Snell Advanced Media

# User Instruction Manual

# IQFDA30

3G/HD/SD-SDI Re-clocking Distribution Amplifier with Fiber I/O

# Information and Notices

## Copyright and Disclaimer



## Contact Details

### Customer Support

For details of our **Regional Customer Support Offices** please visit the SAM website and navigate to Support/24/7 Support Contact Details.

*www.s-a-m.com/support/247-support/*

Customers with a support contract should call their personalized number, which can be found in their contract, and be ready to provide their contract number and details.

# 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
RISK OF ELECTRIC SHOCK
DO NOT REMOVE COVERS
NO USER SERVICEABLE PARTS
REFER SERVICING TO QUALIFIED PERSONNEL ONLY

"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.

## 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

ACHTUNG
Gefahr von Elektroschocks.
Abdeckungen nicht entfernen
Keine vom Benutzer zu wartende Teile
Wenden Sie sich ausschließlich
an qualifiziertes Personal

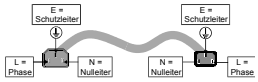
Die angeführten Service-/Reparatur-Anweisungen sind ausschließlich von qualifiziertem Service-Personal auszuführen. Um das Risiko eines lektroschocks zu reduzieren, führen Sie ausschließlich die im Benutzerhandbuch eschriebenen Anweisungen aus, es sei denn, Sie haben die entsprechende Qualifikation. 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 = Nulleiter
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.

## 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
RISQUE DE CHOC ELECTRIQUE
NE PAS RETIRER LE COUVERCLE
NE PAS INTERVENIR SANS
L'AGREMENT DU SERVICE
QUALIFIE

"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 liaison 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 changr 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.

## Explicación de los Símbolos de Seguridad (ESP)

Éste símbolo refiere al usuario información importante contenida en la literatura incluida. Referirse al manual.

Éste 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

ADVERTENCIA
RIESGO DE CHOQUE ELECTRICO
NO QUITAR LAS PROTECCIONNES
ELEMENTOS NO ACCESIBLES AL
USUARIO.
SERVICIO SOLAMENTE A PERSONAL
CUALIFICADO

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: (I)

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:

**ATTENZIONE**
RISCHIO DI SHOCK ELETTRICO NON CERCARE DI SMONTARE L'UNITÀ PER QUALSIASI TIPO DI INTERVENTO RIVOLGERSI AL PERSONALE QUALIFICATO

Le istruzioni relative alla manutenzione sono ad uso esclusivo del personale qualificato. E' 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 (DK)

Dette symbol gør brugeren opmærksom på vigtig information i den medfølgende manual.

Dette symbol indikerer farlig spænding inden i apparatet. Ingen bruger servicerbare dele i apparatet på brugerniveau.
Dette apparat må kun serviceres af faglærte personer..

## Sikkerhedsadvarsler

**FORSIGTIG**
RISIKO FOR ELEKTRISK STØD DÆKPLADER MÅ IKKE FJERNES INGEN BRUGER SERVICERBARE DELE SERVICE MÅ KUN UDFØRES AF FAGLÆRTE PERSONER

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 jordet.**
- **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 (S)

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

**CAUTION**
RISK OF ELECTRIC SHOCK DO NOT REMOVE COVERS NO USER SERVICEABLE PARTS REFER SERVICING TO QUALIFIED PERSONNEL ONLY

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 försörjd från ett strömsystem som är försedd med jordadanslutning ⏚ samt ha en neutral anslutning som lätt identifierbar.**
- **Vägguttaget som strömförsörjer apparaten bör finnas i närheten samt vara lätttillgänglig.**

### 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 (FI)

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

**VAROITUS**
SÄHKÖISKUN VAARA ÄLÄ AVAA LAITTEEN KANSIA EI SISÄLLÄ KÄYTTÄJÄLLE HUOLLETTAVIA OSIA HUOLTO AINOASTAAN AMMATTILAISEN SUORITTAMANA

Huolto-ohjeet on tarkoitettu ainoastaan alan ammattilaisille. Älä suorita laitteelle muita toimenpiteitä, kuin mitä käyttöohjeissa on neuvottu, ellet 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 nollaliitännän 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 nollajohdin N-napaan
RUSKEA vaihejohdin L-napaan


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

## Símbolos de Segurança

P

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 remove-la e elimina-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 υφίστανται 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 εκτελείτε επισκευές παρά μόνο 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 ΓΕΙΩΣΗ ⏚ 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.**

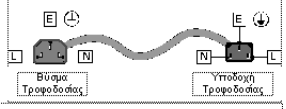
## Σύνδεση τροφοδοσίας σε χώρες εκτός των ΗΠΑ

Ο εξοπλισμός συνοδεύεται συνήθως από ένα καλώδιο τροφοδοσίας με ένα σταθερό βύσμα τροφοδοσίας ρεύματος τύπου πυραμίδας στη μια άκρη του και μια σταθερή υποδοχή τροφοδοσίας ρεύματος τύπου πυραμίδας 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 (Αγωγό Φάσης)




ΠΡΟΣΟΧΗ! Αν η μονάδα έχει δύο τροφοδοτικά βεβαιωθείτε ότι και τα δύο καλώδια τροφοδοσίας είναι συνδεδεμένα σε εξόδους τροφοδοσίας που βρίσκονται στην ίδια φάση.

## Laser Safety

This product operates with Class 1 laser products.

Caution: Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

## 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.

## Safety Standards

This equipment conforms to the following standards:

**EN60950-1 2006**

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 55032:2012 (Class A)**
Electromagnetic Compatibility of Multimedia Equipment - Emission Requirements.

**EN 61000-3-2:2014 (Class A)**
Limits for Harmonic Current Emissions.

**EN 61000-3-3:2013**
Limitation of Voltage Changes, Voltage Fluctuations and Flicker in Public Low-Voltage Supply Systems.

**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.

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

## 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 indents which improve contact between the plug and socket shells are recommended.

