Innovation in the
Multi-Screen World

User Instruction Manual

Kudos Plus HD TBS800

3Gb/s, HD & SD Format Converter and Synchronizer

Information and Notices

Copyright and Disclaimer

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The department is staffed from 9.00am to 5.30pm Monday to Friday (excluding UK public holidays).

Outside these times calls are diverted to voicemail for follow-up, the next working day.

Additional support is available outside these hours by purchasing a support contract details available from the above number during office hours, and via the Account Manager.

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.

Contents

1. Safety

1.1 Explanation of Safety Symbols

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

Servicing instructions where given, are for use by qualified service 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
RISQUE DE CHOC ELECTRIQUE NE PAS RETIRER LE COUVERCLE NE PAS INTERVENIR SANS L'AGREMENT DU SERVICE QUALIFIE

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.

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

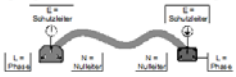
Die angeführten Service-/Reparatur-Anweisungen sind ausschließlich von qualifiziertem Service-Personal auszuführen. Um das Risiko eines lektroschocks zu reduzieren, führen Sie ausschließlich die im Benutzerhandbuch eschriebenen Anweisungen aus, es sei denn, Sie haben die entsprechende Qualifikation.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

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 PROTECCIONES ELEMENTOS NO ACCESIBLES AL USUARIO. SE RVICIO 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:

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.

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

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.

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

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.

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

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.

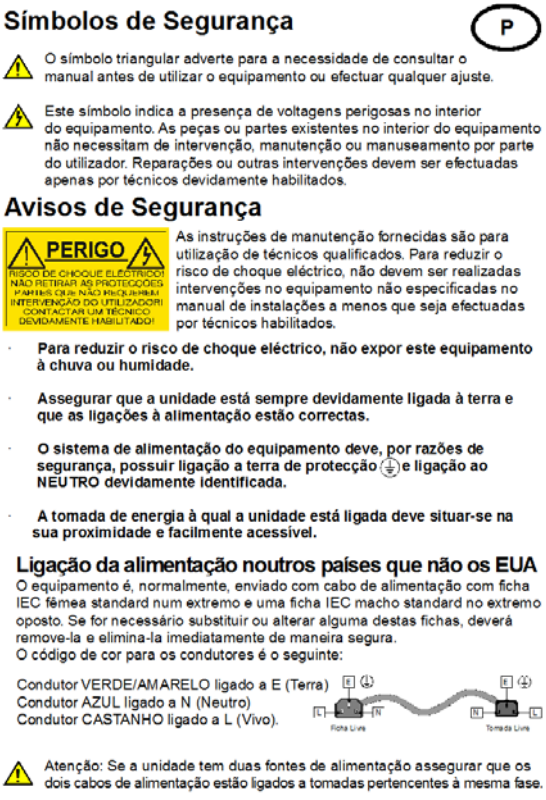
- **Sähköiskujen välttämiseksi suojaa laite sateelta ja kosteudelta.**
- **Varmistu, että laite on asianmukaisesti maadoitettu ja että sähkökytkennät on tehty oikein.**
- **Laitteelle tehoa syöttävässä järjestelmässä tulee olla SUOJAMAALIITÄNTÄ ⏚ ja nollaliitännän on oltava luotettavasti tunnistettavissa.**
- **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

PERIGO

RISCO DE CHOQUE ELECTRICO! NÃO RETIRAR AS PROTECÇÕES. NÃO HÁ NENHUMA INTERVENÇÃO DO UTILIZADOR! CONTACTAR UM TÉCNICO DEVIDAMENTE HABILITADO!

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.

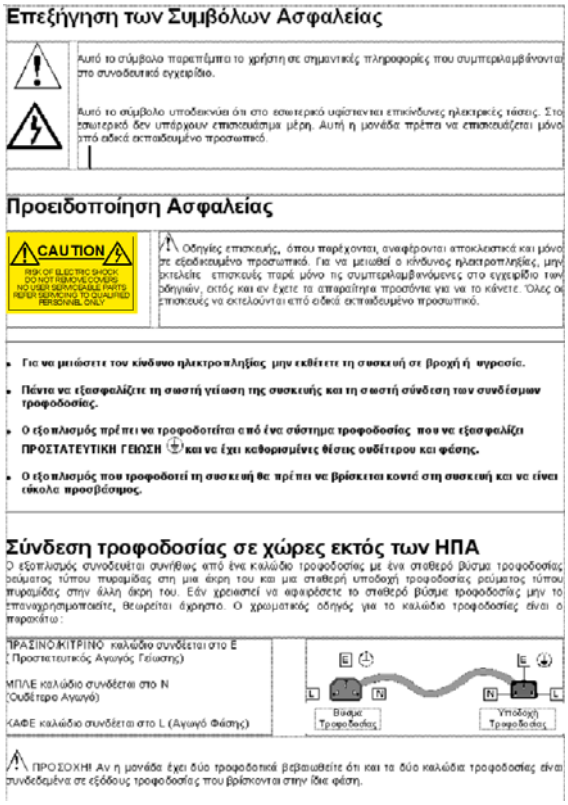
- **Para reduzir o risco de choque eléctrico, não expor este equipamento à chuva ou humidade.**
- **Assegurar que a unidade está sempre devidamente ligada à terra e que as ligações à alimentação estão correctas.**
- **O sistema de alimentação do equipamento deve, por razões de segurança, possuir ligação 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

Προειδοποίηση Ασφαλείας

CAUTION

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

- 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

ΠΡΑΣΙΝΟ/ΚΙΤΡΙΝΟ καλώδιο συνδέεται στο E (Προστατευτικός Αγωγός Γείωσης)

ΜΠΛΕ καλώδιο συνδέεται στο N (Ουδέτερο Αγωγό)

ΚΑΦΕ καλώδιο συνδέεται στο L (Αγωγό Φάσης)

Βύσμα Τροφοδοσίας

Υποδοχή Τροφοδοσίας

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

1.2 Power cable supplied for the USA

The equipment is shipped with a power cord with a standard IEC molded free socket on one end and a standard 3-pin 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 lead connected to E (Protective Earth Conductor)

BLACK lead connected to L (Live Conductor)

WHITE lead connected to N (Neutral Conductor)

Note: For equipment that is not fitted with a mains power switch, to comply with EN60950 Clauses 1.7.2 and 2.6.9, the power outlet supplying power to the unit should be close to the unit and easily accessible.

1.3 Safety Standard

The TBS800 conforms to the following standards:

- BS EN60950:2000 Specification for safety of information technology equipment, including electrical business equipment.
- UL 1419. Professional video equipment File No. E193966

The TBS800 conforms to the following standard:

- BS EN60950:2001 Specification for safety of information technology equipment, including electrical business equipment.

1.4 EMC Standards

These units conform to the following standards:

BS EN 55103-1 : 1997

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

BS EN 55103-2 : 1997

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

Federal Communications Commission Rules Part 15, Class A :1998

1.5 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

1.6 EMC Performance of Cables and Connectors

Snell 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.

1.6.1 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.

1.6.2 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.

1.7 About this Manual

This manual covers the installation and operation of the TBS800 Standards Converter.

1.8 Packing List

The unit is supplied in a dedicated packing carton provided by the manufacturer and should not be accepted if delivered in inferior or unauthorized materials. Carefully unpack the carton and check for any shipping damage or shortages. Please retain the box and original packing materials in case the unit needs to be returned.

1.8.1 Enclosures

- Product CD
- TBS800
- Power cable

1.9 Software Version Amendments

Notes about Versions Fitted: Version 3.05a

1.10 Manufacturers Notice

2. Description

The HD TBS800 is a 3Gb/s/HD/SD motion adaptive format converter with TBS/Synchronization capabilities. It provides multi-rate 3Gb/s/HD/SD inputs and outputs, and is capable of providing linear upconversion, downconversion, and crossconversion within the same frame rate.

TBS800 is AFD ready, enabling integration of SMPTE 2016 (AFD) into your workflow.

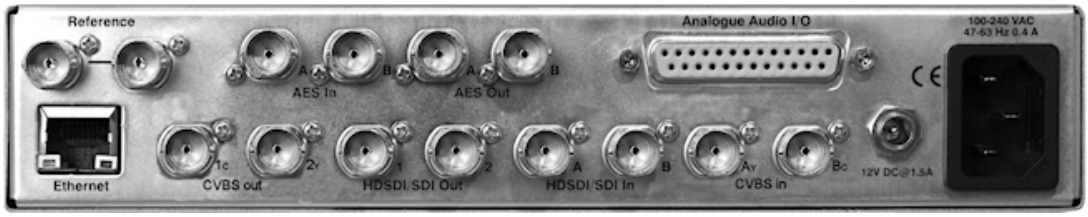
In addition, the product handles embedded AES (balanced or unbalanced) and analog audio, with a range of additional features such as Aspect Ratio Conversion (ARC) and color space conversion.

The HD TBS800 has a DC input for redundant PSU capability and is provided in a compact half rack width housing with remote control capability via Ethernet.

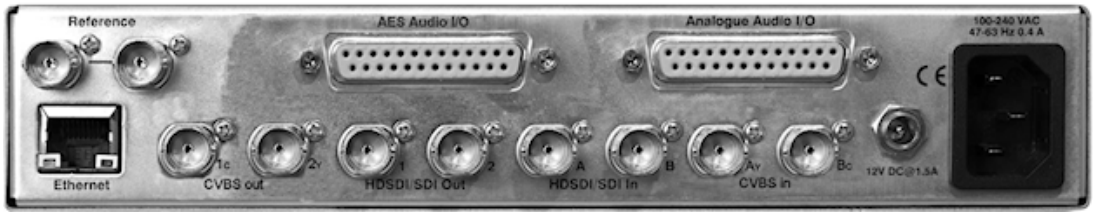
2.1 Front Panel View

2.2 Rear Panel View

2.2.1 HD TBS800UD Unbalanced AES & Analog Audio



2.2.2 HD TBS800BD Balanced AES & Analog Audio



2.3 Order Codes

5078015	*Kudos Plus HD TBS800UD* 3Gb/s, HD & SD Synchronizer and format converter with embedded, analog and unbalanced AES audio.
5078025	*Kudos Plus HD TBS800BD* 3Gb/s, HD & SD Synchronizer and format converter with embedded, analog and balanced AES audio.
INSY-MNT-KIT	(Optional) Rack mount kit to mount one or two units in a 19” rack.
INSY-PSU-EXT	(Optional) External PSU, provides redundant PSU operation.

3. Technical Profile

		Output							
		525 59.94i	625 50i	720 50P	720 59.94P	1080 50i	1080 50P	1080 59.94i	1080 59.94P
Input	525 59.94i	√	x	x	√	x	x	√	√
	625 50i	x	√	√	x	√	√	x	x
	720 50P	x	√	√	x	√	√	x	x
	720 59.94P	√	x	x	√	x	x	√	√
	1080 50i	x	√	√	x	√	√	x	x
	1080 50P	x	√	√	x	√	√	x	x
	1080 59.94i	√	x	x	√	x	x	√	√
	1080 59.94P	√	x	x	√	x	x	√	√

Product Features	
Synchronization	HD to HD (720P/1080i/1080P) or SD to SD (525i/625). HD/SD bi or tri sync reference. Will also synchronize SD/HD output when up/down converting. Cross-locking allowed: The output will lock to any input or reference of the same frequency. Ensures minimum latency and no frame drops or repeats when up/down converting.
Control	Via resident Web page or active front panel
Remote control	Via Web interface or RollCall
HANC data	Audio data (2 groups) processed. Other HANC data is blanked.
VANC data	Pass if the input standard is the same as the output standard (e.g. 1080 50i to 1080 50i). Blanked in all up, down and cross conversion modes.
Processed audio	De-embed any channel (up to 2 groups). For SDI audio must be synchronous 48kHz. Embed to any two groups Processed audio may be from external audio inputs or de-embedder and is simultaneously available on the external audio outputs and as the embedder source PCM audio has full sub-frame router, with pair gain control PCM and non-PCM Processed audio is matched to video delay Non-PCM audio must be 48KHz synchronous to genlock source Simple pair routing of Non-PCM audio, gain control disabled 16, 20 & 24 bit non-PCM audio from the de-embedder or AES input is detected automatically. When detected and selected by the router, the non-PCM data and its associated validity bit and channel status metadata is passed unprocessed through the router and audio delay.

Signalling	Decode incoming L23, Video Index and SMPTE 2016-1 (AFD) Real time clean conversion dependant on decoded signalling (if same frequency) Encode L23, Video Index and SMPTE 2016-1 (AFD) and insert on output
Analog video input	CVBS, YC, 3D adaptive comb filter. Good tolerance to poor inputs. Standards PAL, NTSC, NTSC-J, PAL-M, PAL-N, N4.4, SECAM 12 bit ADCs. Control of Comb, Pedestal, ACC, CTI and Noise reduction
Analog video output	CVBS, YC. Standards PAL, NTSC, NTSC-J, PAL-M, PAL-N. 12 bit DACs
Closed caption	Passes captions between CEA608 (SD) and the 608 compatibility space in CEA708 (HD), dropping and repeating null packets. HD to HD passes full CEA708 packet with simple synchronisation.

