IQEDGE

3G/HD/SD-SDI MULTI-CHANNEL IP PROCESSING SYSTEM 25/40GBE

User Manual

www.grassvalley.com

FCC Compliance

In order to comply with FCC/CFR47: Part 15 regulations, it is necessary to use high-quality, triple-screened Media or Monitor cable assemblies with integrated ferrite suppression at both ends.

Patent Information

This product may be protected by one or more patents.

For further information, please visit: www.grassvalley.com/patents/

Copyright and Trademark Notice

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Information in this document is subject to change without notice and does not represent a commitment on the part of Grass Valley.

Warranty information is available from the Legal Terms and Conditions section of Grass Valley's website.
(See www.grassvalley.com.)

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Important Safety Information

This section provides important safety guidelines for operators and service personnel. Specific warnings and cautions appear throughout the manual where they apply. Please read and follow this important information, especially those instructions related to the risk of electric shock or injury to persons.

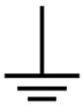
Symbols and Their Meanings

Indicates that dangerous high voltage is present within the equipment enclosure that may be of sufficient magnitude to constitute a risk of electric shock.

Indicates that the user, operator or service technician should refer to the product manuals for important operating, maintenance, or service instructions.

This is a prompt to note the fuse rating when replacing fuses. The fuse referenced in the text must be replaced with one having the ratings indicated.

Identifies a protective grounding terminal which must be connected to earth ground prior to making any other equipment connections.



Identifies an external protective grounding terminal which may be connected to earth ground as a supplement to an internal grounding terminal.

Indicates that static sensitive components are present, which may be damaged by electrostatic discharge. Use anti-static procedures, equipment and surfaces during servicing.

Indicates that the equipment has more than one power supply cord, and that all power supply cords must be disconnected before servicing to avoid electric shock.

The presence of this symbol in or on Grass Valley equipment means that it has been tested and certified as complying with applicable Underwriters Laboratory (UL) regulations and recommendations for USA.

The presence of this symbol in or on Grass Valley equipment means that it has been tested and certified as complying with applicable Canadian Standard Association (CSA) regulations and recommendations for USA/ Canada.

The presence of this symbol in or on Grass Valley equipment means that it has been tested and certified as complying with applicable Underwriters Laboratory (UL) regulations and recommendations for USA/Canada.

The presence of this symbol in or on Grass Valley equipment means that it has been tested and certified as complying with applicable Intertek Testing Services regulations and recommendations for USA/Canada.

The presence of this symbol in or on Grass Valley product means that it complies with all applicable European Union (CE) directives.

The presence of this symbol in or on Grass Valley product means that it complies with safety of laser product applicable standards.

Warnings

A warning indicates a possible hazard to personnel, which may cause injury or death. Observe the following general warnings when using or working on this equipment:

•Appropriately listed/certified mains supply power cords must be used for the connection of the equipment to the rated mains voltage.

- This product relies on the building's installation for short-circuit (over-current) protection. Ensure that a fuse or circuit breaker for the rated mains voltage is used on the phase conductors.
- Any instructions in this manual that require opening the equipment cover or enclosure are for use by qualified service personnel only.
- Do not operate the equipment in wet or damp conditions.
- This equipment is grounded through the grounding conductor of the power cords. To avoid electrical shock, plug the power cords into a properly wired receptacle before connecting the equipment inputs or outputs.
- Route power cords and other cables so they are not likely to be damaged. Properly support heavy cable bundles to avoid connector damage.
- Disconnect power before cleaning the equipment. Do not use liquid or aerosol cleaners; use only a damp cloth.
- Dangerous voltages may exist at several points in this equipment. To avoid injury, do not touch exposed connections and components while power is on.
- High leakage current may be present. Earth connection of product is essential before connecting power.
- Prior to servicing, remove jewelry such as rings, watches, and other metallic objects.
- To avoid fire hazard, use only the fuse type and rating specified in the service instructions for this product, or on the equipment.
- To avoid explosion, do not operate this equipment in an explosive atmosphere.
- Use proper lift points. Do not use door latches to lift or move equipment.
- Avoid mechanical hazards. Allow all rotating devices to come to a stop before servicing.
- Have qualified service personnel perform safety checks after any service.

Cautions

A caution indicates a possible hazard to equipment that could result in equipment damage. Observe the following cautions when operating or working on this equipment:

- This equipment is meant to be installed in a restricted access location.
- When installing this equipment, do not attach the power cord to building surfaces.
- Products that have no on/off switch, and use an external power supply must be installed in proximity to a main power outlet that is easily accessible.
- Use the correct voltage setting. If this product lacks auto-ranging power supplies, before applying power ensure that each power supply is set to match the power source.
- Provide proper ventilation. To prevent product overheating, provide equipment ventilation in accordance with the installation instructions.

- Do not operate with suspected equipment failure. If you suspect product damage or equipment failure, have the equipment inspected by qualified service personnel.
- To reduce the risk of electric shock, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so. Refer all servicing to qualified service personnel.
- This unit may have more than one power supply cord. Disconnect all power supply cords before servicing to avoid electric shock.
- Follow static precautions at all times when handling this equipment. Servicing should be done in a static-free environment.
- To reduce the risk of electric shock, plug each power supply cord into separate branch circuits employing separate service grounds.

Electrostatic Discharge (ESD) Protection

Electrostatic discharge occurs when electronic components are improperly handled and can result in intermittent failure or complete damage adversely affecting an electrical circuit. When you remove and replace any card from a frame always follow ESD-prevention procedures:

- Ensure that the frame is electrically connected to earth ground through the power cord or any other means if available.
- Wear an ESD wrist strap ensuring that it makes good skin contact. Connect the grounding clip to an *unpainted surface* of the chassis frame to safely ground unwanted ESD voltages. If no wrist strap is available, ground yourself by touching the *unpainted* metal part of the chassis.
- For safety, periodically check the resistance value of the antistatic strap, which should be between 1 and 10 megohms.
- When temporarily storing a card make sure it is placed in an ESD bag.
- Cards in an earth grounded metal frame or casing do not require any special ESD protection.

Battery Handling

This product may include a backup battery. There is a danger of explosion if the battery is replaced incorrectly. Replace the battery only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions. Before disposing of your Grass Valley equipment, please review the *Disposal and Recycling Information* at:

http://www.grassvalley.com/assets/media/5692/Take-Back_Instructions.pdf

Cautions for LCD and TFT Displays

Excessive usage may harm your vision. Rest for 10 minutes for every 30 minutes of usage.

If the LCD or TFT glass is broken, handle glass fragments with care when disposing of them. If any fluid leaks out of a damaged glass cell, be careful not to get the liquid crystal fluid in your mouth or skin. If the liquid crystal touches your skin or clothes, wash it off immediately using soap and water. Never swallow the fluid. The toxicity is extremely low but caution should be exercised at all times.

Mesures de sécurité et avis importants

La présente section fournit des consignes de sécurité importantes pour les opérateurs et le personnel de service. Des avertissements ou mises en garde spécifiques figurent dans le manuel, dans les sections où ils s'appliquent. Prenez le temps de bien lire les consignes et assurez-vous de les respecter, en particulier celles qui sont destinées à prévenir les décharges électriques ou les blessures.

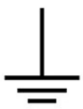
Signification des symboles utilisés

Signale la présence d'une tension élevée et dangereuse dans le boîtier de l'équipement ; cette tension peut être suffisante pour constituer un risque de décharge électrique.

Avertit l'utilisateur, l'opérateur ou le technicien de maintenance que des instructions importantes relatives à l'utilisation et à l'entretien se trouvent dans la documentation accompagnant l'équipement.

Invite l'utilisateur, l'opérateur ou le technicien de maintenance à prendre note du calibre du fusible lors du remplacement de ce dernier. Le fusible auquel il est fait référence dans le texte doit être remplacé par un fusible du même calibre.

Identifie une borne de mise à la terre de protection. Il faut relier cette borne à la terre avant d'effectuer toute autre connexion à l'équipement.



Identifie une borne de mise à la terre externe qui peut être connectée en tant que borne de mise à la terre supplémentaire.

Signale la présence de composants sensibles à l'électricité statique et qui sont susceptibles d'être endommagés par une décharge électrostatique. Utilisez des procédures, des équipements et des surfaces antistatiques durant les interventions d'entretien.

Le symbole ci-contre signifie que l'appareil comporte plus d'un cordon d'alimentation et qu'il faut débrancher tous les cordons d'alimentation avant toute opération d'entretien, afin de prévenir les chocs électriques.

La marque UL certifie que l'appareil visé a été testé par Underwriters Laboratory (UL) et reconnu conforme aux exigences applicables en matière de sécurité électrique en vigueur au Canada et aux États-Unis.

La marque C-CSA-US certifie que l'appareil visé a été testé par l'Association canadienne de normalisation (CSA) et reconnu conforme aux exigences applicables en matière de sécurité électrique en vigueur au Canada et aux États-Unis.

La marque C-UL-US certifie que l'appareil visé a été testé par Underwriters Laboratory (UL) et reconnu conforme aux exigences applicables en matière de sécurité électrique en vigueur au Canada et aux États-Unis.

La marque ETL Listed d'Intertek pour le marché Nord-Américain certifie que l'appareil visé a été testé par Intertek et reconnu conforme aux exigences applicables en matière de sécurité électrique en vigueur au Canada et aux États-Unis.

Le marquage CE indique que l'appareil visé est conforme aux exigences essentielles des directives applicables de l'Union européenne en matière de sécurité électrique, de compatibilité électromagnétique et de conformité environnementale.

Le symbole ci-contre sur un appareil Grass Valley ou à l'intérieur de l'appareil indique qu'il est conforme aux normes applicables en matière de sécurité laser.

Avertissements

Les avertissements signalent des conditions ou des pratiques susceptibles d'occasionner des blessures graves, voire fatales. Veuillez vous familiariser avec les avertissements d'ordre général ci-dessous :

- Un cordon d'alimentation dûment homologué doit être utilisé pour connecter l'appareil à une tension de secteur de 120 V CA ou 240 V CA.
- La protection de ce produit contre les courts-circuits (surintensités) dépend de l'installation électrique du bâtiment. Assurez-vous qu'un fusible ou un disjoncteur pour 120 V CA ou 240 V CA est utilisé sur les conducteurs de phase.
- Dans le présent manuel, toutes les instructions qui nécessitent d'ouvrir le couvercle de l'équipement sont destinées exclusivement au personnel technique qualifié.
- N'utilisez pas cet appareil dans un environnement humide.
- Cet équipement est mis à la terre par le conducteur de mise à la terre des cordons d'alimentation. Pour éviter les chocs électriques, branchez les cordons d'alimentation sur une prise correctement câblée avant de brancher les entrées et sorties de l'équipement.
- Acheminez les cordons d'alimentation et autres câbles de façon à ce qu'ils ne risquent pas d'être endommagés. Supportez correctement les enroulements de câbles afin de ne pas endommager les connecteurs.
- Coupez l'alimentation avant de nettoyer l'équipement. Ne pas utiliser de nettoyants liquides ou en aérosol. Utilisez uniquement un chiffon humide.
- Des tensions dangereuses peuvent exister en plusieurs points dans cet équipement. Pour éviter toute blessure, ne touchez pas aux connexions ou aux composants exposés lorsque l'appareil est sous tension.
- Avant de procéder à toute opération d'entretien ou de dépannage, enlevez tous vos bijoux (notamment vos bagues, votre montre et autres objets métalliques).
- Pour éviter tout risque d'incendie, utilisez uniquement les fusibles du type et du calibre indiqués sur l'équipement ou dans la documentation qui l'accompagne.
- Ne pas utiliser cet appareil dans une atmosphère explosive.
- Présence possible de courants de fuite. Un raccordement à la masse est indispensable avant la mise sous tension.

- Après tout travail d'entretien ou de réparation, faites effectuer des contrôles de sécurité par le personnel technique qualifié.

Mises en garde

Les mises en garde signalent des conditions ou des pratiques susceptibles d'endommager l'équipement. Veuillez vous familiariser avec les mises en garde ci-dessous :

- L'appareil est conçu pour être installé dans un endroit à accès restreint.
- Au moment d'installer l'équipement, ne fixez pas les cordons d'alimentation aux surfaces intérieures de l'édifice.
- Les produits qui n'ont pas d'interrupteur marche-arrêt et qui disposent d'une source d'alimentation externe doivent être installés à proximité d'une prise de courant facile d'accès.
- Si l'équipement n'est pas pourvu d'un modules d'alimentation auto-adaptables, vérifiez la configuration de chacun des modules d'alimentation avant de les mettre sous tension.
- Assurez une ventilation adéquate. Pour éviter toute surchauffe du produit, assurez une ventilation de l'équipement conformément aux instructions d'installation.
- N'utilisez pas l'équipement si vous suspectez un dysfonctionnement du produit. Faites-le inspecter par un technicien qualifié.
- Pour réduire le risque de choc électrique, n'effectuez pas de réparations autres que celles qui sont décrites dans le présent manuel, sauf si vous êtes qualifié pour le faire. Confiez les réparations à un technicien qualifié. La maintenance doit se réaliser dans un milieu libre d'électricité statique.
- L'appareil peut comporter plus d'un cordon d'alimentation. Afin de prévenir les chocs électriques, débrancher tous les cordons d'alimentation avant toute opération d'entretien.
- Veillez à toujours prendre les mesures de protection antistatique appropriées quand vous manipulez l'équipement.
- Pour réduire le risque de choc électrique, branchez chaque cordon d'alimentation dans des circuits de dérivation distincts utilisant des zones de service distinctes.

Protection contre les décharges électrostatiques (DES)

Une décharge électrostatique peut se produire lorsque des composants électroniques ne sont pas manipulés de manière adéquate, ce qui peut entraîner des défaillances intermittentes ou endommager irrémédiablement un circuit électrique. Au moment de remplacer une carte dans un châssis, prenez toujours les mesures de protection antistatique appropriées :

- Assurez-vous que le châssis est relié électriquement à la terre par le cordon d'alimentation ou tout autre moyen disponible.
- Portez un bracelet antistatique et assurez-vous qu'il est bien en contact avec la peau. Connectez la pince de masse à une *surface non peinte* du châssis pour détourner à la terre toute tension électrostatique indésirable. En l'absence de bracelet antistatique, déchargez l'électricité statique de votre corps en touchant une surface métallique *non peinte* du châssis.
- Pour plus de sécurité, vérifiez périodiquement la valeur de résistance du bracelet antistatique. Elle doit se situer entre 1 et 10 mégohms.
- Si vous devez mettre une carte de côté, assurez-vous de la ranger dans un sac protecteur antistatique.
- Les cartes qui sont reliées à un châssis ou boîtier métallique mis à la terre ne nécessitent pas de protection antistatique spéciale.

Manipulation de la pile

Ce produit peut inclure une pile de sauvegarde. Il y a un risque d'explosion si la pile est remplacée de manière incorrecte. Remplacez la pile uniquement par un modèle identique ou équivalent recommandé par le fabricant. Disposez des piles usagées conformément aux instructions du fabricant. Avant de vous séparer de votre équipement Grass Valley, veuillez consulter les *informations de mise au rebut et de recyclage* à:

http://www.grassvalley.com/assets/media/5692/Take-Back_Instructions.pdf

Précautions pour les écrans LCD et TFT

Regarder l'écran pendant une trop longue période de temps peut nuire à votre vision. Prenez une pause de 10 minutes, après 30 minutes d'utilisation.

Si l'écran LCD ou TFT est brisé, manipulez les fragments de verre avec précaution au moment de vous en débarrasser. veillez à ce que le cristal liquide n'entre pas en contact avec la peau ou la bouche. En cas de contact avec la peau ou les vêtements, laver immédiatement à l'eau savonneuse. Ne jamais ingérer le liquide. La toxicité est extrêmement faible, mais la prudence demeure de mise en tout temps.

Environmental Information

European (CE) WEEE directive.

This symbol on the product(s) means that at the end of life disposal it should not be mixed with general waste.

Visit www.grassvalley.com for recycling information.

Grass Valley believes this environmental information to be correct but cannot guarantee its completeness or accuracy since it is based on data received from sources outside our company. All specifications are subject to change without notice.

If you have questions about Grass Valley environmental and social involvement (WEEE, RoHS, REACH, etc.), please contact us at environment@grassvalley.com.

Lithium Batteries

Battery Warning

CAUTION
This equipment contains a lithium battery.
There is a danger of explosion if this is replaced incorrectly.
Replace only with the same or equivalent type.
Dispose of used batteries according to the manufacturer's instructions.
Batteries **shall only** be replaced by trained service technicians.

Your Grass Valley equipment usually comes with at least one button battery located on the main printed circuit board. The batteries are used for backup and should not need to be replaced during the lifetime of the equipment.

Battery Disposal

Before disposing of your Grass Valley equipment, please remove the battery as follows:

1. Make sure the AC adapter / power Cord is unplugged from the power outlet.
2. Remove the protective cover from your equipment.
3. Gently remove the battery from its holder using a blunt instrument for leverage such as a screwdriver if necessary. In some cases the battery will need to be desoldered from the PCB.
4. Dispose of the battery and equipment according to your local environmental laws and guidelines.

WARNING

- Be careful not to short-circuit the battery by adhering to the appropriate safe handling practices.
- Do not dispose of batteries in a fire as they may explode.
- Batteries may explode if damaged or overheated.
- Do not dismantle, open or shred batteries.
- In the event of a battery leak, do not allow battery liquid to come in contact with skin or eyes.
- Seek medical help immediately in case of ingestion, inhalation, skin or eye contact, or suspected exposure to the contents of an opened battery.

Laser Safety - Fiber Output SFP and QSFP Modules Warning

LASER SAFETY

The average optical output power does not exceed 0 dBm (1mW) under normal operating conditions. Unused optical outputs should be covered to prevent direct exposure to the laser beam.

Even though the power of these lasers is low, the beam should be treated with caution and common sense because it is intense and concentrated. Laser radiation can cause irreversible and permanent damage of eyesight. Please read the following guidelines carefully:

- Make sure that a fiber is connected to the board's fiber outputs before power is applied. If a fiber cable (e.g. patchcord) is already connected to an output, make sure that the cable's other end is connected, too, before powering up the board.
- **Do not** look in the end of a fiber to see if light is coming out. The laser wavelengths being used are totally invisible to the human eye and can cause permanent damage. Always use optical instrumentation, such as an optical power meter, to verify light output.

Mains Supply Voltage

Before connecting the equipment, observe the safety warnings section and ensure that the local mains supply is within the rating stated on the rear of the equipment.

Safety and EMC Standards

This equipment complies with the following standards:

Safety Standards

CE

Information Technology Equipment - Safety Part 1

EN60950-1: 2006

Safety of Information Technology Equipment Including Electrical Business Equipment.

UL1419 (4th Edition)

Standard for Safety – Professional Video and Audio equipment (UL file number E193966)

EMC Standards

This unit conforms to the following standards:

EN55032:2015 (Class A)

Electromagnetic Compatibility of multimedia equipment - Emission requirements

EN61000-3-2:2014 (Class A)

Electromagnetic Compatibility - Limits for harmonic current emissions

EN61000-3-3:2013

Electromagnetic Compatibility - Limits of voltage changes, voltage fluctuations and flicker

EN55103-2:2009 (Environment E2)

Electromagnetic Compatibility, Product family standard for audio, video, audio-visual and entertainment lighting control apparatus for professional use. Part 2. Immunity

WARNING
This equipment is compliant with Class A of CISPR 32. In a residential environment this equipment may cause radio interference.

FCC / CFR 47:Part 15 (Class A)

Federal Communications Commission Rules Part 15, Subpart B

Caution to the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.
This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.
Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

EMC Performance of Cables and Connectors

Grass Valley products are designed to meet or exceed the requirements of the appropriate European EMC standards. In order to achieve this performance in real installations it is essential to use cables and connectors with good EMC characteristics.

All signal connections (including remote control connections) shall be made with screened cables terminated in connectors having a metal shell. The cable screen shall have a large-area contact with the metal shell.

SIGNAL/DATA PORTS

For unconnected signal/data ports on the unit, fit shielding covers. For example, fit EMI blanking covers to SFP+ type ports; and fit 75 Ω RF terminators to BNC type ports

COAXIAL CABLES

Coaxial cables connections (particularly serial digital video connections) shall be made with high-quality double-screened coaxial cables such as Belden 8281 or BBC type PSF1/2M and Belden 1694A (for 3Gbps).

D-TYPE CONNECTORS

D-type connectors shall have metal shells making good RF contact with the cable screen. Connectors having indents which improve the contact between the plug and socket shells are recommended.

Table of Contents

1 Introduction

Description

The IQEDGE is a 3RU/4RU enclosure containing an IQMIX IP transceiver module and a customer-defined selection of audio/video processing modules; 3RU models are also equipped with a cooling fan. Signals are received over IP, converted into SDI, processed, then converted back to IP for onward transmission.

Fundamental to this is the IQEDGE rear connector panel, which is capable of accommodating up to four IQ modules. All communication between modules is performed by this unit; as a bonus, the enclosure's cabling requirement is also greatly simplified.

For more information on the 3RU and 4RU enclosures, see the IQH3B and IQH4B user manuals.

Feature Summary

- Up to 8 channels per IQEDGE rear panel of common video and audio processing tasks, in an IP networked environment.
- Channel branding and side-bar keying facilities.
- Dolby handling and loudness monitoring to ensure requirements are met.
- Simulcast format and frame rate conversion processing to provide high quality content across multiple regions and services.
- Gain, offset and hue controls.
- Horizontal and vertical picture enhancement, delay, RGB gamut legalization, aspect ratio conversion with preset ARC maps, including selectable pan, tilt, aspect, size, and output crop adjustments.
- High quality up, down and cross conversion, including conversion aperture control.
- Noise reduction options (adaptive spatial and recursive), side-bar keying, logo insertion and frame rate conversion.
- Processing for 16 channels of embedded audio present on each video channel, with audio proc features including channel routing (shuffling), gain, invert, delay and mixing.
- Advanced audio options, including loudness processing for 4-channel or 5.1 surround sound, downmixing, upmixing and Dolby E/D encoding and decoding.
- Aspect ratio control (signaling reading and writing) using ETSI WSS and AFD Video Index signaling (RP186, SMPTE 2016), closed caption passing or processing for CEA608/708, and WST/OP42 and OP47 teletext captions, and VITC or SMPTE12M timecode translation.
- Built in test pattern and audio tone generators, along with 19-character scrolling caption generator for signal path testing or keep-alive applications.
- Full RollCall and SNMP compatibility allows easy integration with Grass Valley or third party network management systems.
- Dual 25GbE or 40GbE IP links with multiple transport types available, including:
  - Compressed IP transport using SMPTE-2042 (VC2) low latency high quality encoding profile;
  - Uncompressed video transport using either RFC 4175 RTP or SMPTE-2022-6 encapsulation;
  - PCM audio using RFC 3190 & AES67;

  - SMPTE-291M metadata support via IETF standard *RTP Payload for Ancillary Data*.
- Timing and synchronization provided by IEEE-1588v2 (PTP), compliant with SMPTE-2059-2, or via the frame analog reference bus.
- Up to 4 dual-channel IQ modules per IQEDGE rear panel, giving up to 8 processing channels, dual PSUs, cooling fans and control card as standard, plus full chassis monitoring for PSUs, temperature, fans and signal status.

Application Notes

About Power Ratings

Grass Valley IQ modules are assigned a *Power Rating* (PR). This figure represents the relative power consumption of a module.

Grass Valley modular enclosures are also assigned PR values. This figure represents the maximum power available from the enclosure.

The combined total of all modules' PR values must not exceed the enclosure's PR value.

Note: If a module's PR value is not known, use the module's power consumption figure in watts as the PR value.