# Contents



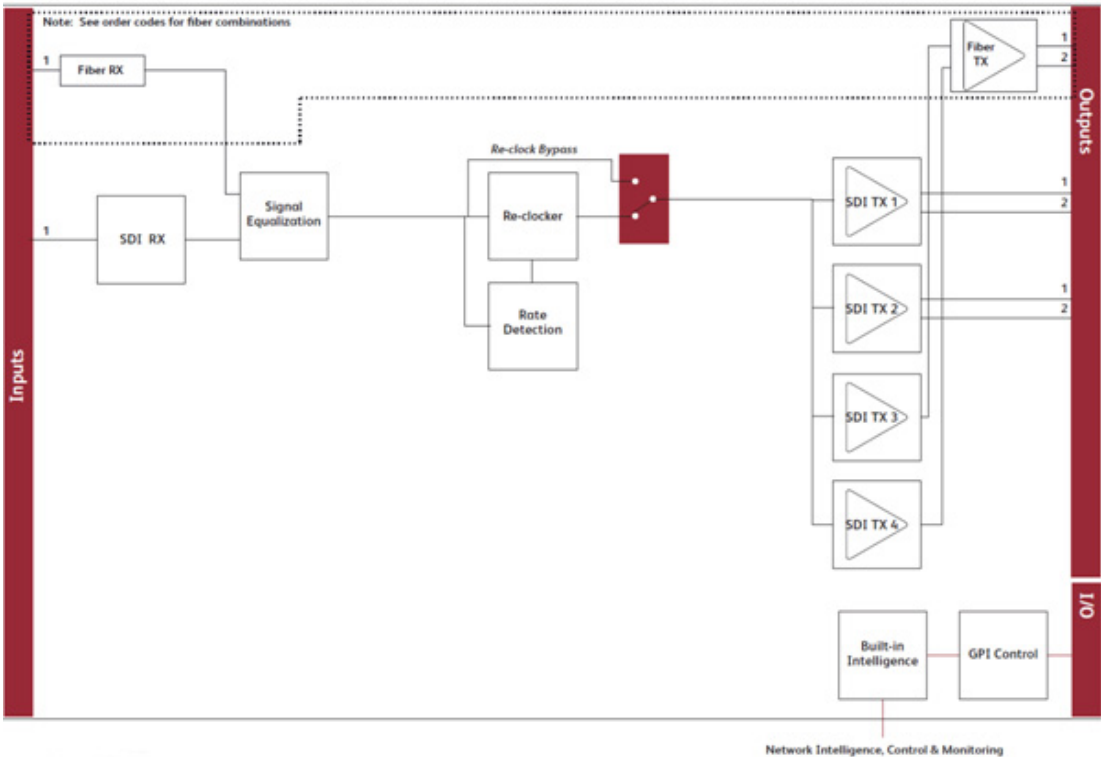
 

# 1 Introduction

## 1.1 Description

The IQFDA30 provides HD-SDI 3 Gbit/s, 1.5 Gbit/s, or 270 Mbit/s SD-SDI inputs with both SDI and Fiber optic outputs in a single-width package. Its 80m 3G, 170m HD, and 300m SD input equalization performance and non re-clocking distribution of wide-band signals make it ideal for all distribution applications.

## 1.2 Block Diagram




## 1.3 Feature Summary

The IQFDA30 provides the following features:

- Single-channel 3 Gbit/s SDI, HD-SDI, and SD-SDI re-clocking distribution amplifier.
- Provides distribution for DVB-ASI and other wide-band signals.
- Equalizes up to 70 m at 3 Gbit/s, 170 m at 1.5 Gbit/s and 350 m at 270 Mbit/s when using Belden 1694A cable.
- Standards supported:
  - 3G-HD to SMPTE 424M
  - HD-SDI to SMPTE 292M
  - SD-SDI to SMPTE 259M-C
  - DVB-ASI & SDTI SMPTE 305M
- RollCall monitoring allows all signal paths to be managed.

## 1.4 Order Codes

Note: Modules with “A” order codes (for example, IQFDA3000-1**A**3) can be fitted into either A- or B-style enclosures. Modules with “B” order codes (for example, IQFDA3000-1**B**3) can only be fitted into B-style enclosures. See page 11.

The following product order codes are covered by this manual:

**IQFDA3000-1A3** 3G/HD/SD-SDI re-clocking distribution amplifier with fiber I/O. 1 SDI input, 2 optical inputs/outputs, 4 SDI outputs.
**IQFDA3000-1B3**

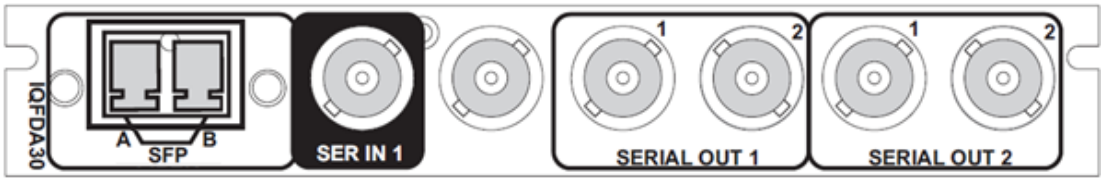
The following SFP modules are available for this product:

| | |
|---|---|
| **FC1-13T1** | 1310 nm 1 TX |
| **FC1-13T2** | 1310 nm 2 TX |
| **FC1-15T1** | 1550 nm 1 TX |
| **FC1-15T2** | 1550 nm 2 TX |
| **FC1-R1** | 1 RX |
| **FC1-TR** | 1 TX, 1 RX |

Note: For CWDM and high sensitivity SFP options, please contact your local sales office.

## 1.5 Rear Panel View

The following rear panel types are available:




**IQFDA3000-1A(B)3**

## 1.6 Enclosures

The module 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 10.

### 1.6.1 B-style Enclosure

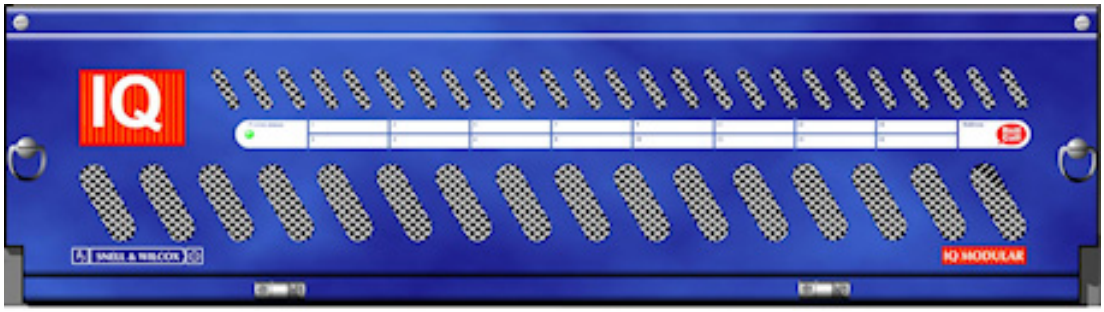

**Enclosure order codes: IQH3B-S-0, IQH3B-S-P**

Note: The IQH3B enclosure provides two internal analog reference inputs. These inputs are applicable to modules with “B” order codes only.

