



Snell
Advanced
Media

User Instruction Manual

IQHCO50

3G/HD/SD-SDI Signal Protection Module

IQHCO51

3G/HD/SD-SDI Synchronised Signal Protection Module

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Safety Information

Explanation of Safety Symbols

(GB)

- This symbol refers the user to important information contained in the accompanying literature. Refer to manual.
- This symbol indicates that hazardous voltages are present inside. No user serviceable parts inside. This unit should only be serviced by trained personnel.

Safety Warnings



"CAUTION: These servicing instructions are for use by qualified personnel only. To reduce 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 personnel."

- To reduce the risk of electric shock, do not expose this appliance to rain or moisture.
- Always ensure that the unit is properly earthed and power connections correctly made.
- This equipment must be supplied from a power system providing a **PROTECTIVE EARTH** connection and having a neutral connection which can be reliably identified.
- The power outlet supplying power to the unit should be close to the unit and easily accessible

Power connection in countries other than the USA

The equipment is normally shipped with a power cable with a standard IEC moulded free socket on one end and a standard IEC moulded plug on the other. If you are required to remove the moulded mains supply plug, dispose of the plug immediately in a safe manner.

The colour code for the lead is as follows:

- GREEN/YELLOW lead connected to E (Protective Earth Conductor)
- BLUE lead connected to N (Neutral Conductor)
- BROWN lead connected to L (Live Conductor)



- Caution If the unit has two mains supply inputs ensure that both power cords are plugged into mains outlets operating from the same phase.

Légende :

(F)

- Ce symbole indique qu'il faut prêter attention et se référer au manuel.
- Ce symbole indique qu'il peut y avoir des tensions électriques à l'intérieur de l'appareil. Ne pas intervenir sans l'agrément du service qualifié.

Précaution d'emploi :



"ATTENTION: Les procédures de maintenance ne concernent que le service agréé. Afin de réduire le risque de choc électrique, il est recommandé de se limiter aux procédures d'utilisation, à moins d'en être qualifié. Pour toute maintenance, contacter le service compétent."

- Pour réduire le risque de choc électrique, ne pas exposer l'appareil dans un milieu humide.
- Toujours s'assurer que l'unité est correctement alimentée, en particuliers à la terre.
- La source électrique de cet équipement doit posséder une connexion à la terre, ainsi qu'une liaison « neutre » identifiable.
- La prise électrique qui alimente l'appareil doit être proche de celle-ci et accessible.

Câble secteur de pays autres que les Etats-Unis

L'équipement est livré avec un câble secteur au standard IEC, moulé mâle/femelle.

Si vous souhaitez changer la prise mâle de votre cordon, voici les codes couleurs des fils :

- Le fil VERT/JAUNE est connecté à T (Terre)
- Le fil BLEU est connecté à N (Neutre)
- Le fil MARRON est connecté à P (Phase)



- Attention si l'appareil a 2 alimentations, s'assurer que les cordons soient branchés sur la même phase.

Erklärung der Sicherheitssymbole

(D)

- Dieses Symbol weist den Benutzer auf wichtige Informationen hin, die in der begleitenden Dokumentation enthalten sind.
- Dieses Symbol zeigt an, dass gefährliche Spannung vorhanden ist. Es befinden sich keine vom Benutzer zu wartenden Teile im Geräteinneren. Dieses Gerät sollte nur von geschultem Personal gewartet werden

Sicherheits-Warnhinweise



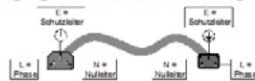
Die angeführten Service-/Reparatur-Anweisungen sind ausschließlich von qualifiziertem Service-Personal auszuführen. Um das Risiko eines lektroschocks zu reduzieren, führen Sie ausschließlich die im Benutzerhandbuch eschriebenen Anweisungen aus, es sei denn, Sie haben die entsprechende Qualifikation. Wenden Sie sich in allen Service-Fragen an qualifiziertes Personal.

- Um das Risiko eines Elektroschocks zu reduzieren, setzen Sie das Gerät weder Regen noch Feuchtigkeit aus.
- Stellen Sie immer sicher, dass das Gerät ordnungsgemäß geerdet und verkabelt ist.
- Dieses Equipment muss an eine Netzsteckdose mit Schutzleiter angeschlossen werden und einen zuverlässig identifizierbaren Nullleiter haben.
- Die Netzsteckdose sollte nahe beim Gerät und einfach zugänglich sein.

Netzanschluss in anderen Ländern als der USA

Das Equipment wird im Normalfall mit einem Netzkabel mit Standard IEC Anschlussbuchse und einem Standard IEC Anschlussstecker geliefert. Sollten Sie den angeschweißten Stecker auswechseln müssen, entsorgen Sie diesen bitte umgehend. Die farbliche Belegung des Netzkabels ist wie folgt:

- GRÜN GELB E = Schutzleiter
- BLAU N = Nullleiter
- BRAUN L = P = Phase



- Achtung: Wenn das Gerät zwei Anschlussbuchsen hat, stellen Sie bitte sicher, dass beide Netzkabel mit der selben Phase in die Netzsteckdose gesteckt werden.

Explicación de los Símbolos de Seguridad

(ESP)

- Este símbolo refiere al usuario información importante contenida en la literatura incluida. Referirse al manual.
- Este símbolo indica que voltajes peligrosos están presentes en el interior. No hay elementos accesibles al usuario dentro. Esta unidad sólo debería ser tratada por personal cualificado.

Advertencias de Seguridad



Las instrucciones de servicio cuando sean dadas, son sólo para uso de personal cualificado. Para reducir el riesgo de choque eléctrico no llevar a cabo ninguna operación de servicio aparte de las contenidas en las instrucciones de operación, a menos que se esté cualificado para realizarlas. Referir todo el trabajo de servicio a personal cualificado.

- Para reducir el riesgo de choque eléctrico, no exponer este equipo a la lluvia o humedad.
- Siempre asegurarse de que la unidad está propiamente conectada a tierra y que las conexiones de alimentación están hechas correctamente.
- Este equipo debe ser alimentado desde un sistema de alimentación con conexión a TIERRA y teniendo una conexión neutra fácilmente identificable.
- La toma de alimentación para la unidad debe ser cercana y fácilmente accesible.

Conexión de alimentación en otros países que no sean USA.

El equipo es normalmente entregado con un cable de alimentación con un enchufe hembra estándar IEC en un extremo y con una clavija estándar IEC en el otro. Si se requiere eliminar la clavija para sustituirla por otra, disponer dicha clavija de una forma segura. El código de color a emplear es como sigue:

- VERDE/ AMARILLO conectado a E (Conductor de protección a Tierra -Earth en el original-)
- AZUL conectado a N (Conductor Neutro -Neutral en el original-)
- MARRÓN conectado a L (Conductor Fase -Live en el original-)



- Advertencia Si la unidad tuviera dos tomas de alimentación, asegurarse de que ambos cables de alimentación están conectados a la misma fase.

Simboli di sicurezza:

- Questo simbolo indica l'informazione importante contenuta nei manuali appartenenti all'apparecchiatura. Consultare il manuale.
- Questo simbolo indica che all'interno dell'apparato sono presenti tensioni pericolose. Non cercare di smontare l'unità. Per qualsiasi tipo di intervento rivolgersi al personale qualificato.

Attenzione:

Le istruzioni relative alla manutenzione sono ad uso esclusivo del personale qualificato. È proibito all'utente eseguire qualsiasi operazione non esplicitamente consentita nelle istruzioni. Per qualsiasi informazione rivolgersi al personale qualificato.

- Per prevenire il pericolo di scosse elettriche è necessario non esporre mai l'apparecchiatura alla pioggia o a qualsiasi tipo di umidità.
- Assicurarsi sempre, che l'unità sia propriamente messa a terra e che le connessioni elettriche siano eseguite correttamente.
- Questo dispositivo deve essere collegato ad un impianto elettrico dotato di un sistema di messa a terra efficace.
- La presa di corrente deve essere vicina all'apparecchio e facilmente accessibile.

Connessione elettrica nei paesi diversi dagli Stati Uniti

L'apparecchiatura normalmente è spedita con cavo pressofuso con la presa e spina standard IEC. Nel caso della rimozione della spina elettrica, gettarla via immediatamente osservando tutte le precauzioni del caso. La leggenda dei cavi è la seguente:

VERDE/GIALLO cavo connesso ad "E" (terra)
BLU cavo connesso ad "N" (neutro)
MARRONE cavo connesso ad "L" (fase)



- Attenzione! Nel caso in cui l'apparecchio abbia due prese di corrente, assicurarsi che i cavi non siano collegati a fasi diverse della rete elettrica.

Forklaring på sikkerhedssymboler

- Dette symbol gør brugeren opmærksom på vigtig information i den medfølgende manual.
- Dette symbol indikerer farlig spænding inden i apparatet. Ingen bruger servicebare dele i apparatet på brugerniveau. Dette apparat må kun service af faglærte personer..

Sikkerhedsadvarsler

Serviceinstruktioner er kun til brug for faglærte servicefolk. For at reducere risikoen for elektrisk stød må bruger kun udføre anvisninger i betjeningsmanualen. Al service skal udføres af faglærte personer.

- For at reducere risikoen for elektrisk stød må apparatet ikke udsættes for regn eller fugt.
- Sørg altid for at apparatet er korrekt tilsluttet og jordat.
- Dette apparat skal forbindes til en nettilslutning, der yder **BESKYTTENDE JORD** (⊕) og 0 forbindelse skal være tydeligt markeret.
- Stikkontakten, som forsyner apparatet, skal være tæt på apparatet og let tilgængelig

Nettilslutning i andre lande end USA

Udstyret leveres normalt med et strømkabel med et standard IEC støbt løst hunstik i den ene ende og et standard IEC støbt hanstik i den anden ende. Hvis et af de støbte stik på strømkablet er defekt, skal det straks kasseres på forsvarlig vis. Farvekoden for lederen er som følger:

GRØN/GUL leder forbundet til J (Jord)
BLÅ leder forbundet til 0
BRUN leder forbundet til F (Fase)



- Forsigtig! Hvis enheden har to lysnetindgange, skal der sørges for at begge ledninger tilsluttes lystnetudgange fra den samme fase.

Förklaring av Säkerhetssymboler

- Denna symbol hänvisar användaren till viktig information som återfinns i litteraturen som medföljer. Se manualen.
- Denna symbol indikerar att livsfarlig spänning finns på insidan. Det finns inga servicevänliga delar inne i apparaten. Denna apparat få endast repareras av utbildad personal.

Säkerhetsvarningar

Serviceinstruktioner som anges avser endast kvalificerad och utbildad servicepersonal. För att minska risken för elektrisk stöt, utför ingen annan service än den som återfinns i medföljande driftinstruktionerna, om du ej är behörig. Överlåt all service till kvalificerad personal.

- För att reducera risken för elektrisk stöt, utsätt inte apparaten för regn eller fukt.
- Se alltid till att apparaten är ordentligt jordad samt att strömtillförseln är korrekt utförd.
- Denna apparat måste bli försörd från ett strömssystem som är försedd med jordanslutning (⊕) samt ha en neutral anslutning som lätt identifierbar.
- Vägguttaget som strömförsörjer apparaten bör finnas i närheten samt vara lättillgänglig.

Strömkontakter i länder utanför USA

Apparaten utrustas normalt med en strömkabel med standard IEC gjuten honkontakt på ena änden samt en standard IEC gjuten hankontakt på den andra änden. Om man måste avlägsna den gjutna hankontakten, avyttra denna kontakt omedelbart på ett säkert sätt. Färgkoden för ledningen är följande:

GRÖN/GUL ledning ansluten till E (Skyddsjordad ledare)

BLÅ ledning ansluten till N (Neutral ledare)
BRUN ledning ansluten till L (Fas ledare)



- Varning! Om enheten har två huvudsakliga elförsörjningar, säkerställ att båda strömkablarna som är inkopplade i enheten arbetar från samma fas.

Turvamerkkien selitys

- Tämä merkki tarkoittaa, että laitteen mukana toimitettu kirjallinen materiaali sisältää tärkeitä tietoja. Lue käyttöohje.
- Tämä merkki ilmoittaa, että laitteen sisällä on vaarallisen voimakas jännite. Sisäpuolella ei ole mitään osia, joita käyttäjä voisi itse huoltaa. Huollon saa suorittaa vain alan ammattilainen.

Turvaohjeita

Huolto-ohjeet on tarkoitettu ainoastaan alan ammattilaisille. Älä suorita laitteelle muita toimenpiteitä, kuin mitä käyttöohjeissa on neuvottu, ellei ole asiantuntija. Voit saada sähköiskun. Jätä kaikki huoltotoimet ammattilaiselle.

- Sähköiskujen välttämiseksi suojaa laite sateelta ja kosteudelta.
- Varmistu, että laite on asianmukaisesti maadoitettu ja että sähkökytkennät on tehty oikein.
- Laitteelle tehoa syöttävässä järjestelmässä tulee olla **SUOJAMAALIITÄNTÄ** (⊕) ja nolllaitännän on oltava luotettavasti tunnistettavissa.
- Sähköpistorasian tulee olla laitteen lähellä ja helposti tavoitettavissa.

Sähkökytkentä

Laitteen vakiovarusteena on sähköjohto, jonka toisessa päässä on muottiin valettu, IEC-standardin mukainen liitäntärasia ja toisessa päässä muottiin valettu, IEC-standardin mukainen pistoliitin. Jos pistoliitin tarvitsee poistaa, se tulee hävittää heti turvallisella tavalla. Johtimet kytketään seuraavasti:

KELTA-VIHREÄ suojamaajohdin E-napaan
SININEN nolllajohdin N-napaan
RUSKEA vaihejohtin L-napaan



- Huom! Jos laitteessa on kaksi verkkojännitteen tuloliitäntää, niiden johdot on liitettävä verkkopistorasioihin, joissa on sama vaiheistus.

Símbolos de Segurança



- O símbolo triangular adverte para a necessidade de consultar o manual antes de utilizar o equipamento ou efectuar qualquer ajuste.
- Este símbolo indica a presença de voltagens perigosas no interior do equipamento. As peças ou partes existentes no interior do equipamento não necessitam de intervenção, manutenção ou manuseamento por parte do utilizador. Reparações ou outras intervenções devem ser efectuadas apenas por técnicos devidamente habilitados.

Avisos de Segurança



As instruções de manutenção fornecidas são para utilização de técnicos qualificados. Para reduzir o risco de choque eléctrico, não devem ser realizadas intervenções no equipamento não especificadas no manual de instalações a menos que seja efectuadas por técnicos habilitados.

- Para reduzir o risco de choque eléctrico, não expor este equipamento à chuva ou humidade.
- Assegurar que a unidade está sempre devidamente ligada à terra e que as ligações à alimentação estão correctas.
- O sistema de alimentação do equipamento deve, por razões de segurança, possuir ligação a terra de protecção (⊕) e ligação ao NEUTRO devidamente identificada.
- A tomada de energia à qual a unidade está ligada deve situar-se na sua proximidade e facilmente acessível.

Ligação da alimentação noutros países que não os EUA

O equipamento é, normalmente, enviado com cabo de alimentação com ficha IEC fêmea standard num extremo e uma ficha IEC macho standard no extremo oposto. Se for necessário substituir ou alterar alguma destas fichas, deverá removê-la e eliminá-la imediatamente de maneira segura. O código de cor para os condutores é o seguinte:

- Condutor VERDE/AMARELO ligado a E (Terra)
- Condutor AZUL ligado a N (Neutro)
- Condutor CASTANHO ligado a L (Vivo).



- Atenção:** Se a unidade tem duas fontes de alimentação assegurar que os dois cabos de alimentação estão ligados a tomadas pertencentes à mesma fase.

Επεξήγηση των Συμβόλων Ασφαλείας



Αυτό το σύμβολο παραπέμπει το χρήστη σε σημαντικές πληροφορίες που συμπεριλαμβάνονται στο συνοδευτικό εγχειρίδιο.



Αυτό το σύμβολο υποδεικνύει ότι στο εσωτερικό υπάρχουν και επικίνδυνες ηλεκτρικές τάσεις. Στο εσωτερικό δεν υπάρχουν επισκευάσιμα μέρη. Αυτή η μονάδα πρέπει να επισκευάζεται μόνο από ειδικά εκπαιδευμένο προσωπικό.

Προειδοποίηση Ασφαλείας



Οδηγίες επισκευής, όπου παρέχονται, αναφέρονται αποκλειστικά και μόνο σε εξειδικευμένο προσωπικό. Για να μειωθεί ο κίνδυνος ηλεκτροπληξίας, μην διεκτελείτε επισκευές παρέ μόνον τις συμπεριλαμβανόμενες στο εγχειρίδιο των οδηγιών, εκτός και αν έχετε τα απαραίτητα προσόντα για να το κάνετε. Όλες οι επισκευές να εκτελούνται από ειδικά εκπαιδευμένο προσωπικό.

- Για να μειώσετε τον κίνδυνο ηλεκτροπληξίας, μην εκθέτετε τη συσκευή σε βροχή ή υγρασία.
- Πάντα να εξασφαλίζετε τη σωστή γείωση της συσκευής και τη σωστή σύνδεση των συνδέσμων τροφοδοσίας.
- Ο εξοπλισμός πρέπει να τροφοδοτείται από ένα σύστημα τροφοδοσίας που να εξασφαλίζει ΠΡΟΣΤΑΤΕΥΤΙΚΗ ΓΕΩΣΗ (⊕) και να έχει καθορισμένες θέσεις ουδέτερου και φάσης.
- Ο εξοπλισμός που τροφοδοτεί τη συσκευή θα πρέπει να βρίσκεται κοντά στη συσκευή και να είναι εύκολα προσβάσιμος.

Σύνδεση τροφοδοσίας σε χώρες εκτός των ΗΠΑ

Ο εξοπλισμός συνοδεύεται συνήθως από ένα καλώδιο τροφοδοσίας με ένα σταθερό βύσμα τροφοδοσίας ρεύματος τύπου πυροφάνης στη μια άκρη του και μια σταθερή υποδοχή τροφοδοσίας ρεύματος τύπου πυροφάνης στην άλλη άκρη του. Εάν χρειαστεί να αφαιρέσετε το σταθερό βύσμα τροφοδοσίας μην το επαναχρησιμοποιείτε, θεωρείται άχρηστο. Ο χρωματικός οδηγός για το καλώδιο τροφοδοσίας είναι ο παρακάτω:

- ΠΡΑΣΙΝΟ/ΚΙΤΡΙΝΟ καλώδιο συνδέεται στο E (Προστατευτικός Αγωγός Γείωσης)
- ΜΠΛΕ καλώδιο συνδέεται στο N (Ουδέτερο Αγωγό)
- ΚΑΦΕ καλώδιο συνδέεται στο L (Αγωγός Φάσης)



- ΠΡΟΣΟΧΗ:** Αν η μονάδα έχει δύο τροφοδοτικά βύσματα τότε και τα δύο καλώδια τροφοδοσίας είναι συνδεδεμένα σε εξόδους τροφοδοσίας που βρίσκονται στην ίδια φάση.

Mains Power Supplies

This equipment has two 3-pin IEC power sockets, one for the main power supply unit and one for the redundant power supply unit.

The power supply is auto switching for input voltages in the ranges of 100 V to 240 V nominal. No voltage adjustment procedure is required.



- This equipment has more than one power supply. To reduce the risk of electric shock, plug each power supply into separate branch circuits employing separate service grounds.
- Before performing any servicing or maintenance, disconnect and isolate the unit from the mains input and from any product outputs.
- Do not operate this unit without an earth connection.

Power Cord Supplied

The equipment is shipped with a power cord with a standard molded IEC female plug on one end and a standard mains plug on the other. If you are required to remove the molded mains supply plug, dispose of the plug immediately in a safe manner.

The color code for the cord is as follows:

- GREEN/YELLOW lead connected to E (Protective Earth Conductor)
- BROWN lead connected to L (Live Conductor)
- BLUE lead connected to N (Neutral Conductor)

Laser Safety

EN60825-1 (2001)
Safety of Laser Products



- Caution: use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure. Viewing the laser diode with the optical fiber removed and with the aid of optical magnifiers may be hazardous.
- This product is a Class 1 laser product (output power <15mW) at 1270 nm to 1610 nm with a beam divergence >30 mrad.

