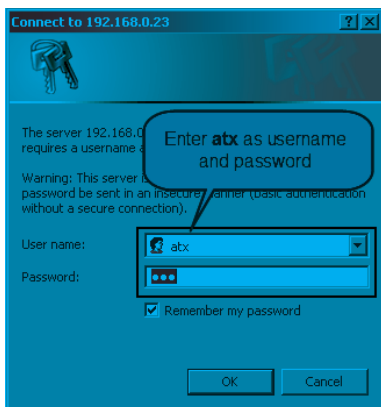


Figure 12-6: Login

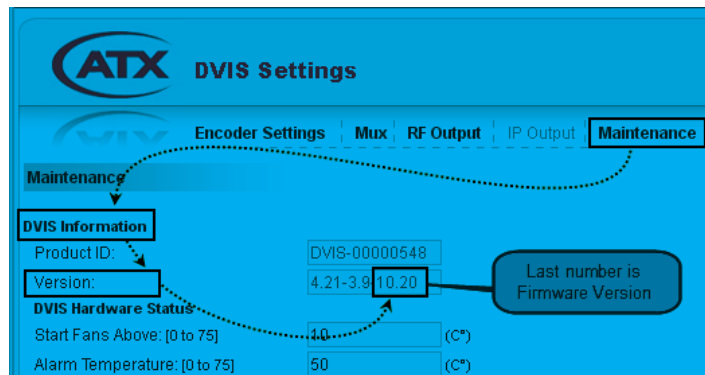


Figure 12-5: Check New Firmware Version

11. Select the 'Maintenance' tab and verify that 'Version Number' is the same as the number in the name of the firmware upgrade file.
12. If the installed firmware version agrees with the name of the file, the firmware upgrade is complete.

12.7 System Recovery Process



NOTE: Do not depress the 'RESET' button unless you have the appropriate firmware file available. This will cause your DigiVu to wait indefinitely until the firmware is uploaded. There is no cancel button for recovery mode and once recovery mode has begun, the appropriate firmware file has to be uploaded to complete the recovery process.

12.7.1 Introduction



NOTE: All programmed settings will be lost. Record the configuration so it may be re-programmed before applying the system recovery file.

System recovery is intended to restore the DigiVu system in case it is suspected that internal files have become corrupted and that the GUI has become unresponsive. The Recovery Mode/Status is reached by pressing and holding, for several seconds, the 'Reset Button' until the fans stop running. The button is located on the front panel of the DigiVu Mini or the back panel of the DigiVu and DigiVu CD beside the Management IP port and is covered from the factory by a small adhesive dot to prevent inadvertent use. One fan will start running again while the other will remain idle. In recovery mode, the IP address setting of the Management IP port always reverts to 192.168.0.23 regardless of previously configured IP settings before recovery. Now the appropriate firmware file has to be uploaded, typically the latest firmware version upgrade file.



NOTE: By default the DigiVu IP address will be reset 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 between 192.168.0.24 and 192.168.0.255.

12.7.2 Obtain and Save Firmware Upgrade

Obtain the appropriate recovery firmware file and save it in a known location on the Management Computer. This file is in .zip format and its name contains the version code for this upgrade.

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

12.7.3 Set Management PC Subnet

You will need to connect to your DigiVu directly through a cable, so set the computer that you will use for the upgrade to the same subnet as the DigiVu in order to access the GUI. The network address for the DigiVu unit will be reset 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 DigiVu, see ["Connecting to the GUI" on page 5-2](#) for a tutorial on setting the IP address.

12.7.4 Reset the DigiVu®



NOTE: Do not depress the 'RESET' button unless you have the appropriate firmware file available. This will cause your DigiVu to wait indefinitely until the firmware is uploaded. There is no cancel button for recovery mode and once recovery mode has begun, the appropriate firmware file has to be uploaded to complete the recovery process.