External Interface Specification	
Video input	2 x 3Gb/s/HD/SD SDI; 2 x CVBS or 1 x YC
Video output	2 x HD/SD SDI; 2 x CVBS or 1 x YC
Reference	Analog Bi/Tri sync in any operating video standard Loop-through. Impedance >20k
Digital video standards	SDI – 525i/626i (SMPTE 259M-C) HDSDI (3Gbit/s HD - SDI SMPTE 424/425) - 1080P @ 50, 59.94Hz
Input cable length	> 120m of Beldon 1694A @ 1.5Gbits/s > 350m of Beldon 1694A @ 270Mbits/s
Output jitter	HD timing jitter < 1UI HD alignment jitter < 0.2UI SD timing and alignment jitter < 0.2UI
Input/output return loss	< -15dB @ 1.5GHz
CVBS input	Differential phase < 0.8 deg. Differential gain < 0.8% Non-linearity < 1% SNR (unweighted): better than -61dB
CVBS output	Differential phase < 0.4 deg. Differential gain < 0.4% Non-linearity < 0.5% SNR (unweighted): better than -62dB
Remote control	10/100BaseT Ethernet
Indicators	Standby
Power Supply	100 - 240 VAC, 47 - 63Hz 0.4A. Three pin IEC power socket. External socket for dual redundant (optional)

Audio Options	
2 x AES Output	Unbalanced BNC 1Vpk-pk and/or Balanced (25 Way D) 3Vpk-pk 48KHz PCM or non PCM audio
2 x AES Input	Unbalanced BNC and/or Balanced (25Way D) 32-96KHz PCM audio 48kHz non PCM (valid only if synchronous to video output lock source)
AES output jitter	< 0.04UI
2 x Stereo Analog Audio Out	24 bit; THD , -91dB and +24dBu, flatness 20Hz – 20KHz ±0.05dB wrt 1KHz
2 x Stereo Analog Audio In	24 bit; < -87 dB at -1dBFS

Control Features	
Input select	SDI A, B; CVBS A, B, YC
Manual image size	Zoom ±20%
Conversion scaling	Fit to height, 14:9, fit to width
SD input format	Normal, anamorphic 16:9, letterbox 16:9
SD output format	Normal, anamorphic 16:9
Pattern	Off, black, ramp, color bars
Conversion	Linear / motion compensated
Conversion processing	Still process: Detects still images and applies an aperture with full (progressive) vertical frequency response. Enhanced still: Adds field motion detection to still process. Prevents artifacts on moving repetitive patterns.
Black level	± 100mV in 0.8mV steps
Contrast	± 6dB in 0.2dB steps
Color saturation	± 6dB in 0.2dB steps
Gamma	Luminance only (black stretch). Range 0.4 to 1.7
Legalizer	On, Off
Freeze	Frame (synchronize mode) or field freeze (convert mode)
Safe area markers	Off, 16:9, 4:3. Rectangular white marker box with color suppress. Vertical extent always 93% (16:9) or 70% (4:3)
Processed audio source	For each processed channel: Analogue A; Analogue B; AES A, AES B, De-embed pair 1 to 8; Tone; Silence Pair or channel routing options for PCM audio Pair routing of Non-PCM audio Selection of balanced or unbalanced AES inputs
Audio gain	For each processed pair ±18dB in 0.1dB steps (PCM audio only).
Embed group	Processed pairs A & B: 1, 2, 3, 4, Off (priority selection) Processed pairs C & D: 1, 2, 3, 4, Off
AES output source 1 & 2	Processed pairs A & B (fixed – no control)
DAC output source 1 & 2	Processed pairs A & B (fixed – no control)
Analog audio input level	+12 to +24dBu in 0.5 dBu steps

Analog audio output level	+12 to +24dBu in 0.5 dBu steps
Tone	Frequency: 100Hz to 10kHz in 100Hz steps
User memories	Up to 16 configurations can be saved, cleared and recalled.
Genlock	Reference lock; Input lock; free run. Genlock phase adjustment +0.5F in output pixel steps. (Control allows range to cover worst-case standards). Only available when reference locked to a source of the same frame rate of the output video. This control is disabled when input locked and a fixed, minimum delay is set. Enabling genlock will lock the output video clock to the genlock source (reference or input) regardless of video standard. If the genlock source and video output are the same frame rate (50 or 59.94Hz) genlock will lock the output to the vertical phase of the source, giving consistent and repeatable processing delay. When attempting to pass non-PCM audio it is essential that genlock is enabled. If using an external reference this must be clock-locked to the input video. Non-PCM audio will always be corrupt if the Genlock is set to free-run. Although the unit will input lock to CVBS/YC or YCbCr, it is recommended that in this case the CVBS or Y source is looped through the reference input / output to the CVBS / Y input, and that reference lock is selected.
Sync mode	Disables ARC feature when input and output formats are the same. This gives the lowest latency.
Signalling reader	The unit can be configured to automatically control the conversion depending on the read value of the incoming L23, VI, or SMPTE2016-1 (AFD) active format descriptors. When no valid signalling is recognized, the user can select whether to hold the current conversion or default to the current manual conversion setup. These conversions, assuming the input and output are of the same frequency, will be clean. Additional controls are provided to allow configuration of the format and standard of each of the signalling types: L23 - Standard ETSI/AFD - Line 10-23 VI - Standard SMPTE/AFD HD inputs only support SMPTE2016-1 (AFD), L23 is valid only on 625 inputs and VI on all SD inputs.

Output signalling	Individual control for each of L23, VI and SMPTE2016-1 (AFD) to be inserted on the output, to allow Automatic generation, deletion, passing or always forcing to a user configured value. There are also a number of controls to allow configuration of the format and standard of the output signalling: L23 - Standard ETSI/AFD - Line 10 – 23 - pass/setting of non Aspect ratio bits VI - standard SMPTE/AFD - pass/delete non AFD data SMPTE 2016 is valid on all output standards, VI is valid on SD outputs and L23 is valid only on 625 outputs.
DHCP	Enables/disables DHCP address discovery.
IP Address	Manual setting of static IP address for non-DHCP networks (Default IP address 192.168.0.100), net mask, default gateway.
Advanced Horizontal Enhancement	Enable/Disable Frequency band selection (Low, Med, High) 4 preset enhancement levels (Low, Med, High, Super) Custom H Gain and H Noise rejection levels.
Advanced Vertical Enhancement	Enable/Disable Frequency band selection (Low, Med, High) 5 preset enhancement levels (Soft, Normal, Sharp 1, Sharp 2, Sharp 3)
Horizontal Aperture	5 preset H detail levels (Soft 2, Soft 1, Normal, Sharp 1, Sharp 2) 5 preset H sharpness levels (Low 2, Low 1, Normal, High 1, High 2)
Closed Caption (59.94Hz only)	CEA608 NTSC Enable CEA708 Output line number (1080i/P & 720P); enable

Processing	
Scaling/ De-interlacing	Horizontal scaling employs a linear filter
Color matrix	Automatic correction with HD/SD conversions
Data width	>= 10 bit YCbCr throughout
Audio	ADC/DAC conversion is 24 bit Digital audio is 24 bit throughout Delay smoothly tracks video delay Minimum audio delay < 3ms
Legalizer	On/Off The legalizer ensures that the output video is kept within the RGB gamut limit.

General	
Dimensions	1/2RU H44 x W220 x D255
Weight	Approx. 1.6kg

Throughput delays	
Same frame rate 'Sync' mode (interlaced formats	0.4ms < Delay < 2 fields + 0.4ms
Same frame rate 'Sync' mode (720P)	0.4ms < Delay < 1 field + 0.4ms
Same frame rate 'ARC' mode (interlaced format in and out)	4 fields + 1ms < Delay < 6 fields + 1ms
Same frame rate 'ARC' mode (interlaced format in **and** out)	4 fields + 1ms < Delay < 6 fields + 1ms
Same frame rate 'ARC' mode (720P in **or** out)	4 fields + 1ms < Delay < 5 fields + 1ms
	where field = 16.7 or 20ms

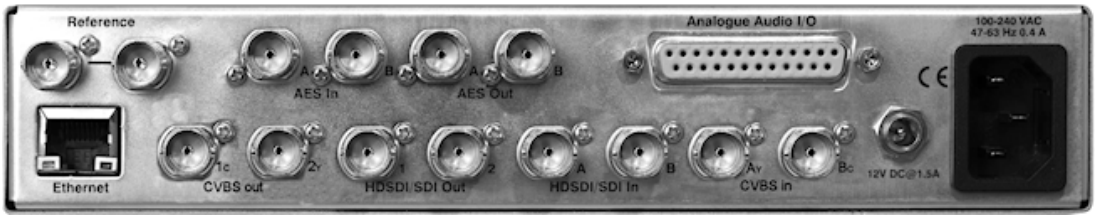
Note:

- In Sync mode, the TBS800 is acting as a synchronizer only (the input and output have the same format and frame rate), and it is assumed that the user is synchronizing the output to a chosen reference. Depending on the reference, the delay will vary between 0.4 ms (minimum) and 2 fields plus 0.4 ms (maximum).
- For ARC mode, there must be at minimum 4 fields of delay as the TBS800 must load at least 3 fields of data to be able to do the aspect ratio conversion with 'still mode' processing. In input-locked mode, the ARC delay could be just 4 fields. However, if the user is synchronizing the output to a chosen reference, as in Sync mode above, depending on the reference, and up to an additional 2 fields + 1ms (maximum) delay may be incurred. Therefore the total delay in ARC mode will vary between 4 fields (minimum) and 6 fields + 1ms (maximum).

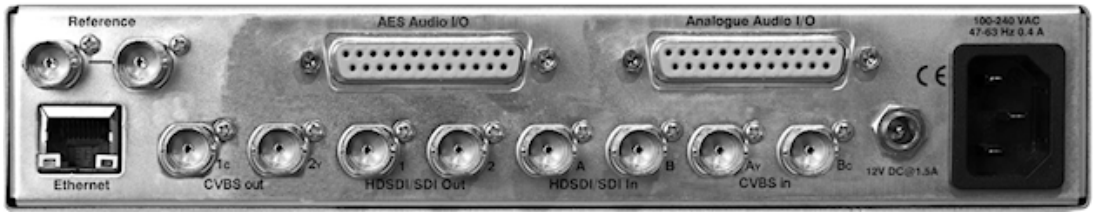
4. Connections

4.1 TBS800 Rear Panel Views

4.1.1 HD TBS800UD Unbalanced AES & Analog Audio



4.1.2 HD TBS800BD Balanced AES & Analog Audio



4.2 Power Connections

The TBS800 unit has one IEC320 mains power connector suitable for a standard IEC type power and a 12V DC connector for optional external PSU.

4.2.1 Supply Voltage

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.

Caution: This unit must not be operated without an earth connection.

4.3 Power On/Off Switch

There is no power On/Off switch. The switch on the front panel is a standby switch.

Power ON will be indicated by the illumination of the front panel display. Standby mode is indicated by a red LED on the front panel.

Note: For equipment that is not fitted with a mains power switch, to comply with EN60950 Clauses 1.7.2 and 2.6.9, the power outlet supplying power to the unit should be close to the unit and easily accessible.

4.4 Input Connections

4.4.1 HDSDI/SDI In

There are two SD/HD SDI inputs to the unit via BNC connectors.

4.4.2 Reference

Where suitable signals are connected to this input, the video output of the unit will be synchronized to the reference signal source when the genlock function is selected. If no signal is present, the unit will automatically revert to internal free-running operation.

BNC loop-through connectors are provided and the signal may black burst or Trisync video at standard level.

4.4.3 Audio AES In (Unbalanced)

There are two AES Audio inputs to the unit via BNC connectors.

4.4.4 Audio AES In (Balanced)

AES audio input is via the 25 way D-Type connector.

4.4.5 Analogue Audio

Analogue audio input is via the 25 way D-Type connector.

4.4.6 CVBS/YC

These BNC connectors enable either:

- 2 CVBS inputs (CVBS A, CVBS B)
- 1 YC input

4.5 Output Connections

4.5.1 HDSDI/SDI Out

There are two SD/HD SDI outputs from the unit via BNC connectors.

4.5.2 Audio AES Out (Unbalanced Option)

There are two AES Audio outputs from the unit via BNC connectors.

AES Out A outputs the audio selected for processed pair A, and AES Out B outputs the audio selected for processed pair B.

4.5.3 Audio AES Out (Balanced Option)

There are two AES Audio outputs from the unit via the 25 way D-Type connector.

AES Out A outputs the audio selected for processed pair A, and AES Out B outputs the audio selected for processed pair B.

4.5.4 Analogue Audio

Analogue audio Output is via the 25 way D-Type connector.

There are two stereo analog outputs available from this connector, containing the audio selected for processed pair A and processed pair B respectively.