### 1.6.2 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**


**Enclosure order code: IQH1A-S-P**

# 2 Technical Specification

| Inputs and Outputs | |
|---|---|
| **Signal Inputs** | |
| SDI Inputs | 1 x 3G/HD/SD-SDI |
| Connector/Format | BNC / 75 Ohm panel jack on standard Snell connector panel |
| Conforms to video standards | SMPTE 297-2006<br>SMPTE 424M (HD level A/B)<br>SMPTE 292M (HD)<br>SMPTE 259M-C (SD) |
| Input Cable Length | Up to 70 m Belden 1694A @ 3 Gbit/s<br>Up to 170 m Belden 1694A @ 1.5 Gbit/s<br>Up to 350 m Belden 1694A @ 270 Mbit/s |
| **Fiber Signal Input**<br>(Dependant on SFP fitted) | |
| SDI Inputs | 1 |
| Optical | 3 Gbit/s HD-SDI<br>1.485 Gbit/s HD-SDI<br>270 Mbit/s SD-SDI |
| Connector/Format | LC singlemode |
| Conforms to | SMPTE 297-2006<br>SMPTE 424M (HD level A/B)<br>SMPTE 292M (HD)<br>SMPTE 259M-C (SD) |
| **Signal Outputs** | |
| SDI Outputs | Up to 4, group selectable |
| Connector/Format | BNC / 75 Ohm panel jack on standard Snell connector panel |
| Conforms to video standards | SMPTE 297-2006<br>SMPTE 424M (HD level A/B)<br>SMPTE 292M (HD)<br>SMPTE 259M-C (SD) |
| **Fiber Signal Output**<br>(Dependant on SFP fitted) | |
| SDI Outputs | Up to 2 |
| Optical | 3 Gbit/s HD-SDI<br>1.485 Gbit/s HD-SDI<br>270 Mbit/s SD-SDI |
| Connector/Format | LC singlemode |
| Conforms to | SMPTE 297-2006<br>SMPTE 424M (HD level A/B)<br>SMPTE 292M (HD)<br>SMPTE 259M-C (SD) |

| | |
|---|---|
| **Controls** | |
| **Indicators** | |
| Power | OK (Green) |
| CPU | OK (Green flashing) |
| Input 1 | OK (Green), Bypass (Orange), Loss (Red) |
| Rx 1 | OK (Green), Bypass (Orange), Loss (Red) |
| RollCall Functions | |
| Video Controls | |
| Input 1 Format Select | SDI, Rx |
| Laser Disable | On/Off |
| Input 1 | Auto, 3G, HD, SD, DVB-ASI, Bypass (re-clocking off) |
| Input Status | Present, Loss, Unknown, Data Rate |
| **Other Controls** | |
| User Memories | Name, save, and recall 16 user memories |
| Memory Naming | User configurable naming of memories 1–16 |
| Information Window | Unit Status, SFP Status |
| Logging | Input 1 Type<br>Input 1 Data Rate<br>Input 1 Present<br>Input 1 Error<br>Input 1 Loss |
| Optical Logging | Tx Laser Bias High Warning<br>Tx Power Low Warning<br>Tx Power High Warning |
| Laser Wavelength | Input 1 Rx Power High Warning<br>Input 1 Rx Power Low Warning<br>Input 1 Rx Power Measurement |
| RollTrack Index | Up to 16 RollTrack destinations |
| RollTrack Controls | On/Off, Index, Source, Address, Command, Status, Sending |
| Roll Track Sources | Unused, Input Present, Input Loss, Input Bitrate, Fiber Tx Bias OK, Fiber Tx Bias High, Fiber Tx Bias Low, Fiber Rx Power OK, Fiber Rx Power High, Fiber Rx Power Low |
| Factory Default | Resets all module settings to factory specified default values and clears memories |
| Default Settings | Resets all module settings to factory specified default values but does not clear memories |
| Restart | Software restart of the module |
| Module Information | Reports the following module information: Software Version, Serial Number, Build Number, KOS Version, Firmware Version, PCB Version |
| **Specifications** | |
| Electrical | 3 Gbit/s SDI, SMPTE 424M<br>1.5 Gbit/s HD-SDI, SMPTE 292M<br>270 Mbit/s SDI, SMPTE 259M-C / DVB-ASI |
| Connector/Format | BNC/75 Ohm Standard SAM screw terminal<br>LC singlemode SFP |
| Return Loss | >-15 dB (270 Mbit/s, 1.5 Gbit/s)<br>>-10 dB (3 Gbit/s) |

| | |
|---|---|
| Output Jitter | SD-SDI 0.2 UI (10 Hz) / 0.2 UI (1 kHz)<br>3G/HD-SDI 1.0 UI (10 Hz) / 0.2 UI (100 kHz) |
| Optical 1310 nm Tx | |
| Wavelength | 1310 nm |
| Spectral Width (FWHM) | >1.5 nm (typical) |
| Output Power | 0 to -5 dBm (-2 dBm typical) |
| Rise and Fall Time | 135 ps @ 3 Gbit/s<br>270 ps @ 1.5 Gbit/s<br>1.5 ns @ 270 Mbit/s |
| Extinction Ratio | >7.5:1 (typical) |
| Optical Return Loss | -27 dB |
| Link Distance | Up to 30 Km @ 3 Gbit/s<br>Up to 21 Km @ 1.5 Gbit/s<br>Up to 10 Km @ 270 Mbit/s |
| **Optical CWDM Tx** | |
| Wavelength | 1270 - 1430nm (SFP type dependent) |
| Spectral width (FWHM) | >1 nm (typ) |
| Output power | 0 to 4 dBm typical |
| Rise and Fall Time | 135 ps @ 3Gbit/s270 ps @ 1.5Gbit/s1.5 ns @ 270Mbit/s |
| Latency | <40ms |
| Extinction ratio | >7.5:1 (typ) |
| Optical Return Loss | -27 dB |
| **Optical Rx** | |
| Input Wavelength Range | 1260 nm (min.), 1620 nm (max.) |
| Input Sensitivity | -21 dBm |
| Optical Power Input Range | >0 dBm, <-20 dBm |
| Link Distance | Up to 30 Km @ 3 Gbit/s<br>Up to 21 Km @ 1.5 Gbit/s<br>Up to 10 Km @ 270 Mbit/s |
| **Optical High Sensitivity Rx** | |
| Input wavelength range | Min. 1260 nm, Max. 1620 nm |
| Input Sensitivity | -19 dBm |
| Optical power input range | > -9 dBm, < -28 dBm |
| **Power Consumption** | |
| Module Power Consumption | 4.5 W Max (A frames)<br>4.5 PR Max (B frames) |

# 3 Connections

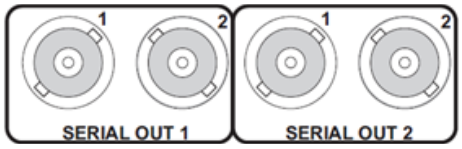
This section describes the physical input and output connections provided by the IQFDA30.

## 3.1 SDI Input

Serial digital input is made to the unit via a BNC connector which terminates in 75 Ohms.