Using a pen or similar small pointed object, press and hold the 'RESET' button on the front panel of the DigiVu Mini or the back panel of the DigiVu or DigiVu CD for several seconds to place the unit in RESET/RECOVERY mode. You can recognise the condition when both fans stop operating, then after a few seconds they restart (this assumes that the fans were running). Wait about 1 minute more for the DigiVu to restart.



NOTE: In Recovery Mode, the DigiVu Management IP port reverts to 192.168.0.23.

12.7.5 Connect to GUI

1. Open an Internet Explorer browser window 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, see Figure 12-7.
3. Upon validation of the login and password, the 'DVIS Recovery' page appears, see Figure 12-8.

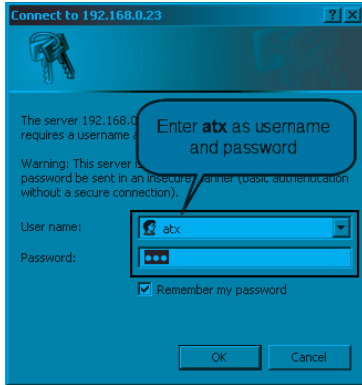


Figure 12-7: Login

12.7.6 Upload Firmware

1. Click **Browse**, see figure Figure 12-8, navigate to the location of the saved files and select the 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 Upload Done page appears in the web browser as shown in Figure 12-9 and file installation on the DigiVu 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, see Figure 12-10. The 'DVIS Encoder Settings' page appears.
6. Click **Maintenance** and verify that 'Version' is the same as the name of the upgrade file, see Figure 12-11.