Ventilation

Although the unit is constructed to meet normal environmental requirements, ensure that there is a free flow of air at the front, rear, and sides of the unit to dissipate the heat produced during operation. Installations should be designed to allow for this.



Do not obstruct the ventilation holes on the right side of the unit. Damage to the equipment may result.

Compliance Standards

This equipment conforms to the following standards:

EN60950-1: 2006 + A11: 2009

Safety of Information Technology Equipment Including Electrical Business Equipment.

UL1419 (3rd Edition) - UL File E193966

Standard for Safety – Professional Video and Audio equipment.



EMC Standards

This equipment conforms to the following standards:

EN 55103-1: 1996 (Environment E4)

Electromagnetic Compatibility, Product family standard for audio, video, audio-visual and entertainment lighting control apparatus for professional use. Part 1. Emission.

EN 55103-2: 1996 (Environment E2)

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

FCC/CFR 47:Part 15, Class A

Federal Communications Commission Rules Part 15, Subpart B, Class A.

EMC Environment

The product(s) described in this manual conform to the EMC requirements for, and are intended for use in, the controlled EMC environment (for example, purpose-built broadcasting or recording studios), and the rural outdoor environment (far away from railways, transmitters, overhead power lines, etc.) E4.

EMC Performance of Cables and Connectors

SAM 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.

Coaxial Cables

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

D-type Connectors

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

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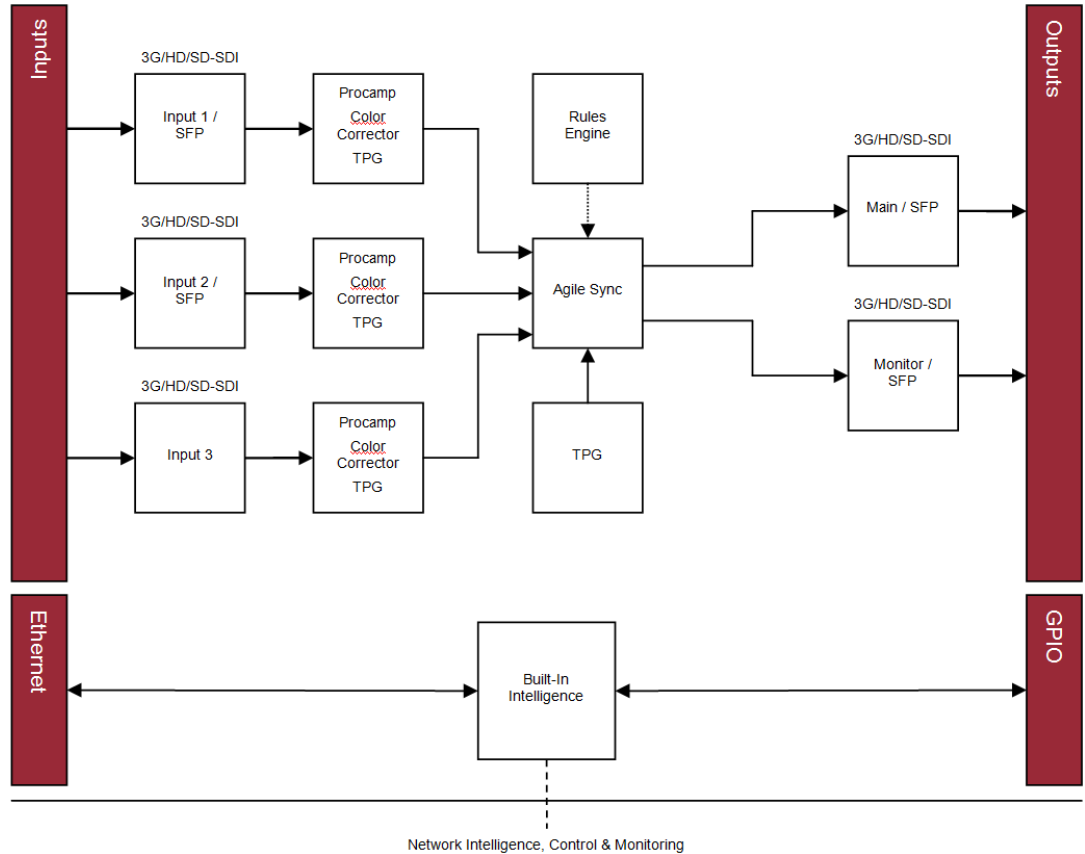
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1 Introduction

1.1 Module Description

The IQHCO50/51 provides backup protection for SDI signal paths. Inputs are monitored for signal errors; when an error state is recognized, a backup feed is automatically switched to. A powerful rules engine is available to provide logical conditions for auto-switching, whilst GPIO or RollTrack inputs can force the unit to switch independently of signal state.

The IQHCO51 model also includes a synchronizer.



1.2 Order Codes

Note: Modules with “A” order codes (for example, IUDC0000-2A) can be fitted into either A- or B-style enclosures. Modules with “B” order codes (for example, IQUDC0000-2B) can only be fitted into B-style enclosures. See page 14.

The following product order codes are covered by this manual:

1.2.1 IQHCO50

- IQHCO5000-1B3 3G/HD/SD-SDI Signal Protection Module, 3 SDI In, 2 SDI Out, 2 SDI Monitor outputs, 2 GPIO
- IQHCO5001-1A3 3G/HD/SD-SDI Signal Protection Module, 3 SDI In, 1 SDI Out, 1 SDI Monitor outputs, Relay bypass, 2 GPIO
- IQHCO5001-1B3 3G/HD/SD-SDI Signal Protection Module, 3 SDI In, 1 SDI Out, 1 SDI Monitor outputs, Relay bypass, 2 GPIO
- IQHCO5002-2A3 3G/HD/SD-SDI Signal Protection Module, 3 SDI In, 2 SDI Out, 1 SDI Monitor outputs, Latching Relay bypass, 8 GPIO
- IQHCO5002-2B3 3G/HD/SD-SDI Signal Protection Module, 3 SDI In, 2 SDI Out, 1 SDI Monitor outputs, Latching Relay bypass, 8 GPIO

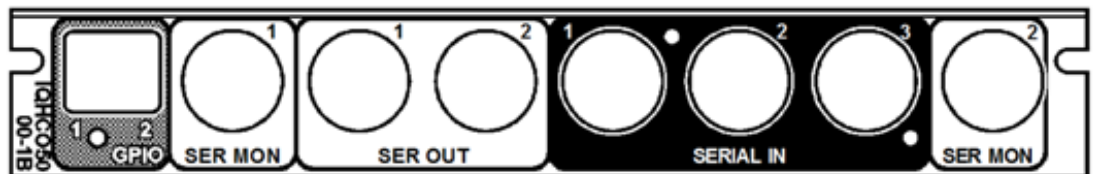
IQHCO5003-2A3	3G/HD/SD-SDI Signal Protection Module, 3 SDI In, 2 SDI Out, 1 SDI
IQHCO5003-2B3	Monitor outputs, 8 GPIO, SFP SDI, Ethernet
TBD	Color Corrector option

1.2.2 IQHCO51

IQHCO5100-1A3	3G/HD/SD-SDI Signal Protection Module, 3 SDI In, 2 SDI Out, 1 SDI
IQHCO5100-1B3	Monitor outputs, 2 GPIO, 1 Reference In
IQHCO5101-1A3	3G/HD/SD-SDI Signal Protection Module, 3 SDI In, 1 SDI Out, 1 SDI
IQHCO5101-1B3	Monitor outputs, Relay bypass, 2 GPIO, 1 Reference In
IQHCO5102-2A3	3G/HD/SD-SDI Signal Protection Module, 3 SDI In, 2 SDI Out, 1 SDI
IQHCO5102-2B3	Monitor outputs, Latching Relay bypass, 8 GPIO, 1 Reference In
IQHCO5103-2A3	3G/HD/SD-SDI Signal Protection Module, 3 SDI In, 2 SDI Out, 1 SDI
IQHCO5103-2B3	Monitor outputs, 8 GPIO, SFP SDI, Ethernet, 1 Reference In

1.3 Rear Panel View

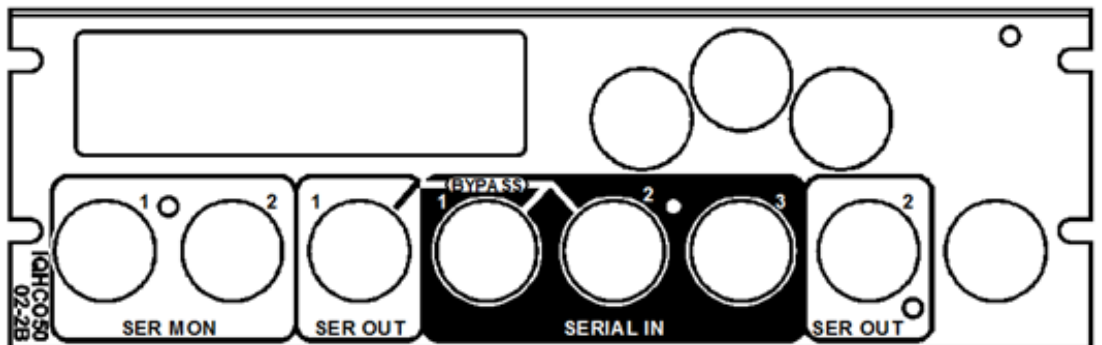
1.3.1 IQHCO50



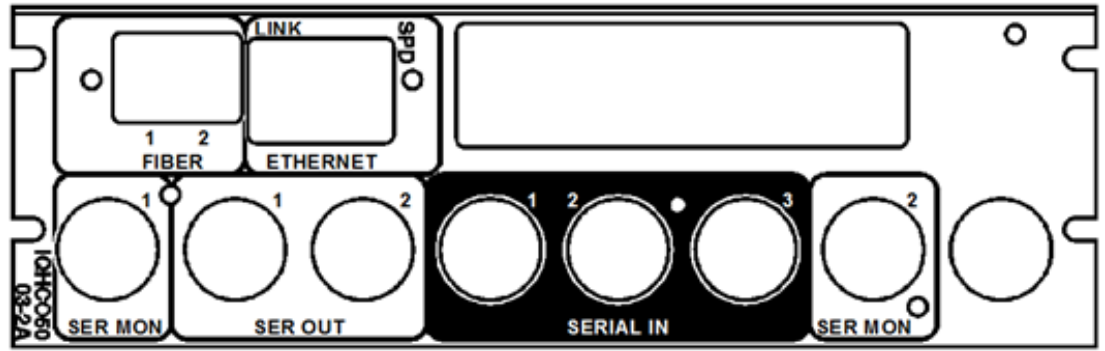
IQHCO5000-1A3, IQHCO5000-1B3



IQHCO5001-1A3, IQHCO5001-1B3

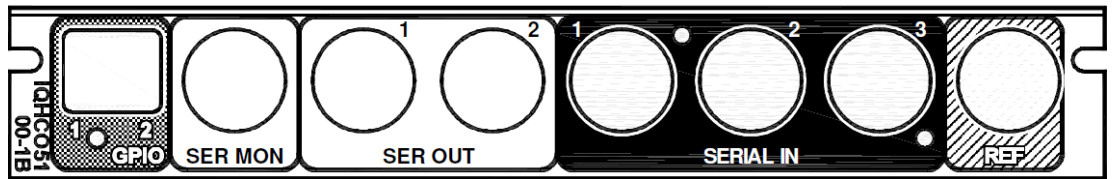


IQHCO5002-2A3, IQHCO5002-2B3

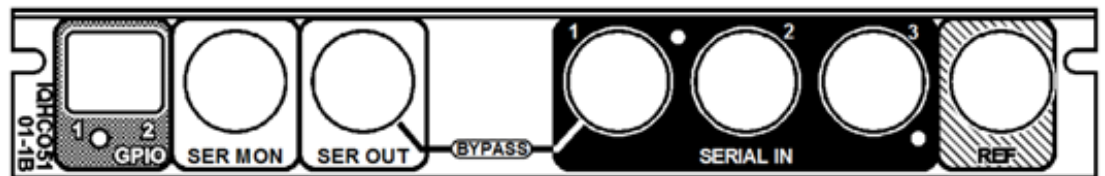


IQHCO5003-2A3, IQHCO5003-2B3

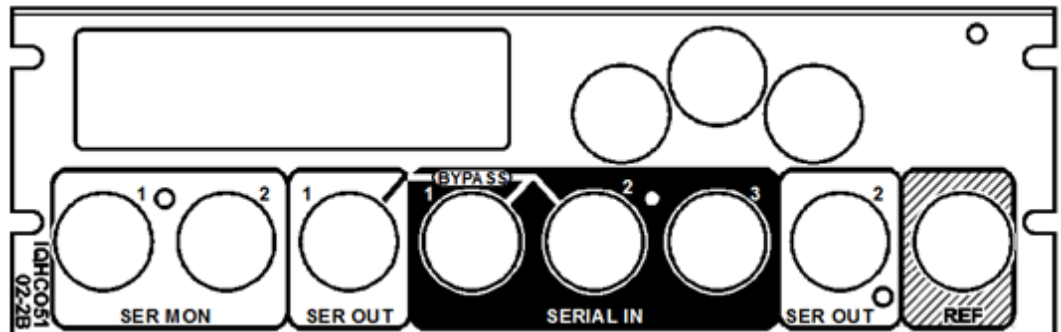
1.3.2 IQHCO51



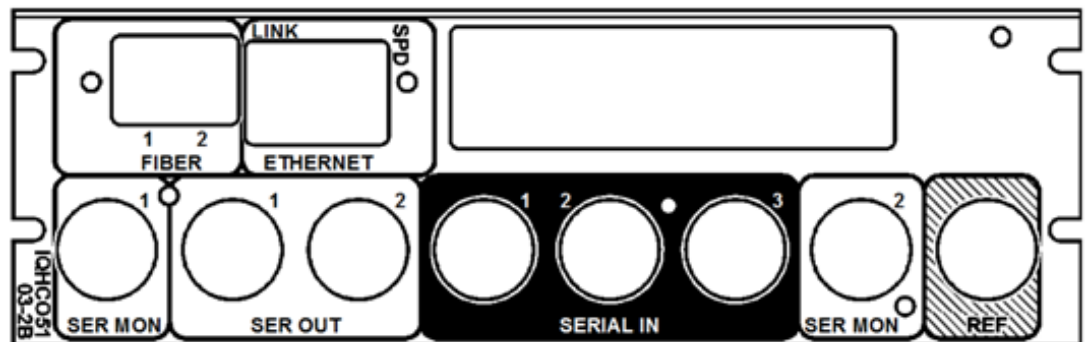
IQHCO5100



IQHCO5101-1A3, IQHCO5101-1B3



IQHCO5102-1A3, IQHCO5102-1B3



IQHCO5103-2A3, IQHCO5103-2B3

1.4 Enclosures

The IQHCO50/51 modules can be fitted into the enclosure types shown.

Important: Although IQ modules are interchangeable between enclosures, their rear panels are enclosure specific. An IQH3B enclosure accepts modules with either “A” or “B” order codes. An IQH3A or IQH1A enclosure accepts modules with “A” order codes only. See page 11.

1.4.1 B-style Enclosure



Enclosure order codes: IQH3B-S-0, IQH3B-S-P

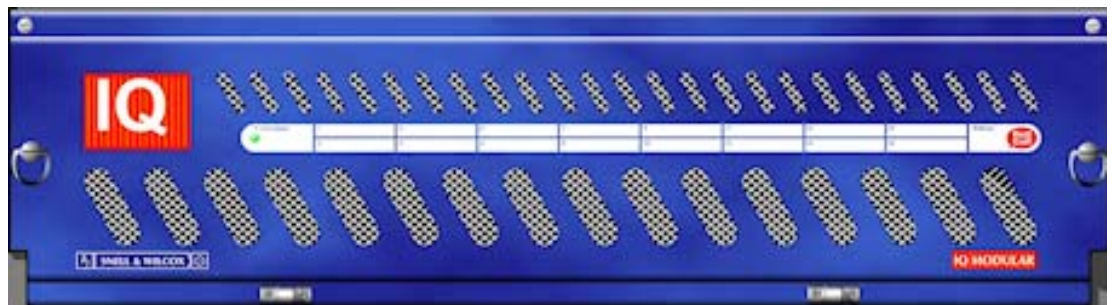
1.4.2 A-style Enclosures



Enclosure order code: IQH1A-S-P



Enclosure order codes: IQH3A-S-0, IQH3A-S-P



Enclosure order codes: IQH3A-E-0, IQH3A-E-P, IQH3A-0-0, IQH3A-0-P

1.5 Feature Summary

1.5.1 IQHCO50

- 3Gbps SDI, HD-SDI and SD-SDI operation with RGB legalization.
- Auto changeover from either input on pre-defined error conditions.
- User-definable changeover delay.
- Connectivity: 3 SDI inputs, up to 4 SDI outputs (2 main and 2 monitoring), up to 8 x GPI/O, relay bypass versions with input 1 bypassed to output 1 on power loss or card removal, or selected input bypassed to output 1 on power loss or card removal.
- Input signal monitoring including SDI lock, ASI carrier detection, EDH/CRC error, Freeze detection, Black detection, embedded audio loss and standard mismatch.
- Up to 32 channel embedded audio support.
- Card Edge Control for input switch & LED status indicators.
- Selectable SDI monitoring outputs enable either input to be monitored independent of the main signal selection.
- In-built test pattern generator and embedded audio tone generator.
- 16 x user memories, save/recall/rename.
- Input signal relay bypass versions available (options for either basic input 1 to output 1, or follow input select bypass).
- RollCall monitoring allows all signal paths to be managed.

1.5.1.1 Options

- Single mode fiber optic transmitter and receiver options
- Color corrector

1.5.2 IQHCO51

- 3G/HD/SD-SDI operation with synchronizer and additional video delay up to 4 frames and RGB legalization.
- Auto change-over from any input on pre-defined error conditions.
- User definable change-over delay.
- Connectivity: 3 SDI inputs, up to 4 SDI outputs (2 main and 2 monitoring), reference input, up to 8 x GPI/O, Ethernet I/O, relay bypass versions with input 1 bypassed to output 1 on power loss or card removal, or selected input bypassed to output 1 on power loss or card removal.
- Input signal monitoring including SDI lock, ASI carrier detection, EDH/CRC error, Freeze detection, Black detection, embedded audio loss and standard mismatch.
- Reference input capable of detecting and referencing to a bi-level or tri-level signal and selection from either external input directly or from internal IQH3B chassis reference bus.
- Agile, router switching tolerant synchronizer operation with genlock adjustment allowing you to time any SDI signal to pixel accuracy with greater tolerance to mis-timed upstream SDI switching (up to +/- 10 lines), ensuring disturbance-free picture output.
- Up to 32-channel embedded audio support.
- Audio proc amp features including channel level (Sub-frame) routing, independent gain, invert and mute control with audio V Fade on switch over.
- Card Edge Control for input switch & LED status indicators.

- Selectable SDI monitoring outputs enable either input to be monitored independent of the main signal selection.
- In-built test pattern generator and embedded audio tone generator.
- 16 x user memories, save/recall/rename Input signal relay bypass versions available (options for either basic input 1 to output 1, or follow input select bypass).
- RollCall monitoring allows all signal paths to be managed.