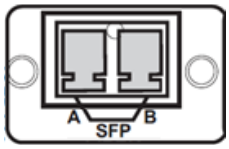

## 3.2 SDI Outputs

Serial digital outputs from the unit are made via four BNC connectors which terminate in 75 Ohms.




## 3.3 SFP

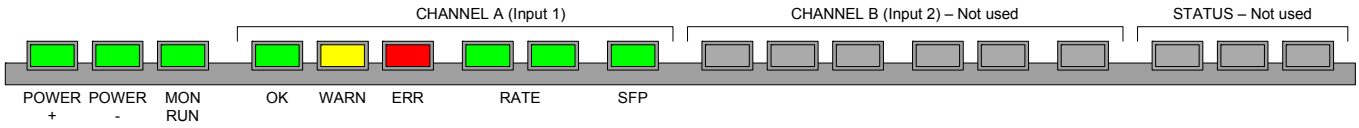
An SFP cage provides a range of connectivity options.



# 4 Card Edge LEDs

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




| LED | Color | State | Indication |
|---|---|---|---|
| POWER + | Green | Illuminated | A positive power supply is present. |
| POWER - | Green | Illuminated | A negative power supply is present. |
| RUN MON | Green | Flashing | The CPU is running. |
| OK | Green | Illuminated | Input channel 1 is locked to the input signal. |
| WARN | Yellow | Illuminated | The signal on input channel 1 is not being re-clocked. That is, in re-clock bypass mode. |
| ERR | Red | Illuminated | Unknown or no input on input channel 1. |
| RATE | Green | Illuminated | The rate on input channel 1:<br>• Both LEDs illuminated: 3 Gbit/s<br>• Left LED illuminated: 1.5 Gbit/s<br>• Right LED illuminated: 270 Mbit/s<br>• Both LEDs off: Rate unknown |
| SFP | Green | Illuminated | Input SFP Rx A selected. |

# 5 Operation Using the RollCall Control Panel

Note: The IQFDA30 will dynamically configure itself depending on rear and SFP options. The RollCall control panel will change to reflect the current product configuration.

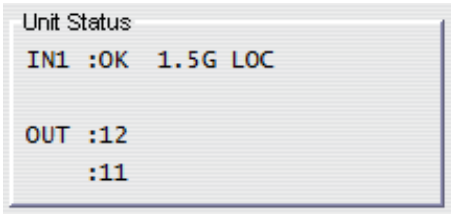
The pages shown in this section are for guidance and reference only, and may be slightly different to those on your module.

## 5.1 Information Window

The Information Window is displayed in the upper-right corner of each page and displays basic information about the input and output status of the module.

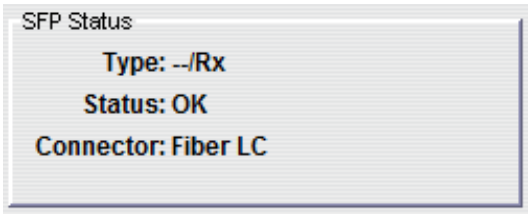
### 5.1.1 Unit Status

The Unit Status pane provides basic information about the status of the video inputs, video outputs, product settings, and status.




| Name | Description |
|---|---|
| IN1: | Displays the status of Input 1, the detected rate, and whether the signal is locked or in bypass mode. If no valid input is detected, asterisks (**) are displayed. |
| OUT: | The first line represents the outputs (1–4). The second line is character aligned with the first and indicates the input routed to that output. If no valid input signal is detected for the output, an E is displayed. |

### 5.1.2 SFP Status

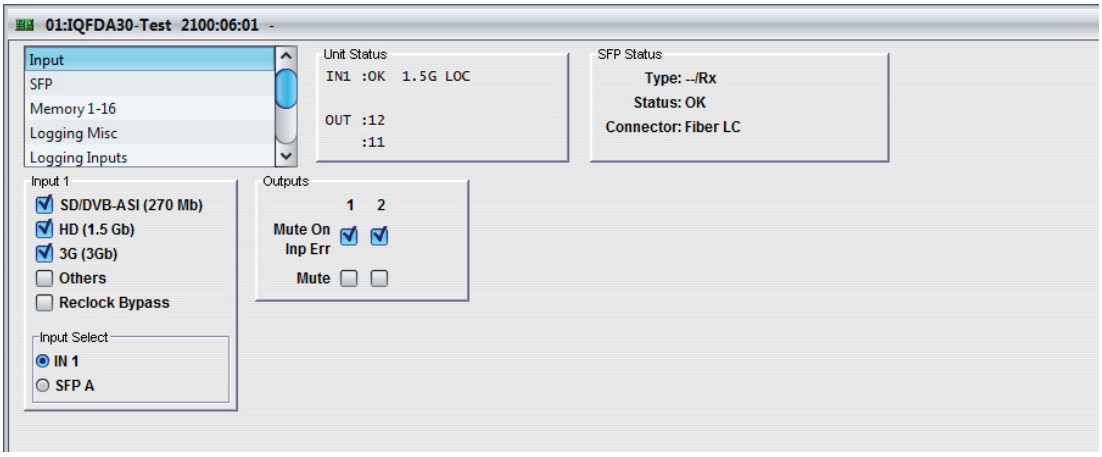



| *Name* | Description |
|---|---|
| Type: | Shows the type of SFP installed. This is supplemented with a simple report for each SFP. |
| Status: | Shows the operational status of the SFP. |
| Connector: | Shows the physical connector type, for example, Fiber LC. |

## 5.2 Input

The Input page enables the inputs and outputs to be configured, and can be used to determine how the module behaves in the event of an input error.




### 5.2.1 Input

- **SD/DVB-ASI (270 Mb):** When selected, the unit will re-clock SD/DVB-ASI (270 Mb) signals.
- **HD (1.5 Gb):** When selected, the unit will re-clock HD (1.5 Gb) signals.
- **3G (3 Gb):** When selected, the unit will re-clock 3G (3 Gb) signals.
- **Others:** When selected, signals that are not of any of the above rates will be re-clocked.
- **Reclock Bypass:** When selected, the unit will not re-clock the input signal. If a supported rate is detected, the Unit Status will display the detected rate, otherwise, *** will be displayed.
- **Input Select:** Use the radio buttons to select the input.

### 5.2.2 Outputs

Use the radio buttons to specify the input for each of the outputs.

Select **Mute On Inp Err** to apply a mute to the output if any rate other than those specified as valid in the Input 1 and Input 2 sections is detected.

Select **Mute** to manually apply a mute to the output.