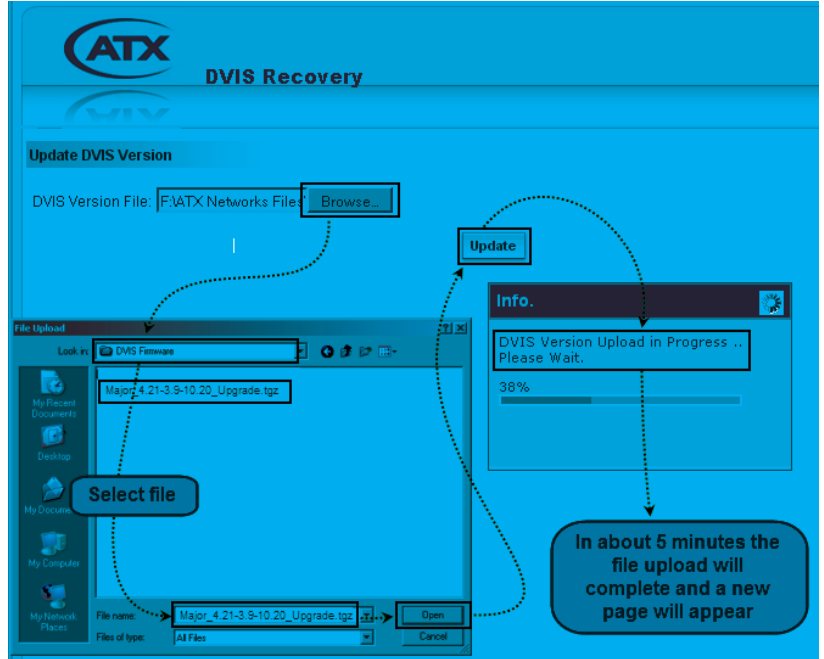


Figure 12-8: Restore System Firmware

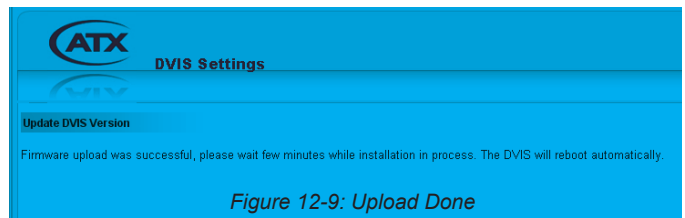


Figure 12-9: Upload Done

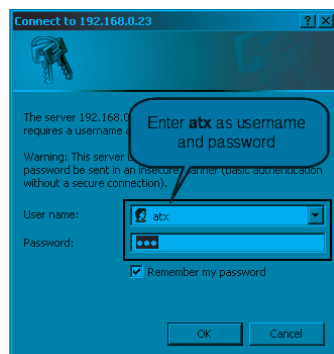


Figure 12-10: Login

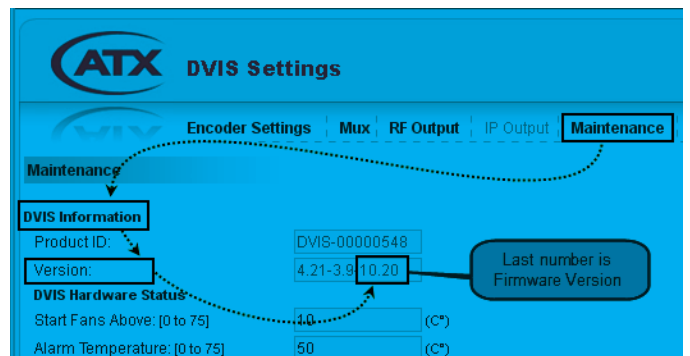


Figure 12-11: Check Firmware Version

12.8 Restore a Configuration Export

If you saved an exported file or are performing a mass deployment of a number of DigiVu with identical configurations and installed firmware, 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 DigiVu suggested when exported.



NOTE: Only install exported configuration files on DigiVu units with identical firmware version as the unit from which the configuration file originated.

Restore an exported file in the same manner as a firmware upgrade from the 'DVIS Update' tab. See Figure 12-12.