1.5.2.1 Options

- Single mode fiber optic transmitter and receiver options
- Color corrector
- SAM audio loudness monitoring
- Media Biometrics Signature
- Logo insertion
- IP thumbnailing

2 Technical Specification

Inputs and Outputs	
Signal Inputs	
Inputs	3
Connector/Format	BNC/75R
Conforms to	3G-SDI to SMPTE 424M/425M level A/B compatible HD-SDI to SMPTE292M/274M/296M SD-SDI to SMPTE259M-C
Input Cable Length	<p>Inputs 1 + 2</p> <p>Up to 92m Belden 1694A @ 3 Gbit/s</p> <p>Up to 156m Belden 1694A @ 1.5 Gbit/s</p> <p>Up to >375m Belden 1694A @ 270 Mbit/s</p> <p>Input 3</p> <p>Up to 80m Belden 1694A @ 3 Gbit/s</p> <p>Up to 140m Belden 1694A @ 1.5 Gbit/s</p> <p>Up to >375m Belden 1694A @ 270 Mbit/s</p>
Signal Outputs	
Outputs	Up to 2
Monitors	Up to 2
Connector/Format	BNC/75R
Conforms to	3G-SDI to SMPTE 424M/425M level A/B compatible HD-SDI to SMPTE292M/274M/296M SD-SDI to SMPTE259M-C
Connector/Format	SFP
Conforms to	3G-SDI to SMPTE 424M/425M level A/B compatible HD-SDI to SMPTE292M/274M/296M SD-SDI to SMPTE259M-C
Video Standards	
Control Interface	
GPIO	2 - 8
Electrical	TTL compatible, active low driven
Connector/Format	Standard SAM screw terminal/D-Type
Indicators	
Front Panel & Card Edge	
Power	OK (Green)
CPU	OK (Green flashing)
1 - 12 Input Standard Detection LEDs	Lock (Green) None (Red)

RollCall Features

Status	Input and Output
User Memories	None
Logging	Input status Input alarms Output status Output alarms Misc
RollTrack Controls	On/off, Index, Source, Address, Command, Status, Sending
Setup	Versions, reset defaults, restart

Specifications

Electrical	ASI transport stream
Connector/Format	BNC/Standard SAM screw terminal

Power Consumption

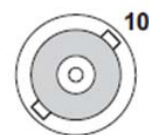
Module power consumption	11PR (11.5W)
--------------------------	--------------

3 Connections

This section describes the physical input and output connections provided by the IQHCO50/51.

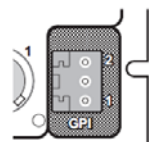
3.1 SDI I/O

12 x 3G/HD/SD-SDI interfaces provided with HD-BNC.



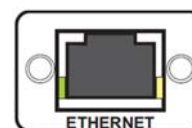
3.2 External Inputs/Outputs

Two general purpose GPIO are provided using standard screw terminals.



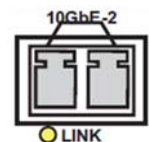
3.3 RJ45 SFP

RJ45 10/100/1G Ethernet.



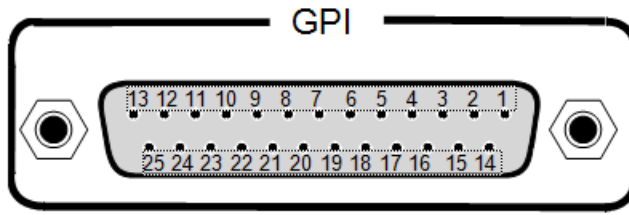
3.4 SDI SFP

SFP supporting 3G/HD/SD-SDI.



3.5 Connector Pinning

3.5.1 25 Way D-Type Connection Pin-out for GPIOs on Double Width Rear Panel



Pin No	Pin No	Name	Description
1		GPIO_4	General Purpose Interface 4
	14	GPIO_0	General Purpose Interface 0
2		GPIO_5	General Purpose Interface 5
	15	GPIO_1	General Purpose Interface 1
3		GPIO_6	General Purpose Interface 6
	16	GPIO_2	General Purpose Interface 2
4		GND	Ground
	17	GND	Ground
5		GPIO_7	General Purpose Interface 7
	18	GPIO_3	General Purpose Interface 3
6		N/A	Not Used
	19	N/A	Not Used
7		GND	Ground
	20	GND	Ground
8		N/A	Not Used
	21	N/A	Not Used
9		N/A	Not Used
	22	N/A	Not Used
10		GND	Ground
	23	GND	Ground
11		META_p	Not Used
	24	META_n	Not Used
12		LTC_p	Not Used
	25	LTC_n	Not Used
13		GND	Ground

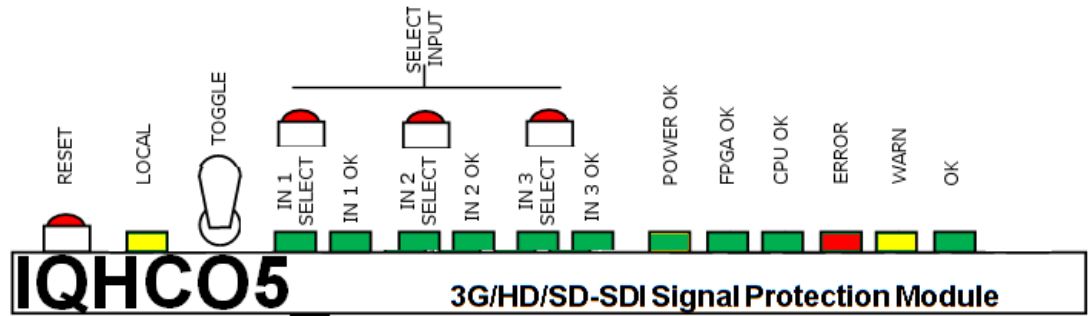
3.5.2 3-Pin Screw Terminal Connection for GPIOs on Single Width Rear Panel

Pin No	Name	Description
1	GPIO_1	General Purpose Interface 1
2	GND	Ground
3	GPIO_2	General Purpose Interface 2

4 Card Edge LEDs

4.1 IQHCO50/51 Card


The LEDs on the edge of the IQHCO50/51 card indicate its operating status.



LED	Color	State	Description
Local Control	Yellow	Illuminated	Module is being controlled via the on-board hardware switches, not remotely via RollCall. Use the toggle switch to select Local or Remote mode.
Input 1-3	Green	Illuminated	Input has been selected and a valid input is present.
Power	Green	Illuminated	Good power supply is present.
FPGA OK	Green	Illuminated	FPGA has been correctly programmed.
CPU OK	Green	Flashing	CPU is running.
ERROR	Red	Illuminated	Board fault conditions. LED is illuminated in the event of: <ul style="list-style-type: none"> • Primary input fail • License error • FPGA comms failure • FPGA upgrading • FPGA overheat • FPGA demo reboot reminder 5 mins, 3 mins, 60 secs
WARN	Yellow	Illuminated	Board warning conditions. LED is illuminated in the event of: <ul style="list-style-type: none"> • CRC errors • License minor faults • Video pattern, freeze, black or caption • Audio routing mismatch (data/PCM mixed) • Configured reference not valid • FPGA overheat warning
OK	Green	Illuminated	Module is operating correctly.

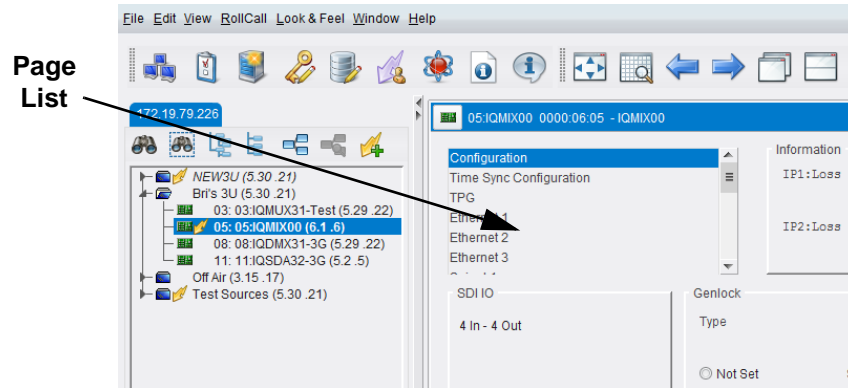
5 The RollCall Control Panel

This section contains information on using the IQHCO50/51 with RollCall.

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

5.1 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.



5.1.1 Template Pages

The following pages are available:

- **Summary** - see section 5.4
- **Input n Valid** - see section 5.5.
- **Outputs** - see section 5.6.
- **Video ProcAmp** - see section 5.7.
- **Color Correction** - see section 5.8.
- **Caption and Test Pattern Generators** - see section 5.9.
- **GPIO 1-4, 5-8** - see section 5.10.
- **Ethernet** - see section 5.11.
- **SFP** - see section 5.12.
- **Setup** - see section 5.13.
- **Memories** - see section 5.14.
- **Savesets** - see section 5.15.
- **RollTrack** - see section 5.16.
- **Logging** - see section 5.17.
- **Logging Output** - see section 5.18.
- **Logging - Changeover** - see section 5.19.

5.1.2 Setting Values

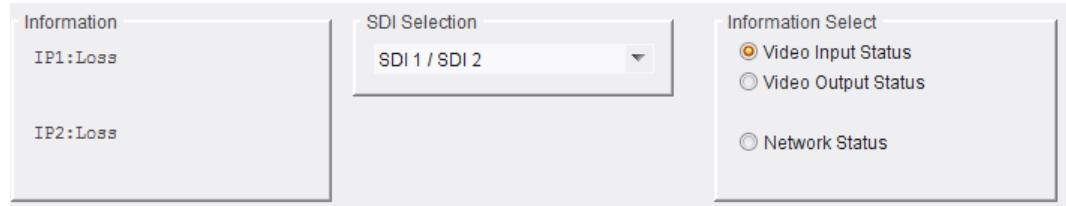
Many of the settings within the templates have values, either alpha or numeric.

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.

5.2 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.



5.2.1 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** or **Network Status** from the **Information Select** pane as required.

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

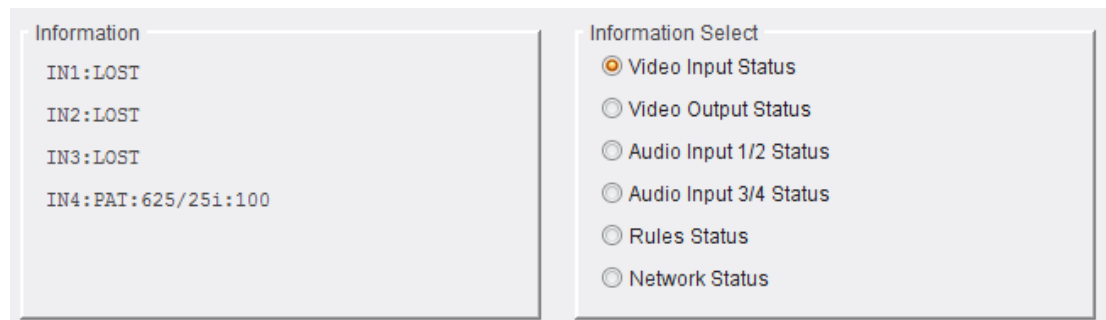
The RollCall Control Panel enables you to control IQ modules through various different pages.

See the *RollCall Control Panel Installation & Operator's Manual* for information about installation and setup of the RollCall Control Panel.

Note: The content and order of the pages shown in this section are for guidance and reference only, and may be slightly different to what you see with your module. The look and functions may also differ slightly from other modules in the range.

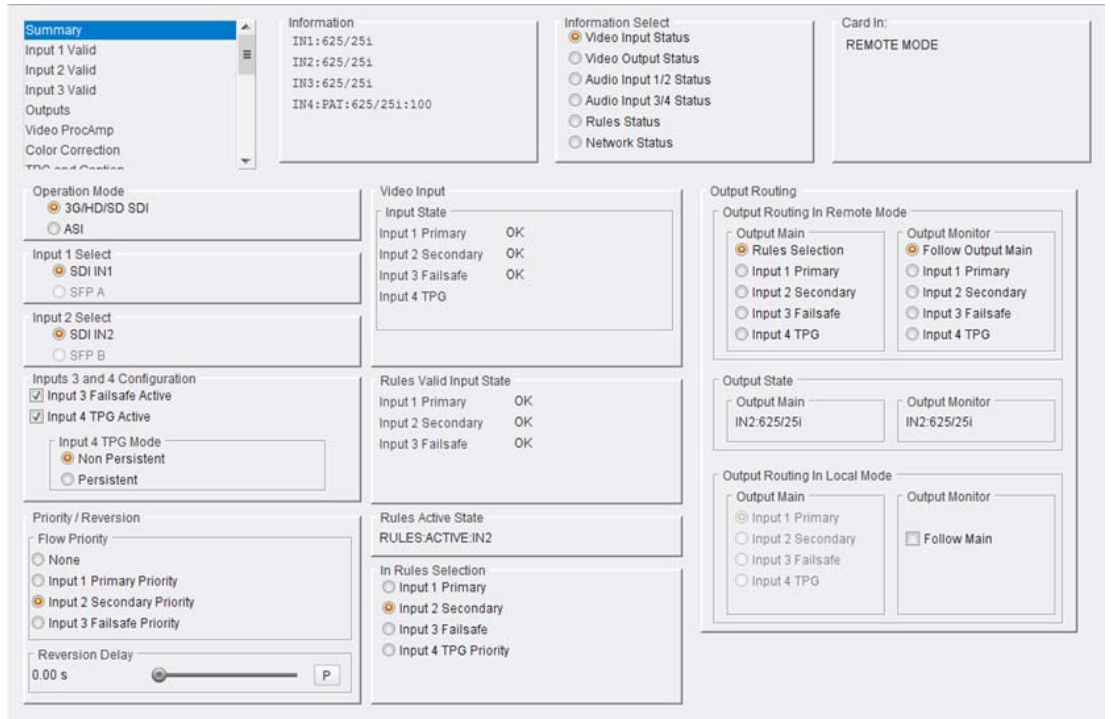
5.3 Information Display

The **Information** display pane appears at the top of each page, and shows basic information on the status of the module. The information to be displayed is selected on the **Information Select** pane to the right of the **Information** display.



5.4 Summary

The Summary page provides a general overview of the module.



The following facilities are provided:

5.4.1 Operation Mode

Select **ASI** to enable ASI passthrough.

Note: The rules engine is applied to 3G/HD/SD SDI mode only. It is bypassed when the ASI passthrough is enabled.

5.4.2 Input 1/2 Select

Select whether the input is SDI or via SFP.

5.4.3 Inputs 3 and 4 Configuration

- **Input 3 Failsafe Active** - Un-check to disable Input 3 Failsafe.
- **Input 4 TPG Active** - Un-check to disable Input 4 TPG.

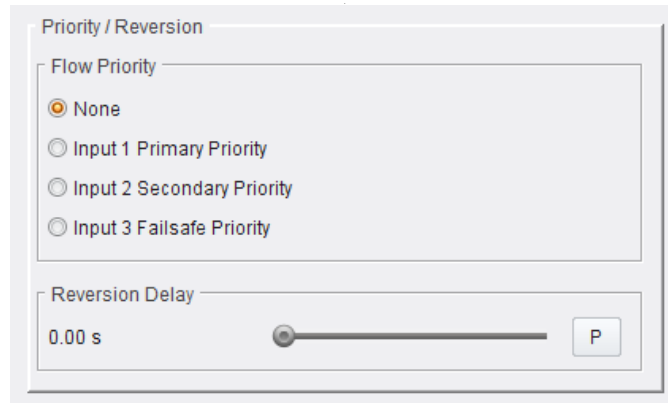
5.4.3.1 Input 4 TPG Mode

Select whether the TPG input is to be persistent or not.

5.4.4 Priority/Reversion

5.4.4.1 Flow Priority

Allows the way in which the module behaves when an input fails to be defined.



The following options are available:

- **None** - If the current input fails, the output fails over to the next available input in the following order:
 - a. Input 1 Primary
 - b. Input 2 Secondary
 - c. Input 3 Failsafe
 - d. TPG

It will not roll back if a failing channel recovers.

- **Input 1 Primary Priority** - If Input 1 recovers having previously failed, the output reverts to Input 1.
- **Input 2 Secondary Priority** - If Input 2 recovers having previously failed, the output reverts to Input 2.
- **Input 3 Failsafe Priority** - If selected, Input 3 is used. If not, the dedicated TPG on input 4 is used.

5.4.4.2 Reversion Delay

The reversion delay sets the amount of time for which a condition must be True before reverting to the next condition. Set the slider as required.

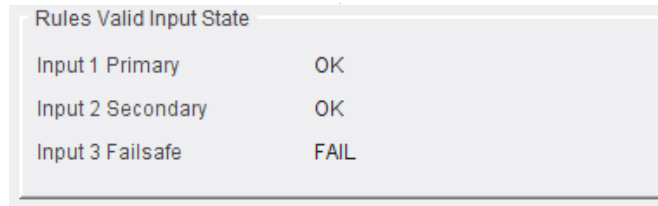
5.4.5 Video Input

5.4.5.1 Input State

Displays state of the video inputs.

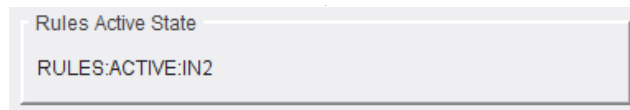
5.4.6 Rules Valid Input State

This pane reports the current input state.



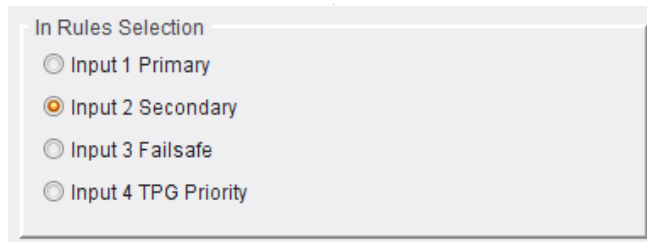
5.4.7 Rules Active State

The Rules Active Status pane reports the status of the rules engine.



5.4.8 In Rules Selection

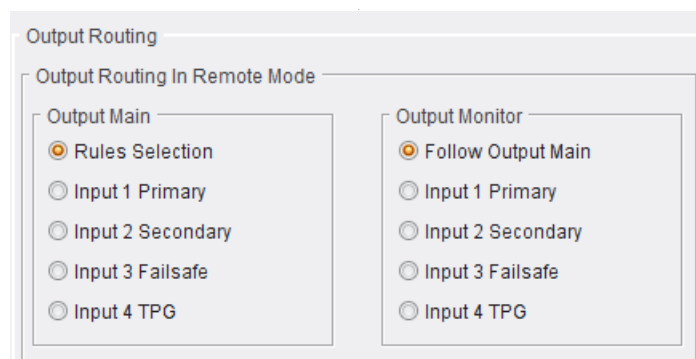
This pane allows a particular input to be specified as a default to be used by the rules engine, if there are no other rule-induced changes. Select as required.



5.4.9 Output Routing

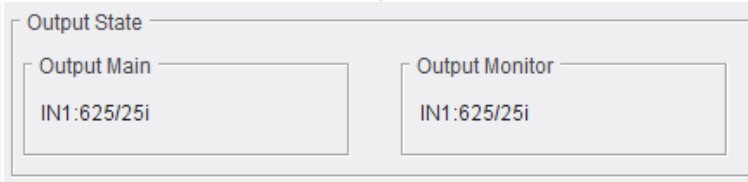
5.4.9.1 Output Routing in Remote Mode

This pane is used to select the output for main and monitor. Select as required.



5.4.9.2 Output State

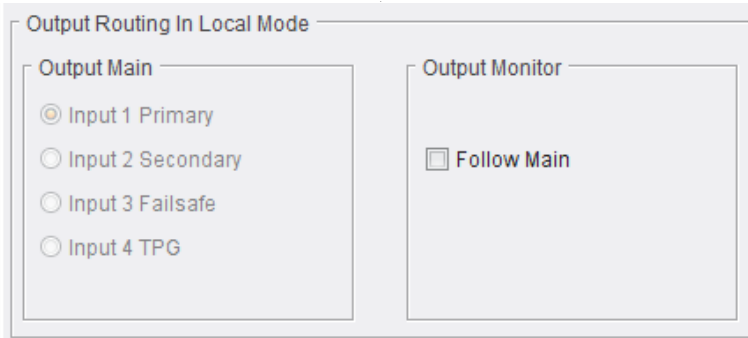
This pane reports the current output state.



The screenshot shows a window titled "Output State" with two sub-panels. The "Output Main" panel displays "IN1:625/25i". The "Output Monitor" panel also displays "IN1:625/25i".

5.4.9.3 Output Routing in Local Mode

This pane allows the main output to be selected locally, and defines whether the monitor output should follow the main. Select as required.



The screenshot shows a window titled "Output Routing In Local Mode" with two sub-panels. The "Output Main" panel contains four radio button options: "Input 1 Primary" (selected), "Input 2 Secondary", "Input 3 Failsafe", and "Input 4 TPG". The "Output Monitor" panel contains a checkbox labeled "Follow Main".