4.5.5 CVBS/YC Out

These BNC connectors allow either 2 CVBS outputs (CVBS 1, CVBS 2) or 1 YC output to be made.

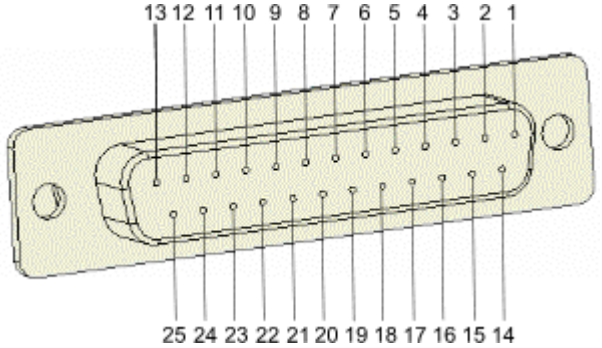
4.6 Control Connections

4.6.1 Ethernet

Connection to a Web browser can be made via the 10/100 BaseT Ethernet connection.

4.7 D-Type Connectors

This view is of the D-type connectors on the back of the unit.



4.7.1 Analog Input/Output Pin Connections

25 D-Sub Pin Description (Analog Input/Output)		
Pin	Name	Signal
1	Chassis	Ground
14	GND1	Analog Out Pair 2 right ‘G’
2	1+	Analog Out Pair 2 right ‘+’
15	1-	Analog Out Pair 2 right ‘-‘
3	2+	Analog Out Pair 2 left ‘+’
16	2 -	Analog Out Pair 2 left ‘-‘
4	GND2	Analog Out Pair 2 left ‘G’
17	GND3	Analog Out Pair 1 right ‘G’
5	3+	Analog Out Pair 1 right ‘+’
18	3-	Analog Out Pair 1 right ‘-‘
6	4+	Analog Out Pair 1 left ‘+’
19	4-	Analog Out Pair 1 left ‘-‘
7	GND4	Analog Out Pair 1 left ‘G’
20	GND5	Analog In Pair 2 right ‘G’
8	5+	Analog In Pair 2 right ‘+’
21	5-	Analog In Pair 2 right ‘-‘
9	6+	Analog In Pair 2 left ‘+’
22	6-	Analog In Pair 2 left ‘-‘
10	GND6	Analog In Pair 2 left ‘G’
23	GND7	Analog In Pair 1 right ‘G’
11	7+	Analog In Pair 1 right ‘+’
24	7-	Analog In Pair 1 right ‘-‘
12	8+	Analog In Pair 1 left ‘+’
25	8-	Analog In Pair 1 left ‘-‘
13	GND8	Analog In Pair 1 left ‘G’

4.8 AES Input/Output Pin Connections

25 D-Sub Pin Description (AES Input/Output)		
Pin	Name	Signal
1	Chassis	
14	GND1	
2	1+	
15	1-	
3	2+	
16	2 -	
4	GND2	
17	GND3	AES Out Pair 2 ‘G’
5	3+	AES Out Pair 2 ‘+’
18	3-	AES Out Pair 2 ‘-‘
6	4+	AES Out Pair 1 ‘+’
19	4-	AES Out Pair 1 ‘-‘
7	GND4	AES Out Pair 1 ‘G’
20	GND5	
8	5+	
21	5-	
9	6+	
22	6_	
10	GND6	
23	GND7	AES In Pair 2 ‘G’
11	7+	AES In Pair 2 ‘+’
24	7-	AES In Pair 2 ‘-‘
12	8+	AES In Pair 1 ‘+’
25	8-	AES In Pair 1 ‘-‘
13	GND8	AES In Pair 1 ‘G’

5. Web Operation

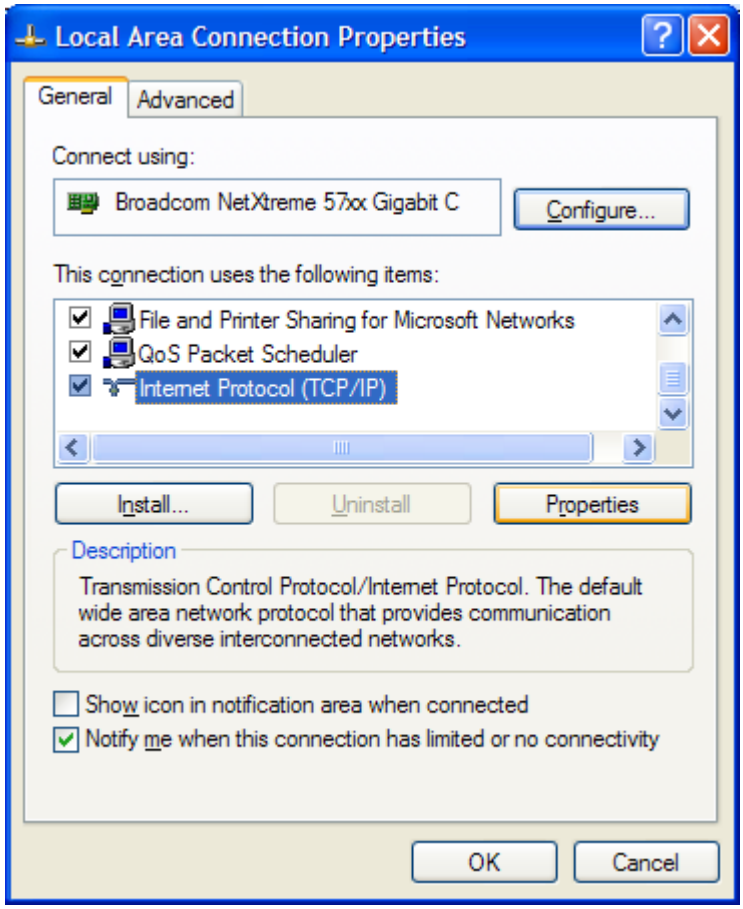
The TBS800 can be controlled by means of a Web interface accessed via the 10/100 BaseT Ethernet connection.

5.1 Connecting to the Web Interface

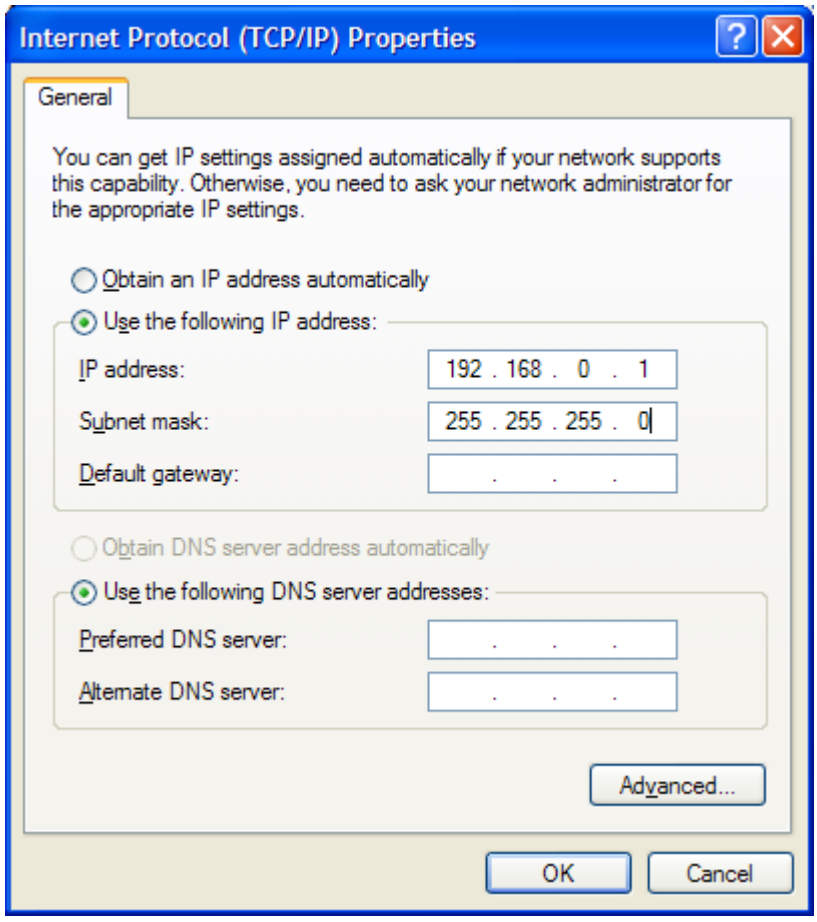
Connection to the Web interface can either be made directly or via a DHCP network.

To connect directly to a PC or laptop:

1. Connect the unit to the network port of the PC using a 'cross-wired' Ethernet cable (RJ45).
2. Click the Windows Start button and select Control Panel > Network Connections then select the network Local Area Connection. If several local connections are shown, ensure that the one corresponding to the port to which the unit is connected is selected.
3. Open the Properties window for the Local Area Connection and on the General tab select Internet Protocol (TCP/IP) and click the Properties button.



4. In the Internet Protocol (TCP/IP) Properties window, select Use the following IP address and enter an IP address of 192.168.0.1 and a Subnet mask of 255.255.255.0 then click OK.



5. Connect to the unit by entering the address 192.168.0.100 (or enter http://192.168.0.100) into your web browser.

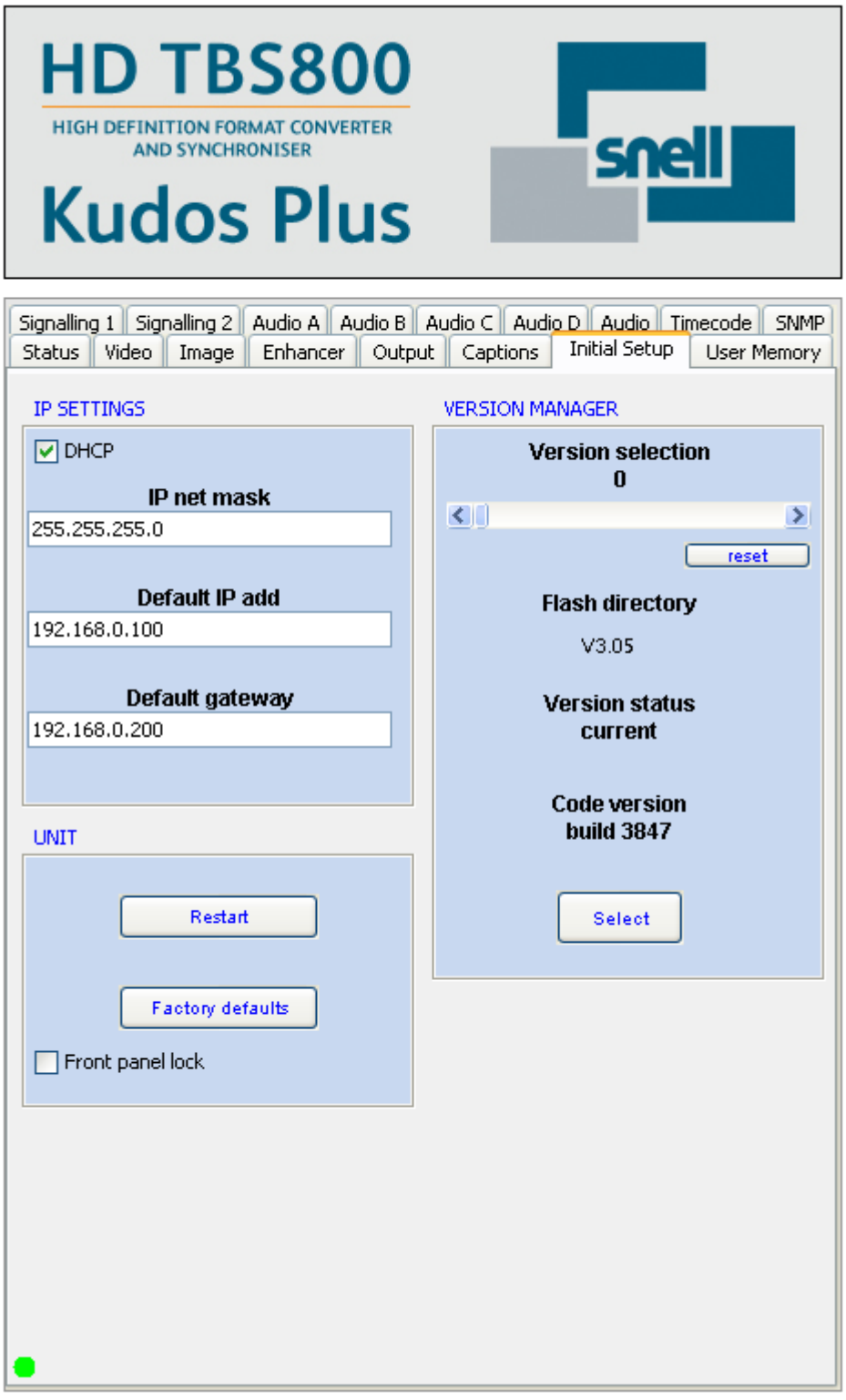
To connect through a DHCP network:

1. Ascertain from the Network Administrator the allocated IP address that corresponds to the unit's MAC address (as written on the unit itself).
2. Connect the unit to a network hub or switch using a standard (i.e. not 'cross-wired') Ethernet (RJ45) cable.
3. Connect to the unit by entering the given address into your web browser, preceded by "http://" if necessary.