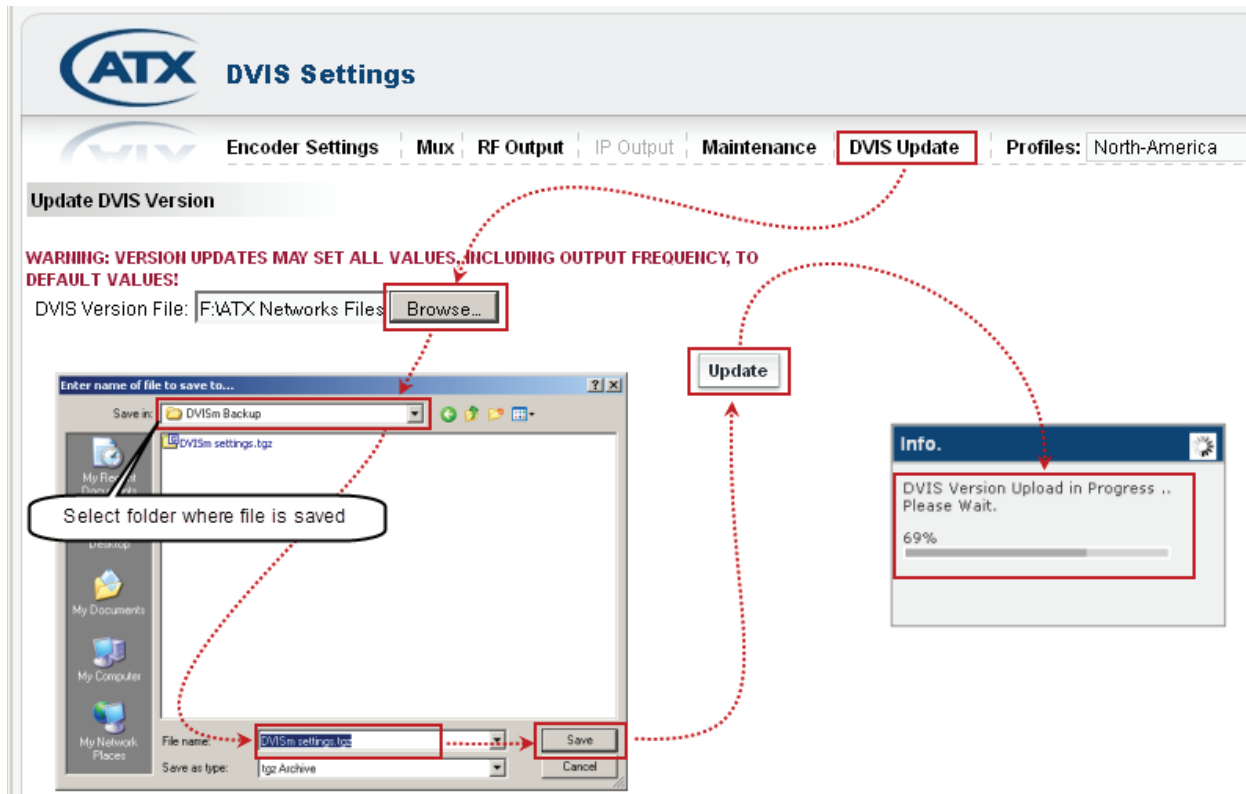


Figure 12-12: Restore an Exported Configuration

1. Select the 'DVIS Update' tab. The 'Update DVIS Version' page 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 DigiVu. A progress bar indicates the percentage file upload completion (0 to 100%).
4. When file upload is complete the DigiVu will present the 'Upload Done' page, as shown in Figure 12-13.
5. When the upload has finished, file installation begins automatically.
6. Close the browser.
7. When file installation has completed (which can take about 1 minute), the unit reboots (indicated when the fans shut off for a few seconds and then restart).
8. Wait 2 minutes after the fan restarts for the reboot to complete.
9. Open Internet Explorer and enter one of the following in the browser URL field as appropriate:
 - a) Enter **http://192.168.0.23/site** if the exported IP address was set to the default IP address setting.

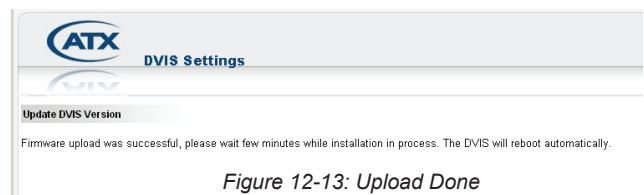


Figure 12-13: Upload Done

- b) Enter the IP address of the DigiVu that was saved in the exported file.
 - c) Enter the original IP address of the target DigiVu receiving the file if 'Network Settings' was not part of the restoration file.
10. When the login screen appears, enter one of the following in the browser URL field as appropriate:
- a) Enter **atx** for both the username and password if the default DigiVu settings had been restored.
 - b) Enter the username and password of the DigiVu that was saved in the exported file.
 - c) Enter the original username and password of the target DigiVu receiving the file if 'Network Settings' was not part of the restoration file.
11. The DVIS 'Encoder Settings' page appears.
12. Configuration settings defined by the **settings.tgz** file have been restored.

12.9 Username & Password Reset Process



NOTE: Do not depress the 'RESET' button unless you have the appropriate firmware file available. This will cause your DigiVu to wait indefinitely until the firmware is uploaded. There is no cancel button for RESET mode and once begun, the appropriate firmware file has to be uploaded to complete the process.



NOTE: The password reset file may be obtained from ATX Networks technical support group, see "Contact ATX Networks" on page 15-1 for phone numbers and email address.

12.9.1 Introduction

The Username/Password reset process is intended to restore the DigiVu factory username and passwords in case it is has been changed then lost or forgotten. After this process, the login credentials will be returned to factory settings but all other settings will be unchanged. The password recovery mode is reached by pressing and holding, the 'RESET' button for several seconds, until the fans stop running. The button is located on the front panel of the DigiVu Mini or the back panel of the DigiVu and DigiVu CD beside the Management IP port and is covered from the factory by a small adhesive dot to prevent inadvertent use. One fan will start running again while the other will remain idle. In reset mode, the IP address setting of the Management IP port always reverts to 192.168.0.23 regardless of previously configured IP settings before reset, then using the factory default IP address, the appropriate firmware file is uploaded.