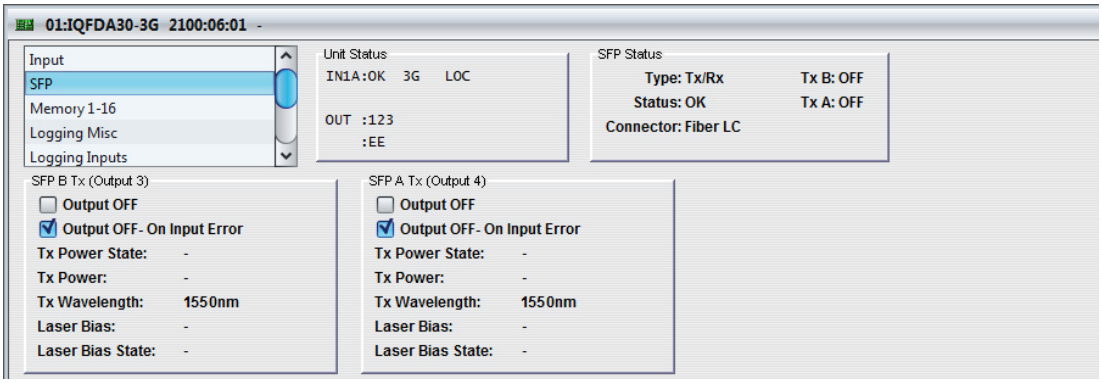
 

## 5.3 SFP

Note: This page is only displayed when the module is fitted with a rear that supports SFPs.

### 5.3.1 SFP Transmit

For an SFP transmitter channel, the SFP page is used to select whether the output is turned off – either permanently, or when an error condition on the selected input is detected.

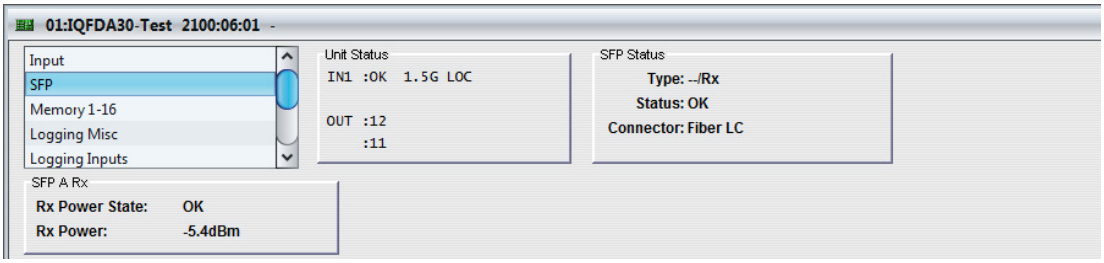



#### 5.3.1.1 SFP B Tx

- **Output OFF:** Enables the fiber optic output to be turned off manually.
- **Output OFF- On Input Error:** When selected, enables the fiber optic output to be turned off automatically when the signal is lost at the associated fiber optic receiver input.
- **Tx Power State:** Displays the state of the transmitted output signal (options include OK, WARN:HI, WARN:LO, FAIL:LO and FAIL:HI).
- **Tx Power:** Displays the signal level of the transmitted output signal (in dBm).
- **Tx Wavelength:** Displays the wavelength of the transmitted output signal (either 1310 nm or 1550 nm).
- **Laser Bias:** Displays the bias level (in mA)
- **Laser Bias State:** Displays the bias state (options include OK, WARN:HI, WARN:LO, FAIL:LO and FAIL:HI).

### 5.3.2 SFP Receive

For an SFP receiver channel, the SFP reports the status of the SFP. If a deselected data rate is presented to the module t will cause an “On Error” condition and the module will handle this as per its On Error settings on the Translate page.



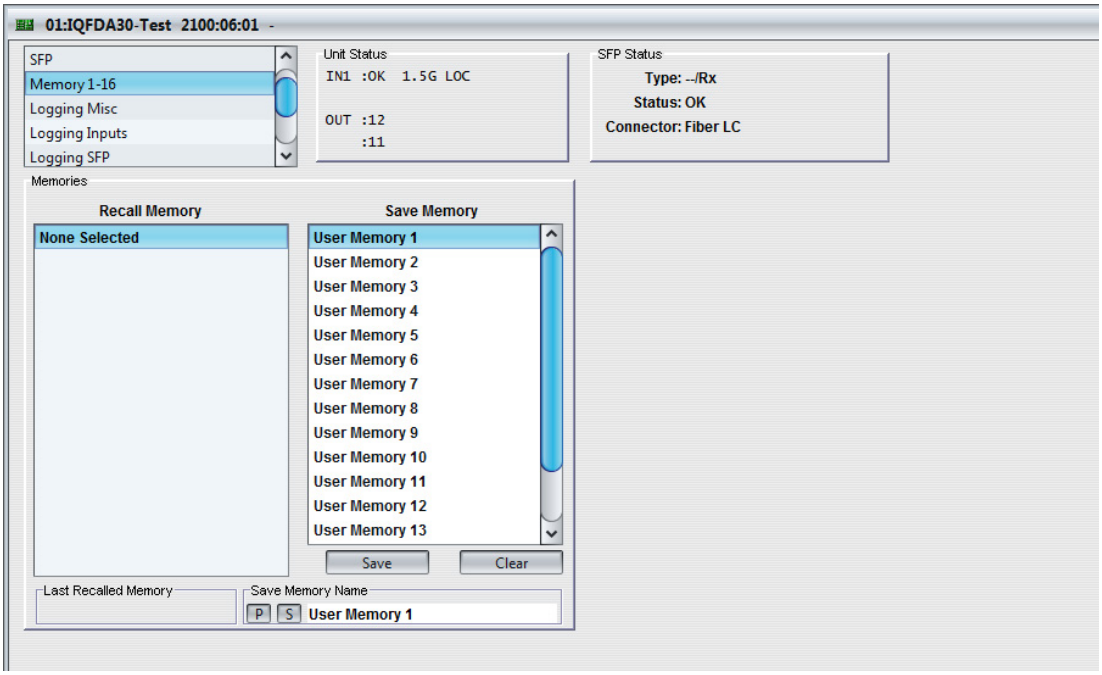

#### 5.3.2.1 SFP A Rx

- **Rx Power State:** Displays the state of the received signal (options include OK, WARN:HI, WARN:LO, FAIL:LO and FAIL:HI).
- **Rx Power:** Displays the signal level received at the input (in dBm).

## 5.4 Memory 1-16

The Memory 1-16 page enables up to 16 setups to be saved and recalled later. Default memory names can be changed to provide more meaningful descriptions.




### 5.4.1 Recall Memory

This column lists the settings that have been previously saved. If no settings have been saved, **None Selected** is displayed.

To recall the settings saved in a memory:

- In the **Recall Memory** column, select the memory to recall by clicking on it. The recalled settings will be applied and the memory name will appear in the **Last Recalled Memory** section.

Note: User memories do not recall log field “states” – that is, whether a log value has been enabled or disabled.