5.2 Using the Web Interface

5.2.1 Initial Setup

The Initial Setup tabs comprises the settings that the unit uses to connect to the network, version controls, the option to return the unit to its default settings and the Restart control.



5.2.1.1 DHCP

To use a dynamically assigned IP address from a DHCP server, enable the DHCP option.

If a DHCP server is not available, the unit details must be configured as described below.

5.2.1.2 IP net mask, Default IP add, Default gateway

Enter manual network set-up parameters here

5.2.1.3 Restart

Click Restart to shut the unit down and then automatically start it again.

5.2.1.4 Factory Defaults

This option resets all of the unit's setting to the factory defaults.

5.2.1.5 Front Panel Lock

Select this option to enable the front panel lock. Clear this option to disable the front panel lock.

5.2.1.6 Version selection

The Version selection control allows the software version of the TBS800 to be specified.

To change the software version, use the slider bar to choose the software version you want to use and then click Select.

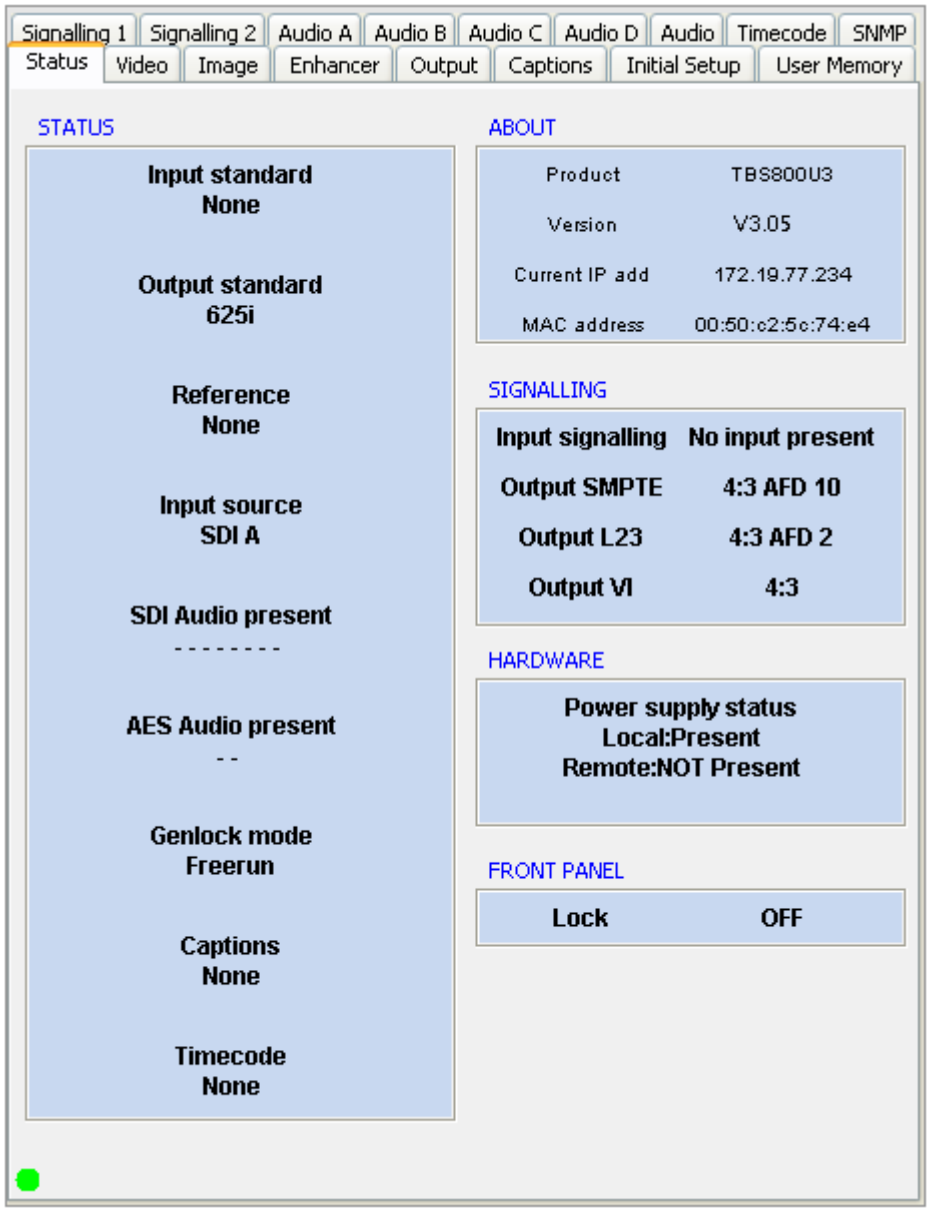
Click reset to return the software version to the most current installed release.

5.2.1.7 Connection Status

The dot visible in the bottom Left-hand corner indicates the connection status. Red indicates that the browser is not currently controlling the unit, while green indicates the connection is functioning normally.

5.2.2 Status

The Status tab displays information about the current operational state of the unit.



5.2.2.1 Input standard

This displays the current input standard. If no input is detected, it displays none.

5.2.2.2 Output standard

This displays the currently selected output standard.

5.2.2.3 Reference

This displays the current reference standard. If no reference is detected, it displays None. If the current reference standard cannot be used with the selected lock mode, it displays Error.

Note: This information is only available on the Web Interface; it is not shown on the unit display.

5.2.2.4 Input source

This displays the currently selected input source.

- SDI A / SDI B
- CVBS A / CVBS B
- YC

5.2.2.5 SDI Audio present

This displays the presence of SDI audio, and the channels on which the audio is present.

Note: This information is only available on the Web Interface; it is not shown on the unit display.

5.2.2.6 AES Audio present

This displays the presence of AES audio, and the channels on which the audio is present.

Note: This information is only available on the Web Interface; it is not shown on the unit display.

5.2.2.7 Genlock mode

This displays the current genlock status:

- Reference lock
- Input lock
- Freerun

Note: This information is only available on the Web Interface; it is not shown on the unit display.

5.2.2.8 Captions

This displays the type of closed caption information. If no closed captioning is present, ‘None’ is displayed.

5.2.2.9 Timecode

This displays the current timecode.

5.2.2.10 Product

This displays the current product that the hardware is set up as.

5.2.2.11 Version

This displays the software version number of the unit.

5.2.2.12 Current IP add

This displays the unit's current IP address.

In DHCP mode, it will display 0.0.0.0 when disconnected from the network.

5.2.2.13 MAC Address

This displays the unit's MAC address.

5.2.2.14 Input signalling

This displays the current input signalling type.

5.2.2.15 Output SMPTE

This displays the current SMPTE output signalling type,

5.2.2.16 Output L23

This displays the current L23 output signalling type.

5.2.2.17 Output VI

This displays the current Video Index output signalling type.

5.2.2.18 Hardware

This section indicates whether the power supplies are present or not.

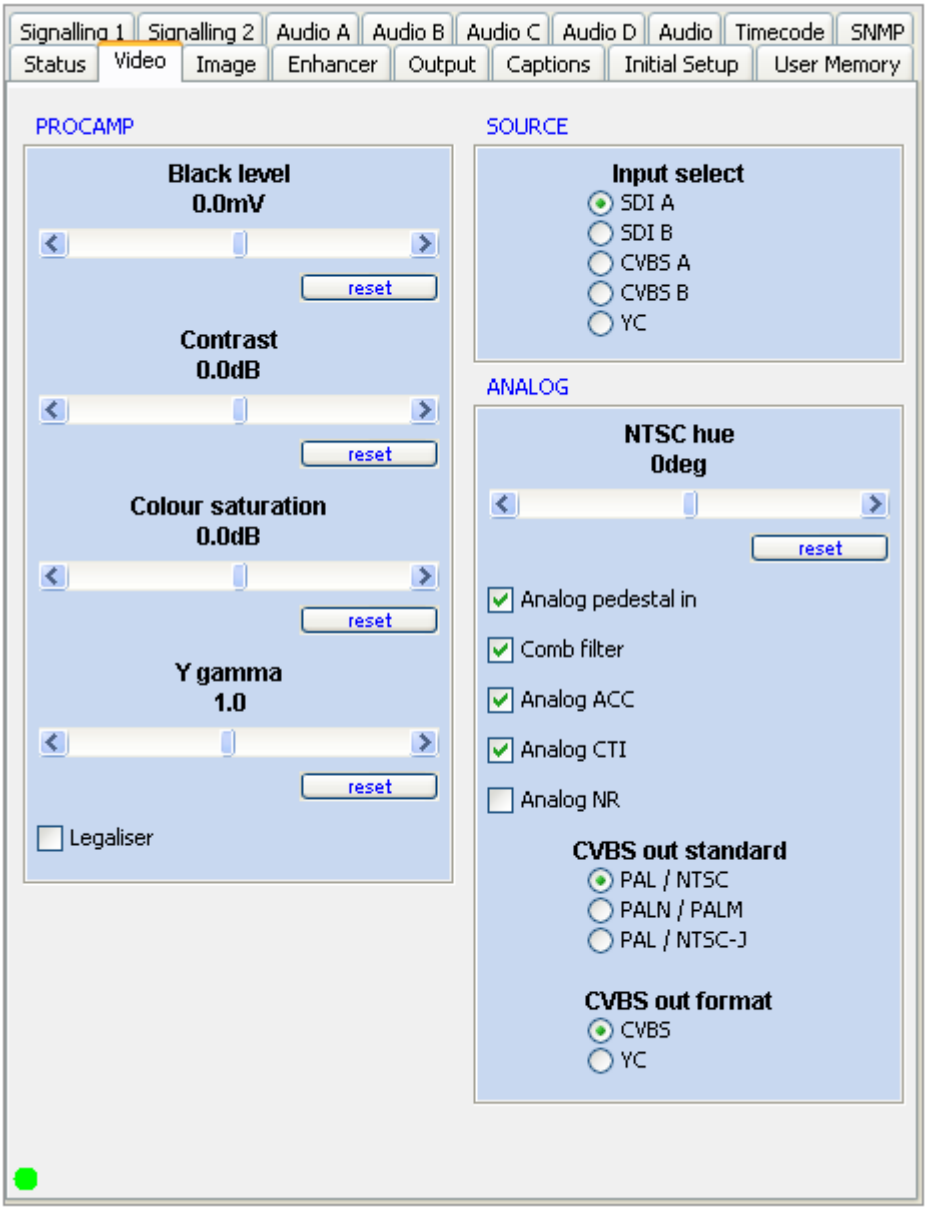
5.2.2.19 Front Panel Lock

This section indicates whether the front panel lock is enabled (ON) or disabled (OFF).

The control to lock the front panel is found under the **More** menu on the panel. Alternatively, you can lock or unlock the front panel by simultaneously pressing the **Video** and **Genlock** buttons.

5.2.3 Video

The controls on the Video tab enable the unit's video input source to be selected and the procamp controls adjusted.



5.2.3.1 Black level

Use the slider bar to adjust the black level over a range of ±100mV.

Click reset to return the control to its preset value of 0mV.

5.2.3.2 Contrast

Use the slider bar to adjust the contrast over a range of ±6bB in 0.2dB steps.

Click reset to return the control to its preset value of 0dB.

5.2.3.3 Color saturation

Use the slider bar to adjust the color saturation over a range of ±6bB in 0.2dB steps.

Click reset to return the control to its preset value of 0dB.

5.2.3.4 Y gamma

Use the slider bar to adjust the Y gamma curve over a range of 0.4 to 1.7 in steps of 0.1.

Click reset to return the control to its preset value of 1.

5.2.3.5 Legalizer

The Legalizer ensures that output video is kept within the RGB gamut limit.

When the Legalizer control is selected:

1. Source video is matrixed from YPbPr to RGB.
2. Any RGB video transitions below black are clipped to black.
3. Black-clipped RGB is matrixed back to YPbPr.
4. Any RGB transitions above peak white are measured relative to peak white to create a scaling factor.
5. The YPbPr video (from stage 3) is multiplied by the scaling factor.

This process ensures minimal disturbance to the perceived black level of the pre-corrected video while maintaining approximately the correct hue in parts of the image above peak white.

5.2.3.6 Input select

This allows the video input source to be selected. Click the corresponding radio button to select:

- SDI A
- SDI B
- CVBS A
- CVBS B
- YC

Input standard is automatically detected.

5.2.3.7 NTSC Hue

Use the slider bar to adjust the NTSC hue over a range of -180° to +180°, in increments of 1°.

Click reset to return the control to its preset value of 0°.

5.2.3.8 Analog pedestal in

Selecting this option allows the composite source (NTSC only) to be treated as if a pedestal is present.