Power Ratings and Card Widths

Product	Width	PR
IQMIX25	3 (inc IQFAN00)	34.5
IQMIX40	3 (inc IQFAN00)	37.5
IQEAS00	1	8.5
IQMCC30	1	17.5
IQSYN33	2	18
IQUDC31	1	16
IQUDC30	1	13

Block Diagrams

IQEDGE Processing Lanes

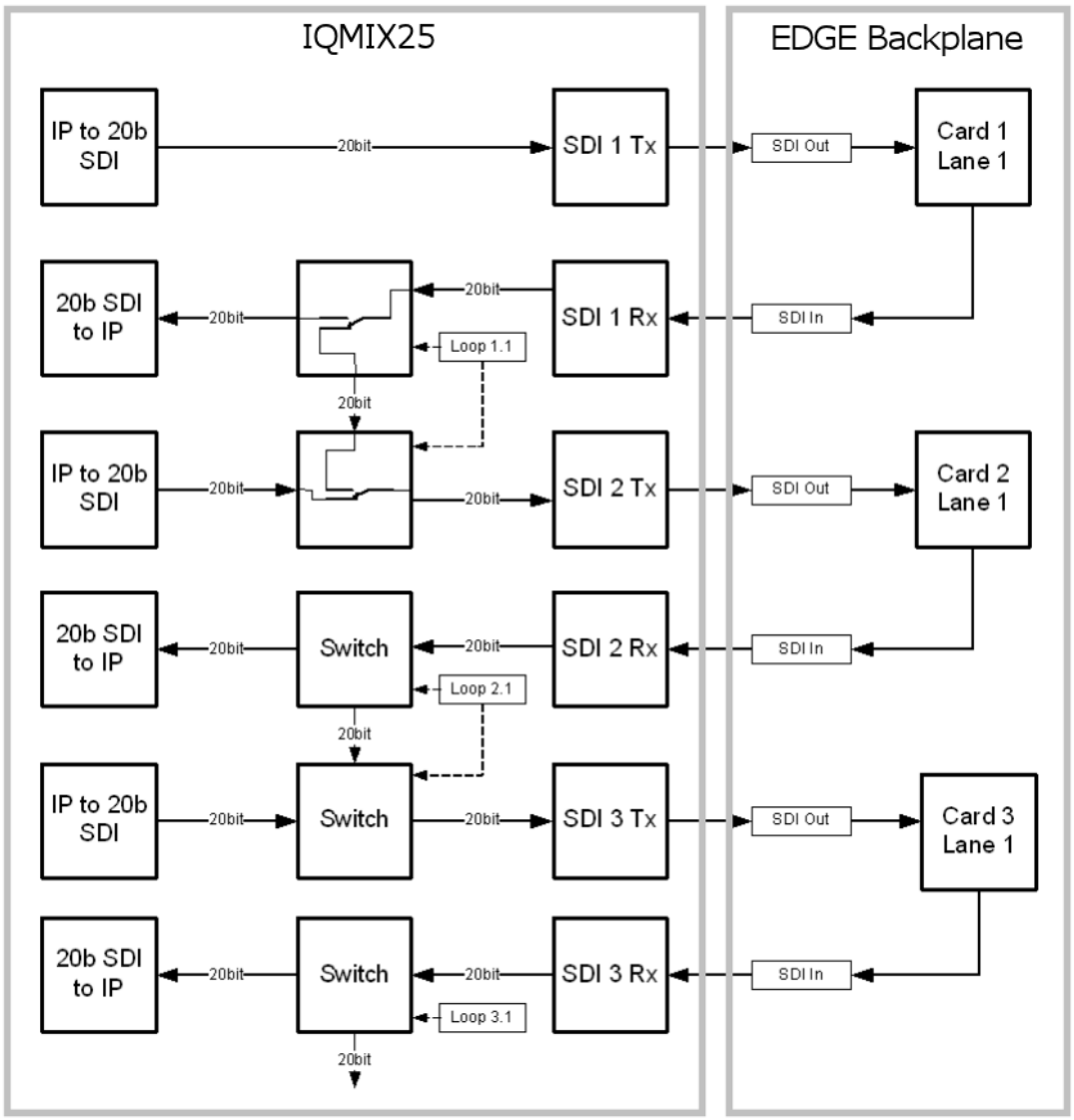
In order to improve throughput, the IQEDGE provides two processing lanes. When used with dual-channel IQ modules, each module is able to process two jobs simultaneously.

The processing lanes are independent of one another, and map directly to the processing channels of suitable IQ processing modules; so, the IQEDGE lane 1 maps to the module's channel 1, and so on.

An IQEDGE processing lane is effectively an SDI daisy chain, connected in ascending slot number order. Processing jobs requiring the use of multiple modules are handed from one module to the next along that chain.

Note: Jobs may cross from one IQEDGE lane to another, but only via IP addressing. This facility is not available via SDI.

Daisy chains are constructed using the **Loop** function. See Loop Enable on page 39 for more information.



IQEDGE Processing Overview

Order Codes

Enclosure and IP Interface Options

The following product order codes are covered by this manual:

IQEDGE-25-6B IQEDGE 7-Slot 3RU IP processing system with dual 25GbE IP connections. Up to 4 card slots for processing available. Includes dual PSUs, dual fans, Ethernet/SNMP compatible RollNet Gateway and reference distribution. Processing cards compatible with IQEDGE are listed below. Also includes an IQFAN00-RP unit for additional cooling.

IQEDGE-25-12B IQEDGE 14-Slot 3RU IP processing system with quad 25GbE IP connections. Up to 8 card slots for processing available. Includes dual PSUs, dual fans, Ethernet/SNMP compatible RollNet Gateway and reference distribution. Processing cards compatible with IQEDGE are listed below. Also includes an IQFAN00-RP unit for additional cooling.

IQEDGE-25-18B IQEDGE 18-Slot 4RU IP processing system with six 25GbE IP connections. Up to 12 card slots for processing available. Includes dual PSUs, dual fans, Ethernet/SNMP compatible RollNet Gateway and reference distribution. Processing cards compatible with IQEDGE are listed below. Also includes an IQFAN00-RP unit for additional cooling.

IQEDGE-40-6B IQEDGE 7-Slot 3RU IP processing system with dual 40GbE IP connections. Up to 4 card slots for processing available. Includes dual PSUs, dual fans, Ethernet/SNMP compatible RollNet Gateway and reference distribution. Processing cards compatible with IQEDGE are listed below. Also includes an IQFAN00-RP unit for additional cooling.

IQEDGE-40-12B IQEDGE 14-Slot 3RU IP processing system with quad 40GbE IP connections. Up to 8 card slots for processing available. Includes dual PSUs, dual fans, Ethernet/SNMP compatible RollNet Gateway and reference distribution. Processing cards compatible with IQEDGE are listed below. Also includes an IQFAN00-RP unit for additional cooling.

IQEDGE-40-18B IQEDGE 18-Slot 4RU IP processing system with six 40GbE IP connections. Up to 12 card slots for processing available. Includes dual PSUs, dual fans, Ethernet/SNMP compatible RollNet Gateway and reference distribution. Processing cards compatible with IQEDGE are listed below.

Processing Options

Processing cards compatible with IQEDGE:

IQEAS00-NR IQEAS00 3G/HD/SD-SDI Single Channel Embedded Audio Shuffler and Processor.

Includes Dolby E auto-alignment feature, 2 inputs, 2 outputs.

IQMCC30-NR IQMCC30 3G/HD/SD-SDI Single Channel Motion Compensated Frame Rate Converter.

2 SDI inputs, frame reference inputs, 2 SDI outputs.

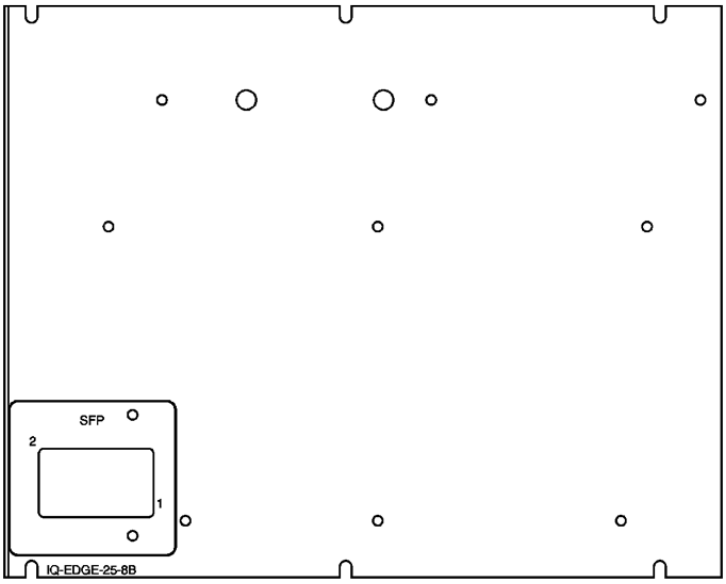
IQUDC31-NR-E IQUDC31 Dual channel Up, down and cross converter with video and audio processing and linear frame rate conversion. Including logo insertion, noise reduction and side-bar keying features. 1 SDI input per channel, Frame reference inputs, 1 SDI output per channel. IQOPTM software options apply.

IQUDC30-NR-E IQUDC30 Single channel Up, down and cross converter with video and audio processing and linear frame rate conversion. Including logo insertion, noise reduction and side-bar keying features. 2 inputs, Frame reference inputs, 2 outputs. IQOPTM software options apply.

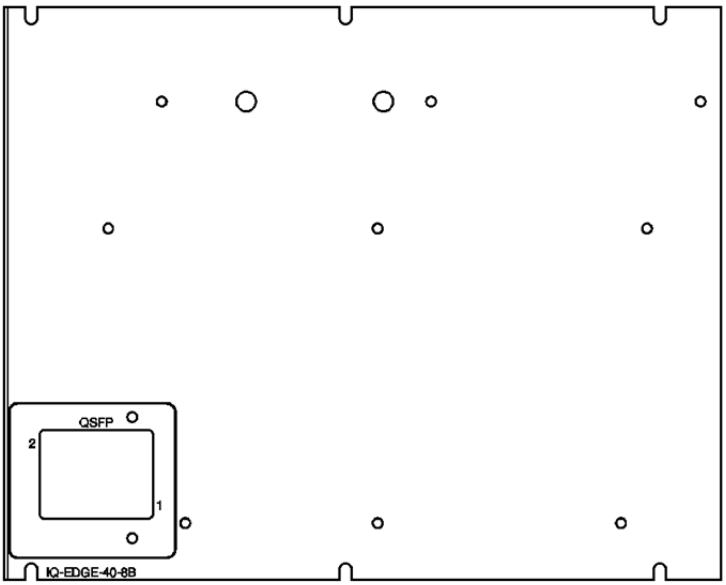
IQSYN33-NR-E IQSYN33 3G/HD/SD-SDI Frame Synchronizer with advanced audio processing including loudness processing and upmixing. 1 input, 2 outputs, IQOPTA LOUD 5.1, CC and Dolby options apply.

Rear Panel View

The following rear panel types are available:



IQEDGE25-6B3



IQEDGE40-6B3

2 Technical Specification

Inputs/Outputs - EDGE backplane	
Ethernet	
Connector/Format	25GbE = SFP+ 40GbE = QSFP
Conforms to	RFC4175 RFC3190 SMPTE-291M/IETF *RTP Payload for Ancillary Data* VC-2 IEEE-1588v2/SMPTE-2059-2 VSF TR-03/TR-04 RTP (upgradeable to SMPTE 2110) or SMPTE 2022-6/7 AES67

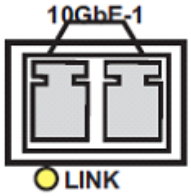
Note: For information on IQH3B and IQH4B enclosures, IQMIX IP transceiver modules and IQEDGE processing modules, see the relevant user manuals.

3 Connections

This section describes the physical input and output connections provided by the IQMIX IP transceiver modules.

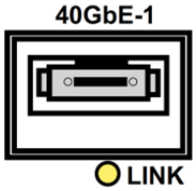
25G Ethernet SFP

SFP+ supporting 25G Ethernet.



40G Ethernet QSFP

QSFP+ supporting 40G Ethernet.



4 Card Edge LEDs

The LEDs on the edge of the module indicate its operating status.

Front Panel	Front Edge		Description
	STATUS	PB=IDENT	**STATUS** Green = PTP-LOCK OK. Off = PTP-LOCK Fail.
	BOARD	CPU	**BOARD** Green = CPU clock running. Off = CPU stopped.
	PTP	REF	**REF** Green flashing = Watchdog timer OK.
	8	16	**1 - 16** - Spigot status. Off = Input/Spigot not in use. Red = No input. Yellow = TPG. Green = Video flow detected (SDI input for Sender spigot, output IP flow for Receiver spigot). **For UHD Quad-Link Modes**: Banks of four adjacent LEDs (e.g. 1 - 4, 5 - 8, etc) will light simultaneously to denote the 4 x 3G streams being received on a 12G-SDI input. If a TPG is enabled, either sender or receiver, four adjacent LEDs will light yellow to denote the 4 x 3G linked internal flows.
	7	15	
	6	14	
	5	13	
	4	12	
	3	11	
	2	10	
	1	9	
	SFP 2	QSFP 2	**SFP 1 - 2** = Status/lane. Red = Fault (3V3 regulator failure), Blue = OK (25G SFP). If flashing, link is down. **QSFP 1 - 2** = Status/lane. Red = Fault (3V3 regulator failure), Cyan = OK (40G QSFP). If flashing, link is down.
	SFP 1	QSFP 1	
		PB=RESET	

5 RollCall Control Panel

This section contains information on using IQEDGE with RollCall.

For help with general use of the RollCall application, open the user manual by clicking the button on the main RollCall toolbar.

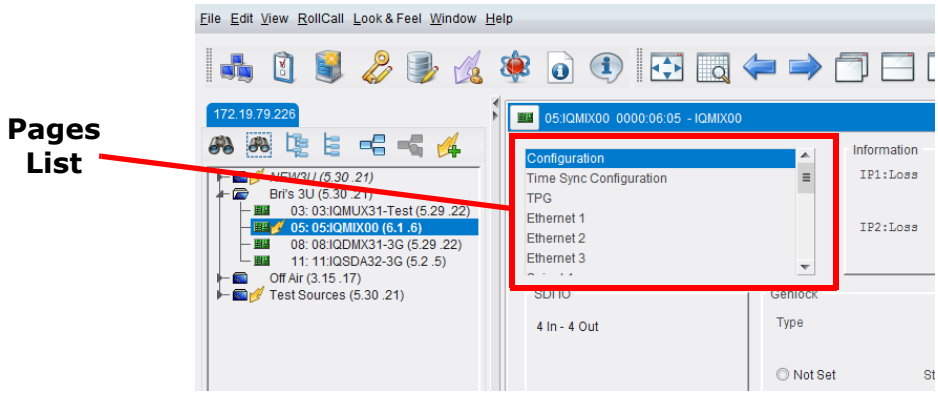
Terminology

The following terms are used in this document:

Term	Description
Essence	A general term used to describe an SDI component; Video, Audio and Data are all essences.
Spigot	Generic term for a Source or Destination.
Flow	Sequence of RTP packets of a single essence.
Source	Originator of one or more flows, ie. a set of one or more sender spigots.
Destination	Receiver of one or more flows, ie. a set of one or more receiver spigots.

Navigating Pages in the RollCall Template

The RollCall template has a number of pages, each of which can be selected from the list at the top left of the display area. Right-clicking anywhere on the pages will also open a page view list, allowing quick access to any of the pages.



Template Pages

Template Pages

The following pages are available:

- **Configuration** - see page 36.
- **Edge Configuration** - see page 38.

- **Time Sync Configuration** - see page 41.
- **Sender TPG (Test Pattern Generator)** - see page 46.
- **Receiver TPG (Test Pattern Generator)** - see page 47.
- **Counters** - see page 48.
- **FEC** - see page 49.
- **NMOS** - see page 51.
- **Ethernet Pages 1 and 2** - see page 53.
- **Ethernet 1 and 2 RTP Sender** - see page 55.
- **Ethernet 1 and 2 RTP Receiver** - see page 56.
- **Ethernet RTP Receiver Video Stats** - see page 57.
- **Ethernet RTP Receiver Audio Stats** - see page 58.
- **Ethernet RTP Receiver Meta Stats** - see page 59.
- **Link Control** - see page 60.
- **HDR Control** - see page 61.
- **Destination Timing** - see page 63.
- **Audio V Fade** - see page 64.
- **Audio Type Control** - see page 65.
- **Input Loss Control** - see page 66.
- **Spigot 1-*n*** - see page 67.
- **Logging - SDI Info** - see page 73.
- **Logging - System** - see page 74.
- **Logging - Network** - see page 80.
- **Logging - SFP** - see page 83.
- **Logging - FPGA** - see page 86.
- **Logging - Spigot 1-*n*** - see page 87.
- **Logging - NMOS** - see page 89.
- **Logging - Card Diagnostics** - see page 90.
- **Rolltrack** - see page 91.
- **Setup** - see page 93.
- **Ethernet Gb** - see page 94.
- **Ethernet Arcnet** see - page 95.
- **Interop** - see page 96.
- **SFP Configuration** - see page 98.

Setting Values

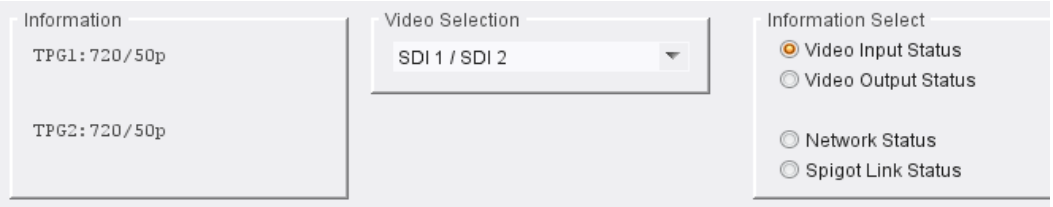
Many of the settings within the templates have values, either alpha or numeric.

When setting a value in a field, the value, whether text or a number, must be set by pressing the ENTER key, or clicking the S **Save Value** button.

Clicking an associated P **Preset Value** button returns the value to the factory default setting.

Information Display

The **Information** display pane appears at the top of each page, and shows basic information on the input, standard and status of the module. The information to be displayed is defined on the **SDI Selection** and **Information Select** panes to the right of the **Information** display.



Information and Selection Panes

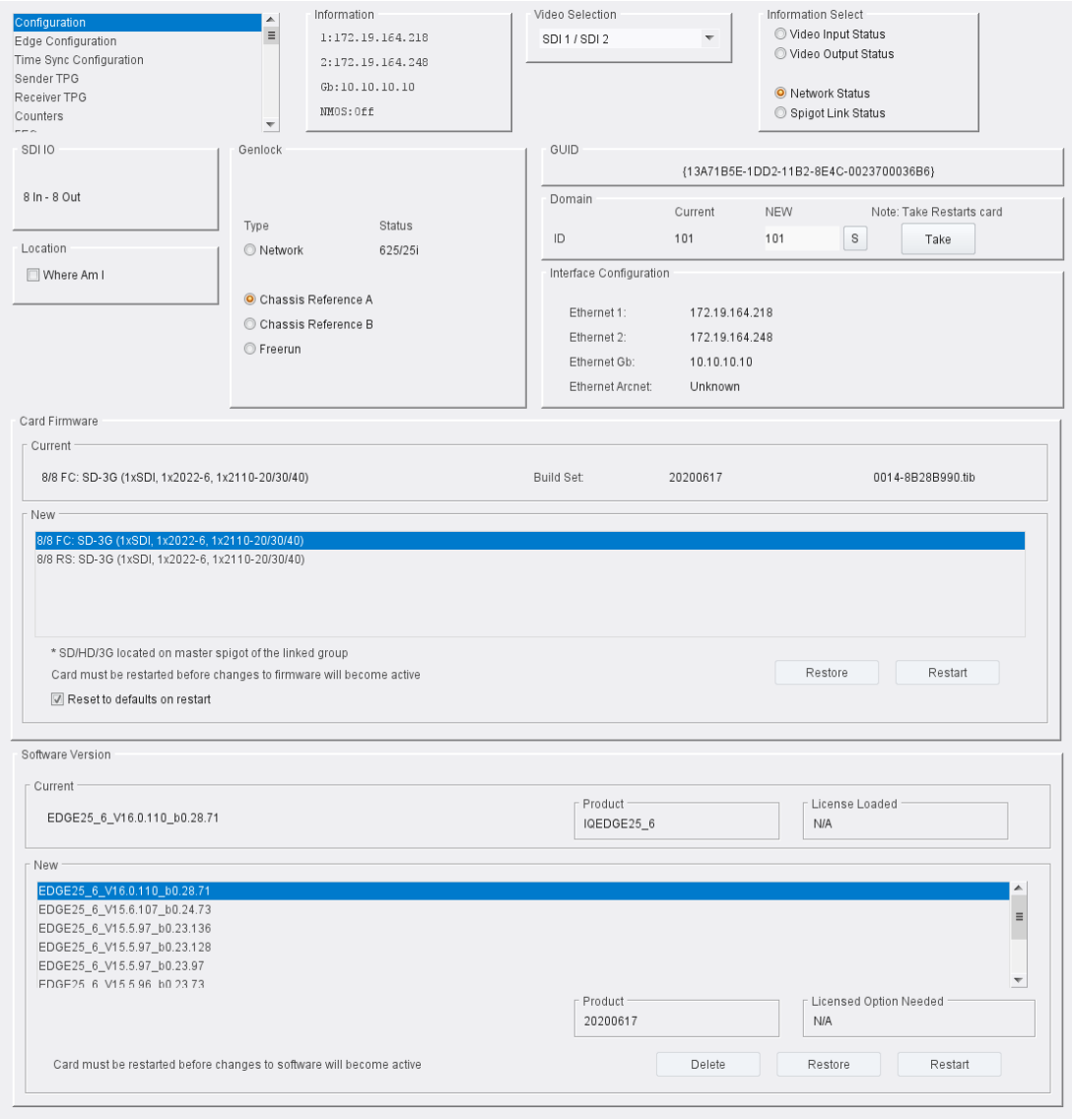
Selecting the Information to Display

- Select the spigots to display data for from the **SDI Selection** drop-down list.
- Select **Video Input Status**, **Video Output Status**, **Network Status** or **Spigot Link Status** from the **Information Select** pane as required.

The selected information will be displayed on the **Information** display pane.

Configuration

The **Configuration** page allows basic module parameters to be set.



Configuration Page

The following facilities are available from this page:

Option	Description
SDI IO	Displays how input and output spigots are currently configured. See *Card Firmware/Software Version*, below, for information on how to change this.
Where Am I	Causes the front-edge LEDs to flash, allowing the module to be easily identified.
Genlock	Select **Genlock** type: • **Network** - click to select PTP. • **Chassis Reference A/B** - click to select an on-chassis reference. • **Freerun** - click to allow free running.
GUID	Displays the absolute unique identifier associated with the module.

Option	Description
Domain	RollCall+ uses domains to partition a network; only nodes on the same domain can communicate with one another. A domain is uniquely identified with a number and a friendly name/alias. Set an ID as required, then press **Take** to confirm the change.
Interface Configuration	Displays the IP address for each Ethernet interface.
Card Firmware/Software Version	Each software version contains multiple firmware images. These allow different spigot input/output and flow standard combinations to be selected. See Setting Spigot Configuration, below, for more information.

Setting Spigot Configuration

IMPORTANT!

Existing details must be cleared down before establishing a new configuration. Failure to do this may result in unexpected behavior from the module.