NOTE: By default the DigiVu IP address will be reset 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 between 192.168.0.24 and 192.168.0.255.

12.9.2 Obtain and Save Password Reset File

Obtain the appropriate recovery firmware file from ATX Networks and save it in a known location on the Management Computer. This file is in **.zip** format and the version you are given will depend on the firmware version installed on your equipment.

Extract the firmware file within the zip archive and save it in a known location. This file is in **.tgz** format and is itself an archive format. It should not be modified in any way or extracted further.

12.9.3 Set Management PC Subnet

During this process, the network address for the DigiVu unit will be reset to the factory default setting of 192.168.0.23 so you will need to connect to your DigiVu directly through a crossover Ethernet cable. Set the computer that you will use for the recovery to the same subnet as the DigiVu in order to access the GUI, configuring the computer to an address between 192.168.0.24 and 192.168.0.255. If you do not know how to change the Management Computer subnet, see "Connecting to the GUI" on page 12-5 for a tutorial.

12.9.4 Reset the DigiVu®



NOTE: Do not depress the 'RESET' button unless you have the Password Reset firmware file available. This will cause your DigiVu to wait indefinitely until the firmware is uploaded. There is no cancel button for recovery mode and once recovery mode has begun, the appropriate firmware file has to be uploaded to complete the process.

Using a pen or similar small pointed object, press and hold the 'RESET' on the front panel of the DigiVu Mini or the back panel of the DigiVu or DigiVu CD for approximately 5 to 10 seconds to place the unit in RESET mode. You can recognise the condition when both fans stop operating, then after a few seconds they restart (this assumes that the fans were running before reset). Wait about 1 minute for the DigiVu to restart.



NOTE: In Reset Mode, the DigiVu Management IP port reverts to 192.168.0.23.

12.9.5 Connect to GUI

1. Open an Internet Explorer browser window 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, see Figure 12-14.
3. Upon validation of the login and password, the 'DVIS Recovery' page appears.

12.9.6 Upload Password Reset Firmware

1. Click **Browse**, navigate to the location of the saved files and select the file. The file name and location appear in the selection box, see Figure 12-15.