5.2.3.9 Comb filter

The comb filter employs a 5-line adaptive 2Dcomb filter that separates chrominance and luminance when decoding a composite video signal. It adapts to the video standard and signal quality automatically. This control improves the decoder performance and should only be switched off if the operator needs to see the source through only a low pass filter.

5.2.3.10 Analog ACC

The automatic color gain control (ACC) function examines the input burst amplitude and adjusts chrominance gain to compensate for chroma level attenuation. Check this control when chroma levels are low compared to luminance. This may occur when using YC installations or composite from RF links.

5.2.3.11 Analog CTI

The chroma transient improvement (CTI) control examines the input video data. It detects transitions of chroma and enhances chroma edges in order to artificially restore lost color bandwidth. Use this function when the input video has chroma bandwidth limitations.

5.2.3.12 Analog NR

The noise reduction is based on the assumption that high frequency signals with low amplitude are probably noise and their removal improves picture quality. Improvements can be seen on most material so this function is on by default.

5.2.3.13 CVBS out standard

Use the radio buttons to specify the CVBS output standard. The options are:

- PAL/NTSC
- PALN/PALM
- PAL/NTSC-J

5.2.3.14 CVBS out format

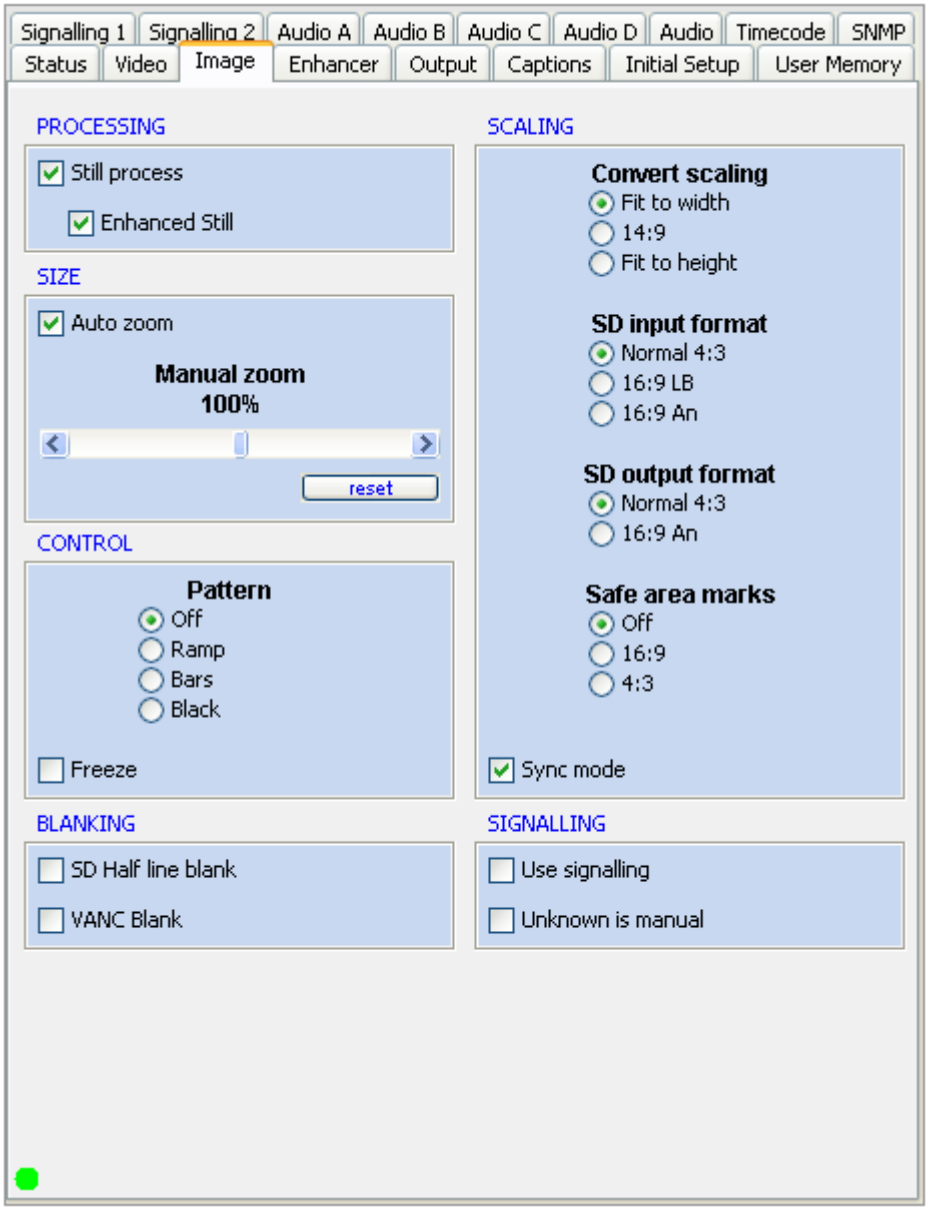
Use the radio buttons to specify the CVBS output format:

- CVBS
- YC

Note: When the output is not selected to be an SD standard, the CVBS or YC output will not be valid.

5.2.4 Image

The controls on the Image tab enable the size, control, and scaling options to be adjusted.



5.2.4.1 Still Process

When enabled (On), the TBS800 uses powerful motion detection techniques to extract the maximum resolution from interlaced sources while format or standards converting. The benefits of this processing can be seen most dramatically on static logos and computer generated overlays.

5.2.4.2 Enhanced Still

When used in concert with the Still Process option, Enhanced Still adds field motion detection to still processing, which prevents artifacts on moving repetitive patterns.

When used in concert with the Motion Process option, Enhanced Still functions as above and additionally disables motion compensation in still areas to prevent certain images (such as cross hatch) being interpreted as motion.

5.2.4.3 Auto zoom

Select the check box to enable auto zoom. Clear the check box to disable auto zoom.

By default, auto zoom is enabled.

5.2.4.4 Manual zoom

Clear the Auto zoom check box and use the slider bar to manually adjust the zoom over a range of 120% to 80% in 1% steps.

Click reset to return the control to its default value of 100%.

5.2.4.5 Pattern

This control enables and disables the pattern output, and specifies the type of pattern output if enabled. The options are:

- Off
- Ramp
- Bars
- Black

5.2.4.6 Freeze

This control freezes the output when enabled.

5.2.4.7 SD Source Half Line Blanking

Allows the source half lines to be blanked. This can be useful for certain ARC settings; for example, SD16:9AN to SD4:3 Fit to Width.

5.2.4.8 VANC Blank

Selecting this option blanks all vertical ancillary data.

5.2.4.9 Convert Scaling

Use this option to select conversion scaling method. The available options are:

- Fit to Height
- 14:9
- Fit to Width

5.2.4.10 SD Input Format

Use this option to select the SD input format. The available options are:

- Normal 4:3
- 16:9 LB
- 16:9 An

5.2.4.11 SD Output Format

Use this option to select the SD output format. The available options are:

- Normal 4:3
- 16:9 An

5.2.4.12 Safe area marks

Markers may be inserted appropriate to the output aspect ratio to indicate the nominal safe area. The safe area is 93% of the effective picture height and width. The available options are:

- Off
- 16:9
- 4:3

5.2.4.13 Sync Mode

When Sync Mode is On, the scaling filters are disabled giving transparent operation while using the unit as a synchronizer. This control is only effective if the input and output formats are identical.

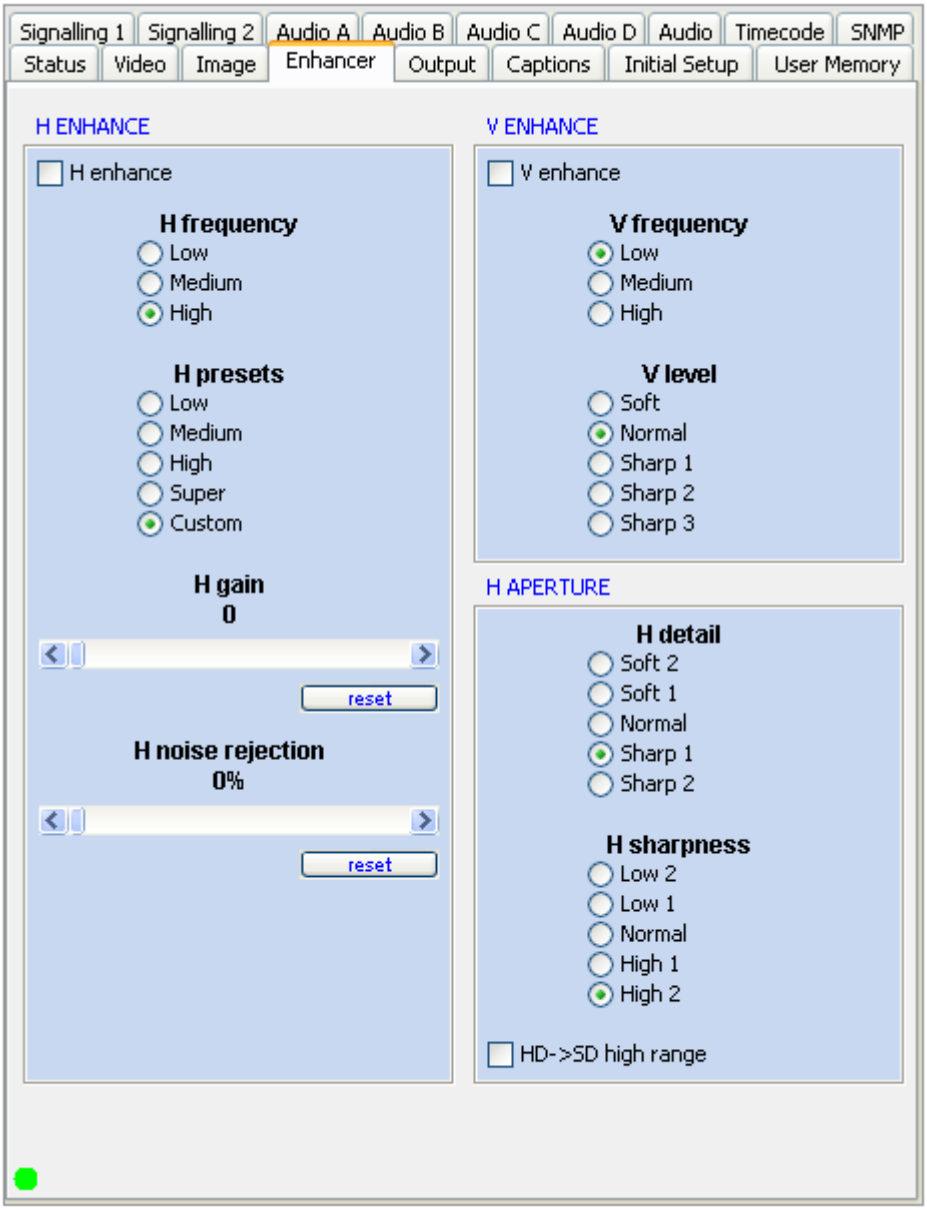
5.2.4.14 Signalling

Use signalling: When this option is selected, the unit will use the signalling options as specified on the Signalling 1 and Signalling 2 tabs.

Unknown is manual: When option is selected, the unit will use manual aspect conversions if the input signal type is not recognized.

5.2.5 Enhancer

The Advanced Horizontal Enhancer allows enhancement to be selectively applied to the low frequency band, medium frequency band, or high frequency band. Four presets are available as well as custom gain and noise rejection.



5.2.5.1 H Enhance

Select this check box to enable advanced horizontal enhancement.

5.2.5.2 H Frequency

Use the radio buttons to specify the frequency band to which enhancement will be applied.

5.2.5.3 H Presets

- *Low:* sets H Gain to 2 and H Noise rejection to 15% for the selected frequency band.
- *Medium:* sets H Gain to 4 and H Noise rejection to 15% for the selected frequency band.
- *High:* sets H Gain to 6 and H Noise rejection to 15% for the selected frequency band.
- *Super:* sets H Gain to 8 and H Noise rejection to 15% for the selected frequency band.
- *Custom:* Allows H Gain and H Noise rejection to be manually adjusted.

5.2.5.4 H Gain

If the Custom preset is selected, this allows the gain to be adjusted on the selected frequency band. This control does not have any effect if the Custom preset is not selected.

5.2.5.5 H Noise rejection

If the custom preset is selected, this allows the noise rejection to be adjusted on the selected frequency band. This control does not have any effect if the Custom preset is not selected.

5.2.5.6 V enhance

The Advanced Vertical Enhancer options allow enhancement to be selectively applied to the low frequency band, medium frequency band, or high frequency band. Five strengths are available per band.

Select the check box to enable the vertical enhancement options.

5.2.5.7 V frequency

Select the radio button to specify the frequency band to which the enhancement will be applied:

- Low
- Med
- High

5.2.5.8 V level

Select the radio button to specify the enhancer strength.

- *Soft:* provides attenuation in the band specified
- *Normal:* nominally flat frequency response
- *Sharp1, Sharp2, Sharp3:* progressively more boost in the frequency band of interest.