To set a new spigot configuration, follow these steps:

1 Open the **Setup** page, and click **Default Settings**. See Defaults on page 94 for more information.

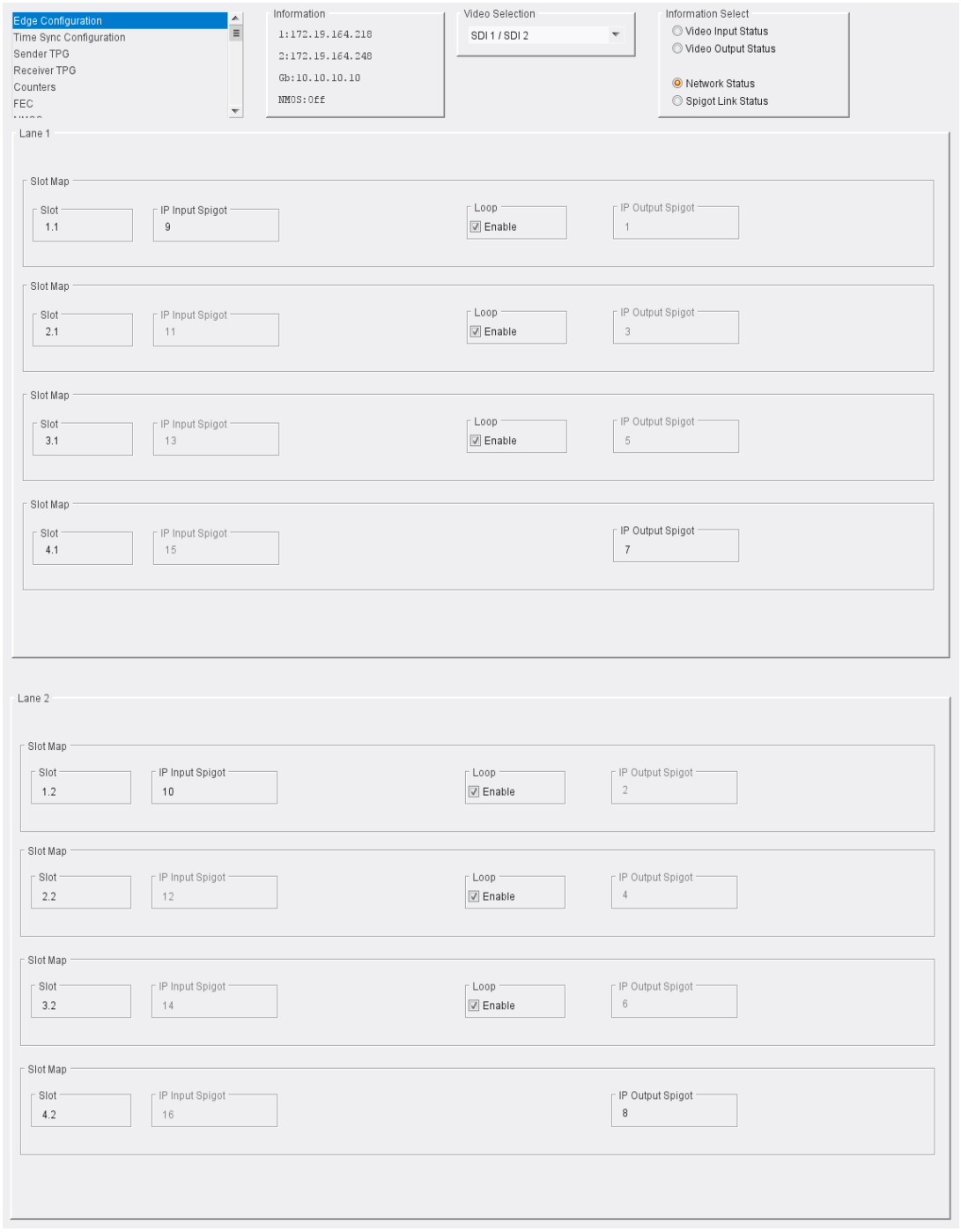
2 From the **Configuration** page, select the required software from the **Software Version** pane, then select the firmware which provides the required combination of inputs, outputs and flow standards from the list displayed on the **Firmware** pane.

Note that **Restore** and **Restart** buttons are displayed only when an item not currently installed is selected.

3 Click **Take** to restart the module and implement any changes made.

Edge Configuration

The **Edge Configuration** page allows the card slots controlled by the EDGE backplane to be monitored, and the modules to be used in a workflow specified.



Edge Configuration Page

The page consists of two sections, one for **Lane 1** and one for **Lane 2**. These display slot maps, i.e. the input and output spigots associated with each of the card slots.

Loop Enable

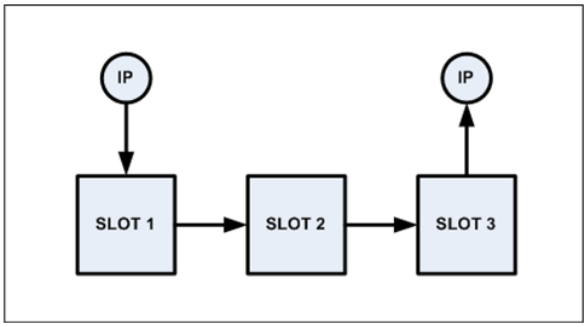
Enables the **Loop** function for the applicable slot.

About the Loop Function

Loop Enable disables IP routing for a slot, and daisy chains it via SDI to the next higher slot number along. This has the effect of starting or continuing a daisy chain, and sending the signal along it to the next slot for further processing.

Each EDGE processing lane can support one or more daisy chains.

Example 1: Creating a Single, 3-slot Daisy Chain

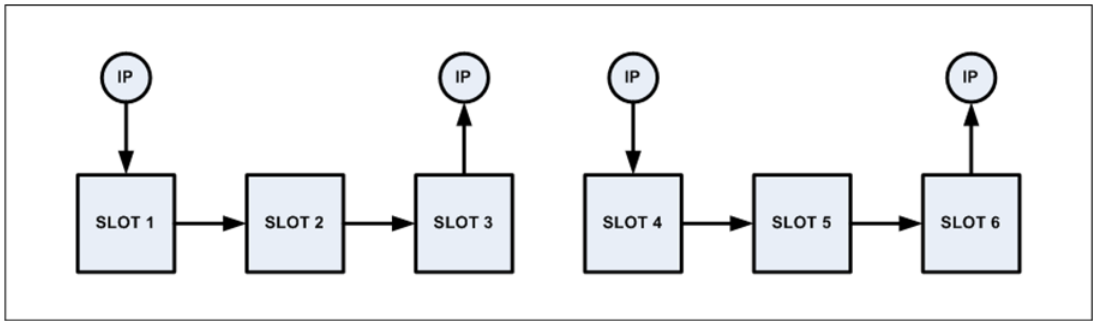


- Select the **Loop Enable** check boxes for Slot 1 and Slot 2.

  This will disable IP routing for slots 1 and 2, and cause daisy chains to be created from Slot 1 to Slot 2, and from Slot 2 to Slot 3.

  As **Loop Enable** has not been selected for Slot 3, IP routing remains in place and so the signal will be routed onwards via IP.

Example 2: Creating Two 3-slot Daisy Chains on the same IQEDGE Lane



- Select the **Loop Enable** check boxes for Slot 1 and Slot 2; this will create the first chain, as shown in Example 1.
- Select the **Loop Enable** check boxes for Slot 4 and Slot 5; this will create the second chain.

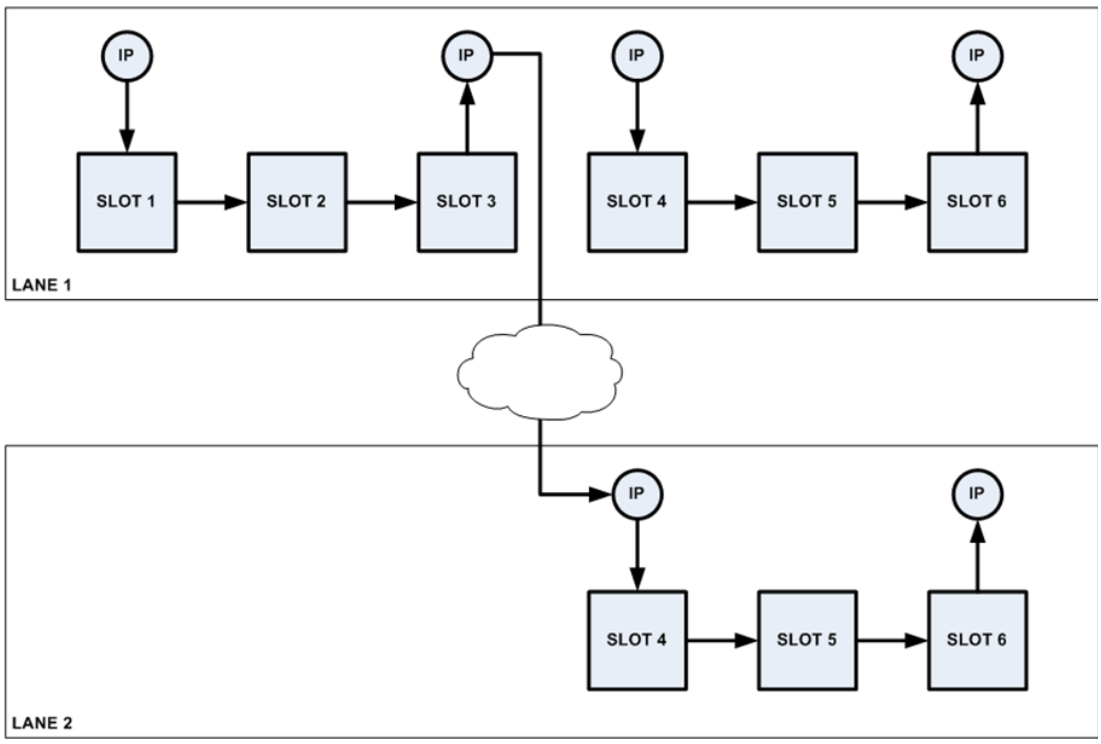
  This will disable IP routing for slots 1 and 2, and cause daisy chains to be created from Slot 1 to Slot 2, and from Slot 2 to Slot 3.

  As **Loop Enable** has not been selected for Slots 3 and 6, IP routing remains in place and so the signal will be routed onwards via IP.

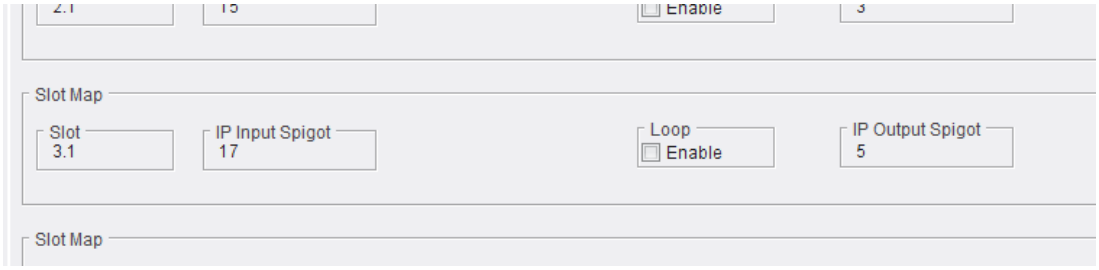
Example 3: Creating Two 3-slot Daisy Chains on Separate IQEDGE Lanes

Lanes cannot be crossed with SDI looping, but can with IP addressing.

In this case, each chain is created as usual, but the link between the two must be created over IP.



- Create daisy chains as required, following the instructions in the examples above.
- Open the **Edge Configuration** page, and navigate to the appropriate **Slot Map** entry. In the diagram above, this would be Slot 3, Lane 1.



Slot Map

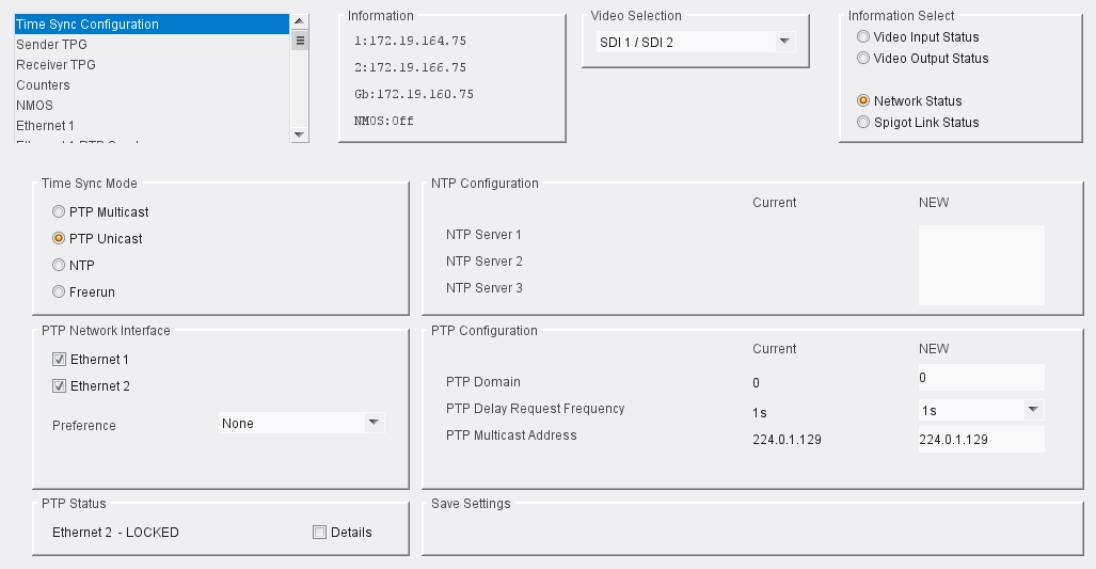
We can see that the IP input for this slot is Spigot 17, and the output is Spigot 5. So, we need to ensure that the IP details for Spigot 5 point to the module occupying Slot 4, Lane 2.

- Open the Spigot page corresponding to the slot to link to over IP. In the diagram above, this would be Slot 4, Lane 2. Make a note of the IP details.
- Open the page for Spigot 5.
- Enter the IP details noted in the step above, and click **S** to save.

  As **Loop Enable** has not been selected for Slots 3 and 6, IP routing remains in place and so the signal will be routed across lanes and onwards via IP.

Time Sync Configuration

The **Time Sync Configuration** page allows selection of the source to be used for synchronizing flows, and any properties associated with the relevant source to be configured.



Time Sync Configuration Page

The following facilities are available from this page:

Option	Description
Time Sync Mode	Click a radio button to select the required mode. PTP options require a grandmaster clock to be present in the system. **Note**: Mixing modes within a system is not advisable. For example, PTP uses atomic time (TAI), whereas NTP is UTC, which is leap-second corrected. So, the two systems will not give identical results. Options are: • **PTP Multicast** - this uses multicast for both sync and follow-up messages. • **PTP Unicast** - this uses multicast for the sync messages and unicast for the follow-up messages. • **NTP** - uses NTP for local clock correction. NTP can usually maintain time to an accuracy of around 1-10ms, but this value could rise to something on the order of >100ms, depending on network congestion, asymmetry, etc. This potentially means that 1-5 frames of misalignment of the local device clocks may be seen across the network. • **Freerun** - the local device clock is left to free run, that is it is not corrected with respect to the world clock. This will drift over time. Select as required.
NTP Configuration	To add an NTP server, enter the server's IP address in to the **New** field.
PTP Network Interface	Click check boxes to select the network interfaces to be used. If an interface fails, the next interface on the list will be switched to automatically. Select the interface to be used as a default from the **Preference** list; this will be used unless it has been disabled or has failed.

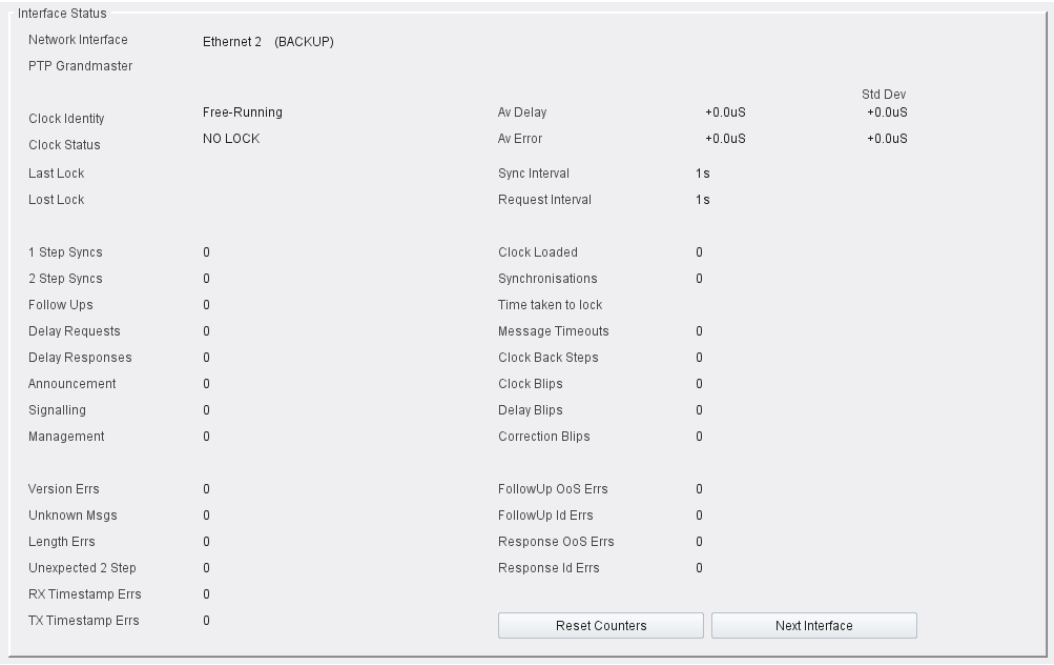
Option	Description
PTP Configuration	Select values from the **PTP Domain** and **PTP Delay Request Frequency** drop-down lists, as required. Type the appropriate IP number into the **PTP Multicast** address field.
PTP Status	Displays PTP status information. Enable the **Details** check box to display detailed interface status information, reset counters, show details for other PTP interfaces etc. See PTP Status Details below for more information.
Save Settings	Displayed only if settings on this page are changed. Clicking **Restore** will discard the changes, while clicking **Restart** will implement the changes and reboot the module.

PTP Status Details

When the **PTP Status Details** check box is enabled, the following information is displayed:

Interface Status

Displays which port is being used for local clock correction. Click Next Interface to move between available PTP Network interfaces.



Interface Status pane

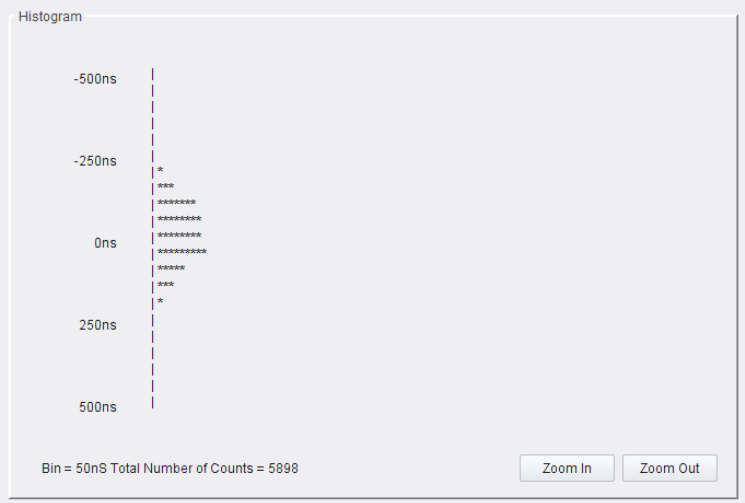
Interface Status Details

Item	Description
Last Lock	Time when PTP last locked.
Lost Lock	Time when PTP last lost lock.
1 Step syncs	Increments on reception of Sync message that has the `twoStepFlag`=false.
2 Step Syncs	Increments on reception of Sync message that has the `twoStepFlag`=true.
Follow Ups	Increments on reception of every `follow_up` message.
Delay Requests	Increments on reception of every `delay_req` message.
Delay Responses	Increments on reception of every `delay_resp` message.
Announcement Messages	Increments on reception of every announce message.
Signaling	Increments on reception of each PTP Signaling message.
Management	Increments on reception of each PTP Management message.
Version Errs	The IQUCP25/50 supports PTPv2 only. If a PTPv1 message is received, it is discarded, and this counter incremented. This would be an indication that the grandmaster clock is not configured correctly.
Unknown Msgs	If the product receives messages on the PTP multicast address port 319 or 320 that are not messages defined as PTP ones this counter is incremented.
Length Errs	PTP messages with an invalid length cause this counter to increment.
Unexpected 2 Steps	Increments on the reception of a `follow_up` message but the sync message is indicating 1 step.
RX Timestamp Errs	Increments for every PTP message where the sequence number is as expected but its timestamp is not valid.
TX Timestamp Errs	Increments for every `delay_resp` message where its sequence number is as expected but its timestamp is not valid.
Av Delay	This is the average network delay time from the grandmaster to the UCP. This should be stable and in the order of 10-20µs.
Av Error	The average error is the difference between the grandmaster and the UCP local clock. If locked, this number will be small.
Sync Interval	From IEEE1588 7.7.2.1: "For each of the message types `Announce`, `Sync`, `Delay_Req` and `Pdelay_Req`, the mean time interval between successive messages shall be represented as the logarithm to the base 2 of this time interval measured in seconds on the local clock of the device sending the message. The values of these logarithmic attributes shall be selected from integers in the range ?128 to 127 subject to further limits established in an applicable PTP profile. The interpretation of the `logMessageInterval` depends on the message type; see 13.3.2.11. Except for `Delay_Req` messages (see 9.5.11.2), a node shall, with 90% confidence, issue messages with intervals within ±30% of the stated value of this attribute."

Item	Description
Request Interval	Return actual minimum interval between delay request messages. This is as set in the **PTP Delay Request Frequency** control. See Configuration on page 36. Values are, {256/s, 128/s, 64/s, 32/s, 16/s, 8/s, 4/s, 2/s, 1s, 2s, 4s, 8s, 16s}.
Clock Loaded	Increments if the interface was live and the PTP was forced to update (crash lock).
Synchronizations	Increments every time a PTP lock is achieved.
Time Taken to Lock	Length of time it has taken to lock the interface.
Message Timeouts	Increments if none of the following are received within any 2-second period: • **follow_up** • **delay_resp** • **sync** • **announce**
Clock Steps Back	If the IQUCP25/50 receives a time earlier than the last, this counter is incremented. This could be because of a fault with the grandmaster, or because there are multiple grandmasters in the system.
Clock Blips	This increments if the local clock offset is >300ns, <-300ns.
Delay Blips	This increments if the network delay is >120%, or <80% of the previous value.
Correction Blips	Uses the `correctionField` in the header of `delay_resp` message from the grandmaster. From IEEE1588 13.3.2.7: "The `correctionField` is the value of the correction measured in nanoseconds and multiplied by 65536. For example, 2.5 ns is represented as 0x28000. Increments if the `correctionField` is > 40000 (0.61ns).
FollowUp OoS Errs	Increments for every `follow_up` message that is out of sequence.
FollowUp ID Errs	Increments for every `follow_up` message that is not from the expected clock.
Response OoS Errs	Increments for every `delay_response` message that is out of sequence.
Response ID Errs	See Histogram, below.