### 5.4.2 Save Memory

This column lists the 16 pre-set memory names that are available for use.

To save settings:

- In the **Save Memory** column, select a memory location, and then click **Save**. The current settings are saved and the memory appears in the **Recall Memory** column.

To clear a memory location:

- In the **Save Memory** column, select a memory location, and then click **Clear**. The current settings stored for that memory are cleared. After you clear a memory location, it disappears from the **Recall Memory** list.

### 5.4.3 Last Recalled Memory

The **Last Recalled Memory** pane displays the most recently recalled memory. If any of the settings have been changed since it was recalled, an asterisk will be displayed after the memory name.

### 5.4.4 Save Memory Name

This option enables the pre-set memory names to be changed (to something more memorable or meaningful), if required.

To change a memory name:

- In the **Save Memory Name** field, type the new memory name, and then click the **S** button. To return the memory to its default preset value, click **P** button.

## 5.5 Logging

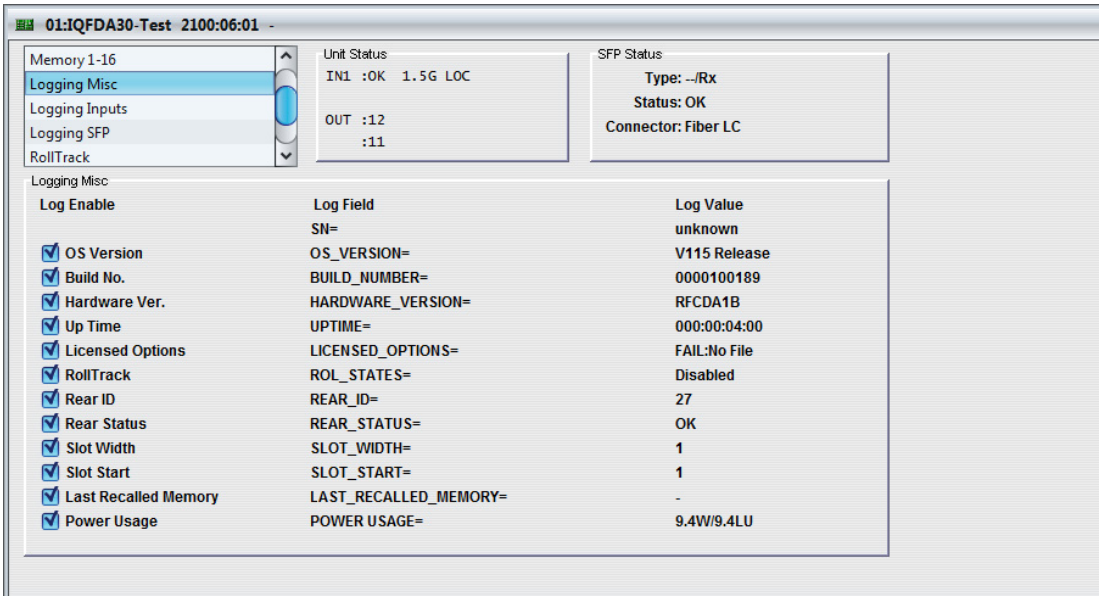
Information about several parameters can be made available to a logging device that is connected to the RollCall network.

Each logging page comprises three columns:

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

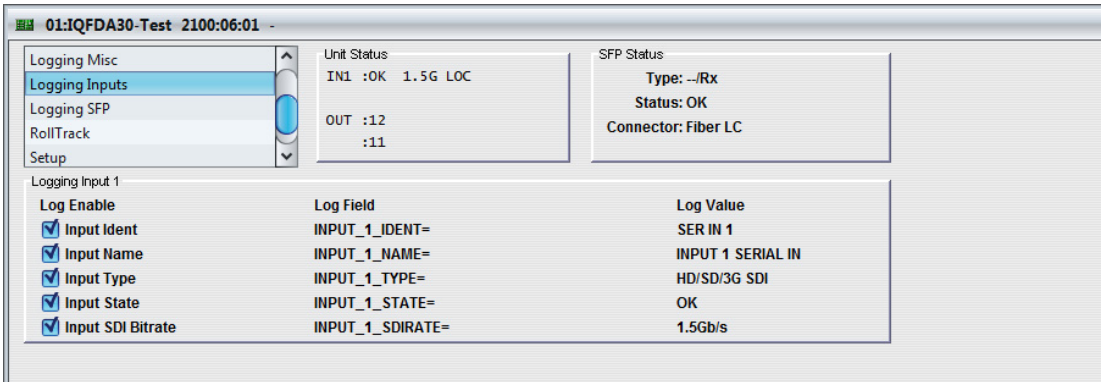
### 5.5.1 Logging Misc

The Logging Misc page displays the current log information about the unit's basic parameters.




### 5.5.2 Logging Inputs

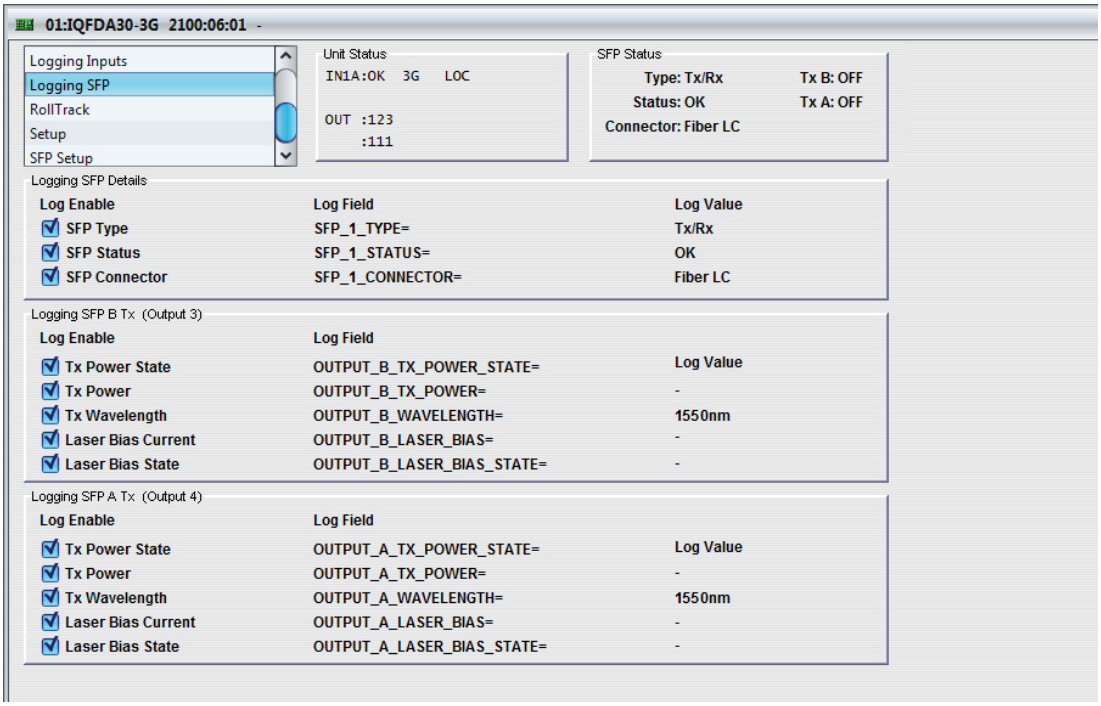
The Logging Inputs page is used to select which fields should be enabled for each of the serial inputs.