5.2.5.9 H Aperture

The H Aperture control allows for linear control of the Horizontal conversion process - especially useful when down converting.

5.2.5.10 H detail

Select the radio button to adjust the amount of detail that is allowed through to the output - effectively moving the stop band of the anti-alias filter.

- Soft2: recommended for severely over enhanced source material
- Soft1: recommended for overly enhanced source material.
- Normal: optimum setting to balance detail and alias
- Sharp1: recommended for slightly soft source material
- Sharp2: recommended for extremely soft source material

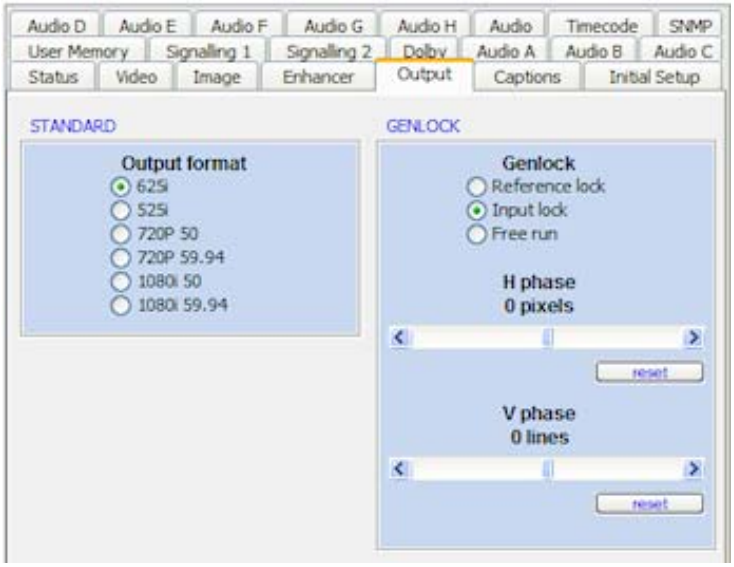
5.2.5.11 H sharpness

Select the radio button to adjust the sharpness of the output - effectively changing the rate of cutoff of the anti-alias filter

- Low2: recommended for severely over enhanced source material
- Low1: recommended for overly enhanced source material.
- Normal: optimum setting to balance detail and alias
- High1: recommended for slightly soft source material
- High2: recommended for extremely soft source material

5.2.6 Output

The options on the Output tab allow the output format and genlock settings to be specified.



5.2.6.1 Output format

Use this control to select the output line standard from the following supported standards:

- 525/625
- 720P
- 1080i
- 1080P A
- 1080P B

5.2.6.2 Default Format

Use this control to specify the default output format.

- Last valid input
- 50Hz
- 58.94Hz

5.2.6.3 Genlock

Enabling Genlock (either Reference Lock or Input Lock) will lock the output video clock to the genlock source (input or reference) regardless of the video standard. If the genlock source and the video output are of the same frame rate (i.e. 50 Hz or 59.95Hz) genlock will lock the output to the vertical phase of the source, giving consistent and repeatable delay.

When attempting to pass non-PCM audio it is essential that genlock is enabled. If using an external reference, it must be clock-locked to the input video.

Reference lock: Output video is locked to an external reference. The offset between the external reference and the output can be adjusted over a range of approximately +/- 32us using the Genlock phase controls

Input lock: Output video, if the same line and frame standard, is locked to the selected input video source. When converting between line or frame standards this mode is not available.

Free run: Output video is locked to an internal reference clock.

Note: Non-PCM audio will always be corrupt if Genlock is set to free run.

5.2.6.4 H Phase

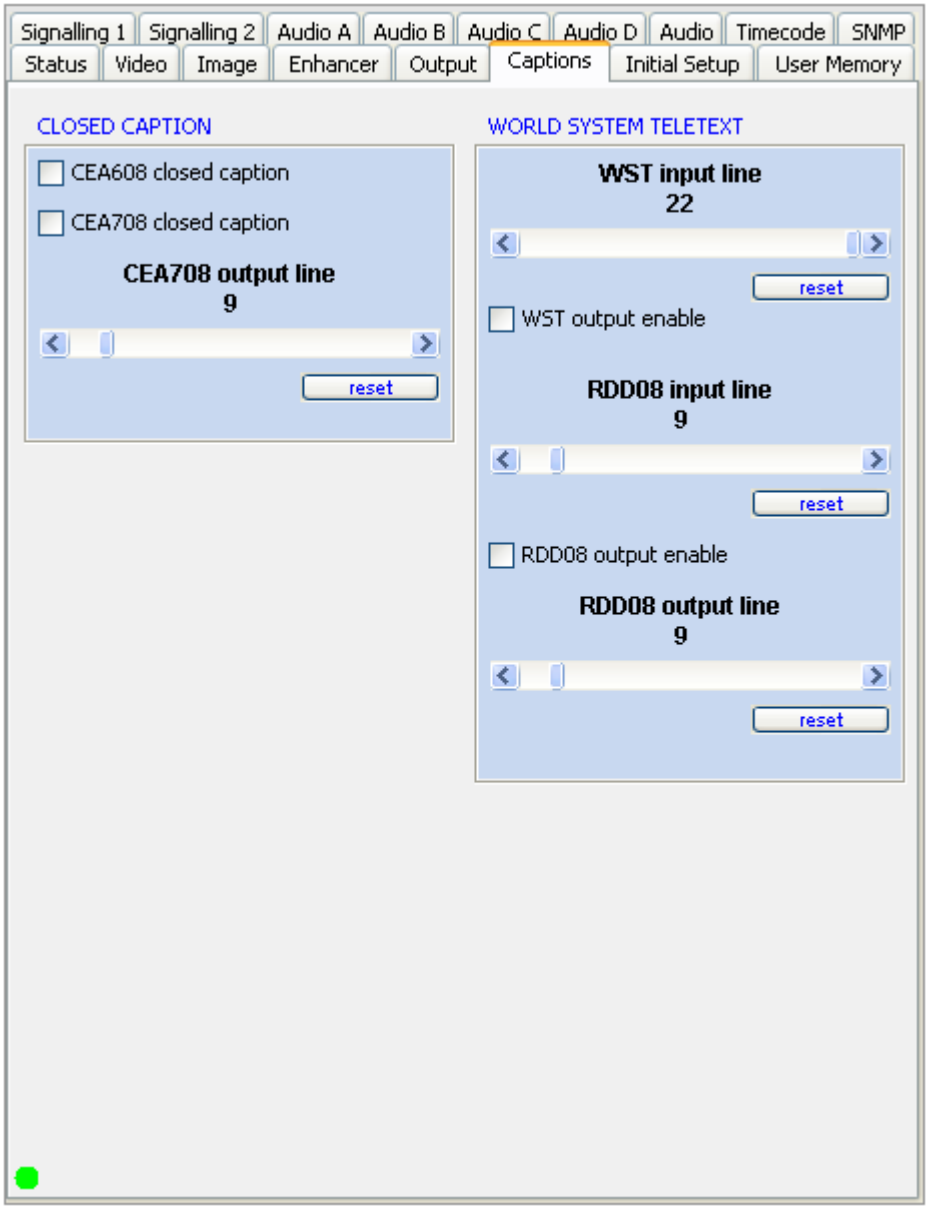
The H Phase control allows the horizontal genlock phase to be adjusted from +1320 to -1319 pixels in one pixel increments. The H Phase preset value is 0.

5.2.6.5 V Phase

The V Phase control allows the vertical genlock phase to be adjusted from +562 to - 563 in 1 line increments. The V Phase preset value is 0.

Note: The H Phase and V Phase controls are only available when the TBS800 is reference locked to a source of the same frame rate as the input video. The control is disabled when the unit is input locked and a fixed minimum delay is set.

5.2.7 Captions



5.2.7.1 Closed Caption

Selecting the CEA608 closed caption option enables CEA608 in SD (NTSC).

Selecting the CEA708 closed caption option enables CEA708 in HD (59.94).

Use the slider bar to specify the CEA708 output line. The output line can be set from line 8 to line 20 (in steps of 1 line). The preset value is line 9.

Note: Insertion is only possible if CC data is present on the input.

5.2.7.2 World System Teletext

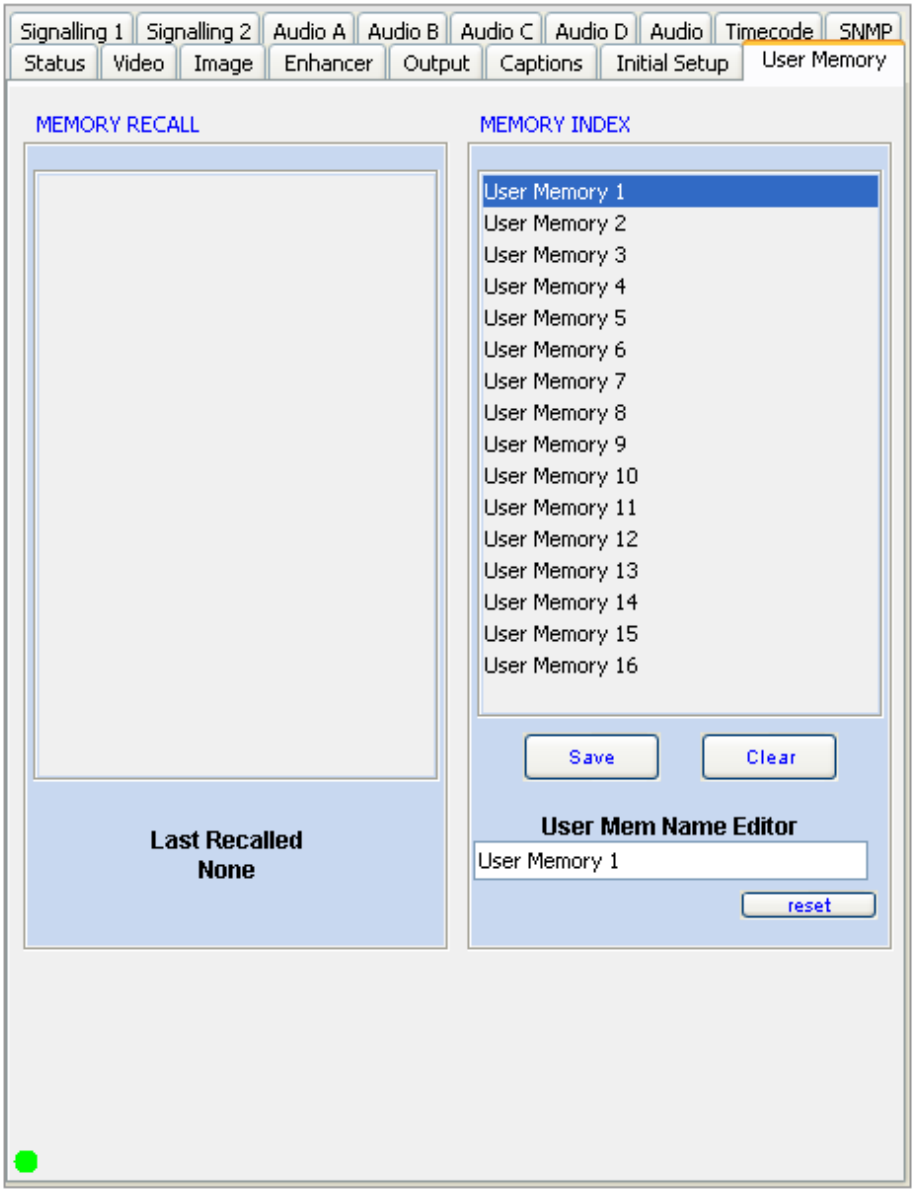
The TBS800 can pass WST (SD) and RDD08 (HD) teletext. These options enable you to specify the lines that are used and to enable or disable teletext output.

- WST input line: Use the slider bar to specify the input line on which WST input is present. The range of adjustment is from lines 7 to 22 and the preset value is line 22.
- WST output enable: Select the checkbox to enable WST output. WST output will be passed on the same line as the WST input.

- RDD08 input line: Use the slider bar to specify the input line on which RDD08 input is present. The range of adjustment is from lines 8 to 20 and the preset value is line 9.
- RDD08 output enable: Select the checkbox to enable RDD08 output on the line specified by the RDD08 output line control.
- RDD08 output line: Use the slider bar to specify the RDD08 output line. The range of adjustment is from lines 8 to 20 and the preset value is line 9.

5.2.8 User Memory

User Memory allows you to store and recall up to 16 unit configurations (User Memory 1 to User Memory 16).