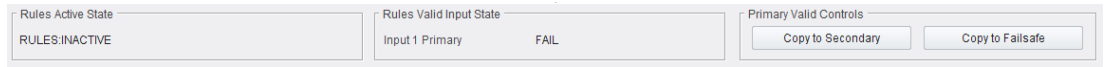
5.5 Input n Valid

There are three input valid pages, one for each for input. These controls all relate to the validity checks applied to the input and then subsequently used by the rules engine. They are grouped into video and audio.

The screenshot displays the 'Input 1 Valid' configuration page. At the top, there are four panels: 'Information' (listing IP addresses like 193.1.1000/291), 'Information Select' (with radio buttons for Video Input Status, Video Output Status, etc.), and 'Card In' (set to REMOTE MODE). Below these are 'Rules Active State' (RULESACTIVEIN1) and 'Primary Valid Controls' (Copy to Secondary, Copy to Failsafe). The 'Configuration' section includes 'Input 1 Status' (Standard: 100029H, Valid Standard Status: OK) and 'Valid Input Standards' (a grid of checkboxes for various standards like 525/29i, 720/30p, etc.). The 'Carrier Detect' section has 'Status: OK' and sliders for 'Fail Timer' and 'Recovery Timer'. The 'Valid CRCEDH' section has 'Enable' checked, 'Status: OK', and 'CRCEDH Errors: 8'. The 'Video Content Detection' section includes 'Freeze Detector' and 'Black Detector', both with 'Status: OK'. The 'Audio' section contains 'Audio Monitor Levels' (Level: -70 dB, Level (Overload): 0 dB), 'Audio Type Timers' (Fail/Recovery for Type), 'Audio Mute Timers' (Fail/Recovery for Mute), and 'Audio Low-level Timers' (Fail/Recovery for Low-level). At the bottom, there is a grid of 16 'Pair' controls (Pair 1 to Pair 16). Each pair control shows 'OK / Fail' status, 'Type' (PCM), 'Ch1 State' (OK/Mute/Lost), 'Ch2 State' (OK/Mute/Lost), and 'Type Expected' (Ignored). Pairs 1-4 are OK, Pairs 5-8 are Mute, and Pairs 9-16 are Lost.

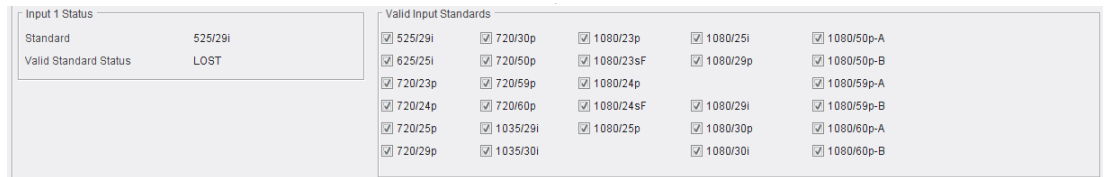
5.5.1 Input Status

For each of the inputs, the current rules state is reported, along with the rules state of the given input. Additional controls are provided to allow for copying of settings to the other two pages.



5.5.2 Valid Inputs

The Input Status pane is a mirror of the information reported on the summary page. The Valid Input Standards check boxes allows the user to select the standards to be used for validity checking. If a standard presented to the rules engine is selected, it passes; if not, it causes an error.



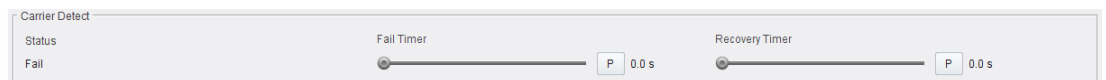
Note: ASI is unprocessed. ASI is passed directly through the card if the ASI carrier check box is enabled.

5.5.3 Validity Timers

Validity timers generally behave in the same way. For clarity, only the Carrier Detect section has been detailed below and where there are exceptions/additions to these controls.

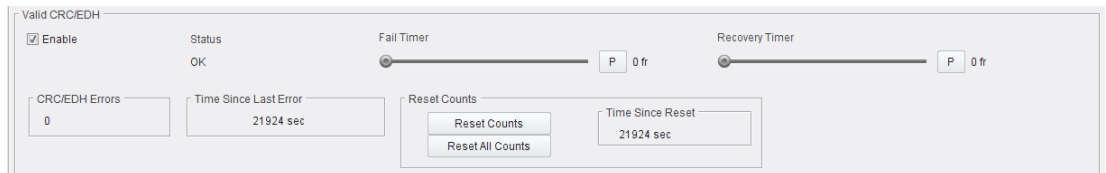
5.5.3.1 Carrier Detect

If the carrier is missing for the period of time defined by the fail timer, a fail is reported. The error condition has to be absent for the period defined by the recovery timer for the condition to be removed. For most controls an enable check box is provided.



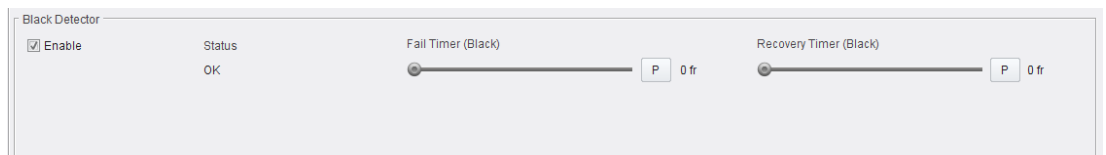
5.5.3.2 Valid CRC/EDH

In addition to the Fail and Recovery Timer's resets are provided for the error counts.



5.5.3.3 Black Detector

A Black threshold is provided at which the rule is applied.



In addition to the above, the following validity timers are provided:

- Freeze Detector
- Audio Monitor Levels
- Audio Timers

5.5.4 Audio Pair Controls

For each of the audio pairs the following controls are available to the rules engine. The top four panes report the current audio type and the pair state.

The following types are supported:

- PCM
- DolbyE
- Data
- Any
- None
- Ignored

The following check boxes allow the rules engine to be applied to the named audio characteristic, based on the values of the previous controls

- Mute
- Low level
- Overload

Pair 1	Pair 2	Pair 3
OK / Fail ---	OK / Fail ---	OK / Fail ---
Type PCM	Type PCM	Type PCM
Ch1 State Lost	Ch1 State Lost	Ch1 State Lost
Ch2 State Lost	Ch2 State Lost	Ch2 State Lost
Type Expected Ignored	Type Expected Ignored	Type Expected Ignored
<input type="checkbox"/> Mute	<input type="checkbox"/> Mute	<input type="checkbox"/> Mute
<input type="checkbox"/> Low level	<input type="checkbox"/> Low level	<input type="checkbox"/> Low level
<input type="checkbox"/> Overload	<input type="checkbox"/> Overload	<input type="checkbox"/> Overload

5.6 Outputs

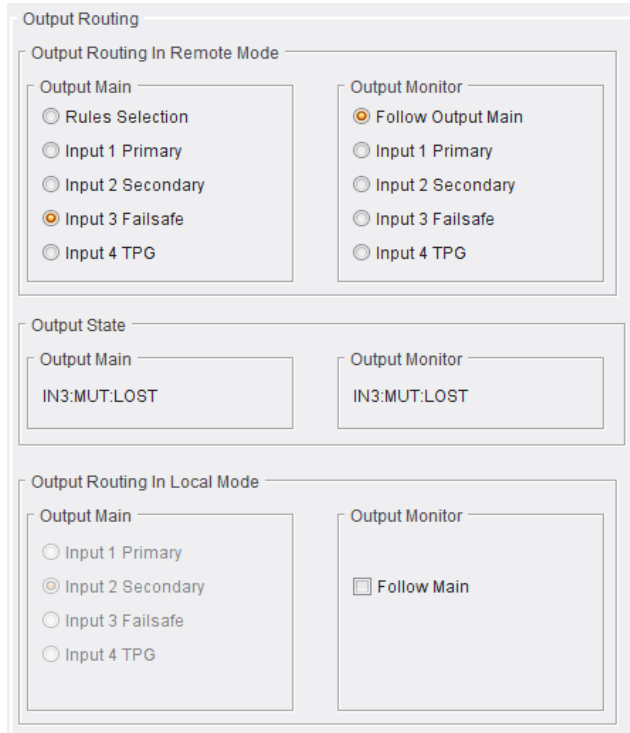
A single Outputs page covers both main and monitor.

The screenshot displays the 'Outputs' configuration page, which is divided into several sections for both the main output and the monitor output.

- Output Routing:** This section is split into 'Remote Mode' and 'Local Mode'.
 - Remote Mode:** Includes 'Output Main' (with radio buttons for Rules Selection, Input 1 Primary, Input 2 Secondary, Input 3 Failsafe, and Input 4 TPG) and 'Output Monitor' (with radio buttons for Follow Output Main, Input 1 Primary, Input 2 Secondary, Input 3 Failsafe, and Input 4 TPG).
 - Local Mode:** Includes 'Output Main' (with radio buttons for Input 1 Primary, Input 2 Secondary, Input 3 Failsafe, and Input 4 TPG) and 'Output Monitor' (with a checkbox for Follow Main).
- Rules Active State:** Shows 'RULES:INACTIVE' and 'In Rules Selection' with radio buttons for Input 1 Primary, Input 2 Secondary, Input 3 Failsafe, and Input 4 TPG Priority.
- Default Output Standard:** A list of standards including 750(720)/30p, 750(720)/29p, 750(720)/25p, 750(720)/24p, 750(720)/23p, 525(480)/29i, and 625(576)/25i. The '625(576)/25i' option is selected. A checkbox for 'Last Known Good' is also present.
- Output State:** Shows 'Output Main' and 'Output Monitor' both displaying 'IN3:MUT:LOST'.
- Output Main - Legalizer:** Contains an 'RGB Legalizer' (checkbox 'Enable', Range: 700 mV, 721 mV, 735 mV, 746 mV) and a 'Luma Clipper' (checkbox 'Enable', sliders for White max: 103.0%, White knee: 100.0%, Black knee: 0.0%, Black min: -1.0%).
- Output Monitor - Legalizer:** Contains an 'RGB Legalizer' (checkbox 'Enable', Range: 700 mV, 721 mV, 735 mV, 746 mV) and a 'Luma Clipper' (checkbox 'Enable', sliders for White max: 103.0%, White knee: 100.0%, Black knee: 0.0%, Black min: -1.0%).
- Output Main - Blanking:** Includes checkboxes for 'Blank VANC' and 'Blank HANC'.
- Output Monitor - Blanking:** Includes checkboxes for 'Blank VANC' and 'Blank HANC'.

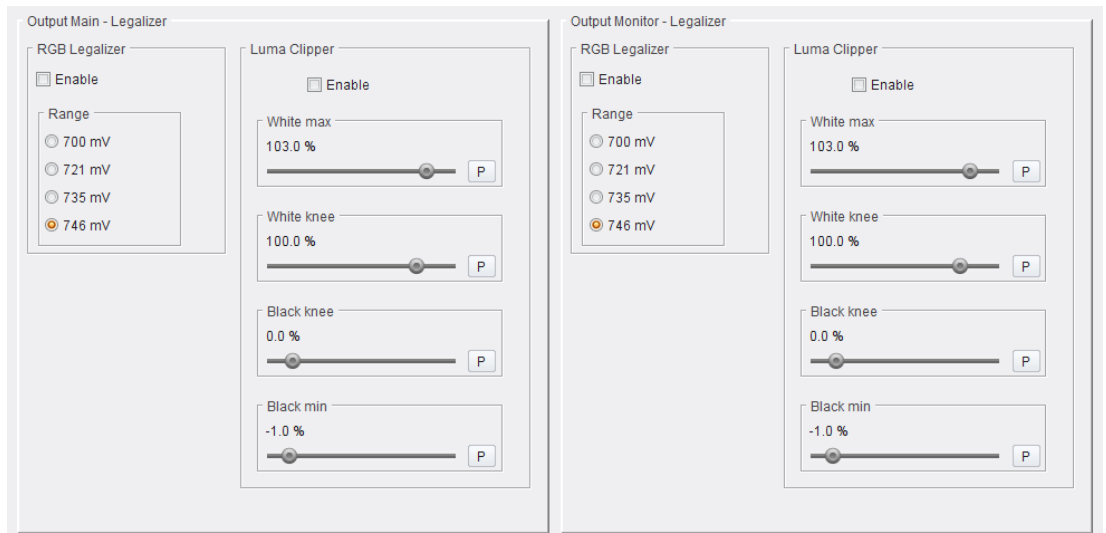
5.6.1 Routing

The output routing pane provides monitoring and control of the output. This same information is mirrored on the **Summary** page.



5.6.2 Legalizer

Both outputs are legalized for both RGB and Luma.



5.6.3 RGB Legalizer

Illegal colors are represented by values of RGB that are outside a nominal range, typically 0 - 700mV, when converted to analog values. Illegal RGB colors are easily generated in YCbCr space because of the differences in the valid color space between RGB and YCbCr.

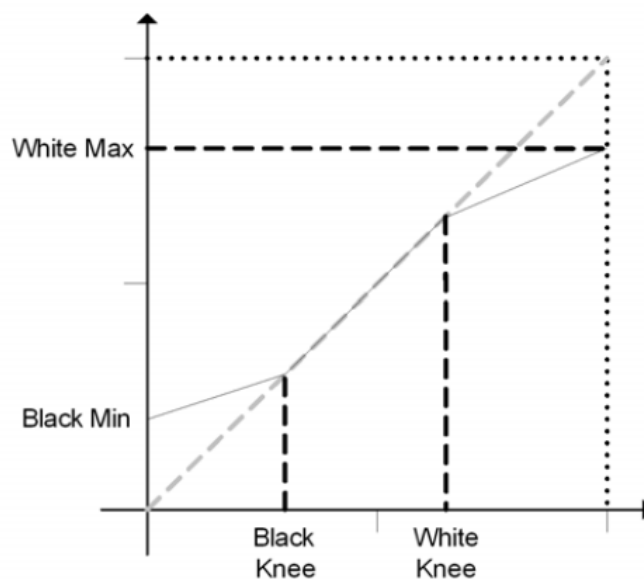
Upon detection of illegal RGB colors, there are a variety of techniques to bring them back into legal color space. Most legalizers will simply de-saturate the chrominance, leaving the luminance unaltered. The legalizer used by SAM is more advanced, and is able to preserve the original saturation to a much greater extent by modifying the luminance and chrominance signals simultaneously, giving the best visually subjective results.

- Off
- 700mV: 0mV to 700mV
- 721mV: -21mV to 721mV
- 735mV: -35mV to 735mV
- 746mV: -46mV to 746mV

5.6.3.1 Luma Clipper

These controls can be used to limit the luminance of the signal at the output. Advanced **White Knee** and **Black Knee** controls are available to soften the clipper, giving a gradual transition to the limit. By default the clipper is disabled. When **Input Format** is set to 4:4:4 RGB, clipping is applied to R, G and B channels.

- **White Max:** This sets up the upper limit (hard clip point) of the clipper. The range is minimum 60% (590 digital 10-bit value) to maximum 109% (1019) with increments of 1%. The default is 103% (966).
- **White Knee:** This sets up the knee for the maximum white limit of the clipper. This can be set up to give a "soft clip" from this knee point to the hard white clip point. The range is minimum 60% (590) to maximum 109% (1019) with increments of 1%. The default is 100% (940).
- **Black Knee:** This sets up the knee for the minimum black limit of the clipper. This can be set up to give a "soft clip" from this knee point to the hard black clip point. The range is minimum -7% (4) to maximum 60% (590) with increments of 1%. The default is 0% (64).
- **Black Min:** This sets up the lower limit (hard clip point) of the clipper. The range is minimum -7% (4) to maximum 60% (590) with increments of 1%. The default is -1% (55).



To achieve a hard white clip, set **White Max** and **White Knee** to the same value. Similarly, to achieve a hard black clip set **Black Min** and **Black Knee** to the same value.

The luma clipper can be used in combination with the 735mV legalizer selection to generate images which adhere to the EBU R103-200 specification.

5.6.4 Blanking

Data is passed but can be blanked for V and H independently for both outputs.

Output Main - Blanking	Output Monitor - Blanking
<input type="checkbox"/> Blank VANC	<input type="checkbox"/> Blank VANC
<input type="checkbox"/> Blank HANC	<input type="checkbox"/> Blank HANC

VANC

Standard	Lines Blanked
525	11-20, 274-282
625	7-22, 320-335
720	8-25
1080i	8-20, 570-583
1080p	8-41

5.7 Video ProcAmp

Each input has a ProcAmp.



The ProcAmp allows the following to be adjusted:

- **ProcAmp Enable:** Select this check box to enable the ProcAmp functions. Clear the check box to disable and bypass the ProcAmp functions.
- **Black Level:** The Black Level control allows the channel's black level to be adjusted over a range of ± 100 mV in steps of 0.8 mV. The preset value is 0.
- **Cb/Cr Gain (Chroma):** The Cb/Cr Gain control allows the chrominance to be adjusted over a range of ± 6 dB in steps of 0.1 dB. The preset value is 0.
- **Hue Adjust:** The Hue control allows the channel's hue to be adjusted over a range of $\pm 180^\circ$ in steps of 1° . The preset value is 0.
- **Y/C Timing:** The Y/C Timing control allows the luma/chroma timing to be adjusted over a range of:
 - ± 8 pixels in 2 pixel steps in SD
 - ± 16 pixels in 2 pixel steps in HD/3G

The preset value is 0.

- **Master Video Gain:** The Mater Video Gain control allows the video gain to be adjusted over a range of ± 6 dB in steps of 0.1 dB. The preset value is 0.

- **Picture Position:** The Picture Position control allows the picture position to be adjusted over a range of:
 - ± 8 pixels in 2 pixel steps SD
 - ± 16 pixels in 2 pixel steps HD/3G
- The preset value is 0.
- **Y Gain Luma:** The Y Gain control allows the luma to be adjusted over a range of ± 6 dB in steps of 0.1 dB. The preset is 0.

5.8 Color Correction

Each input has a color corrector.



Each color corrector has the following controls:

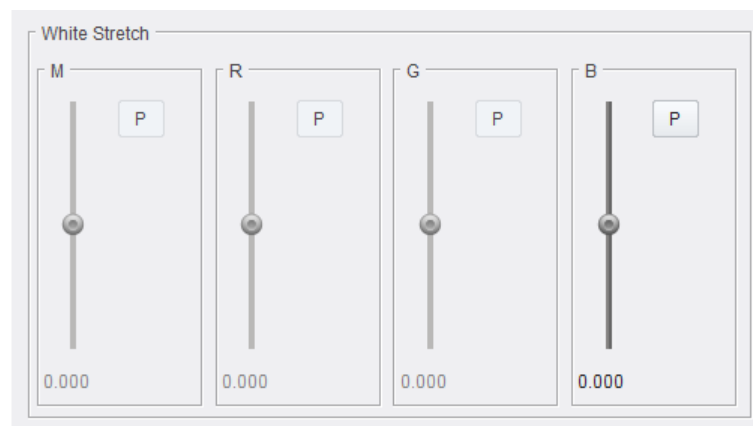
- Enable
- White Stretch
- Mid Tones
- Black Stretch
- Master Knee

5.8.1 Enable

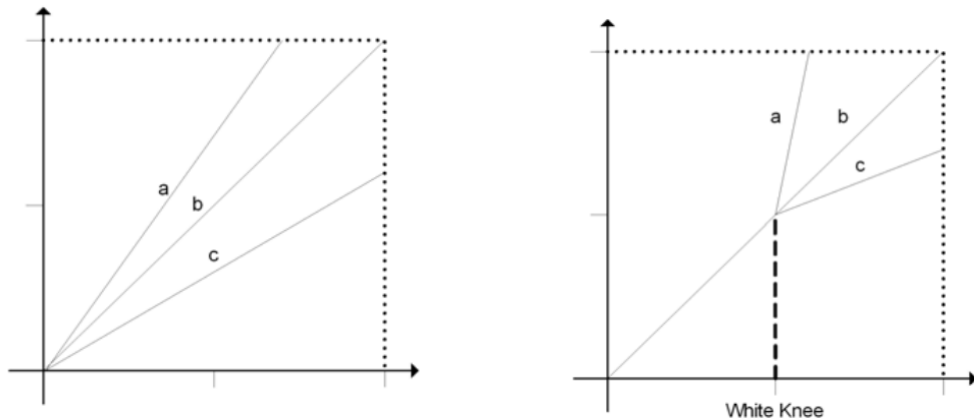
Check the **Enable** check box to activate color correction for the associated input.