Histogram

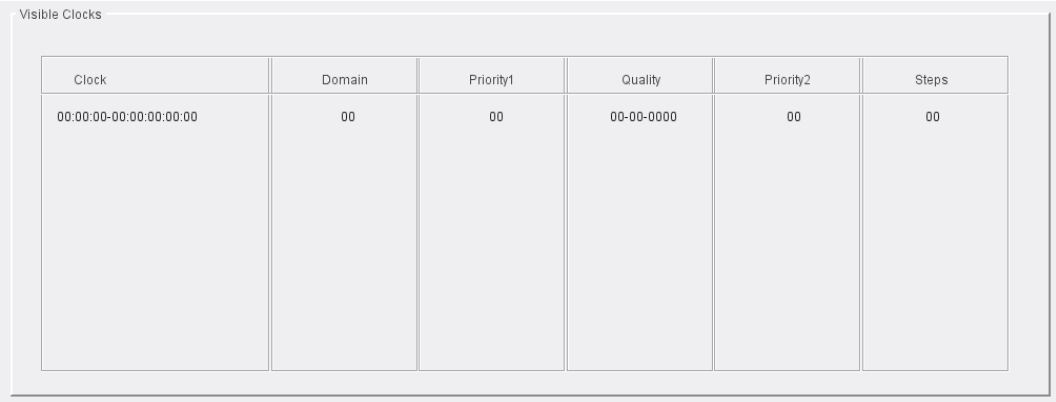
The Histogram provides a graphical representation of the distribution of differences between the card's clock and the PTP grandmaster clock. Every time the clock difference is recalculated, the relevant bar is incremented. A correctly functioning system will show a distinct peak around the 0ns level.



Histogram pane

Visible Clocks

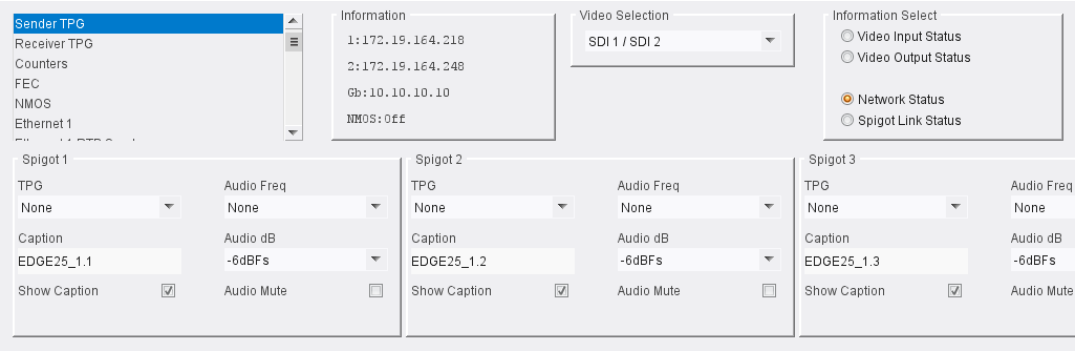
Displays the GrandMaster clocks present on the network.



Visible Clocks pane

Sender TPG (Test Pattern Generator)

The **Sender TPG** page allows test patterns to be applied to senders on a spigot-by-spigot basis.



TPG Page

The following options are available for each spigot:

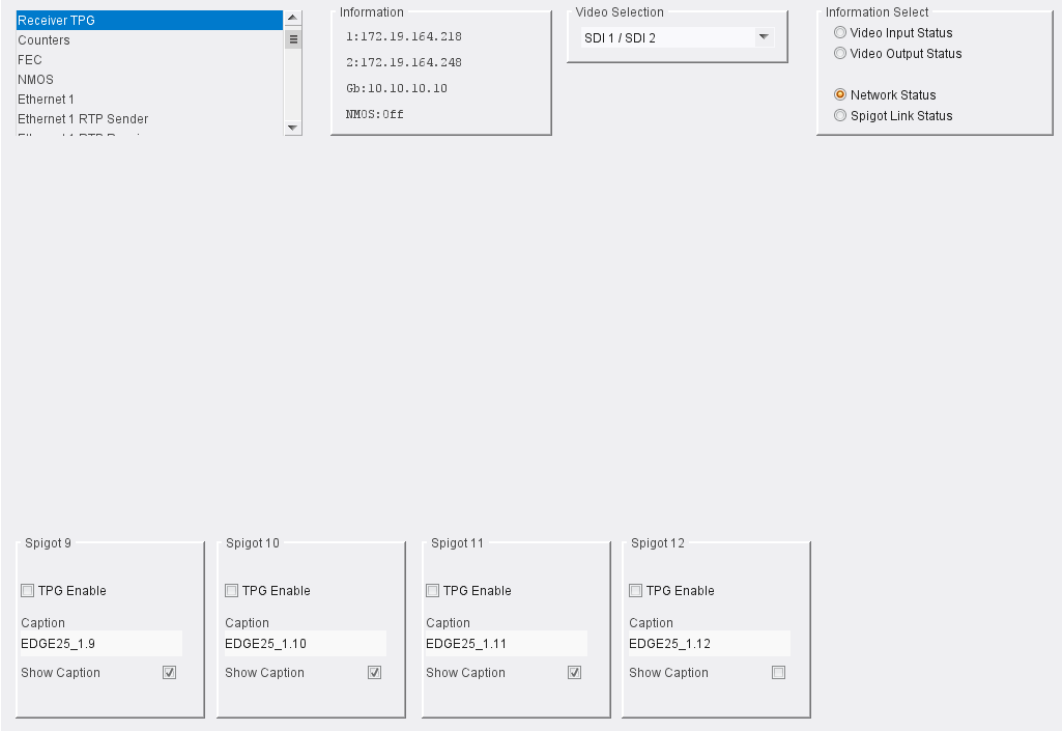
Option	Operation
TPG	Select the test pattern to apply to the spigot from the drop-down list.
Audio Freq	Select the audio frequency to apply to the spigot from the drop-down list.
Caption	Type a caption (max 19 characters) to optionally be displayed with the test pattern.
Audio dB	Select the dB level to apply to the spigot from the drop-down list.
Show Caption	Enable the checkbox to display the caption with the test pattern.
Audio Mute	Enable the checkbox to mute the audio tone.

If a test pattern is applied, either a pattern or a tone, the spigot cannot be used for streaming any other essence.

Click **Show Caption** to overlay a caption on the video essence.

Receiver TPG (Test Pattern Generator)

The **Receiver TPG** page allows test patterns to be applied to receivers on a spigot-by-spigot basis.



Receiver TPG page

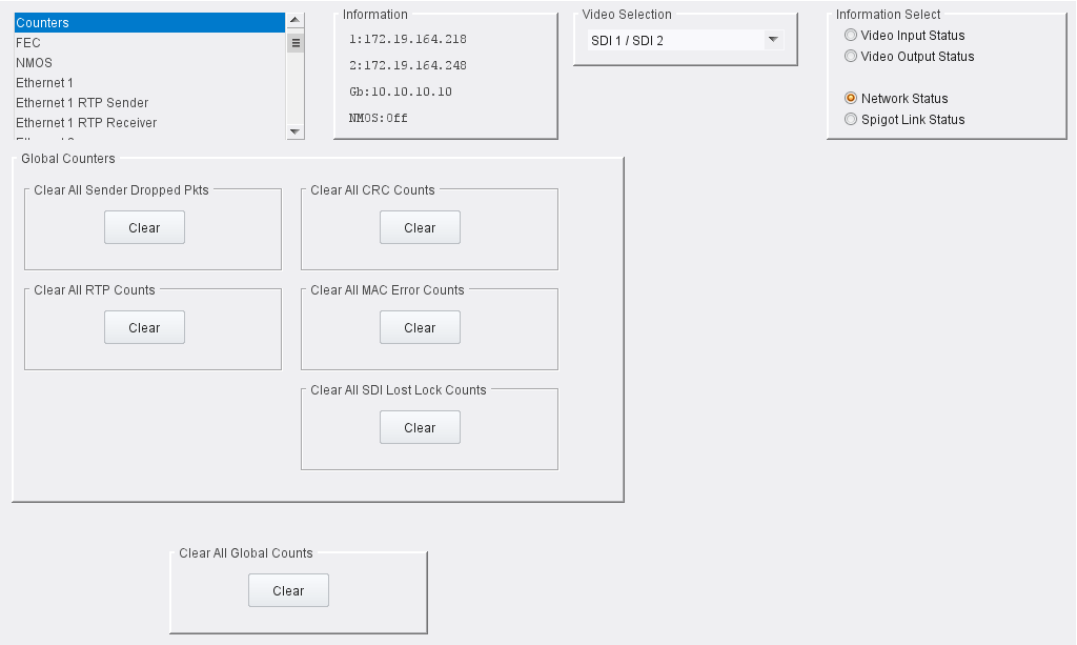
The following options are available for each spigot:

Option	Operation
TPG Enable	Click to enable TPG on this spigot.
Caption	Enter a caption for the spigot (optional).
Show Caption	Click to overlay the caption on the video essence.

If a test pattern is applied, either a pattern or a tone, the spigot cannot be used for streaming any other essence.

Counters

The **Counters** page allows the various counters provided to be cleared down.



Counters Page

Click **Clear** buttons as required.

FEC

The **FEC** page allows control of FEC functionality. The variety of FEC to be used is selected via the **Card Firmware**/**Software Version** options on the **Configuration** page; see Configuration on page 36 for more information.

FEC page

The following facilities are available from this page:

Option	Description
FC-FEC (displayed only if a relevant configuration is in use. See Configuration on page 36 for more information).	Allows low-latency FC-FEC error correction to be used. Options are: • **On** • **Off** **Status** - Displays lock status for each SFP.

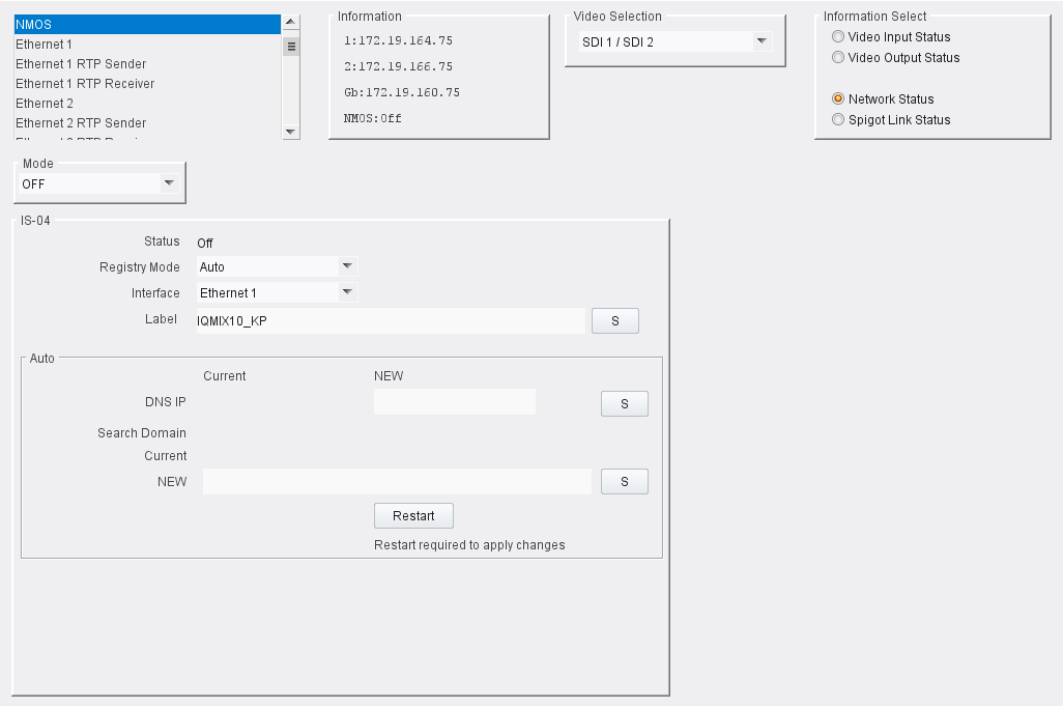
Option	Description
RS-FEC (displayed only if a relevant configuration is in use. See Configuration on page 36 for more information).	Allows longer-range RS-FEC error correction to be used. Options are: • **On** • **Off** • **IEEE Clause 108** • **25G Consortium Schedule 3** **Status** - Displays lock status for each SFP.
FEC Stats	Displays the number of corrected and uncorrected errors received via the SFPs. Click **Enable Stats** to activate, and **Clear Count** to zero the counters.
FEC Logging	Information on several parameters can be made available to a logging device connected to the RollCall network. Enable check boxes to activate log fields as required. Available log fields are shown in the table below.

Log Field	Description
FEC_*N*_CORRECTED_ ERRORS=	Number of corrected errors for FEC *N*.
FEC_*N*_UNCORRECTED_ ERRORS=	Number of uncorrected errors for FEC *N*.

Where N is the SFP number.

NMOS

The **NMOS** page allows NMOS functionality to be configured.



NMOS page

Overview

Networked Media Open Specifications, collectively known as *NMOS*, have been developed to provide interoperability between a wide range of products from various manufacturers. NMOS effectively provides a control and management layer in addition to the transport layer provided by SMPTE ST2110. See www.amwa.tv/nmos for further information.

The following facilities are available from this page:

Option	Description
Mode	Allows Discovery and Connection Management to be disabled. This can be useful if troubleshooting an issue. Options are: • **Off** - IS-04 and IS-05 are both disabled. • **IS-04** - IS-05 is disabled. • **IS-04 and IS-05** - IS-04 and IS-05 are both active.

Option	Description

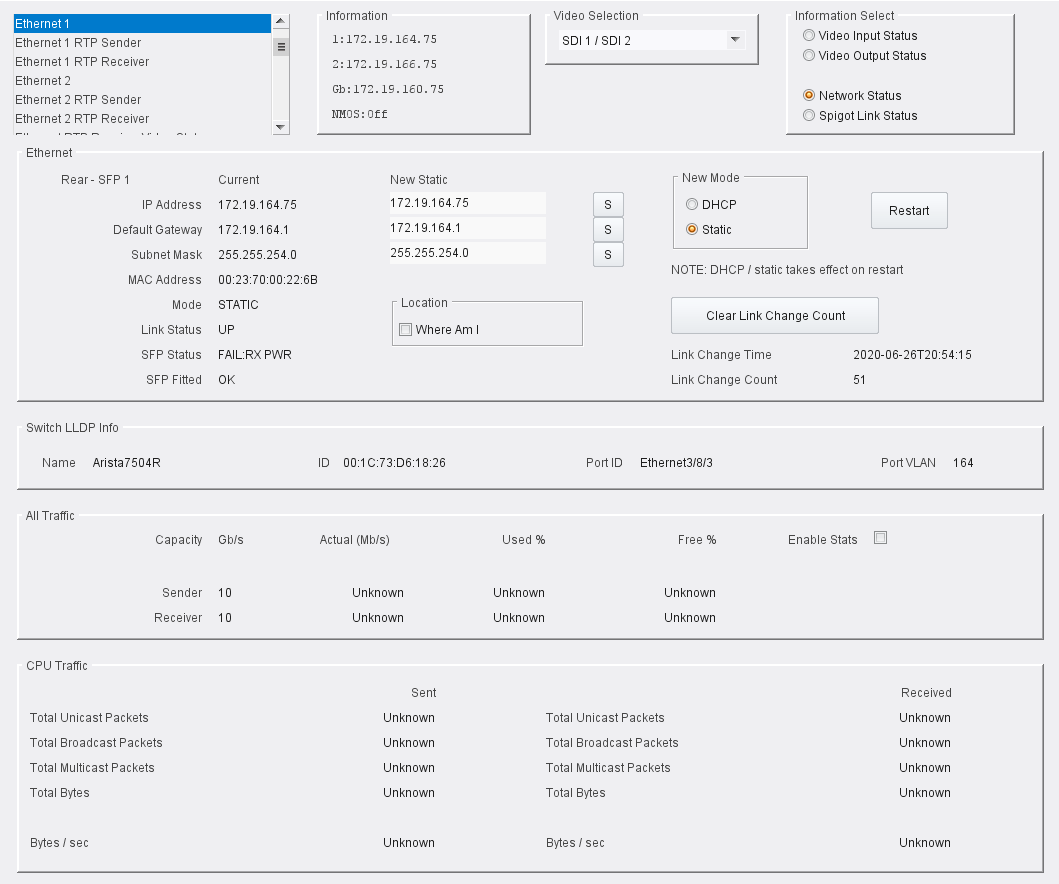
IS-04	Controls how the module is to find and use network resources. Set as required.
	• **Status** - displays registration status of the module. Valid values are:
	  • **Not Registered**
	  • **Registering**
	  • **Registered**
	• **Registry Mode** - options are:
	  • **Auto** - the module will discover the network and set the IP address of the NMOS registry automatically.
	  • **Static** - allows IP address details for the NMOS registry to be set manually.
	• **Interface** - select the Ethernet interface to be used for NMOS control.
	• **Label** - specify a label for the module, and click **S** to save. This is the identifier by which the module will be known in the NMOS registry.

Auto	Displayed if **Registry Mode** (see above) is set to **Auto**. • **DNS IP** - displays the current DNS IP address, and allows a new one to be defined. If required, enter a new address in the **NEW** field, and click **S** to save. • **Search Domain** - displays the current search domain, and allows a new one to be defined. If required, enter a new domain in the **NEW** field, and click **S** to save.
Static	Displayed if **Registry Mode** (see above) is set to **Static**. • **IP Address** - displays the current NMOS registry IP address, and allows a new one to be defined. If required, enter a new address in the **NEW** field, and click **S** to save. • **Registration Port** - displays the port currently used for Registration traffic, and allows a new one to be defined. If required, enter a new port number in the **NEW** field, and click **S** to save or **P** to return to the previous value. • **Query Port** - displays the port currently used for Query traffic, and allows a new one to be defined. If required, enter a new port number in the **NEW** field, and click **S** to save or **P** to return to the previous value.
Restart	Click to restart the module and apply changes. Initial registration of the module may take a few minutes. Note that restarting the module will result in the loss of any signals currently being processed.

Ethernet Pages 1 and 2

Note: **Ethernet** pages 1 & 2 refer to the rear-panel Ethernet connectors only. See Ethernet Gb on page 94 for information on managing the on-module Ethernet connector.

The **Ethernet** pages show details and status for each network interface. The IQEDGE defaults to use of DHCP, but this can be overridden and a static IP address defined if required.



Ethernet 1 page

The Ethernet Pane

The **Ethernet** pane displays details of the currently selected network interface, and allows a static IP address to be defined. Enter information as required, then click **S** to save. New settings are applied when **Restart** is clicked.

Where am I? Check box

When enabled, the **Where Am I** function causes the SFP/QSFP LEDs for the relevant Ethernet connector to flash.

Clear Link Change Count

If the state of the Ethernet link changes, the **Link Change Count** and **Link Change Time** fields are updated. Click **Clear Link Change Count** to reset the **Link Change Count** to zero.

Switch LLDP Info

Displays LLDP information received from the switch that the IQEDGE is connected to.

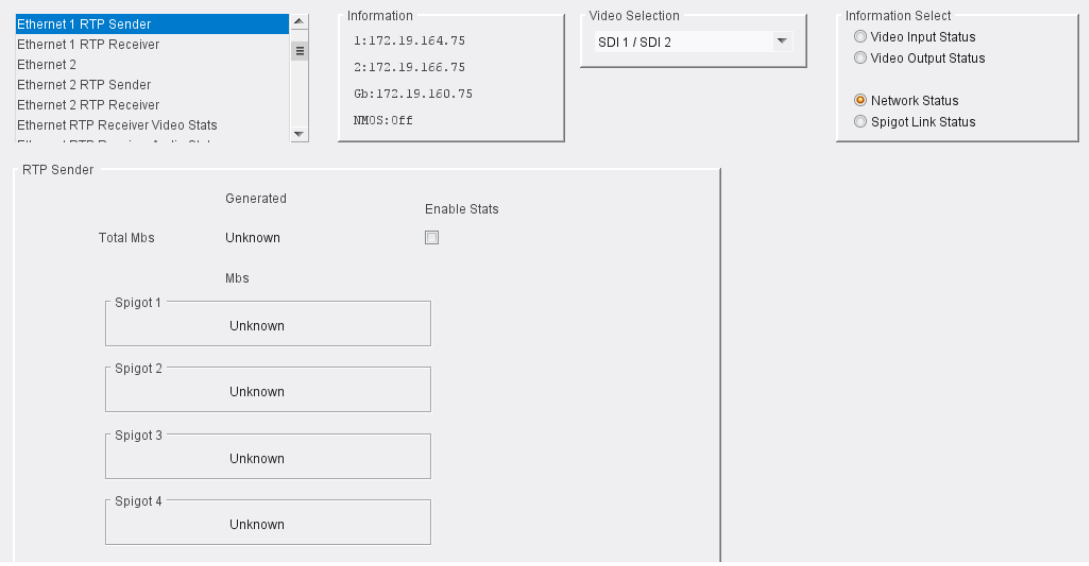
The All Traffic/CPU Traffic Panes

Click the **Enable Stats** check box to display information on traffic through the module.

Ethernet 1 and 2 RTP Sender

The **RTP Sender** page displays the amount of data transmitted, on a spigot-by-spigot basis. Units are megabits per second.

Click **Enable Stats** to display values.

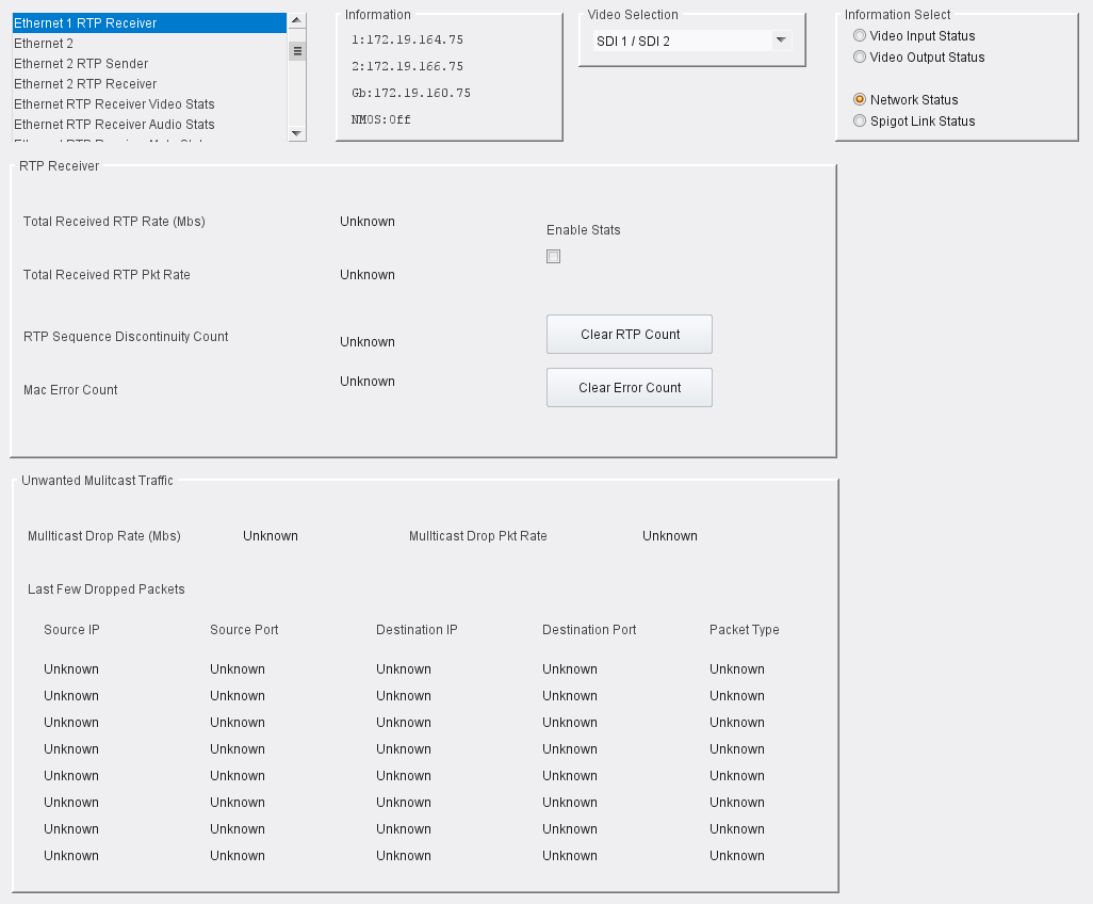


Ethernet 1 & 2 RTP Sender Page

Ethernet 1 and 2 RTP Receiver

The **RTP Receiver** pages display the amount of data received, plus details of packet loss, on a spigot-by-spigot basis. Units are megabits per second.