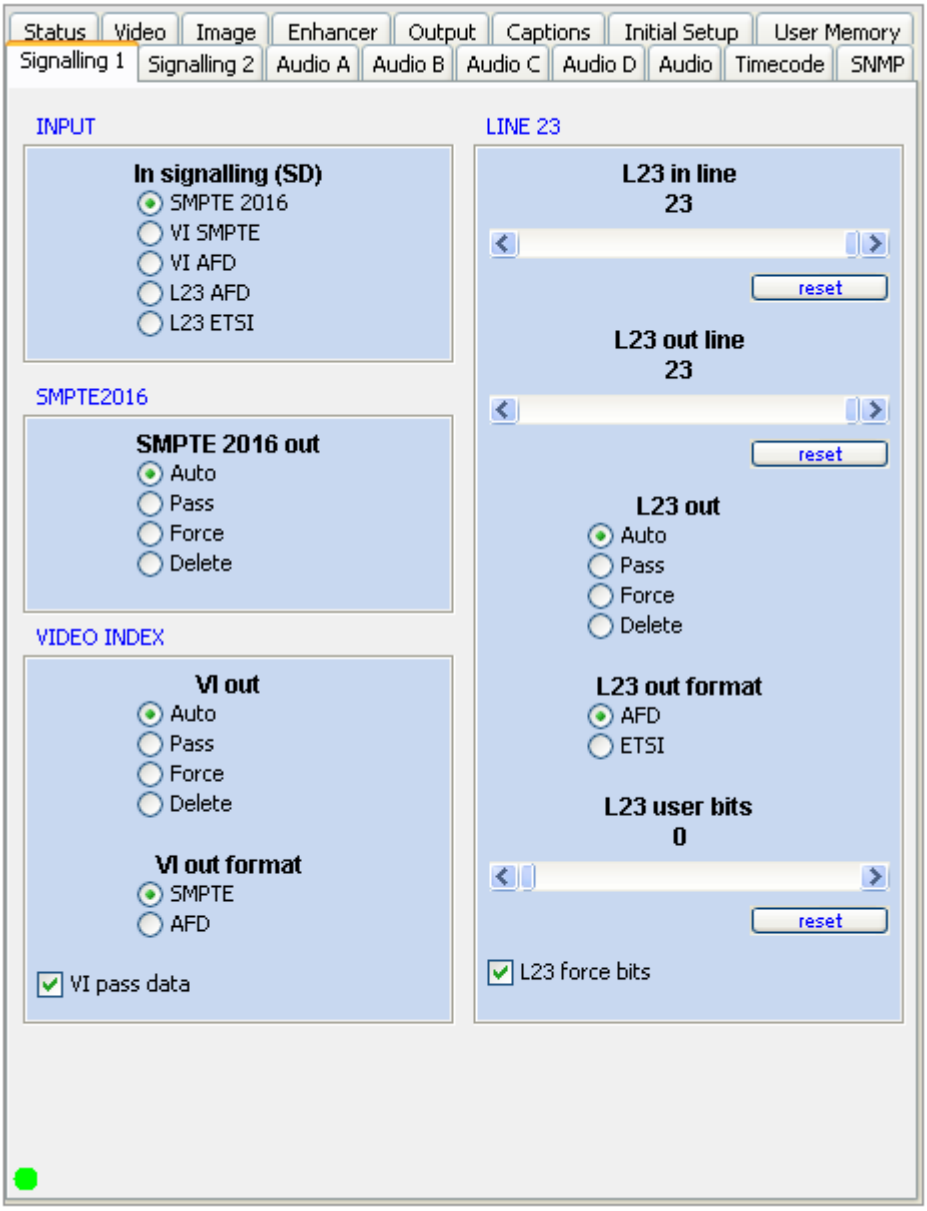
To save a configuration to the user memory, click the **Save** button that corresponds to the memory location that you want to use. After you have done this, the memory will be indicated in the **User Memory Present** list.

To clear a configuration from the user memory, click the **Clear** button that corresponds to the memory. After you have done this, the memory will be removed from the **User Memory Present** list.

To recall a configuration, select the radio button that corresponds to it. Note that the memory must have been previously stored and be in the **Memory Recall** list for this to have any effect.

5.2.9 Signalling 1

The options on the Signalling 1 tab allow the parameters that control automatic Aspect Ratio Conversion to be specified.



5.2.9.1 In signalling (SD)

This option specifies the type of input signalling the unit will respond to.

- SMPTE 2016: Embedded VANC packet according to SMPTE 2016 standard. This format is for Active Format Description only, and is supported in both SD and HD
- VI SMPTE: Video Index according to SMPTE RP186, supported in SD only, line 11/324 (625), 14/277 (525).
- VI AFD: Video Index, plus a 3 bit AFD according to ARDSPEC1, supported in SD only.
- L23 AFD: Video Index, transported using Line 23 (WSS) signalling.
- L23 ETSI: Line 23 (WSS) signalling according to ETSI EN 300 294 (2003) Group 1, supported in SD only.

5.2.9.2 SMPTE2016:

These options specify the SMPTE 2016 output actions.

SMPTE 2016 out:

- Auto: This option automatically sets the conversion based on a combination of the input output standards.
- Pass: If this option is selected, SMPTE 2016 information will be passed through the unit unchanged.
- Force: If this option is selected, the unit will force the conversion specified on the Signalling 2 tab.
- Delete: If the option is selected, SMPTE 2016 information will be deleted from the output signal.

5.2.9.3 Video Index

These options specify the VI output actions

VI out:

- Auto: This option automatically sets the conversion based on a combination of the input output standards.
- Pass: If this option is selected, VI information will be passed through the unit unchanged.
- Force: If this option is selected, the unit will force the conversion specified on the Signalling 2 tab.
- Delete: If the option is selected, VI information will be deleted from the output signal.

VI out format:

- SMPTE: Select this option to output Video Index information according to SMPTE RP186.
- AFD: Select this option to output Video Index information according to ARDSPEC1.

The *VI Pass Data* option specifies whether any user data from the source VI is used at the output. If pass data is not enabled, the VI data other than coded frame and AFD are blanked, otherwise, they are passed from the input if appropriate.

5.2.9.4 Line 23

These options specify the Line 23 (WSS) input and output parameters.

L23 in line: By default, L23 information is carried on line 23. However, if the information occurs on a different line, use the slider to specify the line on which it is carried in the input. The range of adjustment is from line 10 to line 23.

L23 out line: By default, L23 information is carried on line 23. However, if the information is required on a different line, use the slider to specify the line on which it is carried in the output. The range of adjustment is from line 10 to line 23.

L23 out:

- Auto: This option automatically sets the conversion based on a combination of the input and output standards.
- Pass: If this option is selected, L23 information will be passed through the unit unchanged.
- Force: If this option is selected, the unit will force the conversion specified on the Signalling 2 tab.
- Delete: If the option is selected, L23 information will be deleted from the output signal.

L23 out format:

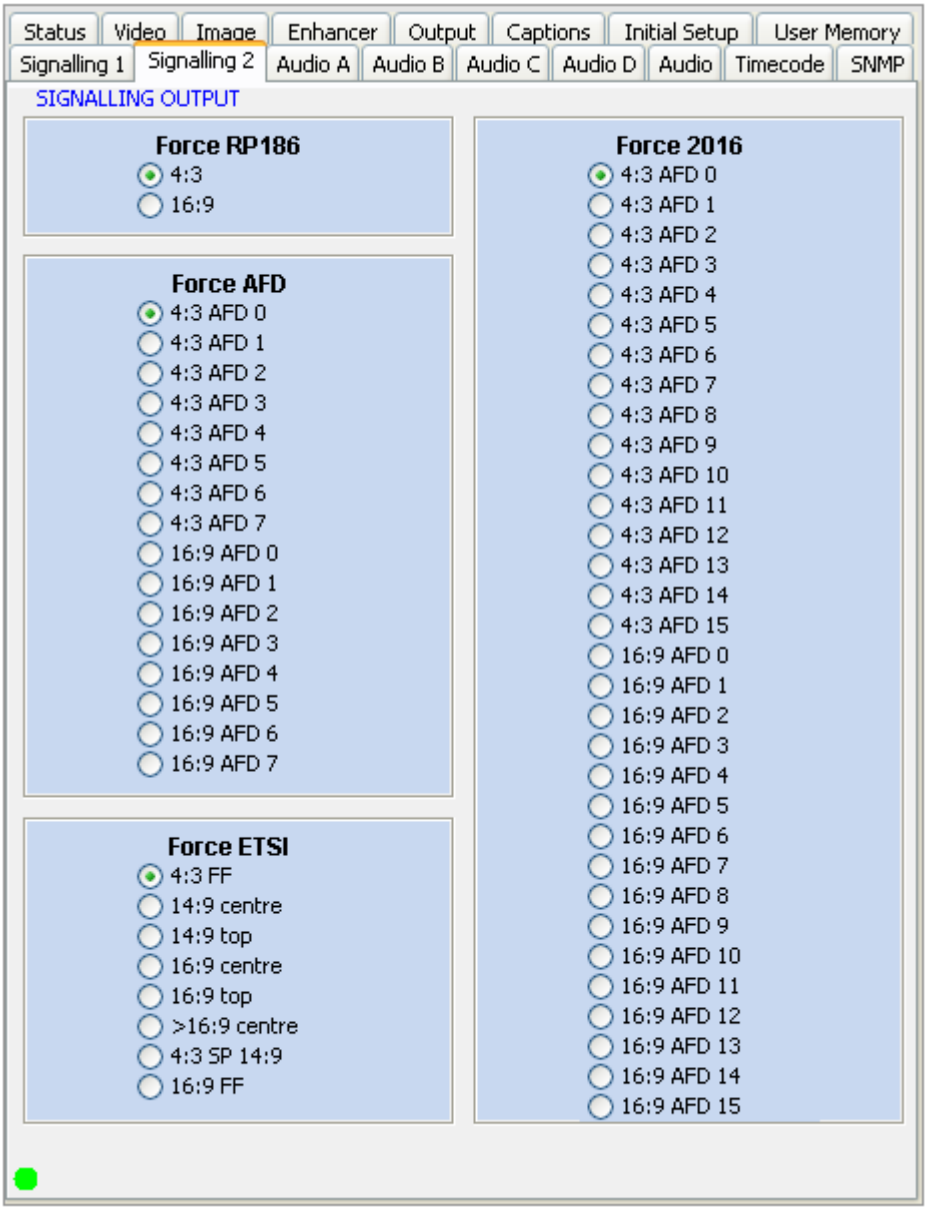
- Select AFD to insert L23 information in AFD format.
- Select ETSI to insert L23 information in ETSI format.

L23 user bits: Set enhanced L23 bits. Use the slider control to select between 15 preset bit combinations.

L23 force bits: Determines whether the L23 user bits set above are forced into the L23 output.

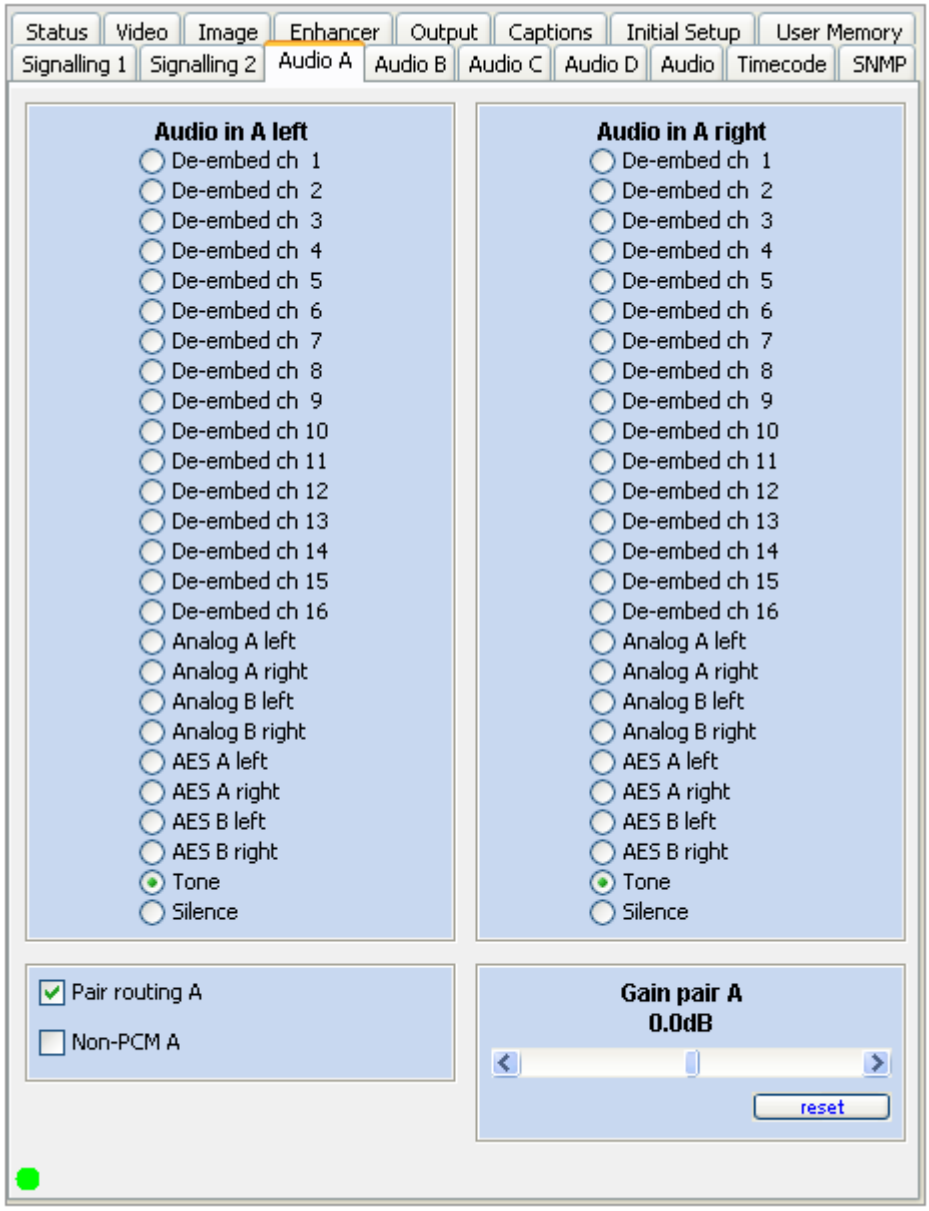
5.2.10 Signalling 2

The options on the Signalling 2 tab specify the output that will be forced if the corresponding Force option is selected on the Signalling 1 tab.