5.8.2 White Stretch

White Stretch is used to lift or crush whites.



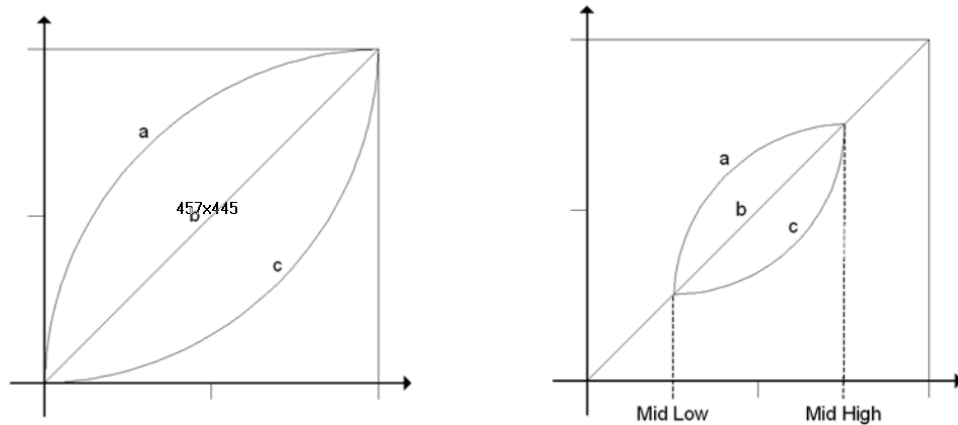
The **M** (Master) slider affects the luma content of the picture, and the RGB controls are used to adjust the balance of the red, green and blue channels. All controls apply irrespective of the **Input Format** setting. With the addition of the **Upper Knee** control, it is possible to adjust whites only, leaving blacks unchanged.



- a. White stretch
- b. Normal
- c. White crush

5.8.3 Mid Tones

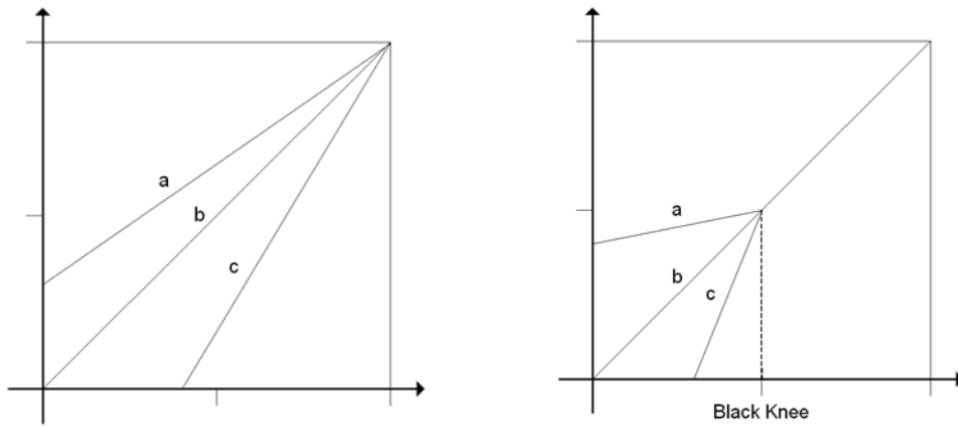
The **Mid Stretch** control can be used to adjust the gamma. With the addition of the **Mid Hi Knee** and the **Mid Lo Knee** controls, the location of the stretch/crush can be finely tuned to blacks, whites or the midpoint.



- a. Mid stretch
- b. Normal
- c. Mid crush

5.8.4 Black Stretch

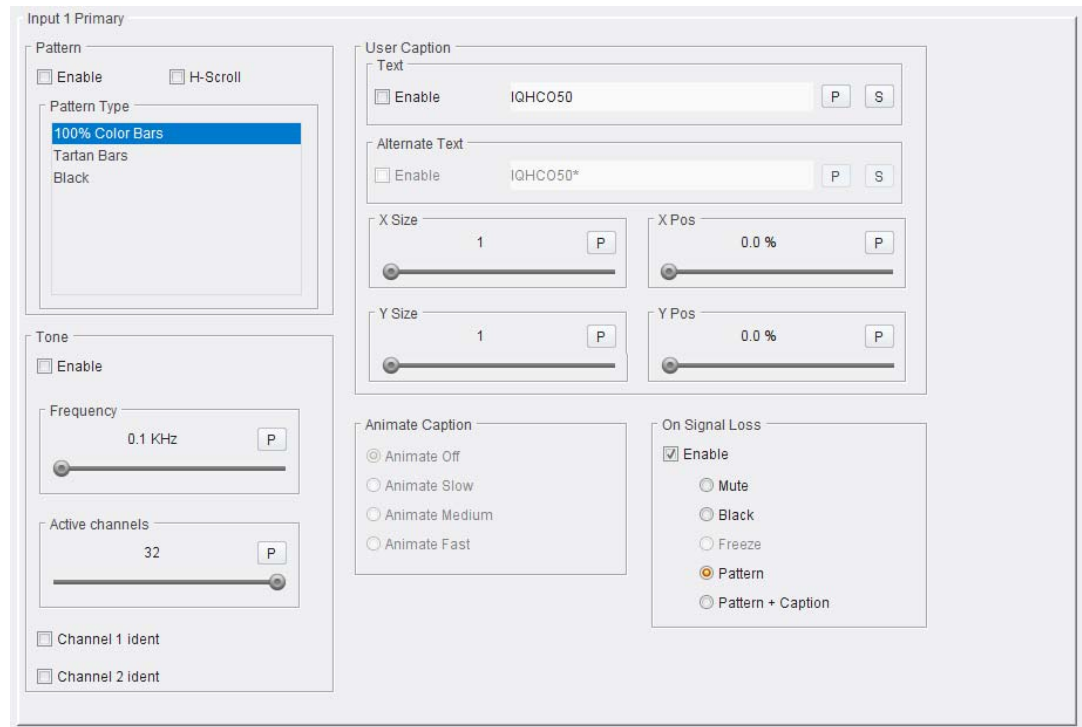
Black Stretch can be used to lift or crush blacks. With the addition of the **Lower Knee** control, it is possible to adjust blacks only, leaving whites unchanged.



- a. Black stretch
- b. Normal
- c. Black crush

5.9 Test Pattern and Caption Generators

Each of the three inputs has its own test pattern and caption generator. There is also a fourth dedicated test pattern and caption generator.



Each color corrector has the following controls:

- Pattern Enable
- H-Scroll
- Pattern Type
- Tone Enable, frequency and channel ident
- Caption, alternate text, animation, position and size
- On input loss

5.9.1 Pattern Enable, Pattern Type

To enable a test pattern, select an item from the **Pattern Type** list and then check the **Enable** check box.

5.9.2 H-Scroll

Enable **H-Scroll** to scroll the pattern horizontally.

5.9.3 Tone

This control allows the tone and its frequency to be enabled and adjusted.

5.9.4 User Caption

These controls allow caption text, alternate text, its size and position to be adjusted.

5.9.5 Animate Caption

When enabled, a caption will appear as white text on a black background in the lower portion of the picture. Basic animation may also be selected, which enables a scrolling effect from right to left, also known as a 'ticker-tape' effect. The options are:

- Animate Off
- Animate Slow
- Animate Medium
- Animate Fast

5.9.6 On Signal Loss

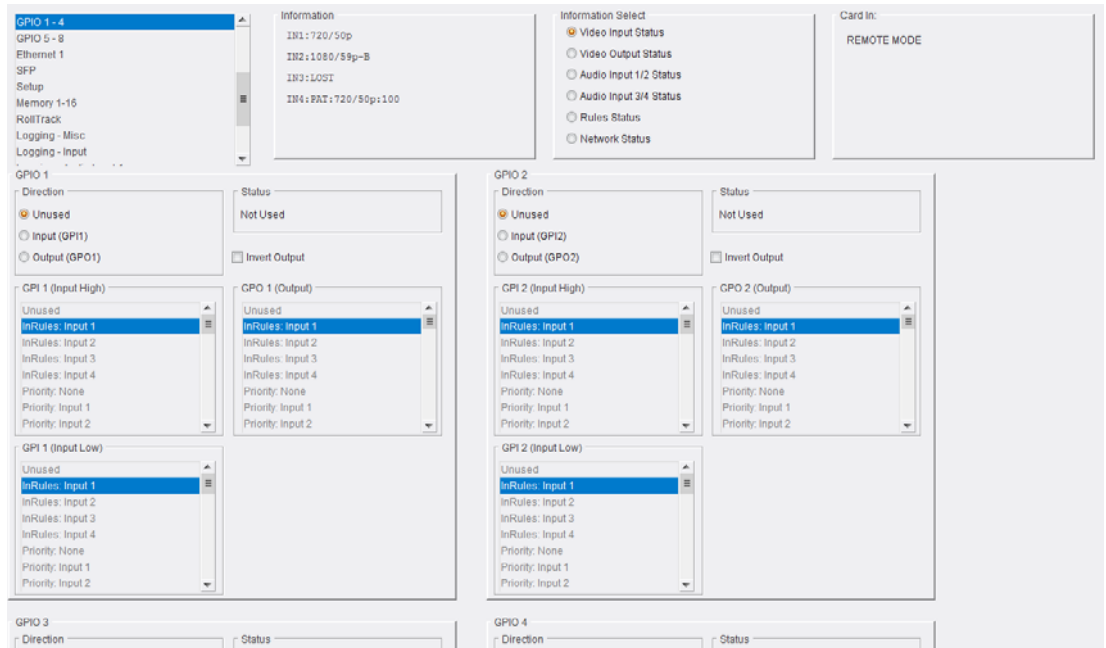
In the event of signal loss, a default behavior for the pattern generator can be set here. Click **Enable** to activate, then select the appropriate display from the list.

Note:

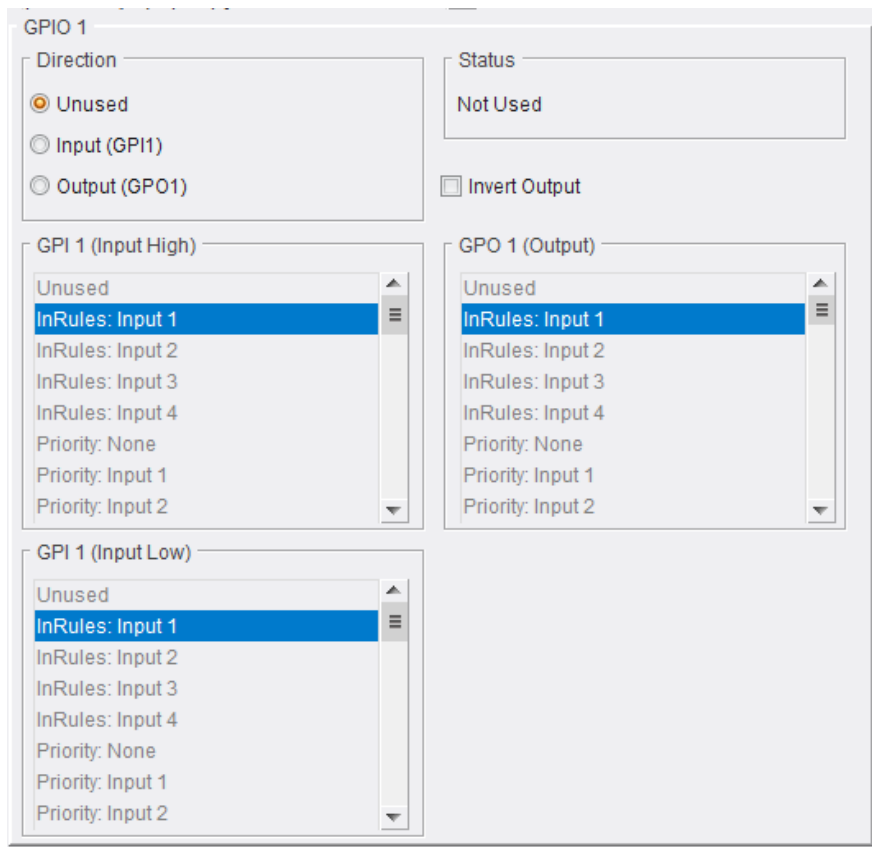
It is important to appreciate that enabling this mode of operation can effectively mask the fact that the input has been lost, and may not necessarily cause the rules engine to be triggered.

5.10 GPIO 1 - 4, 5 - 8

This page provides configuration and action control for the General Purpose IO.



Up to 8 IO ports can be supported. Each port has an associated GPIO pane:



Controls provided are:

- **Direction:** Allows the interface to be configured as an input or an output. Select one, and then select behaviors as required:

- **GPI input high behavior:** Select a behavior to use if the interface has been configured as an input and is transitioning low to high.
- **GPI input low behavior:** Select a behavior to use if the interface has been configured as an input and is transitioning high to low.
- **GPO output trigger:** If configured as an output, the selected event causes the output to be asserted.
- **Invert Output:** Enable the check box to invert the output if required.

5.11 Ethernet

The Ethernet page provides controls for the RJ45 interface.

The screenshot shows the Ethernet configuration interface. On the left is a sidebar menu with options like SFP, Setup, Memory 1-16, RollTrack, and various logging options. The main area is divided into several sections:

- Information:** Lists network interfaces: IN1: 720/50p, IN2: 720/50p, IN3: 720/50p, and IN4: PAT: 720/50p:100.
- Information Select:** A group of radio buttons for selecting status types: Video Input Status (selected), Video Output Status, Audio Input 1/2 Status, Audio Input 3/4 Status, Rules Status, and Network Status.
- Ethernet Configuration Table:**

	Current	NEW		
IP Address	172.19.81.202	-	P	S
Default Gateway	172.19.71.20	-	P	S
Subnet Mask	255.255.224.0	-	P	S
MAC Address	80:30:DC:52:A9:74			
Use DHCP	<input type="checkbox"/>			
- Domain Configuration Table:**

	Current	NEW		
ID	-	-	P	S
Name	-	--	P	S
- Status Table:**

	Sent	Received	
Packets	-	-	
Bytes	-	-	
Packets			
Dropped	-	-	
Bad	-	-	
Capacity			
	Total	Used	Free
Capacity	-	-	-

5.11.1 Ethernet

The Ethernet pane allows the setting of static IP properties or DHCP. New settings are applied only once **Take** is pressed.

The MAC address is read-only.

This is a close-up of the Ethernet configuration table from the screenshot above. It shows the 'Current' and 'NEW' columns for IP Address, Default Gateway, and Subnet Mask, each with 'P' and 'S' buttons. The MAC Address is shown as read-only. A 'Take' button is located to the right of the table.

	Current	NEW		
IP Address	172.19.81.202	-	P	S
Default Gateway	172.19.71.20	-	P	S
Subnet Mask	255.255.224.0	-	P	S
MAC Address	80:30:DC:52:A9:74			
Use DHCP	<input type="checkbox"/>			

5.11.2 Domain

RollCall+ uses Domains to partition a network. Only those nodes on the same domain can communicate with one another. A domain is uniquely identified with number and a friendly name/alias.

The screenshot shows a 'Domain' configuration window. It is divided into two sections: 'Current' and 'NEW'. The 'Current' section has an 'ID' field with a hyphen '-' and two buttons labeled 'P' and 'S'. The 'NEW' section has a 'Name' field with two hyphens '--' and two buttons labeled 'P' and 'S'.

5.11.3 Status

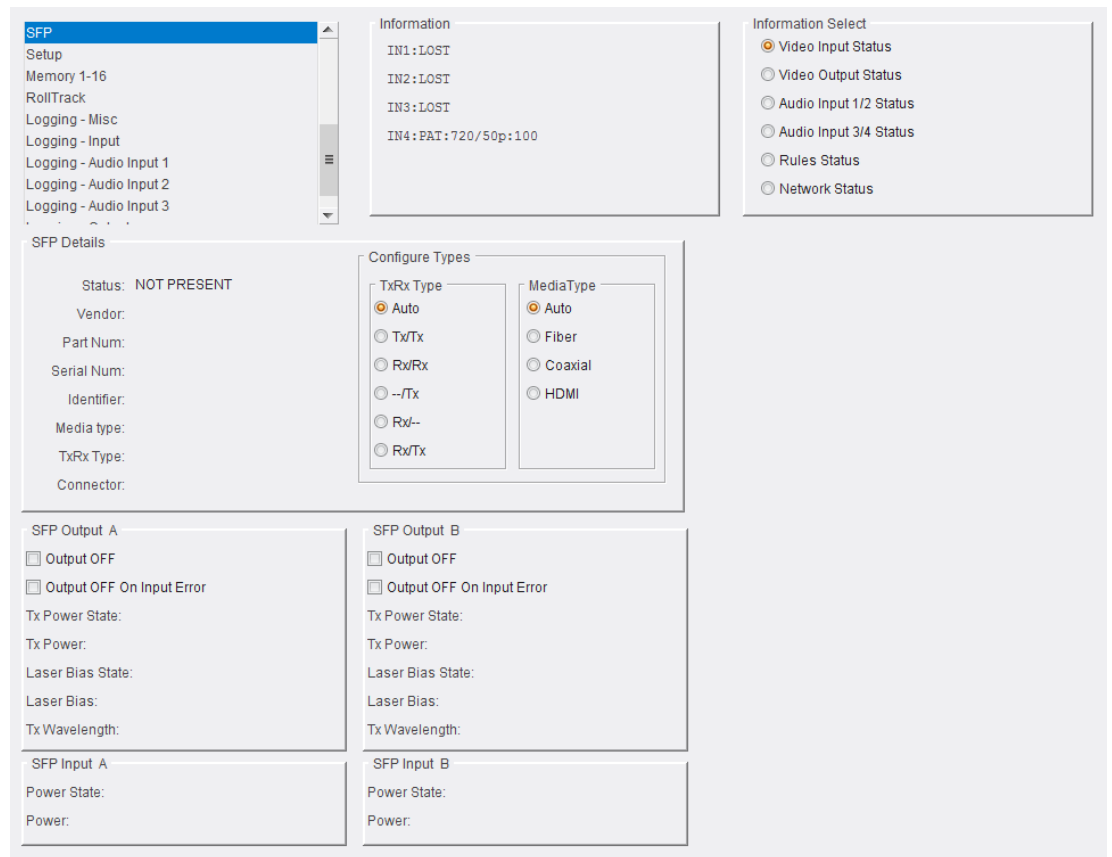
The status pane provides information about the network status such as packets sent, dropped.

The screenshot shows a 'Status' pane with the following statistics:

	Sent	Received	
Packets	-	-	
Bytes	-	-	
Packets			
Dropped	-		
Bad	-		
Total			
Capacity	-	Used	Free
	-	-	-

5.12 SFP

The SFP page allows SFPs to be configured, and various parameters to be monitored.



5.12.1 SFP Details

Displays basic SFP details.

5.12.1.1 Configure Types

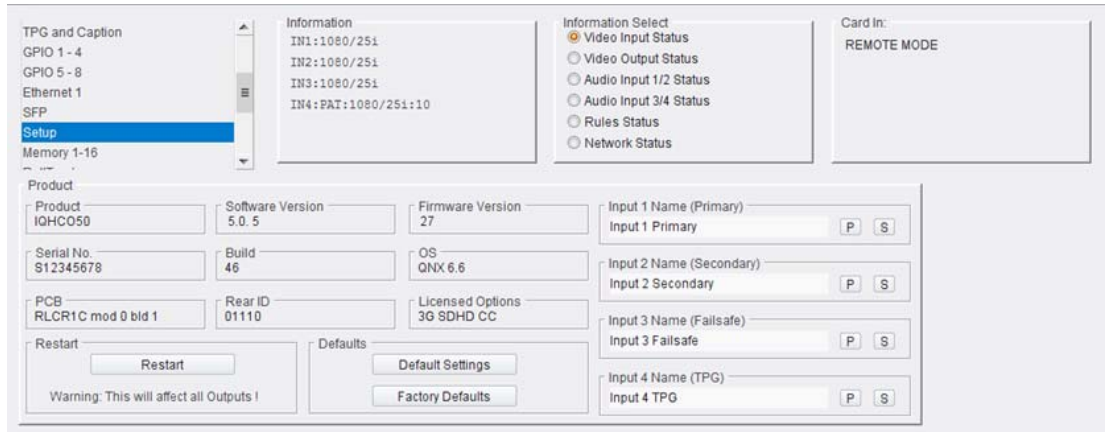
Allows Transmit/Receive and Connection Media types to be specified. Select a radio button for each type as required.