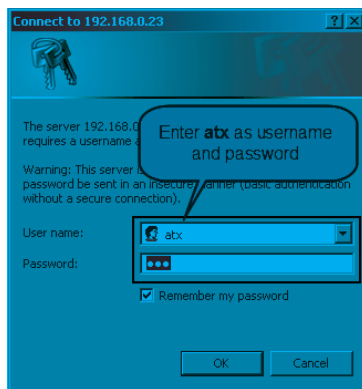


Figure 12-14: Login

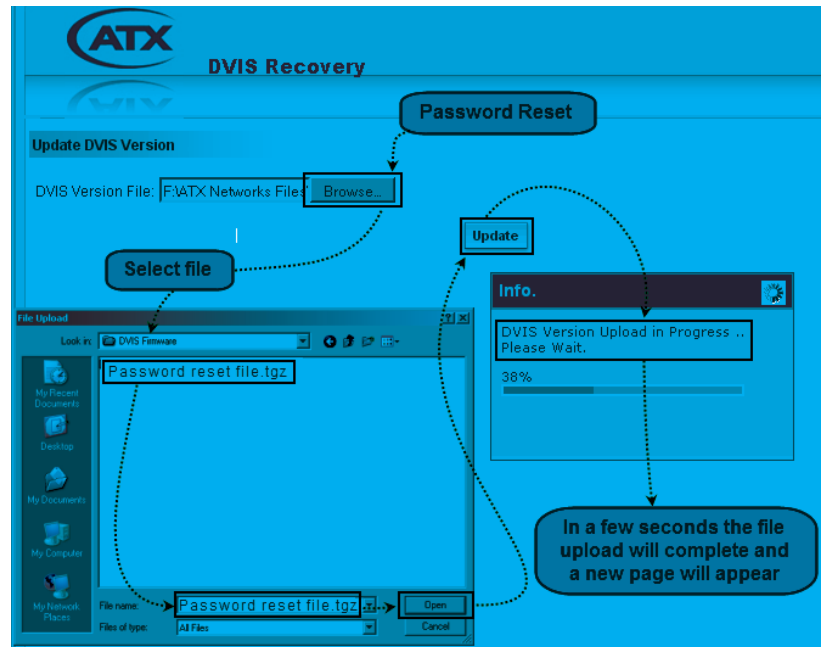


Figure 12-15: Upload Password Reset Firmware

2. Click **Update** to begin uploading the file to the unit. A progress bar indicates the percentage completion (0 to 100%) but it happens very fast so it is easy to miss. When the upload is finished, the 'Upload Done' page appears in the web browser as shown in Figure 12-16 and file installation begins automatically.
3. Close the web browser.
4. When installation has completed (which can take several minutes), the unit reboots (indicated

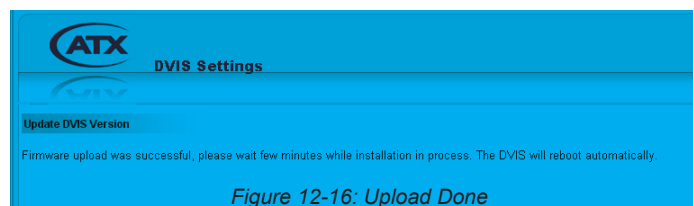


Figure 12-16: Upload Done

when the fans shut off for a few seconds and then restart).

- Wait an additional 90 seconds, reopen the web browser and enter **http://192.168.0.23/site** or the original IP address in the address field. If the IP address was other than the factory set address, the original will be restored. When the login screen appears, enter **atx** for both the Username and Password, see Figure 12-17. The 'DVIS Encoder Settings' page appears, see Figure 12-18.



Figure 12-17: Login

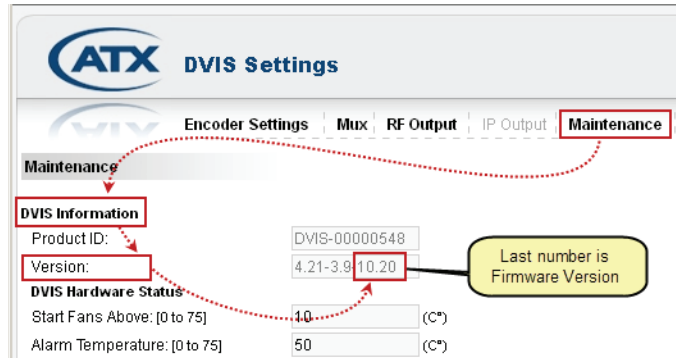


Figure 12-18: Check Firmware Version

- Click **Maintenance** from the menu bar and verify that 'Version' has not changed.
- Change the username and password to whatever is required by your system. For details on doing that, see ["9.8.1 Change Username & Password"](#) on page 9-7.

FIELD REPLACEMENTS

13. Field Replacements



FYI: Reference to DigiVu infers both DigiVu 3RU, DigiVu CD 3RU and DigiVu Mini 1RU unless specifically stated.

13.1 Field Replacement of Realtime Clock Battery

All DigiVu models have a realtime backup battery access door on the front panel. This battery maintains continuity of the clock on the DigiVu 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. The DigiVu is shown but the procedure is the same for DigiVu Mini.

13.1.1 Remove Battery

1. Remove the battery cover with a #1 Phillips screwdriver.
2. Gently remove the battery from its retainer clips.

13.1.2 Replace Battery

1. Replace the battery with a 3 volt CR 2032 or exact replacement type.
2. Snap the battery into the retainer clips.
3. Replace the door and retain with the Phillips screw.