Click **Enable Stats** to display values; click **Clear RTP Count** or **Clear Error Count** to zero RTP Sequence Discontinuity or Error counters.

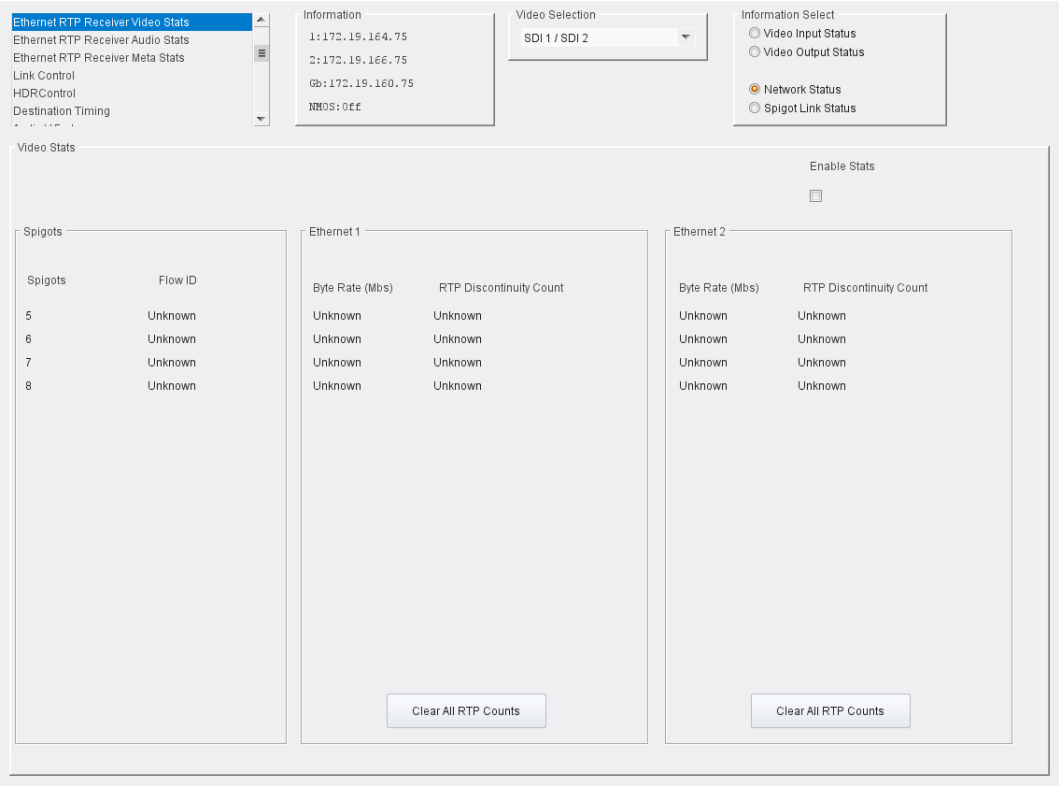


Ethernet 1 & 2 RTP Receiver Page

Ethernet RTP Receiver Video Stats

The **Ethernet RTP Receiver Video Stats** page displays information on the data received via RTP on each Ethernet input. Units are megabits per second.

Click **Enable Stats** to display values; click **Clear All RTP Counts** to zero RTP Discontinuity counters for each Ethernet input.



Ethernet RTP Receiver Video Stats page

About Flow IDs

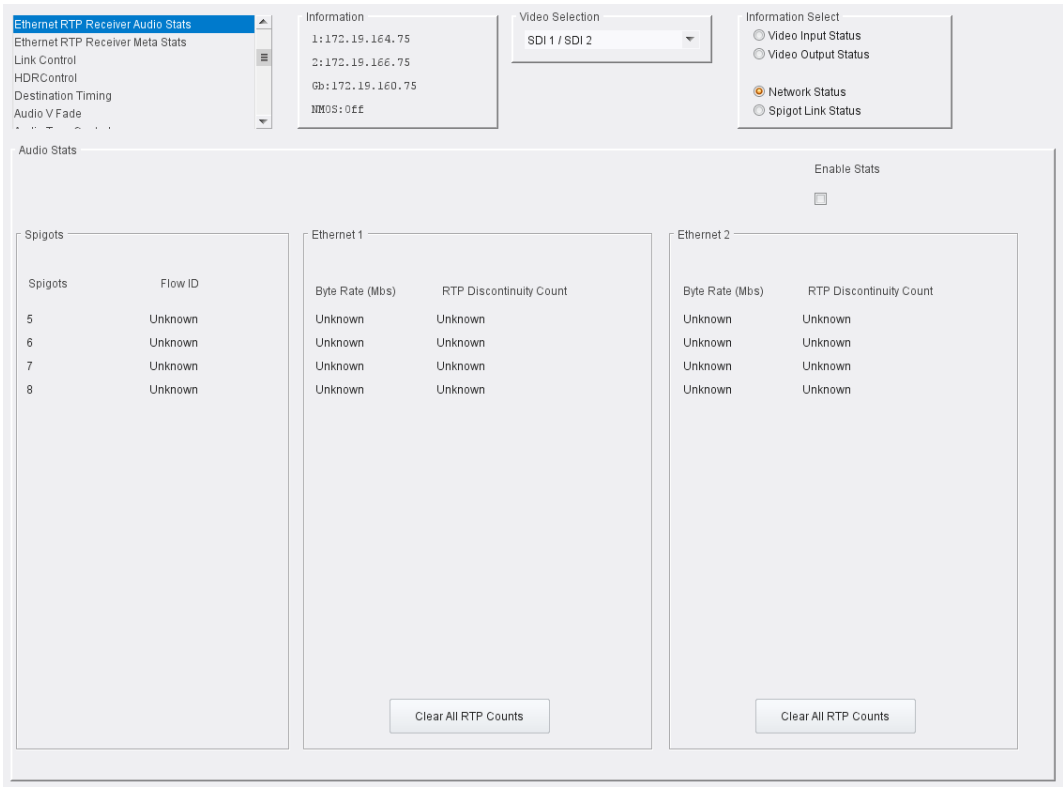
In order to maximize media port bandwidth utilization, if spigot addresses match across multiple interfaces then they are allocated to the same Flow ID.

This means that if multiple spigots are assigned to the same Flow ID and the IP addresses are only partially complete, the module will use the shared flow. For example, if two spigots share the same flow, but one of the spigots is missing from the IP addresses for the secondary interface, the module will use all of the information available to it and populate information for the partially completed spigot as if it had a complete flow.

Ethernet RTP Receiver Audio Stats

The **Ethernet RTP Receiver Audio Stats** page displays information on the data received via RTP on each Ethernet input. Units are megabits per second.

Click **Enable Stats** to display values; click **Clear All RTP Counts** to zero RTP Discontinuity counters for each Ethernet input.



Ethernet RTP Receiver Audio Stats page

About Flow IDs

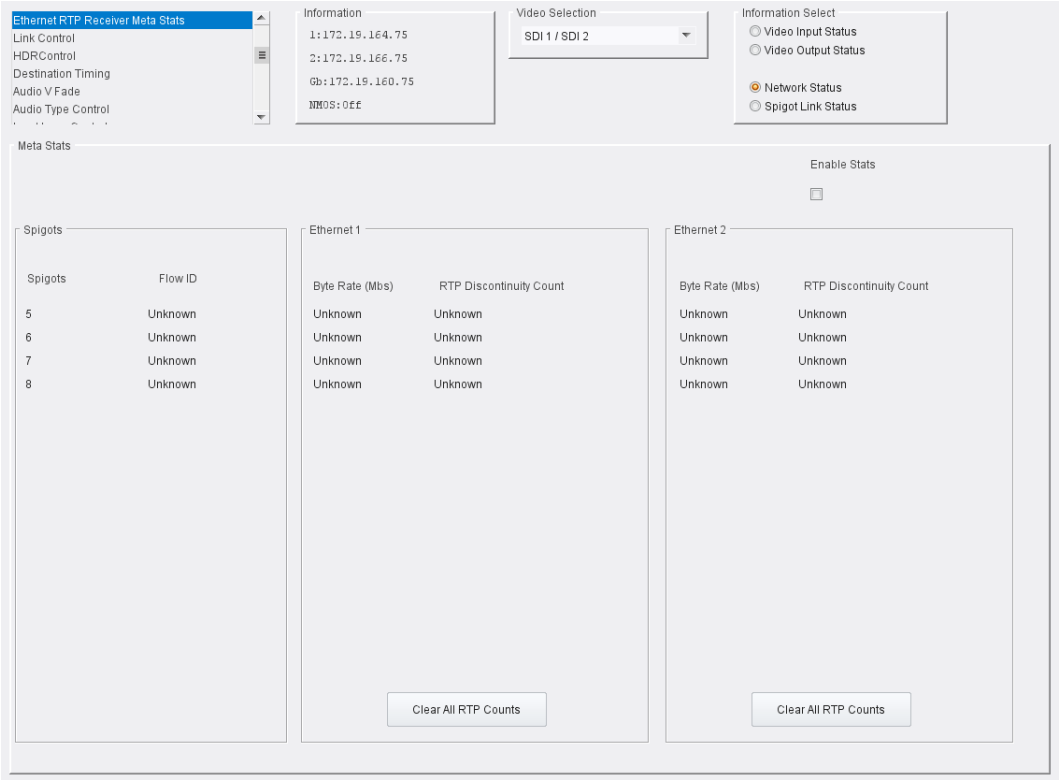
In order to maximize media port bandwidth utilization, if spigot addresses match across multiple interfaces then they are allocated to the same Flow ID.

This means that if multiple spigots are assigned to the same Flow ID and the IP addresses are only partially complete, the module will use the shared flow. For example, if two spigots share the same flow, but one of the spigots is missing from the IP addresses for the secondary interface, the module will use all of the information available to it and populate information for the partially completed spigot as if it had a complete flow.

Ethernet RTP Receiver Meta Stats

The **Ethernet RTP Receiver Meta Stats** page displays information on the metadata received via RTP on each Ethernet input. Units are megabits per second.

Click **Enable Stats** to display values; click **Clear All RTP Counts** to zero RTP Discontinuity counters for each Ethernet input.



Ethernet RTP Receiver Meta Stats page

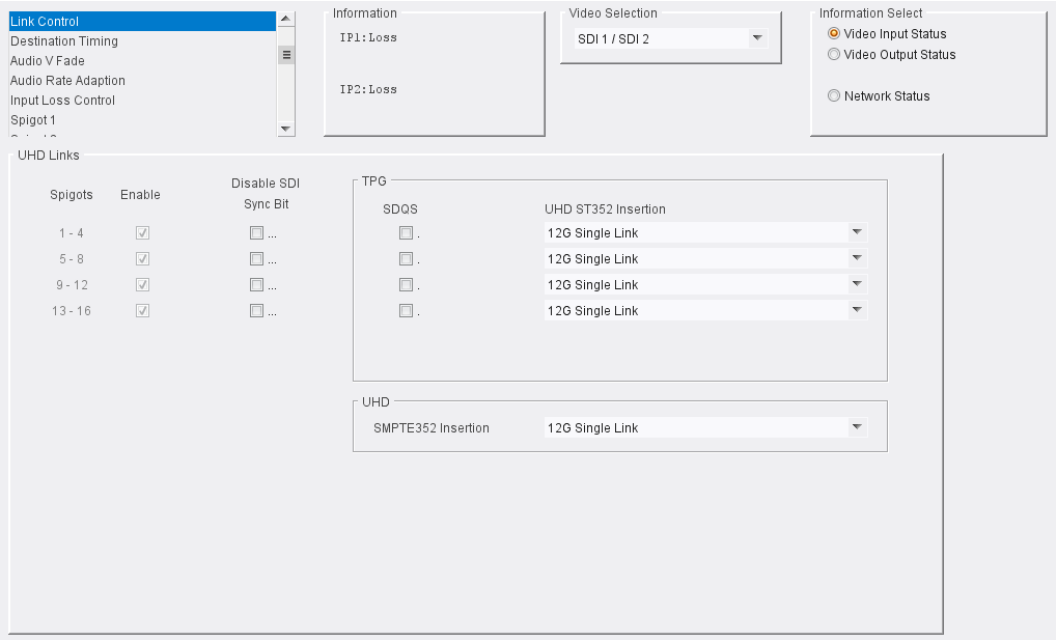
About Flow IDs

In order to maximize media port bandwidth utilization, if spigot addresses match across multiple interfaces then they are allocated to the same Flow ID.

This means that if multiple spigots are assigned to the same Flow ID and the IP addresses are only partially complete, the module will use the shared flow. For example, if two spigots share the same flow, but one of the spigots is missing from the IP addresses for the secondary interface, the module will use all of the information available to it and populate information for the partially completed spigot as if it had a complete flow.

Link Control

The **Link Control** page allows 4K spigots to be configured. Input/output can be via single or quad link. See Configuration on page 36 for information on selecting the required input/output configuration.



Link Control page

UHD Links

Enable the spigots to be used as required. Note that these controls are not available when using a single connector to carry 12G.

Disable SDI Sync Bit: some older SDI receiving equipment may not support sync bit insertion. When transmitting signals to these devices, sync bit insertion can be disabled by checking the boxes as required.

TPG

These controls are displayed only when using 12G output.

SDQS: If using Square Division signals, enable the **SDQS** check boxes as required. Otherwise, Two-sample Interleave will be used.

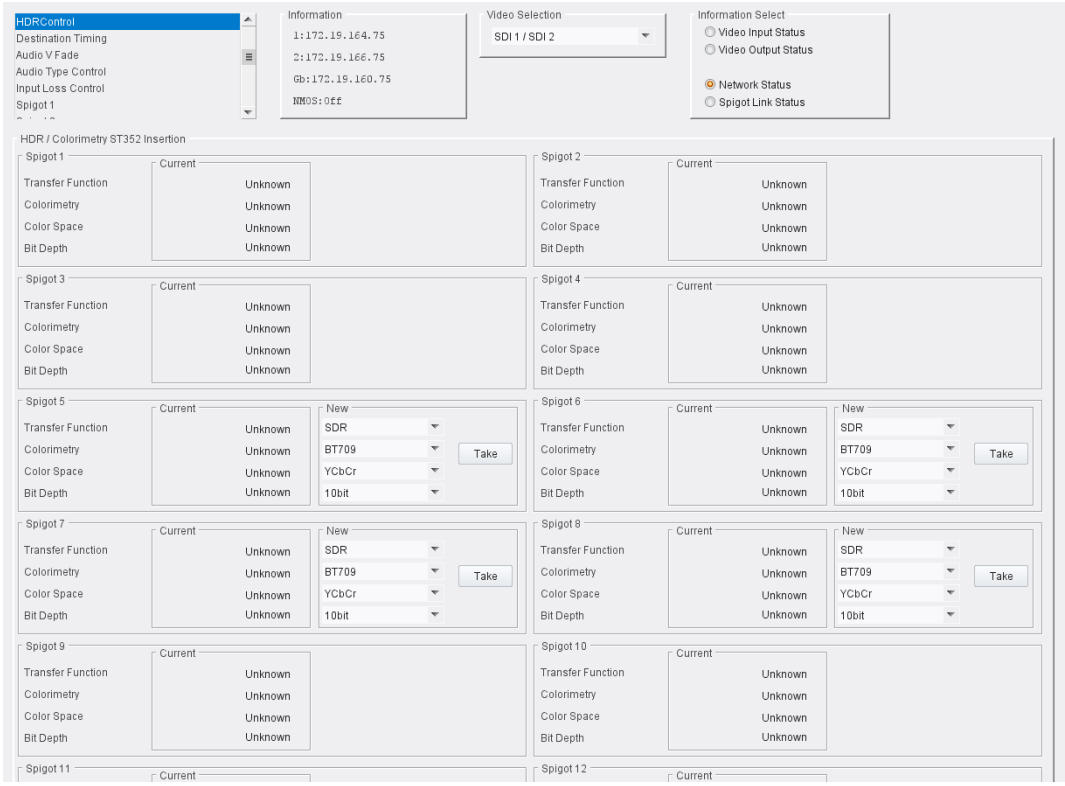
UHD ST352 Insertion: set the ST352 ancillary data type according to how the TPG data is to be output.

- For ST2082-10 output over a single link, select **12G Single Link** from the drop-down list.
- For ST425 output over quad links, select **12G Quad Link** from the drop-down list.

See *SMPTE 2082: 12G-SDI Bit-Serial Interfaces*, *SMPTE 425: Bit-Serial Interfaces at 3 Gb/s* and *SMPTE 352: Payload Identification Codes For Serial Digital Interfaces* for further information.

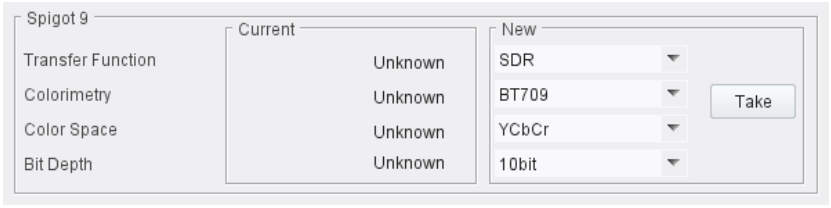
HDR Control

The **HDR Control** page allows outgoing SDI traffic to be modified to indicate that it contains HDR content.



HDR Control page

A **New** pane is displayed against output spigots. Select options from the drop-down menus for each spigot as required, then click **Take** to apply the changes.



The following options are available:

Option	Description
Transfer Function	Available values are: • **SDR** • **HDR-HLG** • **HDR-PQ** • **Other**
Colorimetry	Available values are: • **BT709** • **BT2020** • **Other**

Option	Description
Color Space	Available values are: • **YCbCr** • **ICtCp** • **Other**
Bit Depth	Available values are: • **10bit** • **10bit Full range**

Destination Timing

The **Destination Timing** page allows genlock timing on each spigot to be adjusted, in order to synchronize the IP signal with the house reference.

Destination Timing page

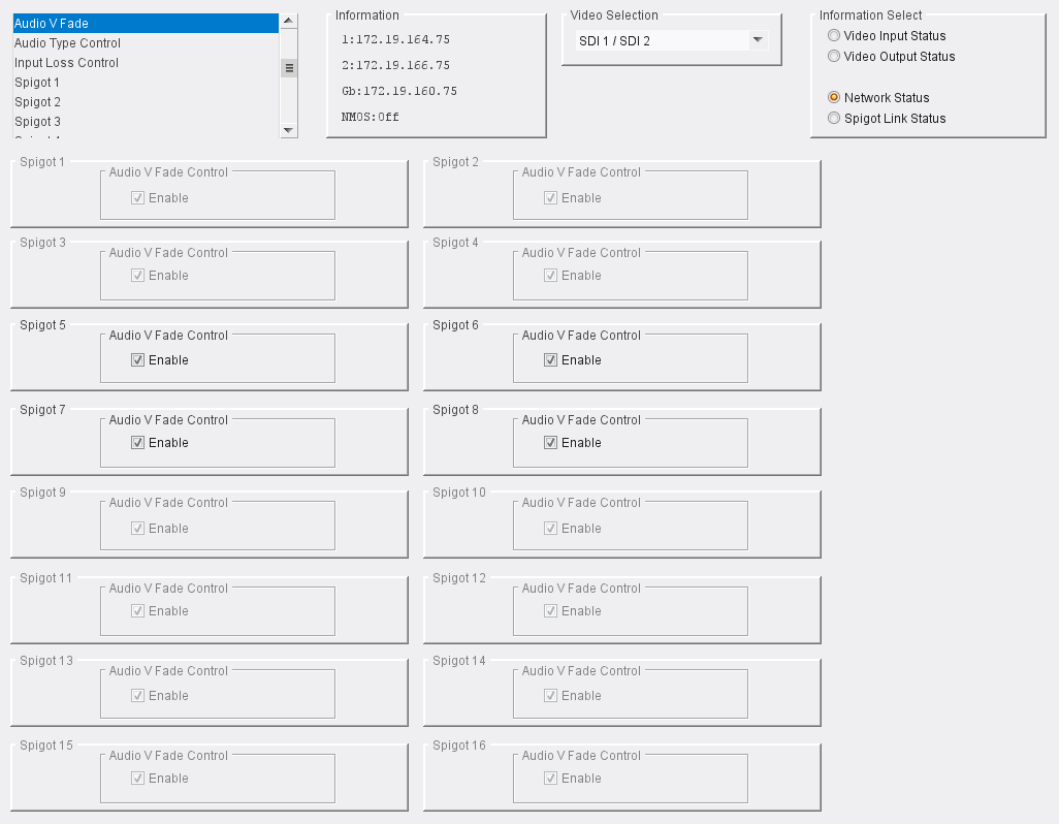
The following parameters can be modified:

Option	Description
Genlock Timing V Offset	Vertical timing offset in lines.
Genlock Timing H Offset	Horizontal timing offset in pixels.
Receiver Packet Buffer Frames Delay	The receiver packet buffer provides additional buffering for a received IP flow. Typically this is required where the IP flow is bursty in nature. However, increasing buffering can affect the time required to switch between IP flows at a spigot, owing to increased switching latency. Adjust as required.

Audio V Fade

This page allows audio fading to be applied on a spigot-by-spigot basis, in order to minimize audio disruption. When applied, the audio will fade down on input loss and perform an audio V fade (down then up) during input switching.

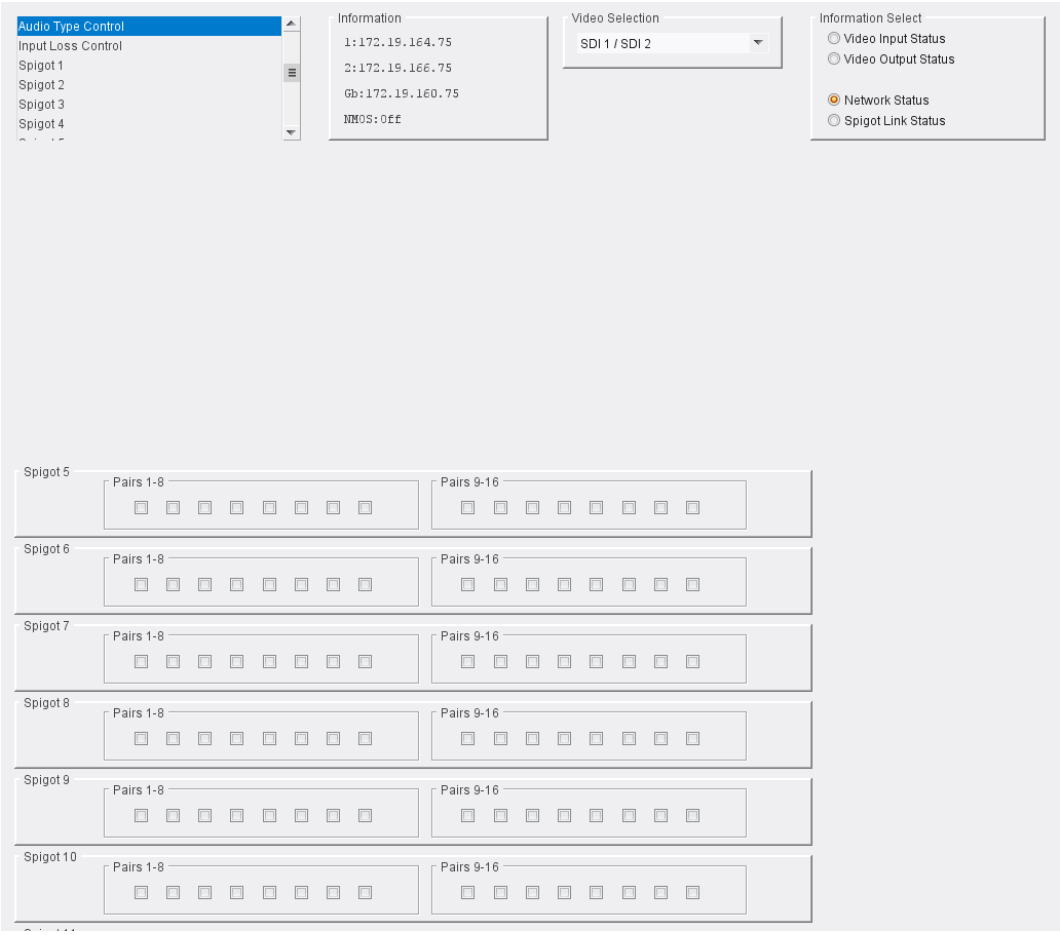
Configure as required.