5.12.2 SFP Inputs/Outputs

Displays various parameters, and allows output from SFPs to be switched off. Also allows output to be switched off automatically if an input error is detected. Select check boxes as required.

5.13 Setup

The Setup page displays basic details of the module. You may be asked for these if you contact SAM technical support.



5.13.1 Restart

Power-cycles the module, and allows the module to be reset to default settings.

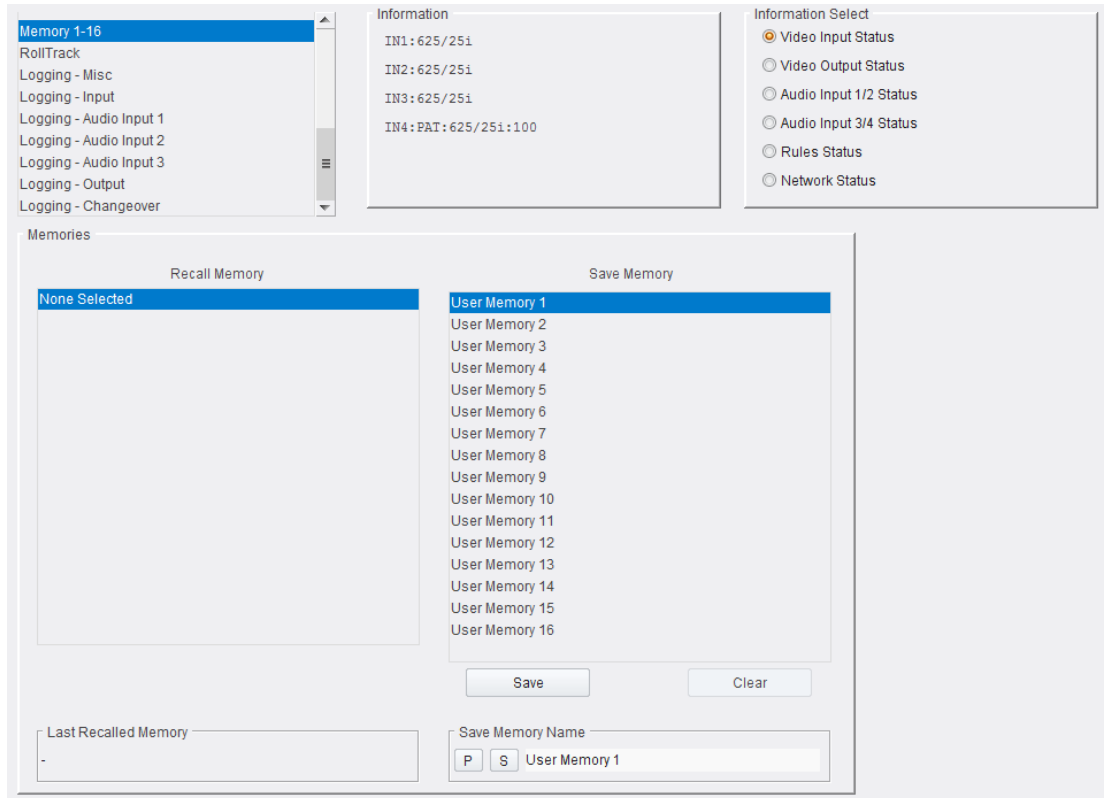
Option	Operation
Default Settings	All controls are reset to their default values, except for network configuration and IP addresses.
Factory Defaults	All controls are reset to their default values, including network configuration and IP addresses.

5.13.2 Input Names

Inputs may be renamed if required. To do this, overwrite the default, and click the **S Save Value** button. To discard an entry and return to the default value, click the **P Preset Value** button.

5.14 Memories

The Memory page enables up to 16 setups to be saved and recalled later. Default memory names can be changed to provide more meaningful descriptions.



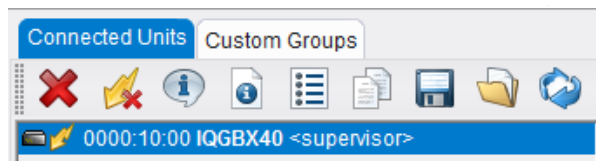
5.15 Savesets

Savesets allow the user to save predetermined RollControl product field settings to file, which can then be used to either transfer the settings to another card, or used as a backup of the settings for that card.

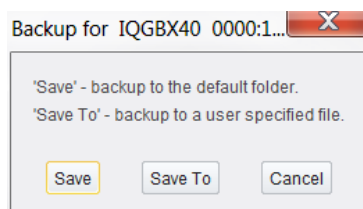
The Saveset feature is available via the RollCall Control Panel client.

5.15.1 Saving a Saveset

This is performed from the RollCall Control Panel **Connected Units** pane:




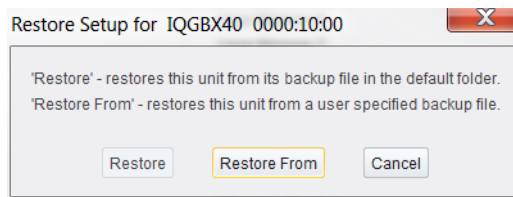
1. Click  to display the **Backup** dialog:



2. Click **Save** to save to the default folder, or **Save To** to save to a specified folder.

5.15.2 Restoring a Saveset

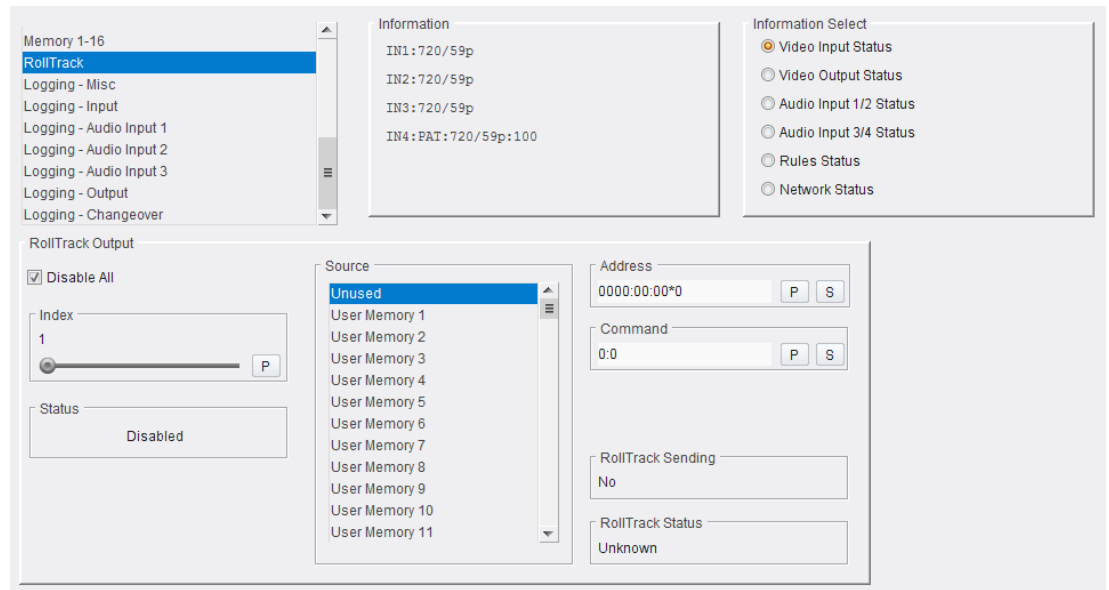
1. From the **Connected Units** pane, select the  icon; the **Restore** dialog is displayed:



Click **Restore** to restore from the default folder, or **Restore From** to restore from a specified folder.

5.16 RollTrack

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



5.16.1 Disable All

When checked, all RollTrack items are disabled.

5.16.2 RollTrack Index

This slider enables up to 16 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.

5.16.3 Source

Select the source of information to trigger the transmission of data. Clicking **P** selects the default preset value. When no source is selected, **Unused** is displayed.

5.16.4 Address

This is where the address of the selected destination unit is set. Type a destination into the text area, then click **S** to save the selection. Clicking **P** will return to the default preset destination

A 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 ID for the destination unit in a multi-unit system. This ensures that only the correct unit will respond to the command. If left at 00, an incorrectly fitted unit may respond inappropriately.

5.16.5 RollTrack Command

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

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

The 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.

5.16.6 RollTrack Sending

Indicates when a RollTrack is being sent. Displays either **Yes** or **No**.

5.16.7 RollTrack Status

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

Message	Description
OK	RollTrack message sent and received OK.
Unknown	RollTrack message has been sent but it has not yet completed.
Timeout	RollTrack message sent but acknowledgement 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.

5.17 Logging

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

- **Log Enable** - Enable the check box for each parameter to be logged.
- **Log Field** - Displays the name of the logging field.
- **Log Value** - Displays the current log value.

5.17.1 Logging Misc

The Logging Misc page allows information on the module’s basic parameters to be logged. Enable check boxes as required.

The screenshot shows the 'Logging Misc' configuration page. On the left, a navigation menu lists various logging options, with 'Logging - Misc' selected. The main area is divided into three columns:

- Information:** Lists system information such as IN1:1080/50p-A, IN2:1080/50p-A, IN3:1080/50p-A, and IN4: PAT:CAP:1080/50.
- Information Select:** A list of radio buttons for selecting logging categories: Video Input Status (selected), Video Output Status, Audio Input 1/2 Status, Audio Input 3/4 Status, Rules Status, and Network Status.
- Logging Misc Table:** A table with three columns: 'Log Enable' (checkboxes), 'Log Field' (parameter names), and 'Log Value' (current values).

Log Enable	Log Field	Log Value
<input checked="" type="checkbox"/>	Serial Number	S12345678
<input checked="" type="checkbox"/>	OS Version	QNX 6.6
<input checked="" type="checkbox"/>	Build No.	548
<input checked="" type="checkbox"/>	Hardware Ver.	RLCR1B mod 0 bid 1
<input checked="" type="checkbox"/>	Hardware Mod.	Unknown
<input checked="" type="checkbox"/>	Firmware Version	27
<input type="checkbox"/>	Temperature State	
<input type="checkbox"/>	Temperature Name	
<input checked="" type="checkbox"/>	Up Time	000:00:06:00
<input checked="" type="checkbox"/>	RollTracks	Disabled
<input checked="" type="checkbox"/>	Last Recalled Memory	-
<input checked="" type="checkbox"/>	Rear ID	0Z1Z0
<input checked="" type="checkbox"/>	Rear Status	Unknown
<input checked="" type="checkbox"/>	Slot Width	0
<input checked="" type="checkbox"/>	Slot Start	7
<input checked="" type="checkbox"/>	Power Usage	Unknown
<input checked="" type="checkbox"/>	Licence	3G SDHD CC
<input checked="" type="checkbox"/>	IP Address	172.19.81.202
<input checked="" type="checkbox"/>	Lan Port 1 State	UP
<input checked="" type="checkbox"/>	Lan Port 1 Speed	100Mb
<input checked="" type="checkbox"/>	Lan Port 1 Name	-

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. For example, KOS V115.
BUILD_NUMBER=	Reports the build number.
HARDWARE_VERSION =	Reports the hardware version number.
HARDWARE_MOD=	Reports the hardware modification level.
FIRMWARE_VERSION=	Reports the ASI controller firmware version.

Log Field	Description
TEMP_1_STATE=	Reports temperature sensor state. Possible values are: <ul style="list-style-type: none"> • 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.
TEMP_1_NAME=	Reports temperature sensor name.
UPTIME=	Reports the time since the last restart in the format ddd:hh:mm:ss.
ROL_STATES=	Reports RollTrack status. Possible values are: <ul style="list-style-type: none"> • OK • Disabled • FAIL
LAST_RECALLED_MEMORY=	Reports last memory to be recalled.
REAR_ID=	Reports the rear panel type number.
REAR_STATUS=	Reports the status of the rear panel.
SLOT_WIDTH=	Reports the slot width.
SLOT_START=	Reports the slot start number.
POWER_USAGE=	Reports the power rating for the module. Note this is not a live power reading, but rather a maximum rating.
LICENSED_OPTIONS=	Reports licenses installed.
IPADDRESS=	Reports current IP address.
LAN_PORT_1_STATE=	Reports Ethernet connection state.
LAN_PORT_1_SPEED=	Reports Ethernet connection speed.
LAN_PORT_1_NAME=	Reports Ethernet port name as defined by the OS.

5.17.2 Logging Inputs

The Logging Inputs page is used to select the fields to be enabled for logging each of the four inputs.

- Memory 1-16
- RollTrack
- Logging - Misc
- Logging - Input
- Logging - Audio Input 1
- Logging - Audio Input 2
- Logging - Audio Input 3
- Logging - Output
- Logging - Changeover

Information

IN1: 1080/50p-A

IN2: 1080/50p-A

IN3: 1080/50p-A

IN4: PAT:CAP:1080/50

Information Select

Video Input Status

Video Output Status

Audio Input 1/2 Status

Audio Input 3/4 Status

Rules Status

Network Status

Logging Input 1 Primary

Log Enable	Log Field	Log Value
<input checked="" type="checkbox"/> Input State	INPUT_1_STATE=	OK
<input checked="" type="checkbox"/> Input Standard	INPUT_1_STANDARD=	1080/50p-A
<input checked="" type="checkbox"/> Input SDI Errors	INPUT_1_SDI_ERRS=	0
<input checked="" type="checkbox"/> Input Type	INPUT_1_TYPE=	3G SDI
<input checked="" type="checkbox"/> Input Ident	INPUT_1_IDENT=	SERIAL IN 1
<input checked="" type="checkbox"/> Input Black Errors	INPUT_1_BLACK_ERRS=	OK
<input checked="" type="checkbox"/> Input Freeze Errors	INPUT_1_FREEZE_ERRS=	OK
<input checked="" type="checkbox"/> Caption	INPUT_1_CAPTION=	OK: Off
<input checked="" type="checkbox"/> Selected Pattern	INPUT_1_PATTERN=	OK: Off

Logging Input 2 Secondary

Log Enable	Log Field	Log Value
<input checked="" type="checkbox"/> Input State	INPUT_2_STATE=	OK
<input checked="" type="checkbox"/> Input Standard	INPUT_2_STANDARD=	1080/50p-A
<input checked="" type="checkbox"/> Input SDI Errors	INPUT_2_SDI_ERRS=	0
<input checked="" type="checkbox"/> Input Type	INPUT_2_TYPE=	3G SDI
<input checked="" type="checkbox"/> Input Ident	INPUT_2_IDENT=	SERIAL IN 2
<input checked="" type="checkbox"/> Input Black Errors	INPUT_2_BLACK_ERRS=	OK
<input checked="" type="checkbox"/> Input Freeze Errors	INPUT_2_FREEZE_ERRS=	OK
<input checked="" type="checkbox"/> Caption	INPUT_2_CAPTION=	OK: Off
<input checked="" type="checkbox"/> Selected Pattern	INPUT_2_PATTERN=	OK: Off

Logging Input 3 Failsafe

Log Enable	Log Field	Log Value
<input checked="" type="checkbox"/> Input State	INPUT_3_STATE=	OK
<input checked="" type="checkbox"/> Input Standard	INPUT_3_STANDARD=	1080/50p-A
<input checked="" type="checkbox"/> Input SDI Errors	INPUT_3_SDI_ERRS=	0
<input checked="" type="checkbox"/> Input Type	INPUT_3_TYPE=	3G SDI
<input checked="" type="checkbox"/> Input Ident	INPUT_3_IDENT=	SERIAL IN 3
<input checked="" type="checkbox"/> Input Black Errors	INPUT_3_BLACK_ERRS=	OK
<input checked="" type="checkbox"/> Input Freeze Errors	INPUT_3_FREEZE_ERRS=	OK
<input checked="" type="checkbox"/> Caption	INPUT_3_CAPTION=	OK: Off
<input checked="" type="checkbox"/> Selected Pattern	INPUT_3_PATTERN=	OK: Off

Logging Input 4 TPG

Log Enable	Log Field	Log Value
<input checked="" type="checkbox"/> Input State	INPUT_4_STATE=	OK: Active TPG
<input checked="" type="checkbox"/> Input Standard	INPUT_4_STANDARD=	1080/50p-A
<input checked="" type="checkbox"/> Selected Pattern	INPUT_4_PATTERN=	WARN:100% Color Bar
<input checked="" type="checkbox"/> Input Type	INPUT_4_TYPE=	3G SDI
<input checked="" type="checkbox"/> Caption	INPUT_4_CAPTION=	WARN: On IQHCO50
<input checked="" type="checkbox"/> Tone	INPUT_4_TONE=	OFF
<input checked="" type="checkbox"/> Tone Frequency	INPUT_4_TONE_FREQUENCY=	0.1 KHz
<input checked="" type="checkbox"/> Tone Channel 1 Ident	INPUT_4_CHANNEL_IDENT=	OFF

Log Field	Description
INPUT_N_STATE=	<p>Possible values are:</p> <ul style="list-style-type: none"> • OK: input signal good. • FAIL: input signal not detected.
INPUT_N_STANDARD=	PAL/NTSC/625 Mono/525 Mono
INPUT_N_SDI_ERRS=	<p>SDI errors that have occurred in a one-second period. Possible values are:</p> <ul style="list-style-type: none"> • OK • WARN
INPUT_N_TYPE=	<p>Type of input as specified by the module's configuration. Range 1–3. Possible values are:</p> <ul style="list-style-type: none"> • 3G/HD/SD SDI • HD/SD SDI • HD/SD Analog • SD Analog
INPUT_N_IDENT=	<p>Identifier string on the rear interface. Possible values are:</p> <ul style="list-style-type: none"> • Y/C:YPbPr:COMP In • COMP In • SERIAL IN • SERIAL IN 1 • SERIAL IN 2
INPUT_N_BLACK_ERRS=	<p>Reports Black errors. Possible values are:</p> <ul style="list-style-type: none"> • OK • FAIL
INPUT_N_FREEZE_ERRS=	<p>Reports Freeze errors. Possible values are:</p> <ul style="list-style-type: none"> • OK • FAIL
INPUT_N_CAPTION=	<p>Reports caption state. Possible values are:</p> <ul style="list-style-type: none"> • OK • WARN
INPUT_N_PATTERN=	<p>Possible values are:</p> <ul style="list-style-type: none"> • 100% Color Bars • SMPTE Bars • Tartan Bars • Pluge • Ramp • Sweep • Pulse & Bar • Burst • Black

Where N is the input number.

5.17.3 Logging - Audio Inputs 1 - 3

The Logging Audio Input page is used to select the fields to be enabled for logging audio inputs.