### 5.5.3 Logging SFP

The Logging SFP page is used to select which fields should be enabled for each of the SFP inputs.



### 5.5.4 Log Field Descriptions

| Log Field | Description |
|---|---|
| SN= | The module's unique serial number. |
| OS_VERSION= | The operating system version. |
| BUILD_NUMBER= | The software build number. |
| HARDWARE_VERSION | The hardware build version. |
| UPTIME= | Shows the time since the last restart (format ddd:hh:mm:ss). |
| LICENSED_OPTIONS= | The licensed features installed in the module. |
| ROL_STATES= | The status of any RollTracks that have been enabled. |
| REAR_ID= | The rear panel type. |
| REAR_STATUS= | The status of the rear panel. |
| SLOT_WIDTH= | The number of slots used by rear and module.1 or 2. |
| SLOT_START= | The first slot number the rear occupies. Use in conjunction with SLOT_WIDTH to determine the slots that the unit occupies. |
| LAST_RECALLED_ MEMORY= | The last recalled memory. |
| POWER USAGE= | The power rating for the module. Note: this is not a live power reading. |
| INPUT_1_IDENT= | The identifier of the serial data input. |
| INPUT_1_NAME= | The name of the serial data input. |
| INPUT_1_TYPE= | This displays the type of input as specified by the unit's configuration. Valid values are HD /SD SDI. |
| INPUT_1_STATE= | Displays the current input state. Valid values are:<br>• **OK**<br>• **WARN:Mismatch** - indicates that input and output standards are not the same.<br>• **FAIL:Lost**<br>• **FAIL:Error** |
| INPUT_1_SDIRATE= | The current bit rate for the serial data input. |
| SFP_*N*_TYPE= | The transmitter type. |
| SFP_*N*_STATUS= | The status of the SFPs as reported by the SFPs. |
| SFP_*N*_CONNECTOR= | The physical connector type, for example, Fiber LC. |
| OUTPUT_*N*_TX_ POWER_STATE= | Displays the TX power status. Valid values are:<br>• **OK**<br>• **WARN:HI**<br>• **WARN:LO**<br>• **FAIL:LO**<br>• **FAIL:HI** |
| OUTPUT_*N*_TX_ POWER= | The power level of the TX input, in dBm. |
| OUTPUT_*N*_ WAVELENGTH= | The wavelength of the transmitted output signal. |

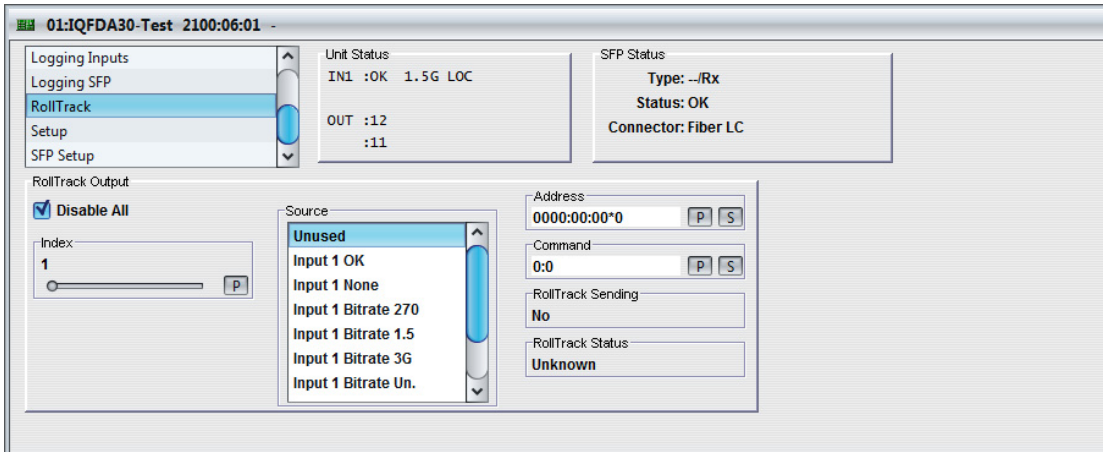
| Log Field | Description |
|---|---|
| OUTPUT_*N*_LASER_BIAS= | The bias level, in mA. |
| OUTPUT_*N*_LASER_BIAS_STATE= | Displays the laser bias status. Valid values are:<br>• **OK**<br>• **WARN:HI**<br>• **WARN:LO**<br>• **FAIL:LO**<br>• **FAIL:HI** |

Note: *N* should be replaced with the respective SFP/output identifier, for example, 1 for an SFP and B for an output.

## 5.6 RollTrack

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




### 5.6.1 Disable All

When checked, all RollTrack items are disabled.

### 5.6.2 Index

This slider enables up to 16 RollTrack outputs to be setup. Dragging the slider selects the RollTrack Index number, displayed below the slider. Clicking the **P** button selects the default preset value.

### 5.6.3 Source

This slider enables the source of information that triggers the transmission of data to be selected. Dragging the slider selects the RollTrack source, displayed below the slider. Clicking the **P** button selects the default preset value. When no source is selected, **Unused** is displayed.

| Message | Description |
|---|---|
| Unused | No RollTracks sent. |
| Input N OK | Valid serial data input received. |
| Input N None | No serial data input received. |
| Input N Bitrate 270 | Received bitrate is 270 Mbit/s. |
| Input Bitrate 1.5 | Received bitrate is 1.5 Gbit/s. |
| Input N Bitrate 3G | Received bitrate is 3 Gbit/s. |
| Input N Bitrate Un. | Received bitrate is unknown. |
| TX *N* Bias OK | LASER Bias current within limits. |
| TX *N* Bias High | LASER Bias current above limits. |
| TX *N* Bias Low | LASER Bias current below limits. |
| RX *N* Power OK | Receive power is within limits. |
| RX *N* Power High | Receive power is above limits. |
| RX *N* Power Low | Receive power is below limits. |

### 5.6.4 Address

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

The address may be changed by typing the new destination in the text area and then selecting the **S** button to save the selection. Clicking the **P** button returns to the default preset destination.