Audio V Fade page

Audio Type Control

The **Audio Type Control** page allows audio pairs to be marked as carrying PCM or non-PCM. Only pairs on IP receiver spigots are displayed.

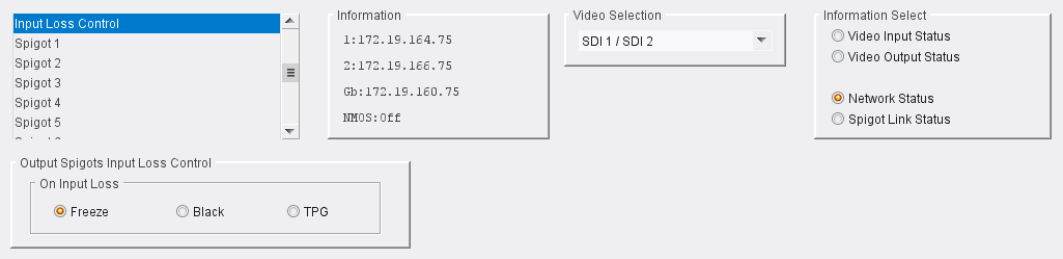


Audio Type Control page

Enable check boxes for pairs carrying PCM.

Input Loss Control

The **Input Loss Control** page allows control of the module's response to signal loss. Select as required.



Input Loss Control page

Options upon signal loss are:

Option	Operation
Freeze	Picture will freeze.
Black	Picture will cut to black.
TPG	Picture will be replaced by TPG output, as set on the **Sender TPG** page. See page 46 for more information.

Spigot Pages

A separate page is provided for each of the active spigots. These pages are dynamically configured by the product, based on the capabilities of the software version/firmware selected.

> Note: The pages shown here may differ from those seen on your particular system, depending on the model and configuration of your IQEDGE system.

Input Spigots

Input spigots are defined by selecting the appropriate firmware version on the **Configuration** page. See Configuration on page 36 for more information.

Typical Input Spigot page

The following facilities are available from this page:

Option	Operation

Spigot Pane	Displays spigot direction, associated BNC connector, current module status, the last **Take** performed on the spigot and how it was made, e.g. via RollCall or an external agent such as VSM.
	The following controls are also available:
	• **Streaming** - set the redundancy options for this spigot. This will also determine the bandwidth to be used. Options are:
	  • **Dual** - full redundancy, both Primary and Secondary available.
	  • **Single** - Primary only, but with all available bandwidth.
	  • **A** - Primary only.
	  • **B** - Secondary only.
	• **Format** - select the maximum expected bandwidth requirement for this spigot.

Sender Pane	• **Ext Headers** - Extended header operation can be adjusted for TR-03/TR-04 compatibility.
	Extended headers provide in-band metadata regarding the essence flow and its format, and are applicable to ST-2110 only. If third-party equipment is unable to support this, the functionality can be disabled, or set to **On (Legacy)**, which ensures that the packet format complies with ST2110 but has no video content.
	• Options are:
	  • **Off** - Extended headers are disabled.
	  • **On** - Sends extended headers fully compliant with ST2110-20.
	  • **On (Legacy)** - Sends extended headers that are compatible with releases earlier than V11.73D.76.
	• **Num Audio Channels** - select the number of audio channels present on this spigot.
	• **Packet Time** - select the amount of time required to complete the transmission of each packet.
	• **SDI Input CRC Errors** - enable the check box to display the number of CRC errors. Click **Clear** to reset the counter to zero.

	• **Spigot Link** - indicates the spigot link status for the selected spigot, as set on the **Link Control** page (see page 60). Control is displayed only if spigots are linked.
Take	Click to apply changes.

Option	Operation
Flow Panes (Primary, Secondary, Audio and Metadata)	Displays Video, Audio and Metadata status, and allows multicast IP and port details to be defined for the selected spigot. To set multicast details for the spigot: • Enter IP and Port details as required. • Enter the appropriate details in the **Source IP** and **Source Port** fields. Each spigot can support a variety of flows. • Select the required flow type from the **Flow Type** menu. • Click **S** to save the details for each item. • Click **Packetizer Stats** to view network statistics for the flow, if required.

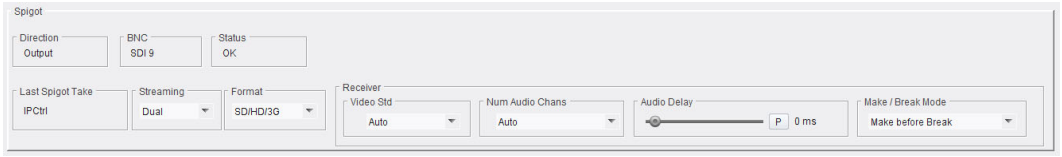
Output Spigots

Output spigots are defined by selecting the appropriate firmware version on the **Configuration** page. See Configuration on page 36 for more information.

Typical Output Spigot page

Spigot Pane

The **Spigot** pane provides basic monitoring for the selected Spigot. Click **Take** to apply any changes made.



Output Spigot Pane

The **Spigot** pane details:

- Spigot direction;
- Associated BNC connector;
- Current status;
- The last **Take** performed on the spigot.

Streaming

Select the Ethernet connectors to use for this spigot. This will also determine the bandwidth to be used. Options are:

- **Dual** - use both Ethernet connectors, and so all available bandwidth.
- **Single** - use either Ethernet connector, and so half of the available bandwidth.
- **A** or **B** - use one particular Ethernet connector, and so half of the available bandwidth.

Format

Select the format to be used on this spigot. This will ensure that the appropriate level of bandwidth is allocated.

Video Standard

Select the standard for the incoming video, or set to **Auto** to detect the standard automatically.

Num Audio Channels

If the number of audio channels is known, select the number present on this spigot. Otherwise, set to **Auto**.

Note:	It is important to use the **Auto** setting unless the actual number of audio channels in the stream is known definitively. Setting an inaccurate number of audio channels may result in unpredictable behavior.

Audio Delay

Move the slider to set an **Audio Delay** as required. Click **P** to return to the preset default value.

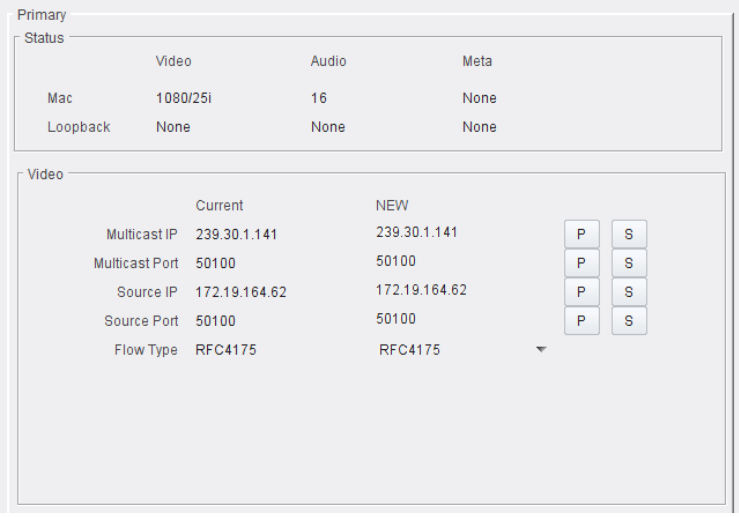
Make/Break Mode

Specifies how changes to an output's destination will be made. **Make before Break** causes the new destination to buffer data before connection to the previous destination is broken; this results in a smoother transition, but requires more bandwidth. **Break before Make** simply swaps the output's destination without buffering.

Select the required mode from the drop-down list.

Flow Panes (Primary and Secondary)

Displays Video, Audio and Metadata Status, and allows multicast IP and port details to be defined for the selected spigot.



Output Spigot Flow Pane

Setting Multicast Details

To set multicast details:

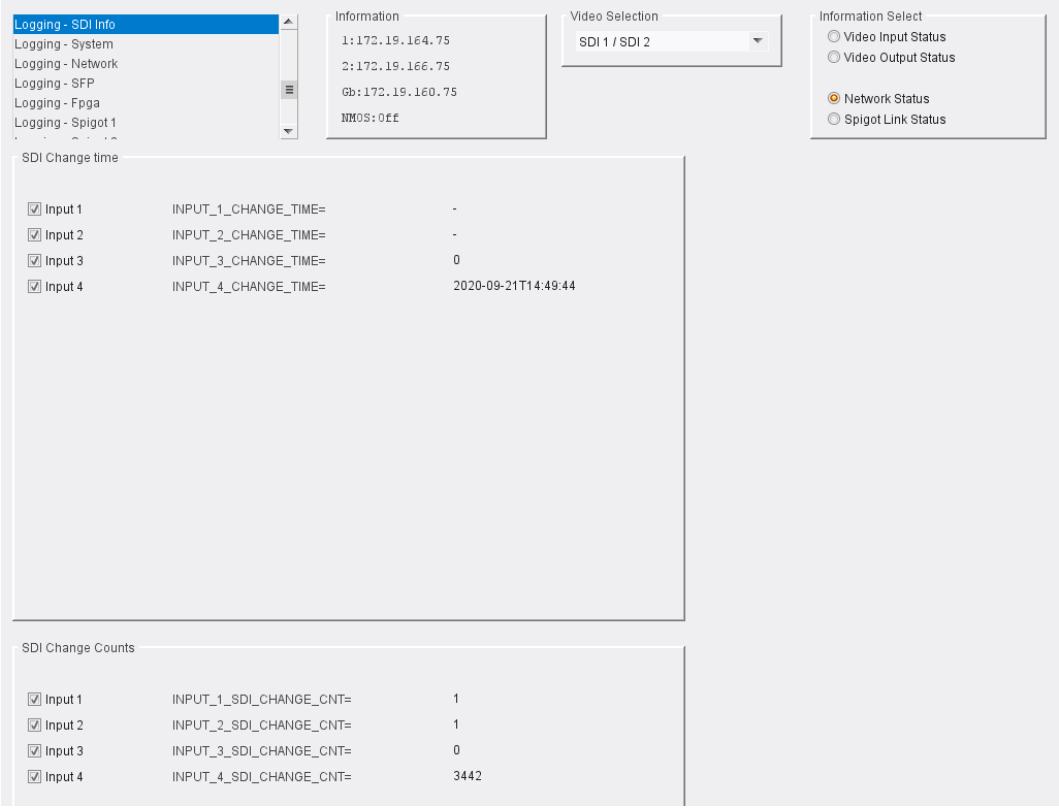
- Select the required video standard from the drop-down list.
- Enter multicast IP and port details as required.
- Enter the appropriate details in the **Source IP** and **Source Port** fields. Each spigot can support a variety of flows.
- Select the required flow type from the **Flow Type** menu.
- Click **S** to save the details, or **P** to return to the preset default value.

Logging - SDI Info

Information on various parameters can be made available to a logging device connected to the RollCall network. Each logging page comprises three columns:

- **Log Enable** - Select the check boxes that correspond to the parameters for which log information should be collected.
- **Log Field** - Displays the name of the logging field.
- **Log Value** - Displays the current log value.

The information below describes the various parameters available for logging.



Logging SDI Info page

The following facilities are available from this page:

Log Field	Description
INPUT_*N*_CHANGE_TIME=	Logs time that the SDI input changed.
INPUT_*N*_SDI_CHANGE_CNT=	Logs number of times that the SDI input has changed.

Where N is the input number.

Logging - System

Information on several parameters can be made available to a logging device connected to the RollCall network. Each logging page comprises three columns:

- **Log Enable** - Select the check boxes that correspond to the parameters for which log information should be collected.
- **Log Field** - Displays the name of the logging field.
- **Log Value** - Displays the current log value.

Logging - System page

The following logging options are available. Enable check boxes to activate log fields as required.

Log Field	Description
SN=	Reports the module serial number, which consists of an *S* followed by eight digits. **Note**: this cannot be deselected.
OS_VERSION=	Reports the operating system name and version.
BUILD_NUMBER=	Reports the build number.
HARDWARE_VERSION=	Reports the hardware version number.
HARDWARE_MOD=	Reports the hardware modification number.
HARDWARE_BUILD=	Reports the hardware build number.
FEATUREBOARD_ VERSION=	Reports the rear module daughter board version number.
FEATUREBOARD_MOD=	Reports the rear module daughter board modification number.
FEATUREBOARD_BUILD=	Reports the rear module daughter board build number. Valid values are: • **FB1** • **FB2**
FIRMWARE_VERSION=	Reports the firmware version number.
UPTIME=	Reports the time since the last restart in the format *ddd:hh:mm:ss*.
RC_UPTIME=	Reports time RollCall has been up in the format *ddd:hh:mm:ss*.
ROL_STATES=	Reports the RollCall status. Valid values are: • **OK** • **FAIL:*n*** where *n* is the RollTrack index or indexes which are failing • **Disabled**
REAR_ID=	Reports the code number of the rear fitted.
REAR_STATUS=	Reports the status of the rear where it can be determined.
SLOT_WIDTH=	Reports the slot width. IQUCP25 modules are available in single and triple width.
SLOT_START=	Reports the slot in the rack where the module is located.
POWER_USAGE=	Reports the power usage in PR Units (for IQH4B-type frames). **Note**: this cannot be deselected.
TEMP_*N*_CELSIUS=	Reports the temperature status of the FPGA. **Note**: this cannot be deselected.
TEMP_*N*_NAME=	Temperature measurement name.
REFERENCE_*N*_SOURCE=	Reports time reference source.
REFERENCE_*N*_STATE=	Valid values are: • **OK:Locked** • **OK:Input** • **WARN:Freerun** • **WARN:CrossLock**

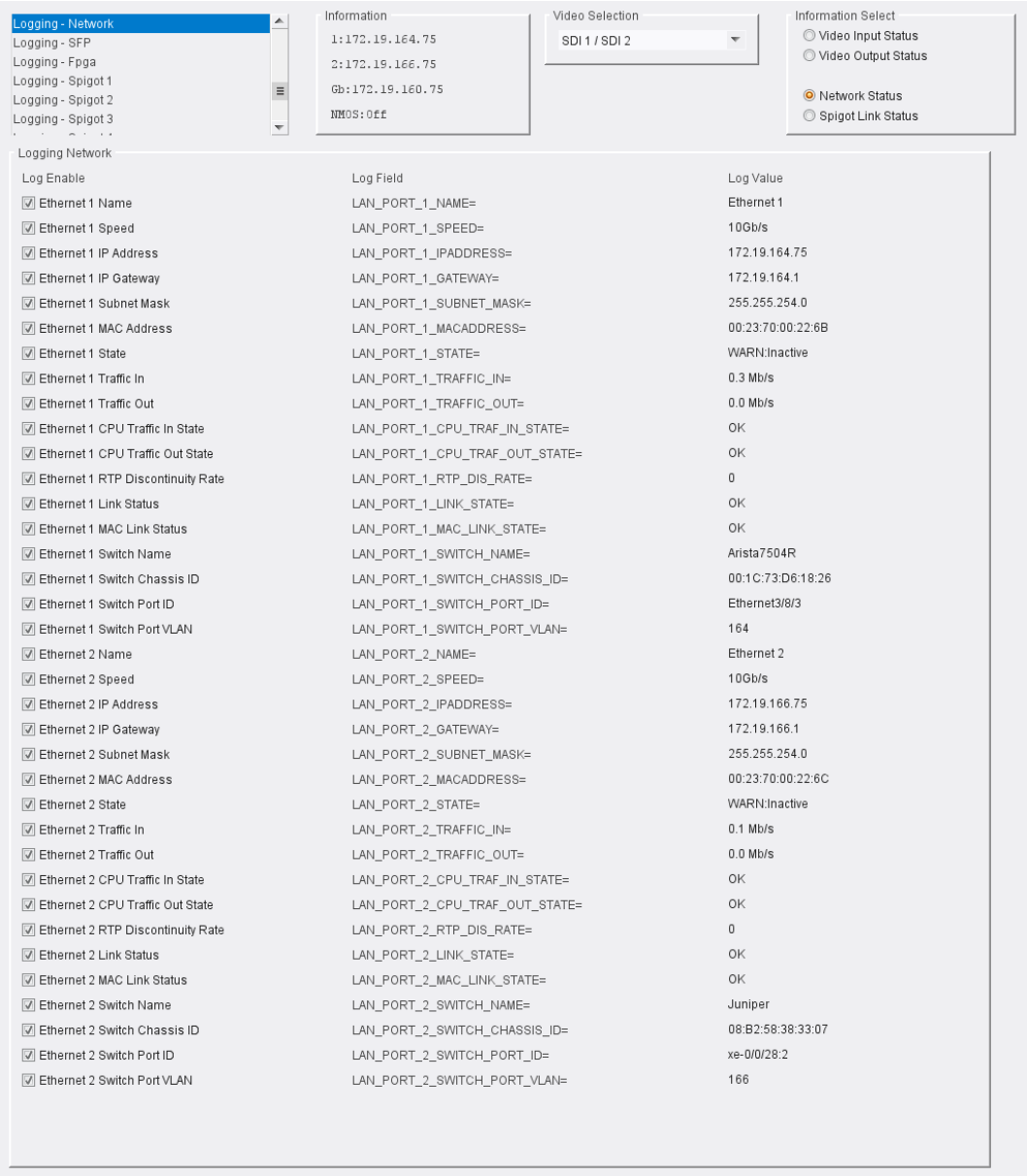
Log Field	Description
TIMESYNC_*N*_MODE=	Valid values are: • **Free running**: Module is using its own clock with no reference to any other source. • **PTP Multicast**: Card is synchronizing to a PTP grandmaster clock using multicast network messages. • **PTP Unicast**: As PTP Multicast but using the delay request. Reply messages are unicast to minimize network traffic. • **NTP**: Module clock is synchronized to an NTP clock. Generally less precise than PTP.
TIMESYNC_*N*_NETWORK=	Network port currently being used for synchronization for IQEDGE modules, dependent on the choice of interfaces made on the **Time Sync Configuration** page. If PTP and multiple interfaces are enabled, the PTP synchronization will switch ports if it doesn't see regular sync messages on the port.
TIMESYNC_*N*_CLOCK_ID=	Identification number of PTP clock being used for synchronization. This is not necessarily the grandmaster clock identity, as there can be intermediate clocks between the grandmaster and the card, depending on network configuration.
TIMESYNC_*N*_CLOCK_ STATE=	Valid values are: • **Free running**: Card is not being synchronized. • **No Lock**: PTP being used but clocks haven't synchronized within +/- 1mS. • **Locked**: PTP being used and clocks are within the accepted range. • **NTP**: Module using NTP to synchronize.
TIMESYNC_*N*_AVG_ DELAY=	The current network delay time between the card and the clock sending the synchronization messages. This should be relatively constant and is dependent on network configuration.
TIMESYNC_*N*_STDV_ DELAY=	The current standard deviation in the network delay time between the card and the clock sending the synchronization messages. Should be a low number as the network delay is expected to be constant.
TIMESYNC_*N*_AVG_ ERROR=	The current difference between the cards time and the grandmaster time. Should be close to zero once card has synchronized.
TIMESYNC_*N*_STDV_ ERROR=	The standard deviation in the average error.
TIMESYNC_*N*_ GRANDMASTER=	Identity of network clock acting as PTP grandmaster. This is the source of the PTP synchronization messages used by all PTP slave clocks on the network. If there are multiple grandmasters, they should negotiate between themselves to identify the most accurate and then silence the others.

Log Field	Description
TIMESYNC_*N*_LAST_ LOCK=	Time when the module last changed from not locked to locked. Ideally this will be a few seconds after the module has powered up. This allows the user to confirm which clock the module has synchronized to.
TIMESYNC_*N*_ SYNCHRONISATIONS=	Logs the number of times the card has synchronized since it was powered up. Ideally this will be a low number, as cards are expected to synchronize and stay synchronized. Large numbers indicate possible problems with the network or grandmaster clock.
TIMESYNC_*N*_STATE=	Logs whether PTP is locked. Valid values are: • **OK:LOCKED** • **FAIL:NO LOCK**
TIMESYNC_*N*_CLOCK_ ADDRESS=	Logs IP address of the currently-selected Grand Master.
TIMESYNC_*N*_REQUEST_ INTERVAL=	Logs the PTP Delay Request Frequency setting, as set on the **Time Sync Configuration** page. See page 41.
TIMESYNC_*N*_ PREFERENCE=	Logs the PTP Network Interface **Preference** setting, as set on the **Time Sync Configuration** page. See page 41.

Where N is the input number.

Information on several parameters can be made available to a logging device connected to the RollCall network. Each logging page comprises three columns:

- **Log Enable** - Select the check boxes that correspond to the parameters for which log information should be collected.
- **Log Field** - Displays the name of the logging field.
- **Log Value** - Displays the current log value.



Logging - Network page

The following logging options are available. Enable check boxes to activate log fields as required.

Log Field	Description
LAN_PORT_*N*_NAME=	Logs the Ethernet port name.
LAN_PORT_*N*_SPEED=	Logs the Ethernet connection speed. Valid values are: • **10 Mbit/s Full Duplex** • **10 Mbit/s Half Duplex** • **100 Mbit/s Full Duplex** • **100 Mbit/s Half Duplex** • **1 Gbit/s Full Duplex** • **25 Gbit/s** • **No Link**
LAN_PORT_*N*_IPADDRESS=	Logs the Ethernet port IP address.