- Memory 1-16
- RollTrack
- Logging - Misc
- Logging - Input
- Logging - Audio Input 1
- Logging - Audio Input 2
- Logging - Audio Input 3
- Logging - Output
- Logging - Changeover

Information

IN1:LOST

IN2:1080/50p-A

IN3:1080/50p-A

IN4:FAT:CRP:1080/50

Information Select

Video Input Status

Video Output Status

Audio Input 1/2 Status

Audio Input 3/4 Status

Rules Status

Network Status

Input 1 Primary

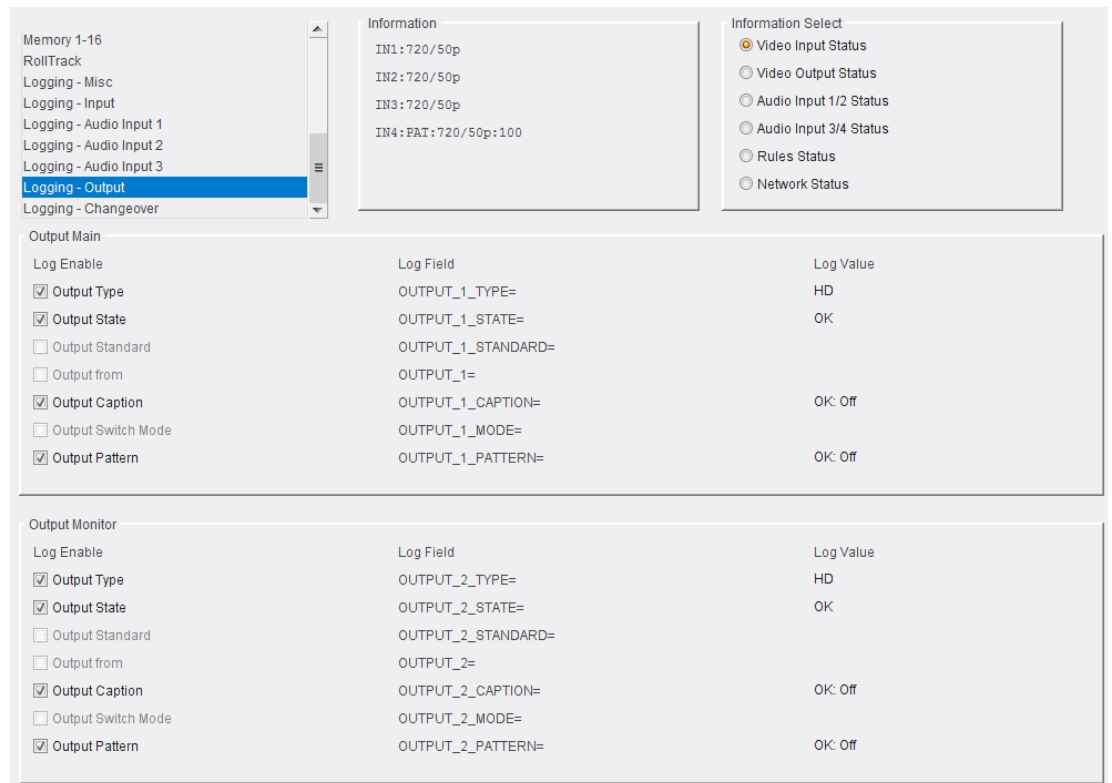
Log Enable	Log Field	Log Value	
<input checked="" type="checkbox"/>	Pair 1 State	INPUT_1_AUDIO_ALARM_PAIR_1_STATE=	---
<input checked="" type="checkbox"/>	Pair 2 State	INPUT_1_AUDIO_ALARM_PAIR_2_STATE=	---
<input checked="" type="checkbox"/>	Pair 3 State	INPUT_1_AUDIO_ALARM_PAIR_3_STATE=	---
<input checked="" type="checkbox"/>	Pair 4 State	INPUT_1_AUDIO_ALARM_PAIR_4_STATE=	---
<input checked="" type="checkbox"/>	Pair 5 State	INPUT_1_AUDIO_ALARM_PAIR_5_STATE=	---
<input checked="" type="checkbox"/>	Pair 6 State	INPUT_1_AUDIO_ALARM_PAIR_6_STATE=	---
<input checked="" type="checkbox"/>	Pair 7 State	INPUT_1_AUDIO_ALARM_PAIR_7_STATE=	---
<input checked="" type="checkbox"/>	Pair 8 State	INPUT_1_AUDIO_ALARM_PAIR_8_STATE=	---
<input checked="" type="checkbox"/>	Pair 9 State	INPUT_1_AUDIO_ALARM_PAIR_9_STATE=	---
<input checked="" type="checkbox"/>	Pair 10 State	INPUT_1_AUDIO_ALARM_PAIR_10_STATE=	---
<input checked="" type="checkbox"/>	Pair 11 State	INPUT_1_AUDIO_ALARM_PAIR_11_STATE=	---
<input checked="" type="checkbox"/>	Pair 12 State	INPUT_1_AUDIO_ALARM_PAIR_12_STATE=	---
<input checked="" type="checkbox"/>	Pair 13 State	INPUT_1_AUDIO_ALARM_PAIR_13_STATE=	---
<input checked="" type="checkbox"/>	Pair 14 State	INPUT_1_AUDIO_ALARM_PAIR_14_STATE=	---
<input checked="" type="checkbox"/>	Pair 15 State	INPUT_1_AUDIO_ALARM_PAIR_15_STATE=	---
<input checked="" type="checkbox"/>	Pair 16 State	INPUT_1_AUDIO_ALARM_PAIR_16_STATE=	---
<input checked="" type="checkbox"/>	Pair 1 Channel 1 State	INPUT_1_EMBEDDED_AUDIO_1_1_STATE=	Lost
<input checked="" type="checkbox"/>	Pair 1 Channel 2 State	INPUT_1_EMBEDDED_AUDIO_1_2_STATE=	Lost
<input checked="" type="checkbox"/>	Pair 2 Channel 1 State	INPUT_1_EMBEDDED_AUDIO_2_1_STATE=	Lost
<input checked="" type="checkbox"/>	Pair 2 Channel 2 State	INPUT_1_EMBEDDED_AUDIO_2_2_STATE=	Lost
<input checked="" type="checkbox"/>	Pair 3 Channel 1 State	INPUT_1_EMBEDDED_AUDIO_3_1_STATE=	Lost
<input checked="" type="checkbox"/>	Pair 3 Channel 2 State	INPUT_1_EMBEDDED_AUDIO_3_2_STATE=	Lost
<input checked="" type="checkbox"/>	Pair 4 Channel 1 State	INPUT_1_EMBEDDED_AUDIO_4_1_STATE=	Lost
<input checked="" type="checkbox"/>	Pair 4 Channel 2 State	INPUT_1_EMBEDDED_AUDIO_4_2_STATE=	Lost
<input checked="" type="checkbox"/>	Pair 5 Channel 1 State	INPUT_1_EMBEDDED_AUDIO_5_1_STATE=	Lost
<input checked="" type="checkbox"/>	Pair 5 Channel 2 State	INPUT_1_EMBEDDED_AUDIO_5_2_STATE=	Lost
<input checked="" type="checkbox"/>	Pair 6 Channel 1 State	INPUT_1_EMBEDDED_AUDIO_6_1_STATE=	Lost
<input checked="" type="checkbox"/>	Pair 6 Channel 2 State	INPUT_1_EMBEDDED_AUDIO_6_2_STATE=	Lost
<input checked="" type="checkbox"/>	Pair 7 Channel 1 State	INPUT_1_EMBEDDED_AUDIO_7_1_STATE=	Lost
<input checked="" type="checkbox"/>	Pair 7 Channel 2 State	INPUT_1_EMBEDDED_AUDIO_7_2_STATE=	Lost
<input checked="" type="checkbox"/>	Pair 8 Channel 1 State	INPUT_1_EMBEDDED_AUDIO_8_1_STATE=	Lost
<input checked="" type="checkbox"/>	Pair 8 Channel 2 State	INPUT_1_EMBEDDED_AUDIO_8_2_STATE=	Lost
<input checked="" type="checkbox"/>	Pair 9 Channel 1 State	INPUT_1_EMBEDDED_AUDIO_9_1_STATE=	Lost
<input checked="" type="checkbox"/>	Pair 9 Channel 2 State	INPUT_1_EMBEDDED_AUDIO_9_2_STATE=	Lost
<input checked="" type="checkbox"/>	Pair 10 Channel 1 State	INPUT_1_EMBEDDED_AUDIO_10_1_STATE=	Lost
<input checked="" type="checkbox"/>	Pair 10 Channel 2 State	INPUT_1_EMBEDDED_AUDIO_10_2_STATE=	Lost
<input checked="" type="checkbox"/>	Pair 11 Channel 1 State	INPUT_1_EMBEDDED_AUDIO_11_1_STATE=	Lost
<input checked="" type="checkbox"/>	Pair 11 Channel 2 State	INPUT_1_EMBEDDED_AUDIO_11_2_STATE=	Lost
<input checked="" type="checkbox"/>	Pair 12 Channel 1 State	INPUT_1_EMBEDDED_AUDIO_12_1_STATE=	Lost
<input checked="" type="checkbox"/>	Pair 12 Channel 2 State	INPUT_1_EMBEDDED_AUDIO_12_2_STATE=	Lost
<input checked="" type="checkbox"/>	Pair 13 Channel 1 State	INPUT_1_EMBEDDED_AUDIO_13_1_STATE=	Lost
<input checked="" type="checkbox"/>	Pair 13 Channel 2 State	INPUT_1_EMBEDDED_AUDIO_13_2_STATE=	Lost
<input checked="" type="checkbox"/>	Pair 14 Channel 1 State	INPUT_1_EMBEDDED_AUDIO_14_1_STATE=	Lost
<input checked="" type="checkbox"/>	Pair 14 Channel 2 State	INPUT_1_EMBEDDED_AUDIO_14_2_STATE=	Lost
<input checked="" type="checkbox"/>	Pair 15 Channel 1 State	INPUT_1_EMBEDDED_AUDIO_15_1_STATE=	Lost
<input checked="" type="checkbox"/>	Pair 15 Channel 2 State	INPUT_1_EMBEDDED_AUDIO_15_2_STATE=	Lost
<input checked="" type="checkbox"/>	Pair 16 Channel 1 State	INPUT_1_EMBEDDED_AUDIO_16_1_STATE=	Lost
<input checked="" type="checkbox"/>	Pair 16 Channel 2 State	INPUT_1_EMBEDDED_AUDIO_16_2_STATE=	Lost

Log Field	Description
INPUT_N_AUDIO_ ALARM_PAIR_X_ STATE=	Reports alarm conditions for the selected pair/channel. Possible values are: <ul style="list-style-type: none"> • OK • FAIL
INPUT_N_EMBEDDED_ AUDIO_X_STATE=	Reports information on incoming embedded audio. Possible values are: <ul style="list-style-type: none"> • OK:PCM - PCM present • OK:Data - Non-PCM AES audio present • OK:Dolby E - Dolby E audio present • FAIL:LOST - Audio not present <p>WARN:Unknown - Unselected SDI input with unknown embedded audio state</p>

Where N is the input number and X is the audio pair/channel number.

5.18 Logging - Output

The Logging Output page is used to select the fields to be enabled for logging outputs.



Log Field	Description
OUTPUT_N_TYPE=	Logs output type. Possible values are: <ul style="list-style-type: none"> • SD SDI • HD SDI • HD/SD/3G SDI
OUTPUT_N_STATE=	Logs state of the output. Possible values are: <ul style="list-style-type: none"> • OK • FAIL • WARN: Freeze • WARN: Pattern
OUTPUT_N_STANDAR=	Logs details of the output standard in this format: <Lines>(<Active>)/<Rate><i/p/sf> Where: <ul style="list-style-type: none"> • Lines = Total lines • Active = Active lines • Rate = Frame rate • I = Interlaced • P = Progressive • SF = Slow Frame Rate
OUTPUT_N=	Logs output source. Taken from editable name of selected input.

Log Field	Description
OUTPUT_N_CAPTION	Logs caption information. Possible values are: <ul style="list-style-type: none"> • OK - Off • WARN - On
OUTPUT_N_PATTERN	Logs test pattern information. Possible values are: <ul style="list-style-type: none"> • 100% Color bars • SMPTE bars • Tartan bars • Pluge • Ramp • Sweep • Pulse & bar • Burst • Black

Where N is the input number.

5.19 Logging - Changeover

The Logging-Changeover page allows errors or events which cause a failover to be logged.

The screenshot shows the 'Logging - Changeover' configuration page. On the left is a navigation menu with 'Logging - Changeover' selected. The main content area is divided into several sections:

- Information:** A table showing input details:

IN1:	720/50p
IN2:	720/50p
IN3:	720/50p
IN4:	PAT: 720/50p:100
- Information Select:** A list of radio buttons for selecting information to log:
 - Video Input Status
 - Video Output Status
 - Audio Input 1/2 Status
 - Audio Input 3/4 Status
 - Rules Status
 - Network Status
- Rules Valid Input State:** A table with checkboxes and log values:

Log Enable	Log Field	Log Value
<input checked="" type="checkbox"/> Input 1 Primary	PRIMARY_STATE=	OK
<input checked="" type="checkbox"/> Input 2 Secondary	SECONDARY_STATE=	OK
<input checked="" type="checkbox"/> Input 3 Failsafe	FAILSAFE_STATE=	OK
- Logging Rules:** A table with checkboxes and log values:

Log Enable	Log Field	Log Value
<input checked="" type="checkbox"/> Rules State	RULES_STATE=	IN4:720/50p:100% Co
- GPIO State:** A table with checkboxes and log values:

Log Enable	Log Field	Log Value
<input checked="" type="checkbox"/> GPIO 1 State	GPI_1_STATE=	Not Used
<input checked="" type="checkbox"/> GPIO 2 State	GPI_2_STATE=	Not Used
<input checked="" type="checkbox"/> GPIO 3 State	GPI_3_STATE=	Not Used
<input checked="" type="checkbox"/> GPIO 4 State	GPI_4_STATE=	Not Used
<input checked="" type="checkbox"/> GPIO 5 State	GPI_5_STATE=	Not Used
<input checked="" type="checkbox"/> GPIO 6 State	GPI_6_STATE=	Not Used
<input checked="" type="checkbox"/> GPIO 7 State	GPI_7_STATE=	Not Used
<input checked="" type="checkbox"/> GPIO 8 State	GPI_8_STATE=	Not Used

5.19.1 Rules Valid Input State

Select check boxes to activate logging to a downstream device attached to the RollCall network.

5.19.2 Logging Rules

Select the check box to activate logging of any event generated by the rules engine to a downstream device attached to the RollCall network.

5.19.3 GPIO State

Select check boxes to activate logging of GPIO states to a downstream device attached to the RollCall network.

Note:

All log values will be shown on-screen regardless of the settings made here.

Appendix A Active Formats & Signal Mapping

A.1 Active Picture Areas

The active picture areas used in the wide screen signaling scheme for aspect ratio control are described here for reference. A basic principle of operation is that any picture can be processed from the following information:

- The whole picture aspect ratio (i.e. the target or coded screen).
- The active area used within the screen (outside is generally left black to create a letterbox in either orientation).
- How much of the active area is to be preserved (optional shoot-and-protect area indicated in the table by the circles).
- Where within the screen the active area is (optional top attribute used for extended subtitle area).

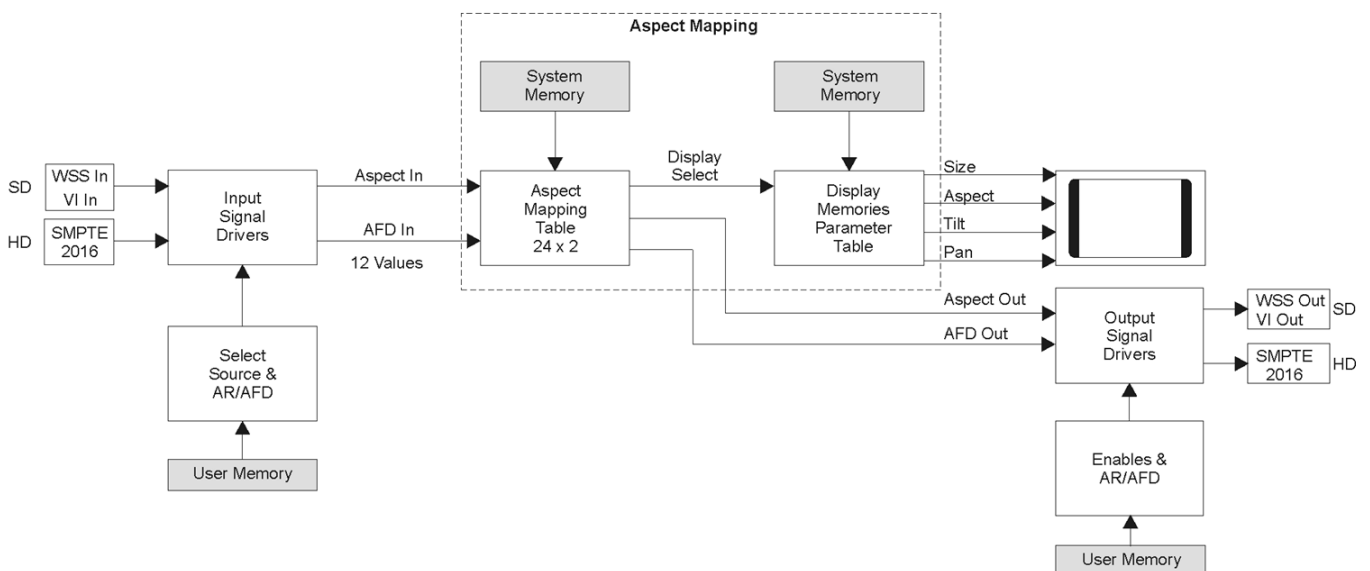
Knowing this and the output aspect ratio for conversion to, it is possible to do a mapping which will correct the aspect ratio while preserving the active picture and minimizing black bar area.

A.2 Wide Screen Signaling and Aspect Ratio Control Overview

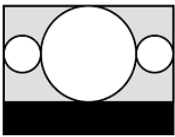
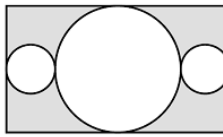
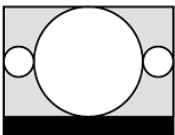
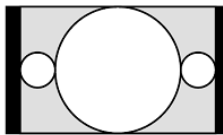
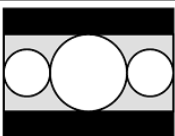
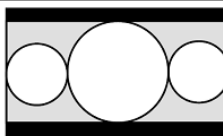
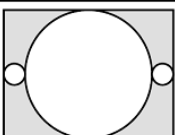
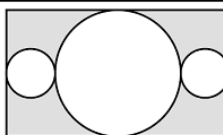
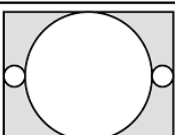
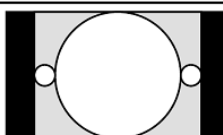
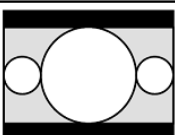
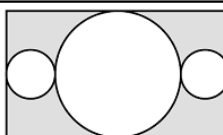
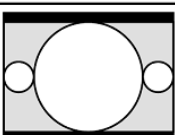
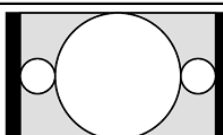
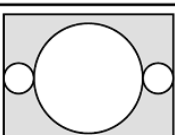
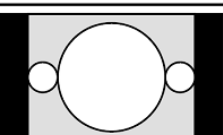
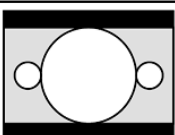
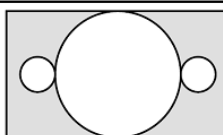
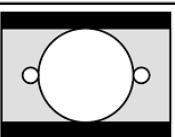
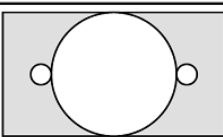
The Input signal drivers decodes and defaults selected signaling to give a valid Aspect Ratio (strictly 4:3 or 16:9) and Active Format Descriptor (AFD) (8 ARDSPEC1 entries, plus 3 extended and unknown pair). If no input signal or data is present, the aspect ratio & AFD will be "4:3 - Unknown".

These two signals are sent to the aspect mapping table (see below), which is initialized by a full set of defaults. This uses Aspect and AFD pair (24 values) to call up fixed and programmable Display memories.

Display memory functions include Size, Aspect, Tilt, Pan and Input Crop Left / Right / Top / Bottom.



A.3 Active Formats Illustrated

Active_format		Illustration of described format	
value	description	in 4:3 coded frame	in 16:9 coded frame
0000 - 0001	reserved		
0010	box 16:9 (top)		
0011	box 14:9 (top)		
0100	box > 16:9 (centre)		
0101 - 0111	reserved		
1000	As the coded frame		
1001	4:3 (centre)		 (see note)
1010	16:9 (centre)		
1011	14:9 (centre)		
1100	reserved		
1101	4:3 (with shoot & protect 14:9 centre)		
1110	16:9 (with shoot & protect 14:9 centre)		
1111	16:9 (with shoot & protect 4:3 centre)		
NOTE:		It is recommended to use the 4:3 coded frame mode to transmit 4:3 source material rather than using a pillar box to transmit it in a 16:9 coded frame. This allows for higher horizontal resolution on both 4:3 and 16:9 sets.	