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

- The first set (**0000**) is the network segment code number.
- The second set (**10**) is the number identifying the (enclosure/mainframe) unit.
- The third set (**01**) is the slot number in the unit.
- The fourth set (**99**) is a user-definable number that is a unique identification number 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 unexpectedly.

### 5.6.5 Command

This item 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 the **S** button to save the selection. Clicking the **P** button 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.

### 5.6.6 RollTrack Sending

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

| Message | Description |
|---|---|
| String | A string value is always being sent. |
| Number | A number value is always being sent. |
| No | The message is not being sent. |
| Yes | The message is being sent. |
| Internal Type Error | Inconsistent behavior. Please contact your local Snell agent. |

### 5.6.7 RollTrack Status

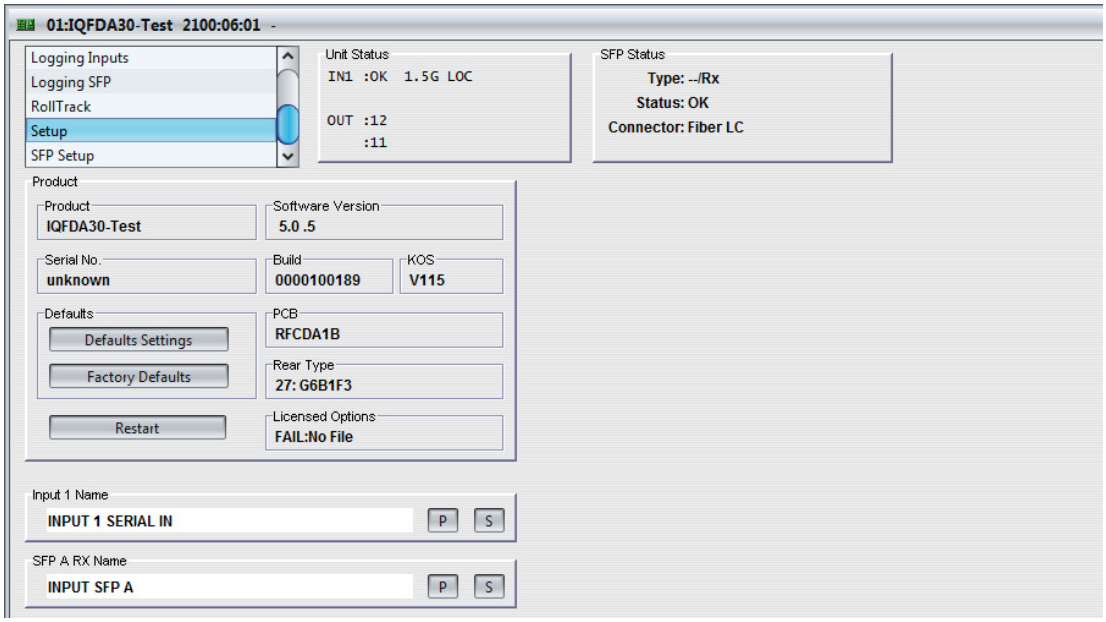
A message is displayed here to indicate the status of the currently selected RollTrack index. Possible RollTrack Status messages are:

| 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. |

## 5.7 Setup

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




- **Product:** The name of the module.
- **Software Version:** The currently installed software version number.
- **Serial No:** The module serial number.
- **Build:** The factory build number. This number identifies all parameters of the module.
- **KOS:** The operating system version number.
- **PCB:** The Printed Circuit Board revision number.
- **Rear Type:** The rear panel type.
- **Licensed Options:** The installed licensed options.

### 5.7.1 Default Settings

The **Default Settings** button enables module settings to be reset to their factory defaults, leaving user memories intact.

### 5.7.2 Factory Defaults

The **Factory Defaults** button enables the module settings to be reset to their factory defaults.

Note: Resetting the module to its factory defaults also clears all the saved memory settings.

### 5.7.3 Restart

The **Restart** button enables the module to be rebooted, simulating a power-up/power-down cycle.

### 5.7.4 Input Name

These are the input names displayed in logging.

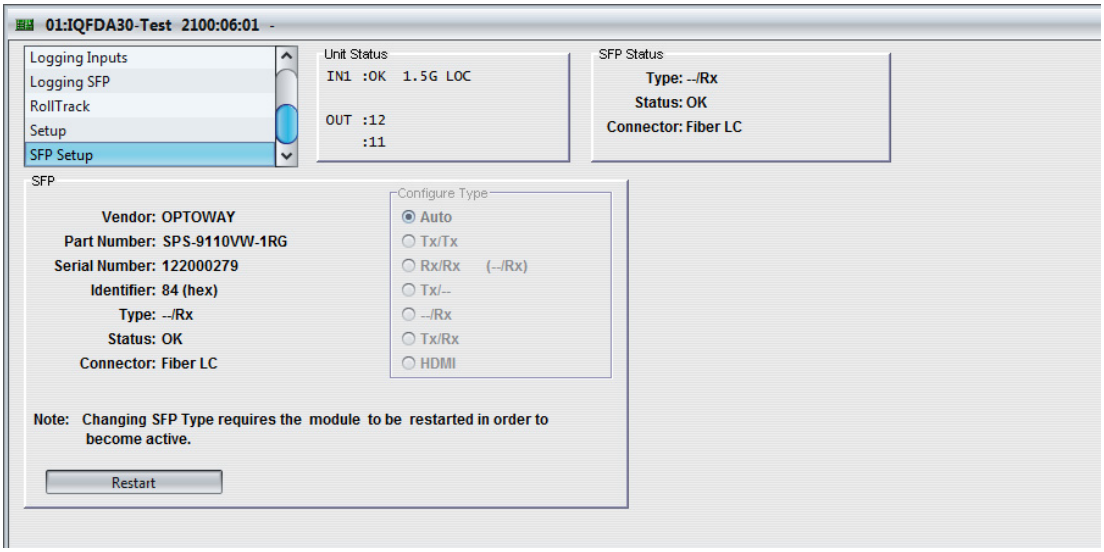
To change the name of Input 1 or Input 2, type the name in the text field and click **S**. To return the name to its factory default, click **P**.

## 5.8 SFP Setup

Note: The SFP Setup page is displayed only when the module is fitted with a rear that supports SFPs, even if no SFP is fitted.

The SFP Setup page displays basic information about the SFP configuration. If the SFP is not recognized, manual configuration is available.




### 5.8.1 Restart

The **Restart** button enables the module to be rebooted, simulating a power-down/power-up cycle.

### 5.8.2 Configure Type

In the event of the module not recognizing the SFP, the **Configure Type** controls will become available for manual selection.

Note: When changing an SFP, the module needs to be restarted in order for the SFP to become active.

Before configuring the SFP, ensure that the correct SFP is installed.