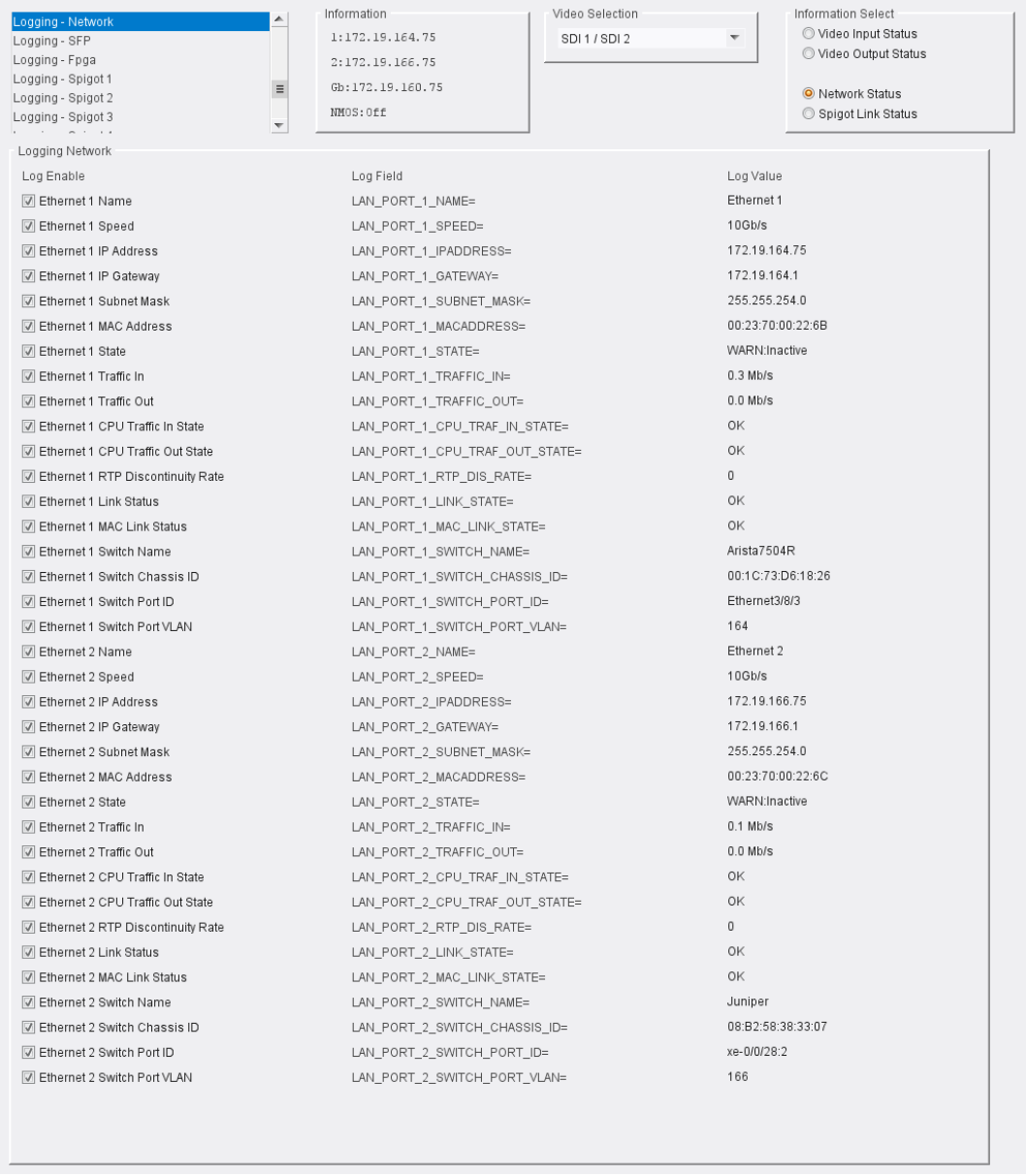
Log Field	Description
LAN_PORT_*N*_GATEWAY=	Logs the gateway address set for the management of media interfaces.
LAN_PORT_*N*_SUBNET_MASK=	Logs the subnet mask address set for the management of media interfaces.
LAN_PORT_*N*_MACADDRESS=	Logs the Ethernet port MAC address.
LAN_PORT_*N*_STATE=	Logs the Ethernet connection state. Valid values are: • **Active** • **WARN:Inactive**
LAN_PORT_*N*_TRAFFIC_IN=	Logs speed of traffic received by the Ethernet port. Values are reported in kbps, Mbps or Gbps, as appropriate.
LAN_PORT_*N*_TRAFFIC_OUT=	Logs speed of traffic transmitted by the Ethernet port. Values are reported in Kbps, Mbps or Gbps, as appropriate.
LAN_PORT_*N*_CPU_TRAF_IN_STATE=	Shows whether the flow of data into the CPU is satisfactory. Valid values are: • **OK** • **WARN:LOW DATA** • **FAIL**
LAN_PORT_*N*_CPU_TRAF_OUT_STATE=	Shows whether the flow of data out of the CPU is satisfactory. Valid values are: • **OK** • **WARN:LOW DATA** • **FAIL**
LAN_PORT_*N*_RTP_DIS_RATE=	Logs RTP discontinuity rate for the Ethernet port.
LAN_PORT_*N*_LINK_STATE=	Logs the Ethernet link state. Valid values are: • **OK** • **WARN:DOWN**
LAN_PORT_*N*_MAC_LINK_STATE=	Logs state of the module's FPGA Ethernet link. Valid values are: • **UP** • **DOWN**
LAN_PORT_*N*_SWITCH_NAME=	Logs name of the network switch that the module is connected to.
LAN_PORT_*N*_SWITCH_CHASSIS_ID=	Logs the MAC address of the switch port to which the module's media port is connected.
LAN_PORT_*N*_SWITCH_PORT_ID=	Logs Port ID of the network switch the module is connected to.
LAN_PORT_*N*_SWITCH_PORT_VLAN=	Logs name of the VLAN that the module is connected to.

Where N is the input number.

Logging - Network

Information on several parameters can be made available to a logging device connected to the RollCall network. Each logging page comprises three columns:

- **Log Enable** - Select the check boxes that correspond to the parameters for which log information should be collected.
- **Log Field** - Displays the name of the logging field.
- **Log Value** - Displays the current log value.



Logging - Network page

The following logging options are available. Enable check boxes to activate log fields as required.

Log Field	Description
LAN_PORT_*N*_NAME=	Logs the Ethernet port name.
LAN_PORT_*N*_SPEED=	Logs the Ethernet connection speed. Valid values are: • **10 Mbit/s Full Duplex** • **10 Mbit/s Half Duplex** • **100 Mbit/s Full Duplex** • **100 Mbit/s Half Duplex** • **1 Gbit/s Full Duplex** • **25 Gbit/s** • **No Link**
LAN_PORT_*N*_IPADDRESS=	Logs the Ethernet port IP address.
LAN_PORT_*N*_GATEWAY=	Logs the gateway address set for the management of media interfaces.
LAN_PORT_*N*_SUBNET_MASK=	Logs the subnet mask address set for the management of media interfaces.
LAN_PORT_*N*_MACADDRESS=	Logs the Ethernet port MAC address.
LAN_PORT_*N*_STATE=	Logs the Ethernet connection state. Valid values are: • **Active** • **WARN:Inactive**
LAN_PORT_*N*_TRAFFIC_IN=	Logs speed of traffic received by the Ethernet port. Values are reported in kbps, Mbps or Gbps, as appropriate.
LAN_PORT_*N*_TRAFFIC_OUT=	Logs speed of traffic transmitted by the Ethernet port. Values are reported in Kbps, Mbps or Gbps, as appropriate.
LAN_PORT_*N*_CPU_TRAF_IN_STATE=	Shows whether the flow of data into the CPU is satisfactory. Valid values are: • **OK** • **WARN:LOW DATA** • **FAIL**
LAN_PORT_*N*_CPU_TRAF_OUT_STATE=	Shows whether the flow of data out of the CPU is satisfactory. Valid values are: • **OK** • **WARN:LOW DATA** • **FAIL**
LAN_PORT_*N*_RTP_DIS_RATE=	Logs RTP discontinuity rate for the Ethernet port.
LAN_PORT_*N*_LINK_STATE=	Logs the Ethernet link state. Valid values are: • **OK** • **WARN:DOWN**
LAN_PORT_*N*_MAC_LINK_STATE=	Logs state of the module's FPGA Ethernet link. Valid values are: • **UP** • **DOWN**

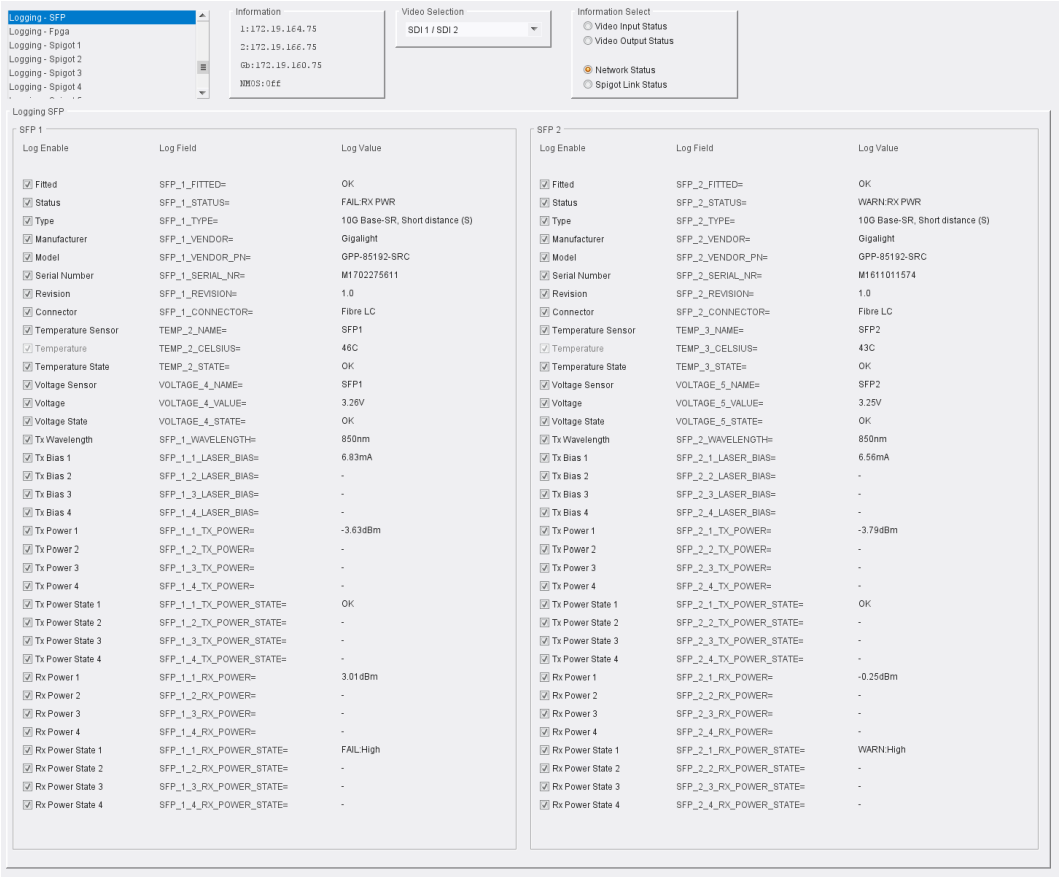
Log Field	Description
LAN_PORT_*N*_SWITCH_NAME=	Logs name of the network switch that the module is connected to.
LAN_PORT_*N*_SWITCH_CHASSIS_ID=	Logs the MAC address of the switch port to which the module's media port is connected.
LAN_PORT_*N*_SWITCH_PORT_ID=	Logs Port ID of the network switch the module is connected to.
LAN_PORT_*N*_SWITCH_PORT_VLAN=	Logs name of the VLAN that the module is connected to.

Where N is the input number.

Logging - SFP

Information on several parameters can be made available to a logging device connected to the RollCall network. Each logging page comprises three columns:

- **Log Enable** - Select the check boxes that correspond to the parameters for which log information should be collected.
- **Log Field** - Displays the name of the logging field.
- **Log Value** - Displays the current log value.



Logging - SFP page

The following options are available. Enable check boxes to activate log fields as required.

Log Field	Description
SFP_*N*_FITTED=	Logs presence of (Q)SFP. Valid values are: • **OK** • **Missing**
SFP_*N*_STATUS=	Logs status reported by the (Q)SFP. Valid values are: <u>SFPs</u> • **OK** • **WARN:Temp** • **WARN:VCC** • **WARN:TX BIAS** • **WARN:RX BIAS** • **WARN:Laser** • **WARN:TEC Curr** • **FAIL:SFP Not Ready** • **FAIL:RX LOS - RX Failure** • **FAIL:TX Fault - TX Failure** • **FAIL:RX LOL - RX Loss of Lock** • **FAIL:TX LOL - TX Loss of Lock** <u>QSFPs</u> • **OK** • **WARN:Temp** • **WARN:VCC** • **WARN:RX PWR LO** • **WARN:RX PWR HI** • **WARN:TX PWR LO** • **WARN:TX PWR HI** • **FAIL:SFP Not Ready** • **FAIL:RX LOS - RX Failure** • **FAIL:TX LOS - TX Failure** • **FAIL:EQ Fault - EQ Failure** • **FAIL:RX LOL - RX Loss of Lock** • **FAIL:TX LOL - TX Loss of Lock** • **FAIL:Temp** • **FAIL:VCC**
	<u>QSFPs (cont)</u> • **FAIL:RX PWR LO** • **FAIL:RX PWR HI** • **FAIL:TX BIAS LO** • **FAIL:TX BIAS HI** • **TX PWR LO** • **TX PWR HI**
SFP_*N*_TYPE=	Logs (Q)SFP identifier from device.
SFP_*N*_VENDOR=	Logs (Q)SFP manufacturer from device.
SFP_*N*_VENDOR_PN=	Logs (Q)SFP model number from device.

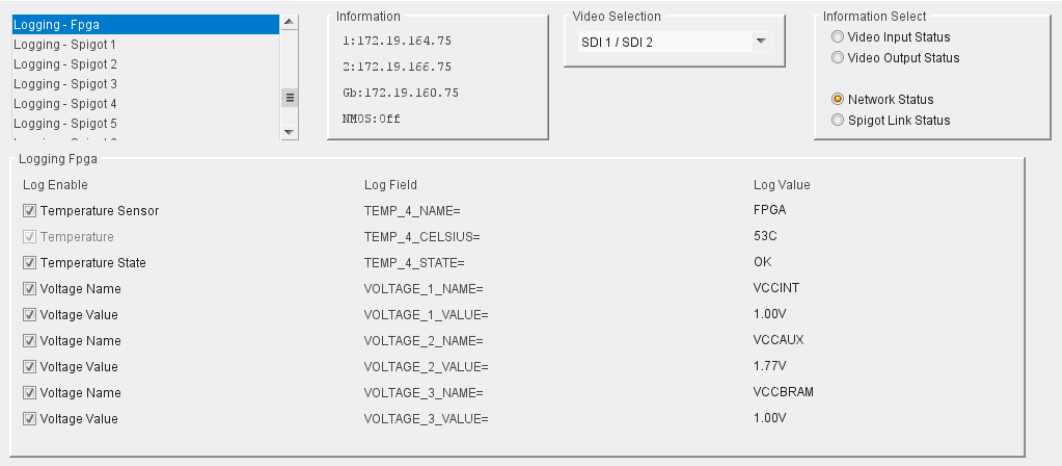
Log Field	Description
SFP_*N*_SERIAL_NR=	Logs the module serial number, which consists of an S followed by eight digits.
SFP_*N*_REVISION=	Logs manufacturer revision number.
SFP_*N*_CONNECTOR=	Logs connector type.
TEMP_*N*_NAME=	Logs temperature sensor name.
TEMP_*N*_CELSIUS=	Logs current temperature sensor reading.
TEMP_*N*_STATE=	Logs temperature sensor state. Valid values are: • **WARN:Disabled** - Temperature sensor disabled. • **WARN:Low** - Low, but in tolerance. • **WARN:High** - High, but in tolerance. • **OK** • **FAIL:Low** - Low and out of tolerance. • **FAIL:High** - High and out of tolerance.
VOLTAGE_*N*_NAME=	Logs voltage sensor name.
VOLTAGE_*N*_VALUE=	Logs current voltage reading.
VOLTAGE_*N*_STATE=	Logs temperature sensor state. Valid values are: • **OK** • **WARN:Low** - Low, but in tolerance. • **WARN:High** - High, but in tolerance.
SFP_*N*_WAVELENGTH=	Logs transmit wavelength in nm.
SFP_*N*_*X*_LASER_BIAS=	Logs bias level in mA.
SFP_*N*_*X*_TX_POWER=	Logs transmit power level in dBm.
SFP_*N*_*X*_TX_POWER_STATE=	Logs transmit power level. Valid values are: • **OK** • **WARN:Low** - Low, but in tolerance. • **WARN:High** - High, but in tolerance. • **FAIL:Low** - Low and out of tolerance. • **FAIL:High** - High and out of tolerance.
SFP_*N*_*X*_RX_POWER=	Logs receive power level in dBm.
SFP_*N*_*X*_RX_POWER_STATE=	Logs receive power level. Valid values are: • **OK** • **WARN:Low** - Low, but in tolerance. • **WARN:High** - High, but in tolerance. • **FAIL:Low** - Low and out of tolerance. • **FAIL:High** - High and out of tolerance.

Where N is the input/(Q)SFP number and X is the lane.

Logging - FPGA

Information on several parameters can be made available to a logging device connected to the RollCall network. Each logging page comprises three columns:

- **Log Enable** - Select the check boxes that correspond to the parameters for which log information should be collected.
- **Log Field** - Displays the name of the logging field.
- **Log Value** - Displays the current log value.



Logging - FPGA page

The following options are available. Enable check boxes to activate log fields as required.

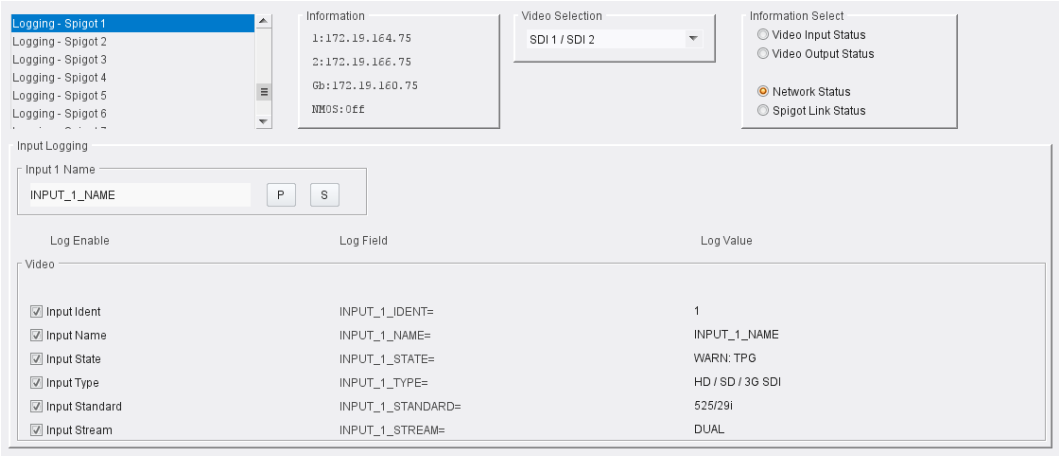
Log Field	Description
TEMP_*N*_NAME=	Reports temperature sensor name.
TEMP_*N*_CELSIUS=	Reports current temperature sensor reading.
TEMP_*N*_STATE=	Reports current temperature state. Valid values are: • **WARN:Low** - temperature is low, but in tolerance. • **WARN: High** - temperature is high, but in tolerance. • **OK** • **FAIL**:**Low** - temperature is low and out of tolerance. • **FAIL**:**High** - temperature is high and out of tolerance. • **WARN:Disabled** - temperature sensor is disabled.
VOLTAGE_*N*_NAME=	Voltage sensor name.
VOLTAGE_*N*_VALUE=	Reports current voltage reading.

Where N is the input number.

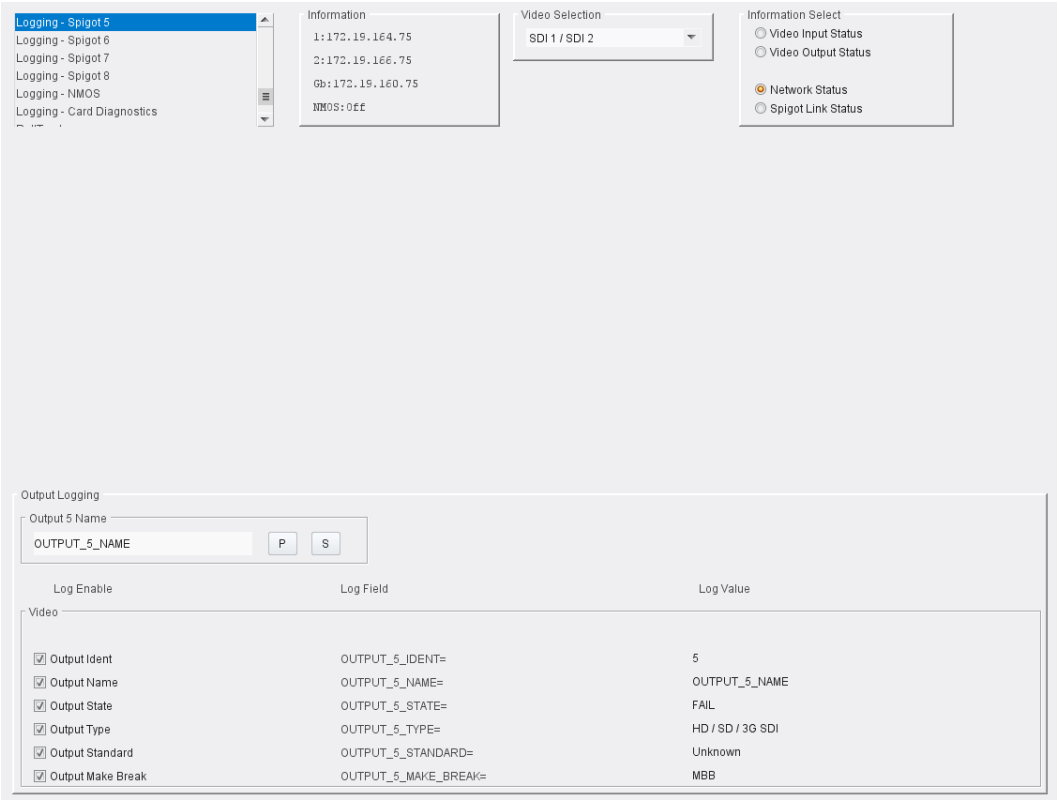
Logging - Spigot *n*

The **Logging - Spigot** pages are used to select the fields to be enabled for each available spigot. Depending on whether the spigot is an input or an output, the appropriate log fields are shown.

An additional field is provided for the user to optionally specify a name for the input/output.



Input Spigot Logging page



Output Spigot Logging page

The following options are available. Enable check boxes to activate log fields as required.

Option	Description
INPUT_*N*_IDENT=	System-defined identifier for the input, based on the rear ID.
INPUT_*N*_NAME=	Name of the input, as defined on the **Setup** page. See page 93.

Option	Description
INPUT_*N*_STATE=	Valid values are: • **OK**: input signal good. • **FAIL**: input signal not detected.
INPUT_*N*_TYPE=	HD/SD/3G SDI
INPUT_*N*_STANDARD=	PAL/NTSC/625 Mono/525 Mono
INPUT_*N*_STREAM=	Displays whether an IP sender uses SDI on Primary, Secondary or both. Valid values are: • **Dual** - both used. • **A** - only Primary used. • **B** - only Secondary used.
OUTPUT_*N*_IDENT=	Name of the output as shown on the rear panel.
OUTPUT_*N*_NAME=	Name of the output as defined by the user.
OUTPUT_*N*_STATE=	Current state of the output. Valid values are: • **OK**: output signal good. • **FAIL**: output signal not detected. • **WARN:Freeze** • **WARN: Pattern** • **WARN:Black**
OUTPUT_*N*_TYPE=	Type of output. Valid values are: • **SD SDI** • **HD SDI** • **HD/SD/3G SDI**
OUTPUT_*N*_STANDARD=	Reports video standard on the output. Format: **<Lines>(<Active>)/<Rate><i/p/sf>** Where: • **Lines** = Total lines • **Active** = Active lines • **Rate** = Frame rate • **I** = interlaced • **P** = Progressive • **SF** = Segmented Frame For example: **1080/50p** or **1125(1080)/25i**.
OUTPUT_*N*_MAKE_BREAK=	Reports **Make-before-Break** or **Break-before-Make** setting for the spigot.

Where N is the input/output number.