13.1.3 Dispose of Battery

Recycle or dispose of batteries in accordance with the battery manufacturer's instructions and local/national disposal and recycling regulations. If you are located in North America, please call 1-800-8-BATTERY or go to the website at www.call2recycle.org for information on recycling or disposing of your used battery.

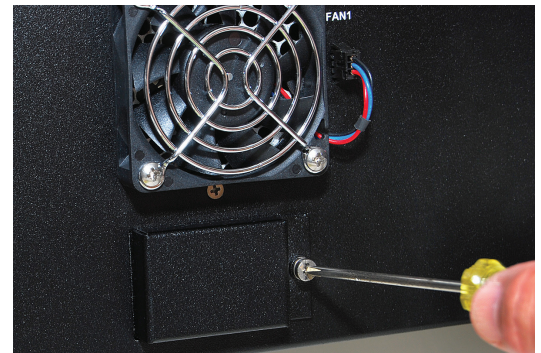


Figure 13-1: Remove Battery Cover

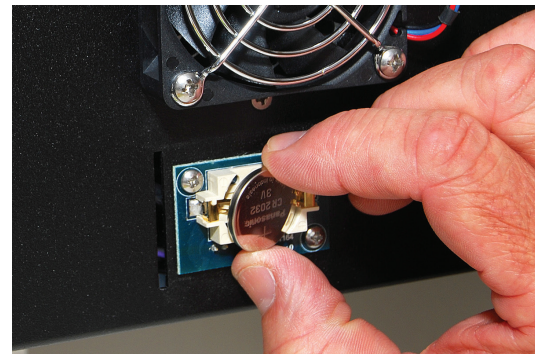


Figure 13-2: Remove Battery

13.2 Field Replacement of Cooling Fans

13.2.1 Remove Fan

1. Disconnect the fan connector by gently pulling on the wires. The connector is retained only by friction clips.
2. Using a #2 Phillips screwdriver, remove the four screws holding the fan in place.
3. Remove the finger guard for reuse.

13.2.2 Replace Fan

1. Hold the fan in position with the finger guard installed so the fan rotates freely (do not flip it inside out), insert the four retaining screws and tighten using the #2 Phillips screwdriver.
2. Insert the connector into the adjacent receptacle and seat the connector fully into the receptacle.

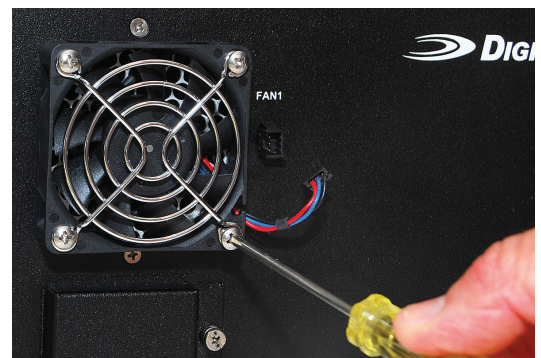


Figure 13-3: Disconnect and Remove Cooling Fan

13.3 Field Replacement of Plug-in Cards

All plug-in cards are installed in a slot on the rear panel which are numbered 1 through 5 plus AUX (6th slot) on the DigiVu and DigiVu CD, see Figure 2-13, and numbered 1 & 2 on the DigiVu Mini, see Figure 2-14. Be careful to align the circuit board of the card with the internal card guides when re-inserting the cards.



FYI: See the card support table in “2.7.1 Card Slot Support” on page 2-8 for guidance in installing cards into compatible slots.