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A.4 Transformation Descriptions

Input		Transformation	Output	
4:3	16:9		4:3	16:9
		(1) Description Full Frame Size 100% Aspect 100%		
		(2) Description Box 16:9 Top > 16:9 Size 133% Aspect 75%		 Tilt Down 12.5%
		(3) Description 4:3 Box 14:9 Top > 16:9 Size 116.7% Aspect 75%		 Tilt Down 7.1%
		(4) Description Box 16:9 > 16:9 Size 133.3% Aspect 75%		
		(5) Description Box 4:3 > 4:3 Size 100% Aspect 133.3%		
		(6) Description 4:3 > Box 16:9 Size 100% Aspect 75%		
		(7) Description 16:9 > Box 4:3 Size 75% Aspect 133.3%		
		(8) Description 4:3 Box 14:9 > 16:9 Size 116.7% Aspect 75%		
		(9) Description 16:9 Box 14:9 > 4:3 Size 85.7% Aspect 133.3%		

These are the Standard Presets for Display Memories and are also copied into the first 9 user Display Memories. They are heavily used by the wide screen signaling based automatic Aspect Ratio Control functionality as the core transformations. Transformation naming terminology (also default memory name) is:

(source aspect for ambiguous 14:9) (box when present) source AFD > (box) target display aspect.

A.5 Mapping of External Signaling to Internal States

Signaling supports WSS ETSI 300294 (Line 23), Video Index (SMPTE RP186), and the ARD Spec versions of both these interface formats. These are all translated into an internal Aspect Ratio and ETSI 101154 AFD format for use in the mapping tables and error handling to allow a consistent view.

This table shows how WSS ETSI (Line 23) is mapped into the internal format. Where a resulting conversion cannot be turned back into an ETSI signal the WSS output will be disabled.

ARD Spec formats directly map onto the unshaded formats. Both Video Index SMPTE and the ARD Spec variants provide for unknown active formats so a valid output signal can always be maintained.

Note that ARD Spec codes are 0 to 7 rather than the AFD range of 8 upwards. Code (12) Reserved is supported in case customized legacy schemes make use of it.

WSS ETSI Coded Aspect In	Internal Coded Aspect & Active Format (AFD)	WSS ETSI Coded Aspect Out
-	4:3 & Unknown	(0) Full format 4:3
-	16:9 & Unknown	(7) Full format 16:9
(4) Box 16:9 top	4:3 & (2) Box 16:9 top	(4) Box 16:9 top
-	16:9 & (2) Box 16:9 top	No signal
(2) Box 14:9 top	4:3 & (3) Box 14:9 top	(2) Box 14:9 top
-	16:9 & (3) Box 14:9 top	No signal
(5) Box > 16:9 centre	4:3 & (4) Box >16:9 centre	(5) Box > 16:9 centre
-	16:9 & (4) Box >16:9 centre	No signal
(0) Full format 4:3	4:3 & (8) As coded frame	(0) Full format 4:3
(7) Full format 16:9	16:9 & (8) As coded frame	(7) Full format 16:9
-	4:3 & (9) 4:3 centre	(0) Full format 4:3
-	16:9 & (9) 4:3 centre	No signal
(3) Box 16:9 centre	4:3 & (10) 16:9 centre	(3) Box 16:9 centre
-	16:9 & (10) 16:9 centre	(7) Full format 16:9
(1) Box 14:9 centre	4:3 & (11) 14:9 centre	(1) Box 14:9 centre
-	16:9 & (11) 14:9 centre	No signal
-	4:3 & (12) Reserved	No signal
-	16:9 & (12) Reserved	No signal
(6) Full 4:3 shoot-and-protect 14:9 centre	4:3 & (13) 4:3 shoot-and-protect 14:9 centre	(6) Full 4:3 shoot-and-protect 14:9 centre
-	16:9 & (13) 4:3 shoot-and-protect 14:9 centre	No signal
-	4:3 & (14) 16:9 shoot-and-protect 14:9 centre	No signal
-	16:9 & (14) 16:9 shoot-and-protect 14:9 centre	No signal
-	4:3 & (15) 16:9 shoot-and-protect 4:3 centre	No signal
-	16:9 & (15) 16:9 shoot-and-protect 4:3 centre	No signal
Numbers in brackets in this column indicate ETSI line 23 codes	Numbers in brackets in this column indicate Active Format Codes	Numbers in brackets in this column indicate ETSI line 23 codes

A.6 4:3 Target Aspect Default Mapping

Source Coded Aspect & AFD Default Display	Memory	Default Target Coded Aspect & AFD
4:3 - Unknown	<none>	4:3 - (8) As coded frame
16:9 - Unknown	<none>	4:3 - (8) As coded frame
4:3 - (2) Box 16:9 top	Full frame	4:3 - (2) Box 16:9 top
16:9 - (2) Box 16:9 top	16:9 > box 4:3	4:3 - (10) 16:9 centre
4:3 - (3) Box 14:9 top	Full frame	4:3 - (3) Box 14:9 top
16:9 - (3) Box 14:9 top	16:9 box 14:9 > 4:3	4:3 - (11) 14:9 centre
4:3 - (4) Box >16:9 centre	Full frame	4:3 - (4) Box >16:9 centre
16:9 - (4) Box >16:9 centre	16:9 > box 4:3	4:3 - (4) Box >16:9 centre
4:3 - (8) As coded frame	Full frame	4:3 - (8) As coded frame
16:9 - (8) As coded frame	16:9 > box 4:3	4:3 - (10) 16:9 centre
4:3 - (9) 4:3 centre	Full frame	4:3 - (9) 4:3 centre
16:9 - (9) 4:3 centre	Box 4:3 >	4:3 4:3 - (9) 4:3 centre
4:3 - (10) 16:9 centre	Full frame	4:3 - (10) 16:9 centre
16:9 - (10) 16:9 centre	16:9 > box 4:3	4:3 - (10) 16:9 centre
4:3 - (11) 14:9 centre	Full frame	4:3 - (11) 14:9 centre
16:9 - (11) 14:9 centre	16:9 box 14:9 > 4:3	4:3 - (11) 14:9 centre
4:3 - (12) reserved	<none>	4:3 - (12) reserved
16:9 - (12) reserved	<none>	4:3 - (12) reserved
4:3 - (13) 4:3 shoot-and-protect 14:9 centre	Full frame 4:3 - (13)	4:3 shoot-and-protect 14:9 centre
16:9 - (13) 4:3 shoot-and-protect 14:9 centre	Box 4:3 > 4:3 4:3 - (13)	4:3 shoot-and-protect 14:9 centre
4:3 - (14) 16:9 shoot-and-protect 14:9 centre	Full frame	4:3 - (14) 16:9 shoot-and-protect 14:9 centre
16:9 - (14) 16:9 shoot-and-protect 14:9 centre	16:9 > box 4:3	4:3 - (14) 16:9 shoot-and-protect 14:9 centre
4:3 - (15) 16:9 shoot-and-protect 4:3 centre	Full frame	4:3 - (15) 16:9 shoot-and-protect 4:3 centre
16:9 - (15) 16:9 shoot-and-protect 4:3 centre	16:9 > box 4:3	4:3 - (15) 16:9 shoot-and-protect 4:3 centre

A.7 16:9 Target Aspect Default Mapping

Source Coded Aspect & AFD	Default Display Memory	Default Target Coded Aspect & AFD
4:3 - Unknown	<none>	16:9 - (8) As coded frame
16:9 - Unknown	<none>	16:9 - (8) As coded frame
4:3 - (2) Box 16:9 top	Box 16:9 top > 16:9	16:9 - (8) As coded frame
16:9 - (2) Box 16:9 top	Full frame	16:9 - (2) Box 16:9 top
4:3 - (3) Box 14:9 top	4:3 box 14:9 top > 16:9	16:9 - (3) Box 14:9 centre
16:9 - (3) Box 14:9 top	Full frame	16:9 - (3) Box 14:9 top
4:3 - (4) Box >16:9 centre	Box 16:9 > 16:9	16:9 - (4) Box >16:9 centre
16:9 - (4) Box >16:9 centre	Full frame	16:9 - (4) Box >16:9 centre
4:3 - (8) As coded frame	4:3 > box 16:9	16:9 - (9) 4:3 centre
16:9 - (8) As coded frame	Full frame	16:9 - (8) As coded frame
4:3 - (9) 4:3 centre	4:3 > box 16:9	16:9 - (9) 4:3 centre
16:9 - (9) 4:3 centre	Full frame	16:9 - (9) 4:3 centre
4:3 - (10) 16:9 centre	Box 16:9 > 16:9	16:9 - (10) 16:9 centre
16:9 - (10) 16:9 centre	Full frame	16:9 - (10) 16:9 centre
4:3 - (11) 14:9 centre	4:3 box 14:9 > 16:9	16:9 - (11) 14:9 centre
16:9 - (11) 14:9 centre	Full frame	16:9 - (11) 14:9 centre
4:3 - (12) reserved	<none>	16:9 - (12) reserved
16:9 - (12) reserved	<none>	16:9 - (12) reserved
4:3 - (13) 4:3 shoot-and-protect 14:9 centre	4:3 > box 16:9	16:9 - (13) 4:3 shoot-and-protect 14:9 centre
16:9 - (13) 4:3 shoot-and-protect 14:9 centre	Full frame	16:9 - (13) 4:3 shoot-and-protect 14:9 centre
4:3 - (14) 16:9 shoot-and-protect 14:9 centre	Box 16:9 > 16:9	16:9 - (14) 16:9 shoot-and-protect 14:9 centre
16:9 - (14) 16:9 shoot-and-protect 14:9 centre	Full frame	16:9 - (14) 16:9 shoot-and-protect 14:9 centre
4:3 - (15) 16:9 shoot-and-protect 4:3 centre	Box 16:9 > 16:9	16:9 - (15) 16:9 shoot-and-protect 4:3 centre
16:9 - (15) 16:9 shoot-and-protect 4:3 centre	Full frame	16:9 - (15) 16:9 shoot-and-protect 4:3 centre

Italics in the above table indicate input signalling value combinations that make limited sense.

A.8 Products Featuring RollTrack™

RollTrack is a feature of RollCall™ (SAM's proprietary remote control system), that allows devices to communicate across the RollCall network with no direct user intervention.

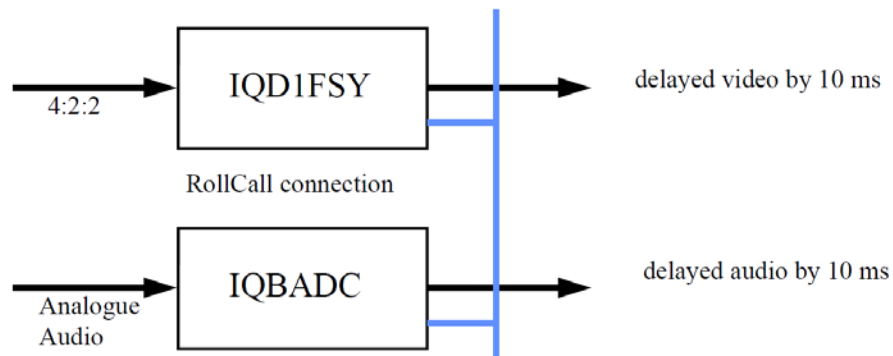
RollTrack Audio Delay Tracking enables RollCall™ compatible audio delay products to track delay introduced by RollCall™ compatible video processing products.

The current products that implement RollTrack Audio Delay Tracking are:

Audio Delay Modules	Video Modules	Other Products	
IQBAAD	IQD1FSY	ALCHEMIST	MDD3000
IQBADC	IQDMSDS	CPP100	MDD550
IQBDAC	IQDAFS	CPP200	MDD560
IQBDAD	IQDMSDS	NRS500	MDD570
IQBSYN	IQDMSDP	HD5050	MDD2000
IQBADCD	IQDSYN		

A.9 Configuration: Single Video Unit and Single Audio Delay

The simplest configuration is a single video unit and a single audio delay in a RollCall™ system. The audio delay will have the same delay as through the video path. If the delay changes the audio delay will track.



A.10 Configuration: Multiple Video Units and Audio Delays

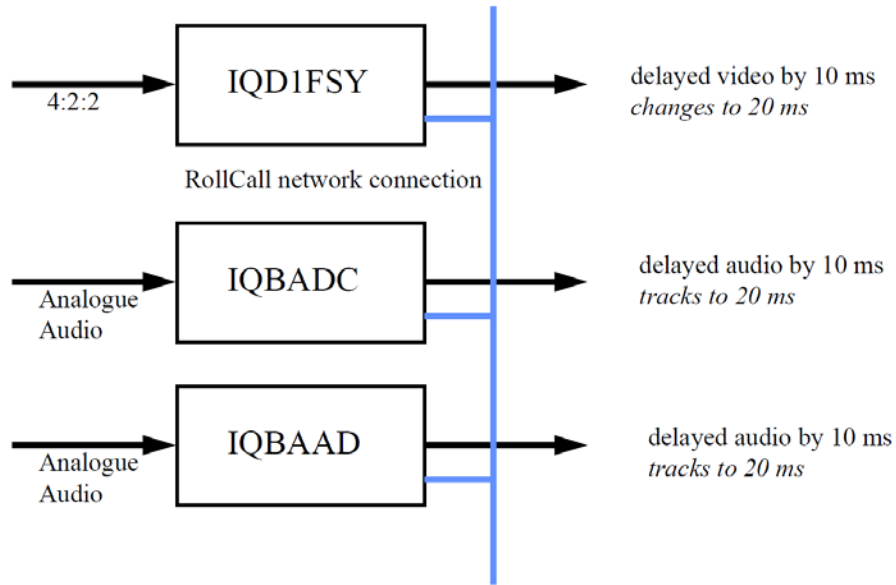
The next level of configuration is where there are multiple Frame Synchronizers (for example) each connected through RollCall™ to their own tracking Audio Delay. (It is worth stating that the synchronizers and audio delays do not have to be in the same enclosure; the addressing scheme, discussed later, allows for the units to be positioned anywhere in the RollCall™ domain.) The maximum number of video units and audio delays in a RollCall™ system is set by the maximum limit of the number of modules in a RollCall™ network and is currently 3840 on a single network without bridges.

The unique identification of the destination unit (a decimal number) for various modules is as follows:

Module	ID
IQBADC	51
IQBDAC	52
IQBAAD	53
IQBDAD	54
IQBSYN	89
IQBADCD	107

A.11 Configuration: Vertical Delay Cluster

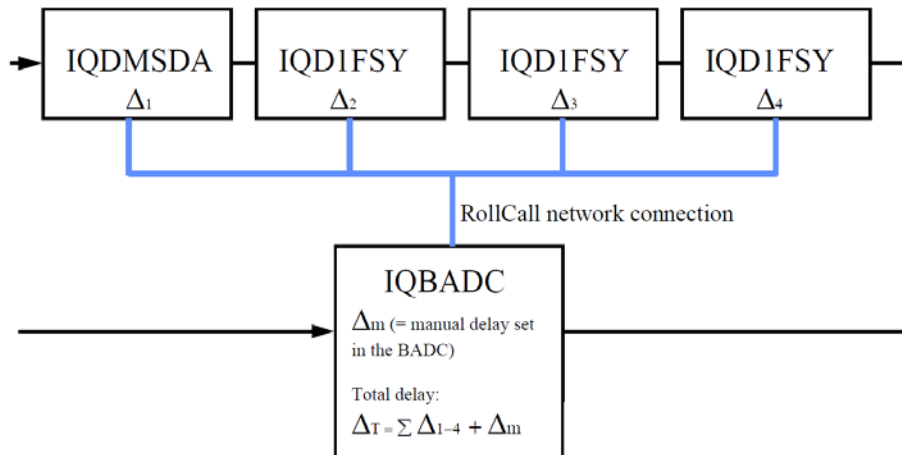
The next level of complexity is a vertical delay cluster where a video unit can have up to eight audio delays tracking - of the same or different types.



From one to eight audio delay products can be connected via RollCall™ to a single frame synchronizer, for example. If the synchronizer delay changes, then however many audio delays are connected will track the delay. The audio delays can also have a manual delay which will be added to the RollTrack delay.

A.12 Configuration: Horizontal Delay Cluster

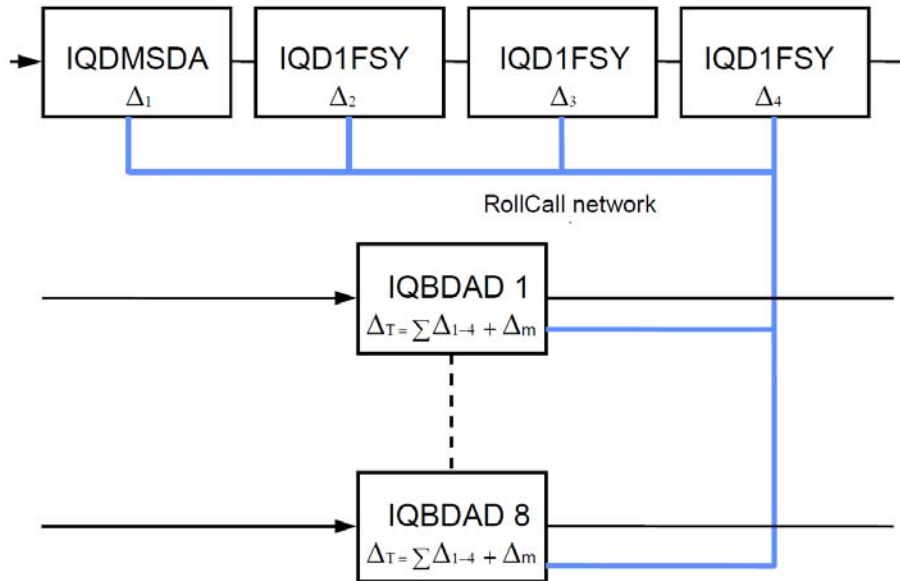
The next level of complexity is a horizontal delay cluster where an audio delay can track up to four video units.



The total delay time through the audio delay is then the sum of the individual delays introduced by the video units plus the manual delay of the audio unit. The manual delay can be set to compensate for any fixed propagation delay in the video path or may be set to zero.

A.13 Configuration: Matrix Delay Cluster

The next level of complexity is a matrix delay cluster where each audio delay (up to eight) can track up to four video units. This configuration is in effect a four by eight matrix of video units and audio delay units. The total delay time through the audio delay units is then the sum of the individual delays introduced by the video units plus the manual delay of the audio unit.



As any of the delay times change in the video path so will the audio delay time track this delay.

To make a virtual connection between from, say, an IQD1FSY to an IQBDAD:

2. Select the **Setup...** Menu of the IQD1FSY.
3. Select the **Audio_Delay...** Menu.
4. Choosing from **Unit_1** to **Unit_8**.
5. Enter the unique network address of the IQBDAD in the form **nnnn:xx:yy*z*d**

Where:

nnnn = network address and in most cases will be 0000(hex)

xx = IQ enclosure address (hex)

yy = slot address of the IQBDAD (hex)

z = the connection (or channel) number (decimal) - see table below

d = the unique identification of the destination unit (decimal) The ID entered must match the receiving units own ID or else the command will be ignored. If the ID value is set to 00, the receiving unit does not perform an ID match and will always accept the incoming command.

6. Select the **Delay...** Menu of the IQBDAD.
7. Select RollTrack.

Example

Example of Network Addresses with Channel Numbers and ID Numbers

	D1FSY 1	D1FSY 2	D1FSY 3	D1FSY 4
Audio delay 1	0000:10:01*14*54	0000:10:01*15*54	0000:10:01*16*54	0000:10:01*17*54
Audio delay 2	0000:10:03*14*54	0000:10:03*15*54	0000:10:03*16*54	0000:10:03*17*54
Audio delay 3	0000:10:05*14*54	0000:10:05*15*54	0000:10:05*16*54	0000:10:05*17*54
Audio delay 4	0000:10:07*14*54	0000:10:07*15*54	0000:10:07*16*54	0000:10:07*17*54
Audio delay 5	0000:10:09*14*54	0000:10:09*15*54	0000:10:09*16*54	0000:10:09*17*54
Audio delay 6	0000:10:0B*14*54	0000:10:0B*15*54	0000:10:0B*16*54	0000:10:0B*17*54
Audio delay 7	0000:10:0D*14*54	0000:10:0D*15*54	0000:10:0D*16*54	0000:10:0D*17*54
Audio delay 8	0000:10:0F*14*54	0000:10:0F*15*54	0000:10:0F*16*54	0000:10:0F*17*54

A.13.1 Configuration: An Array of Matrix Clusters

The most complex system would be an array of matrix delay clusters.