Logging - NMOS

Information on several NMOS parameters can be made available to a logging device connected to the RollCall network. Each logging page comprises three columns:

- **Log Enable** - Select the check boxes that correspond to the parameters for which log information should be collected.
- **Log Field** - Displays the name of the logging field.
- **Log Value** - Displays the current log value.

Logging - NMOS page

The following options are available. Enable check boxes to activate log fields as required.

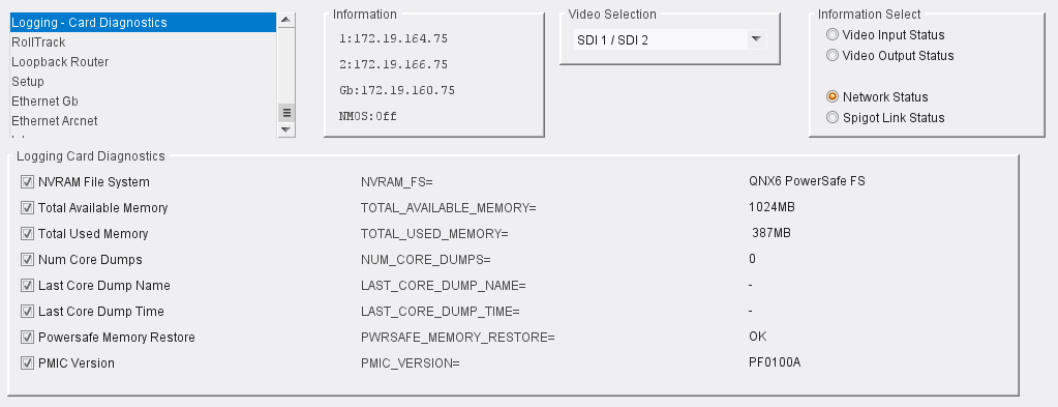
Option	Description
NMOS_STATUS=	Displays the current NMOS status. Valid values are: • **OK:Off** - NMOS functionality is disabled. • **OK:Registered** - the module has been successfully added to the NMOS registry. • **WARN:Registering** - the module is currently being registered. • **FAIL**:**Unregistered** - the registration process has failed.
NMOS_REGISTRATION=	Displays the method used to register the module. Valid values are: • **Auto** • **Static** See NMOS on page 51 for information on these settings.
NMOS_REGISTRY_IP_ ADDRESS=	Displays the IP address of the NMOS registry.
NMOS_QUERY_PORT=	Displays the port currently used for NMOS query traffic.
NMOS_REGISTRATION_ PORT=	Displays the port currently used for NMOS registration traffic.

Where N is the input/output number.

Logging - Card Diagnostics

Information on several parameters can be made available to a logging device connected to the RollCall network. Each logging page comprises three columns:

- **Log Enable** - Select the check boxes that correspond to the parameters for which log information should be collected.
- **Log Field** - Displays the name of the logging field.
- **Log Value** - Displays the current log value.



Logging - Card Diagnostics page

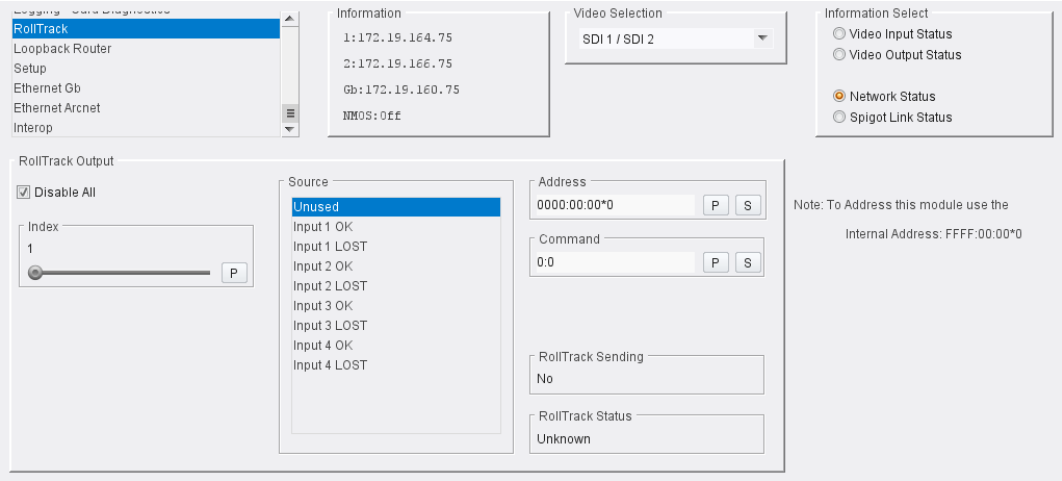
The following options are available. Enable check boxes to activate log fields as required.

Option	Description
NVRAM_FS=	Logs whether the installed file system is QNX6 PowerSafe or FAT32.
TOTAL_AVAILABLE_ MEMORY=	Logs total amount of CPU memory available to the module, in bytes.
TOTAL_USED_MEMORY=	Logs amount of CPU memory used by the module, in bytes.
NUM_CORE_DUMPS=	Logs number of times a core dump has been performed as a result of an application crash.
LAST_CORE_DUMP_ NAME=	Logs name of last application to crash.
LAST_CORE_DUMP_ TIME=	Logs time of last core dump performed as a result of an application crash.
PWRSAFE_MEMORY_ RESTORE=	Logs where system memory was restored from. Valid values are: • **FAT32** - restored from FAT32. • **OK** - restored from QNX6 PowerSafe. • **FAIL** - memory restoration failed.
PMIC_VERSION=	Logs name of the on-board power management chip.

RollTrack

The **RollTrack** page allows information to be sent, via the RollCall network, to other compatible units connected on the same network.

The **Source** window lists the RollTrack sources:



Source Pane

Disable All

When checked, all RollTrack items are disabled.

RollTrack Index

This slider allows up to 16 distinct RollTrack outputs to be set up. Dragging the slider selects the RollTrack Index number, displayed below the slider. Clicking **P** selects the default preset value.

RollTrack Source

The source of information that triggers transmission of data is selected with this control. Dragging the slider selects the RollTrack source, displayed below the slider. Clicking **P** selects the default preset value. When no source is selected, **Unused** is displayed.

RollTrack Source	Description
Unused	No RollTracks sent.
Input *N* OK	Input *N* is good.
Input *N* LOST	Input *N* is bad.

Where N is the input number.

RollTrack Address

This item enables the address of the selected destination unit to be set.

The address may be changed by typing the new destination into the text field, then clicking **S** to save the selection. Clicking **P** returns to the default preset destination.

The RollTrack address consists of four sets of numbers, for example, **0000:10:01*99**:

- The first set, **0000**, is the network segment code number.
- The second set, **10**, is the number identifying the (enclosure/mainframe) unit.

- The third set, **01**, is the slot number in the unit.
- The fourth set, **99**, is a user-definable number that is a unique identifier for the destination unit in a multi-unit system. This ensures only the correct unit will respond to the command. If left at **00**, an incorrectly fitted unit may respond inappropriately.

RollTrack Command

This item enables a command to be sent to the selected destination unit.

The command may be changed by typing a code in to the text field, and then selecting **S** to save the selection. Clicking **P** returns to the default preset command.

A RollTrack command consists of two sets of numbers, for example: **84:156**:

- The first number, **84**, is the actual RollTrack command.
- The second number, **156**, is the value sent with the RollTrack command.

RollTrack Sending

A message is displayed here when the unit is actively sending a RollTrack command. Possible messages are:

Log Field	Description
No	The message is not being sent.
Yes	The message is being sent.

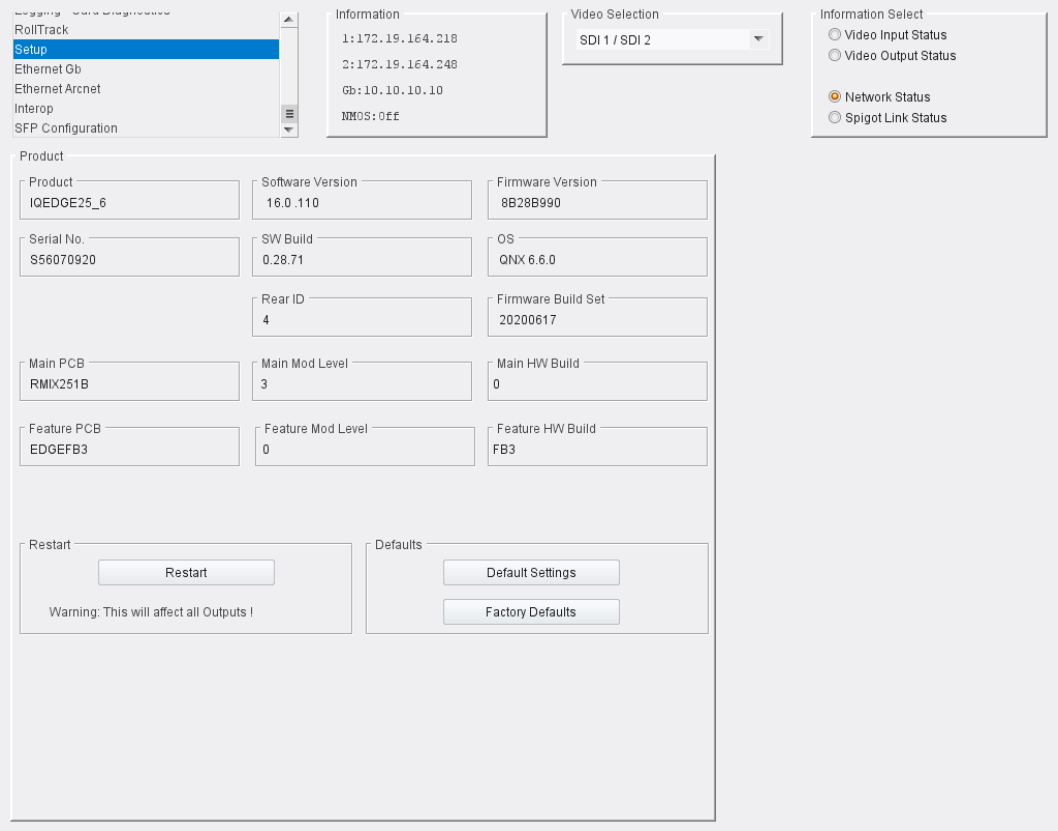
RollTrack Status

A message is displayed here to indicate the status of the currently selected RollTrack index. Possible RollTrack Status messages are:

Log Field	Description
OK	RollTrack message was sent and received successfully.
Unknown	RollTrack message has been sent but transmission has not yet completed.
Timeout	RollTrack message has been sent but acknowledgment not received. This could be because the destination unit is not at the location specified.
Bad	RollTrack message has not been correctly acknowledged at the destination unit. This could be because the destination unit is not of the type specified.
Disabled	RollTrack sending is disabled.

Setup

The **Setup** page displays basic information about the module, such as the serial number and software version. Use the functions on the page to restart the module or to return all settings to their factory or default settings.



Setup page

The **Product** pane displays technical information on the IQEDGE. You may be asked for these details by Grass Valley support if you need technical assistance.

Item	Description
Product	Name of the module.
Software Version	Currently installed software version number.
Firmware Version	Currently installed firmware version number.
Serial No	Module serial number.
SW Build	Factory software build number. This number identifies all parameters of the module.
OS	Operating system version number.
Rear ID	Rear panel type.
Firmware Build Set	Firmware Build Set ID.
Main PCB	Printed Circuit Board version number.
Main Mod Level	Main PCB modification level.
Main HW Build	Factory main hardware build number.
Feature PCB	Feature board PCB revision number.

Item	Description
Feature Mod Level	Feature board PCB modification level.
Feature HW Build	Factory feature board hardware build number.

Restart

Power-cycles the module. This will produce disturbances on the output picture.

> Note: Restarting the module will affect all outputs.

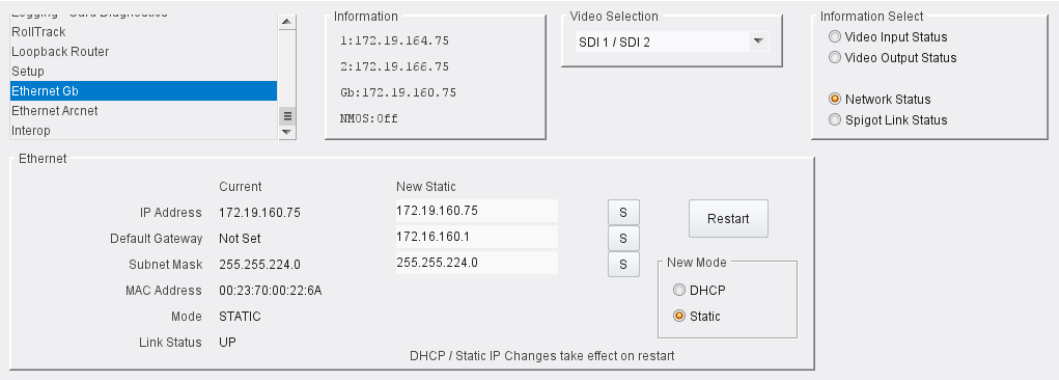
Defaults

Provides options to reset the module to its defaults.

Option	Description
Default Settings	All controls are reset to their default values, **except** for network configuration and IP addresses.
Factory Defaults	All controls are reset to their default values, **including** network configuration and IP addresses.

Ethernet Gb

The **Ethernet Gb** page shows details and status of the on-module Ethernet connector. The IQEDGE defaults to use of DHCP, but this can be overridden and a static IP address specified if required.



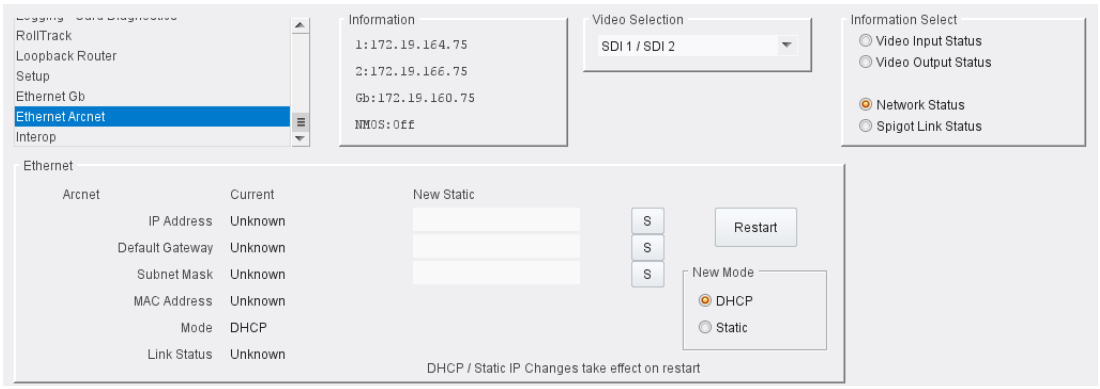
Ethernet Gb page

The Ethernet Pane

The **Ethernet** pane displays details of the currently selected network interface, and allows a static IP address to be defined. Enter information as required, then click **S** to save. New settings are applied when **Restart** is clicked.

Ethernet Arcnet

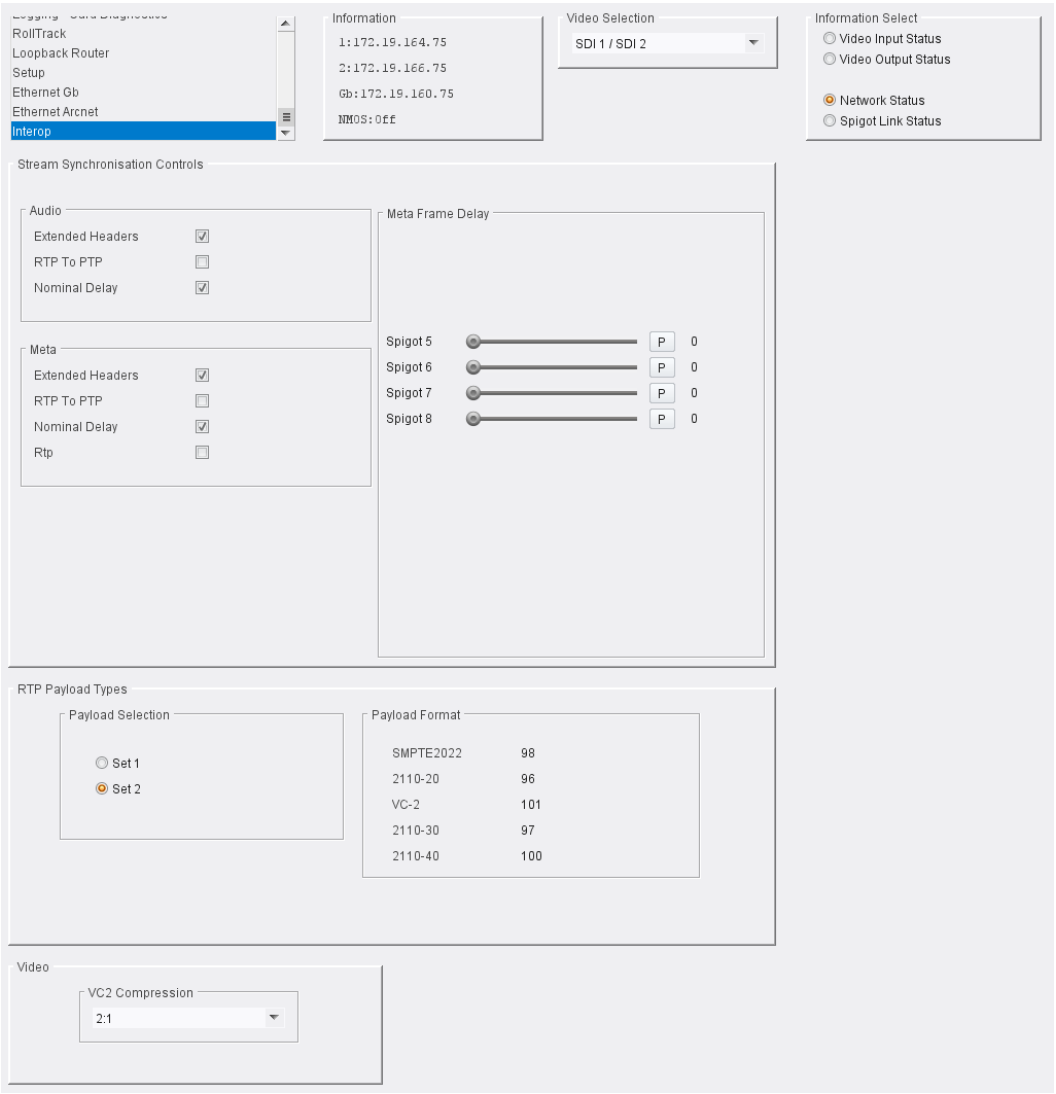
Not currently used.



Ethernet Arcnet Page

Interop Page

The **Interop** page allows certain parameters to be changed in order to improve interoperability with third-party equipment.



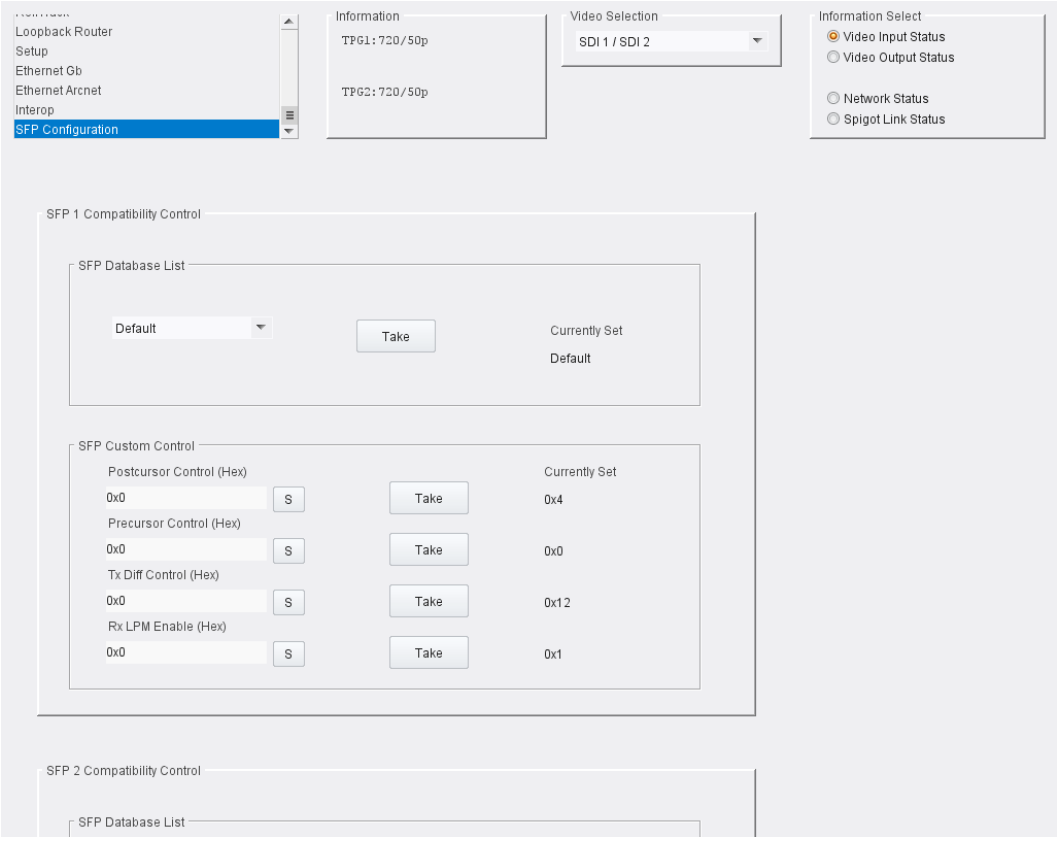
Interop page

The following facilities are available from the **Interop** page:

Option	Description
Stream Synchronization Controls	Audio: • **Extended Headers** - Enable to use extended headers in the RTP audio stream. • **RTP to PTP** - Enable to synchronize RTP to PTP. • **Nominal Delay** - Enable to set nominal delay at the spigot. Meta: • **Extended Headers** - Enable to use extended headers in the RTP metadata stream. • **RTP to PTP** - Enable to synchronize RTP to PTP. • **Nominal Delay** - Enable to set nominal delay at the spigot. • **RTP** - Enable to use RTP timestamps only to synchronize metadata to video.
Meta Frame Delay	Allows a frame delay for metadata received on the spigots shown to be set. Use the sliders to adjust as required. Click **P** to use the preset default value.
RTP Payload Types	Payload Selection: • **Set 1/Set 2** - Select the appropriate set of standards to be used. The set contents are displayed on the **Payload Format** pane.
Video	VC2 Compression: • Select the compression ratio to be used from the drop-down list.

SFP Configuration

The **SFP Configuration** page allows various SFP parameters to be adjusted, if required.



SFP Configuration page

The majority of SFPs will operate correctly with IQUCP modules without any need for adjustment. Some, however, may need to have module parameters set a little differently.

If difficulties are encountered with an SFP not working as expected, follow these instructions:

1. Select the appropriate SFP type from the **SFP Database List**, and click **Take**. Verify whether the SFP is now working correctly; if so, no further action is required.
2. If the SFP is still not working properly, select **Custom** from the **SFP Database List**. This allows all the parameters shown to be adjusted as required. Make changes and click **Take** to apply them.
3. When a working configuration is found, the parameter values can be saved by clicking **S** beside each field.

Grass Valley Technical Support

For technical assistance, contact our international support center, at 1-800-547-8949 (US and Canada) or +1 530 478 4148.

To obtain a local phone number for the support center nearest you, please consult the Contact Us section of Grass Valley's website (www.grassvalley.com).

An on-line form for e-mail contact is also available from the website.

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