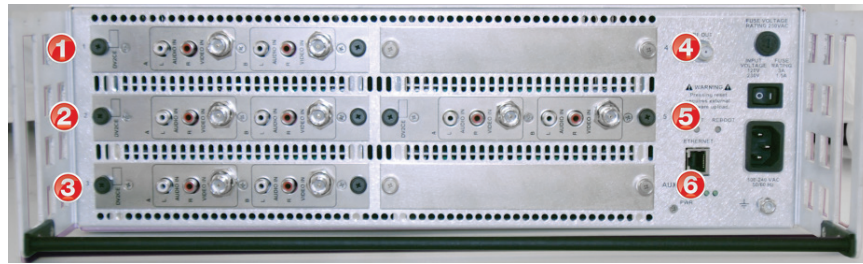


Figure 13-4: DigiVu® 3RU Rear Panel



Figure 13-5: DigiVu® Mini 1RU Rear Panel



NOTE: The 6th card slot in the DigiVu 3RU platforms is for power only to cards which do not require management, as this slot does not show up in the GUI. Currently, this slot is exclusively used for the 2-Way A/V Splitter card but the A/V Splitter card may be installed in any slot if required.

13.3.1 Card Removal

1. Disconnect any cables attached to the card.
2. Loosen the thumbscrews at the left and right end of the card.
3. Gently slide the card out of the slot. See Figure 13-6.

13.3.2 Card Insertion

1. Align the card edges with the internal metal guides inside 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. See Figure 13-7.
3. Tighten the thumbscrews at the left and right end of the card.
4. Re-attach any cables that were removed.

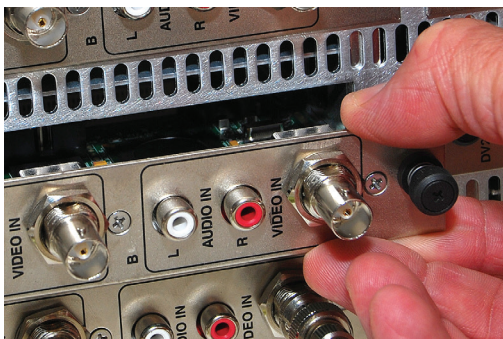


Figure 13-6: Release Screws on Both Card Ends and Gently Pull Card Out

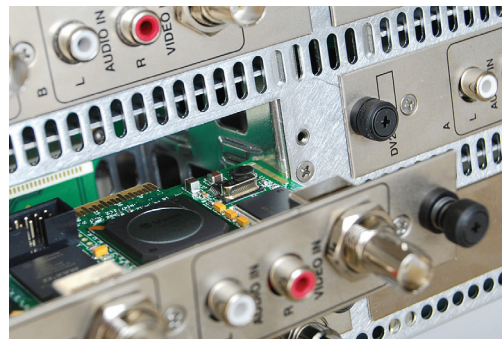


Figure 13-7: To Replace - Align Card with Internal Metal Guides

TROUBLESHOOTING

14. Troubleshooting

This chapter lists the error codes that may be given by the DigiVu device under some circumstances. These codes may be used to better understand the problem that was encountered and to help the ATX support engineer to assist in troubleshooting the equipment problem.

14.1 Error Codes

The following chart displays the Error Codes that may appear in the GUI web browser.

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	Cannot access shared memory
506	Configuration	Cannot open configuration file
507	TS Analyze	NO input TS in demodulator
508	TS Analyze	Cannot find PAT (PID 0)
509	TS Analyze	Cannot find TS information
		HTTP/1.0 200_001 - System Is Configured For Add & Drop But There Is No Demod Card Present

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SERVICE & SUPPORT

15. Service & Support

15.1 Contact ATX Networks

Please contact ATX Technical Support for assistance with any ATX products. Please contact ATX 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 ATX.

TECHNICAL SUPPORT

Tel: 289.204.7800 – press 1
Toll-Free: 866.YOUR.ATX (866.968.7289) USA & Canada only
Email: support@atx.com

SALES ASSISTANCE

Tel: 289.204.7800 – press 2
Toll-Free: 866.YOUR.ATX (866.968.7289) USA & Canada only
Email: insidesales@atx.com

FOR HELP WITH AN EXISTING ORDER

Tel: 289.204.7800 – press 3
Toll-Free: 866.YOUR.ATX (866.968.7289) USA & Canada only
Email: orders@atx.com
Web: www.atx.com

15.2 Warranty Information

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



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