5.2.11 Audio A to Audio D

The settings on these eight tabs enable the audio input sources to be specified for the Left and Right channels. Since each tab differs only in the audio pair that is controlled, it is described only once.



5.2.11.1 Audio in A to D Left

These specify the Left audio input source.

- De-embed ch (De-embed ch 1 to De-embed ch 16). To do this, select the radio button and then use the scrolling list to select the channel
- Analog A - Left
- Analog A - Right
- Analog B - Left
- Analog B - Right
- AES A - Left
- AES A - Right
- AES B - Left
- AES B - Right
- Tone
- Silence

5.2.11.2 Audio in A to D Right

These specify the Right audio input source. The options are the same as the Left input source.

5.2.11.3 Preset Values

The audio input channels have the following default values:

- Audio in A Left: De-embed ch 1
- Audio in A Right: De-embed ch 2
- Audio in B Left: De-embed ch 3
- Audio in B Right: De-embed ch 4

  and so on, to:

- Audio in D Left: De-embed ch 15
- Audio in D Right: De-embed ch 16

5.2.11.4 Pair Routing A to D

Select this option to configure the Left and Right as a pair.

With Pair Routing enabled and after selecting a source for Audio in A - Left, the unit will automatically route the corresponding stereo channel to Audio in A - Right. E.g. If De-embed ch 8 is selected for Audio in A - Left the unit will automatically route ch 9 to Audio in A - Right.

5.2.11.5 Pair A to D Non-PCM

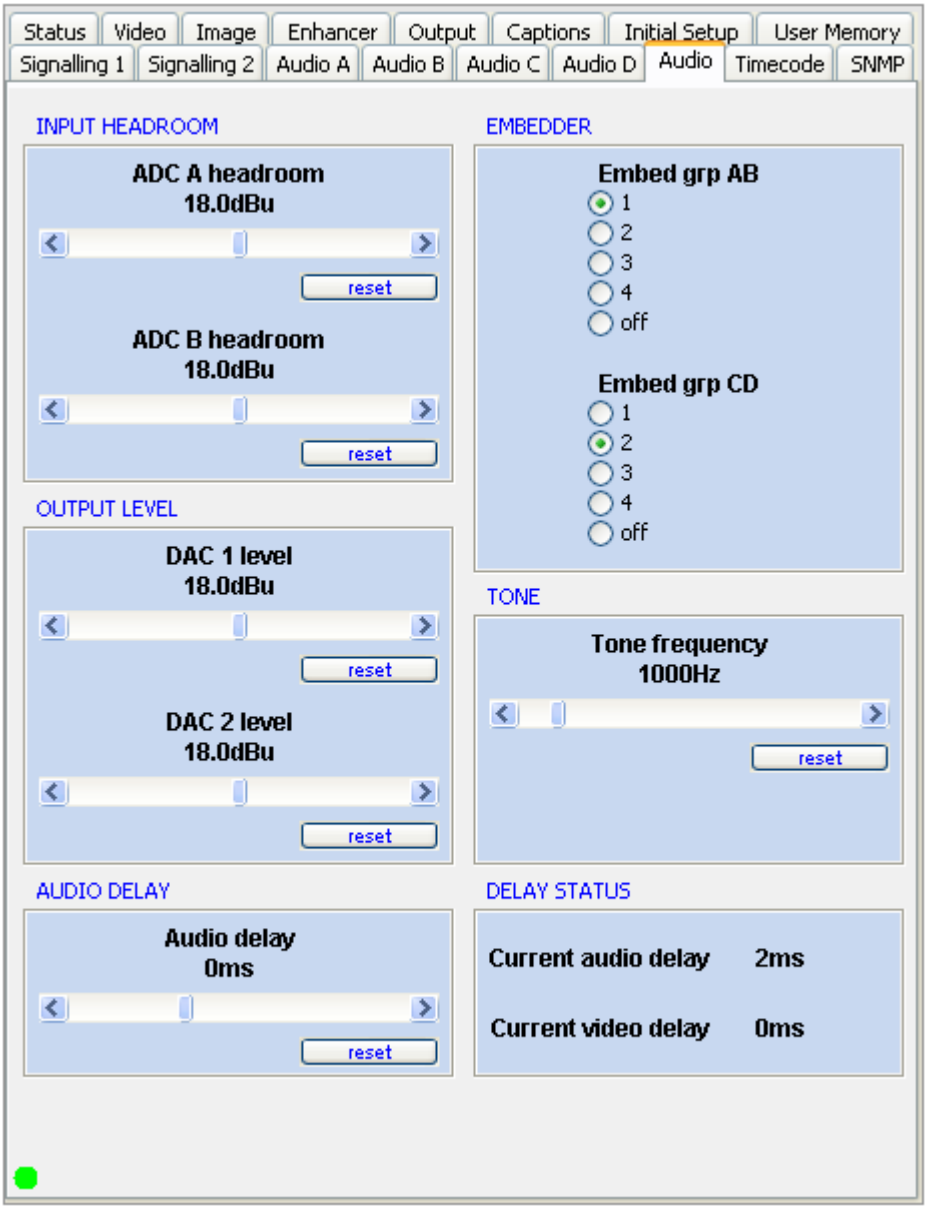
Selecting this option allows the unit to pass, unchanged, non-PCM data on a left/right channel pair. Note Genlock settings in section 5.2.6.3

5.2.11.6 Gain pair A to D

Use the slider to apply a gain to the audio channel of ±18dB in 0.1dB steps.

Click reset to return the control to its preset value of 0dB.

5.2.12 Audio



5.2.12.1 ADC A Headroom

Use the slider bar to adjust the ADC A headroom between +12 dBu and +24dBu in 0.5dB steps

Click reset to return the control to its default value of 18dBu.

Note: If the applied audio level exceeds the value set for the Headroom the processed audio will be clipped.

5.2.12.2 ADC B Headroom

Use the slider bar to adjust the ADC B headroom between +12 dBu and +24dBu in 0.5dB steps

Click reset to return the control to its default value of 18dBu.

5.2.12.3 DAC 1 level

Use the slider bar to adjust the DAC 1 audio output level for 0dBFS between +12 dBu and +24dBu in 0.5dB steps

DAC 1 outputs audio selected under the Audio A tab..

5.2.12.4 DAC 2 level

Use the slider bar to adjust the DAC 2 audio output level for 0dBFS between +12 dBu and +24dBu in 0.5dB steps

DAC 2 outputs audio selected under the Audio B tab..

5.2.12.5 Embed grp 1 AB to Embed grp 4 CD

Select the embed group for audio selected under the Audio A to D tabs.

5.2.12.6 Tone Frequency

Use the slider to adjust the tone frequency between 100Hz and 10kHz in 100Hz steps.

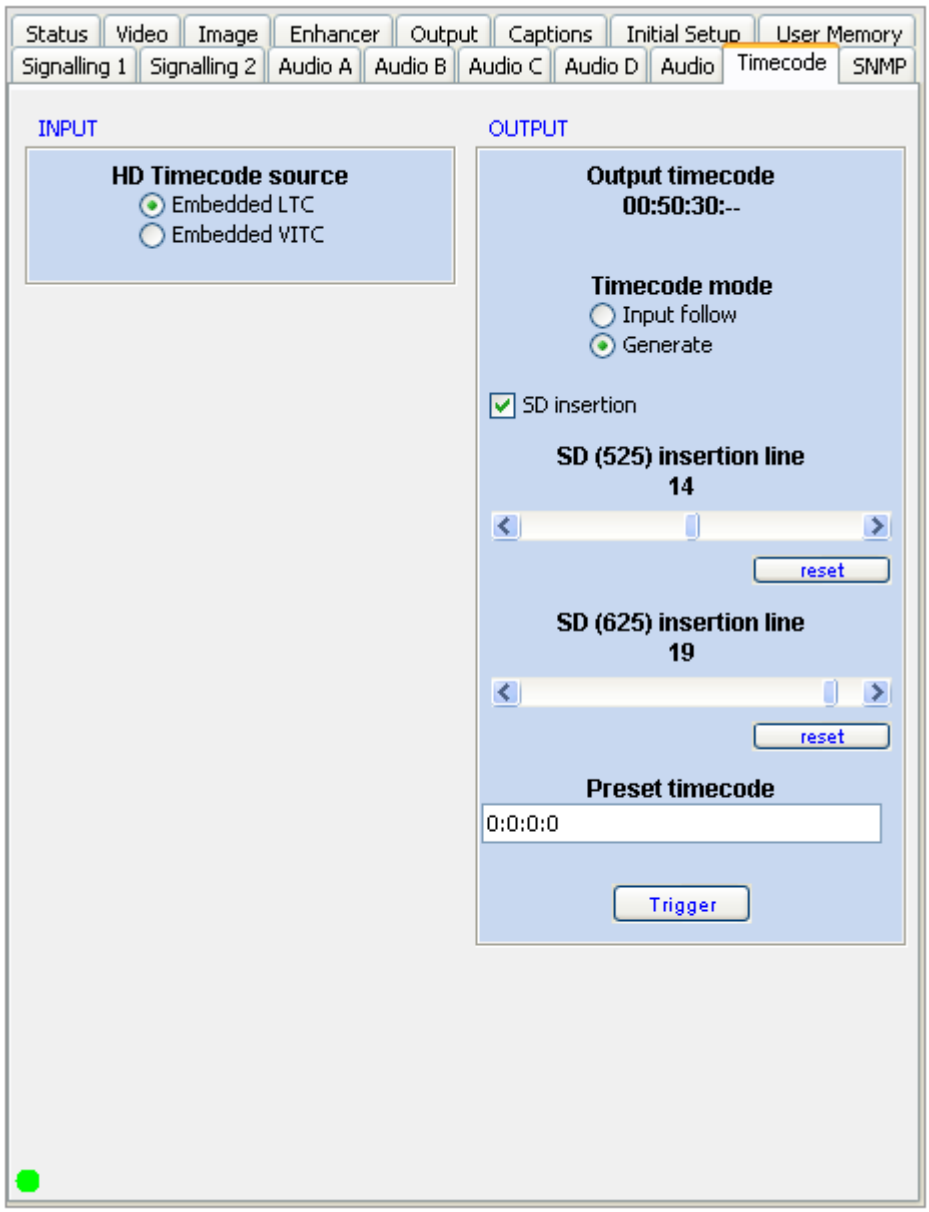
5.2.12.7 Audio Delay

Use this control to adjust the audio delay -40ms to +80ms relative to the video delay.

The current audio and video delays are displayed in the **Delay Status** section to the right.

5.2.13 Timecode

The settings on the Timecode tab specify the unit's timecode options.



5.2.13.1 HD Timecode source

HD timecode can either be embedded as:

- Embedded LTC: The HD input video timecode is read from the embedded LTC signals (SMPTE RP188)
- Embedded VITC: The HD input video timecode is read from the embedded VITC signals (SMPTE RP188)

5.2.13.2 Output timecode

This displays the current value of the generated output timecode.

5.2.13.3 Timecode mode

The TBS800 timecode functions can operate in one of two modes:

- Input follow: The output timecode will follow the input timecode.
- Generate: The TBS800 will generate its own timecode signal.

5.2.13.4 SD insertion

Select this option to enable SD timecode insertion. The timecode will be inserted on the line that is specified below.

5.2.13.5 SD (525) insertion line

Use the slider bar to specify the line on which SD (525) timecode information will be inserted. Click Reset to return the insertion line to its default value of 14.

5.2.13.6 SD (625) insertion line

Use the slider bar to specify the line on which SD (625) timecode information will be inserted. Click Reset to return the insertion line to its default value of 19.

5.2.13.7 Preset timecode

In this field you can specify the value at which the timecode starts.

5.2.13.8 Trigger

Click Trigger to initiate a timecode event.

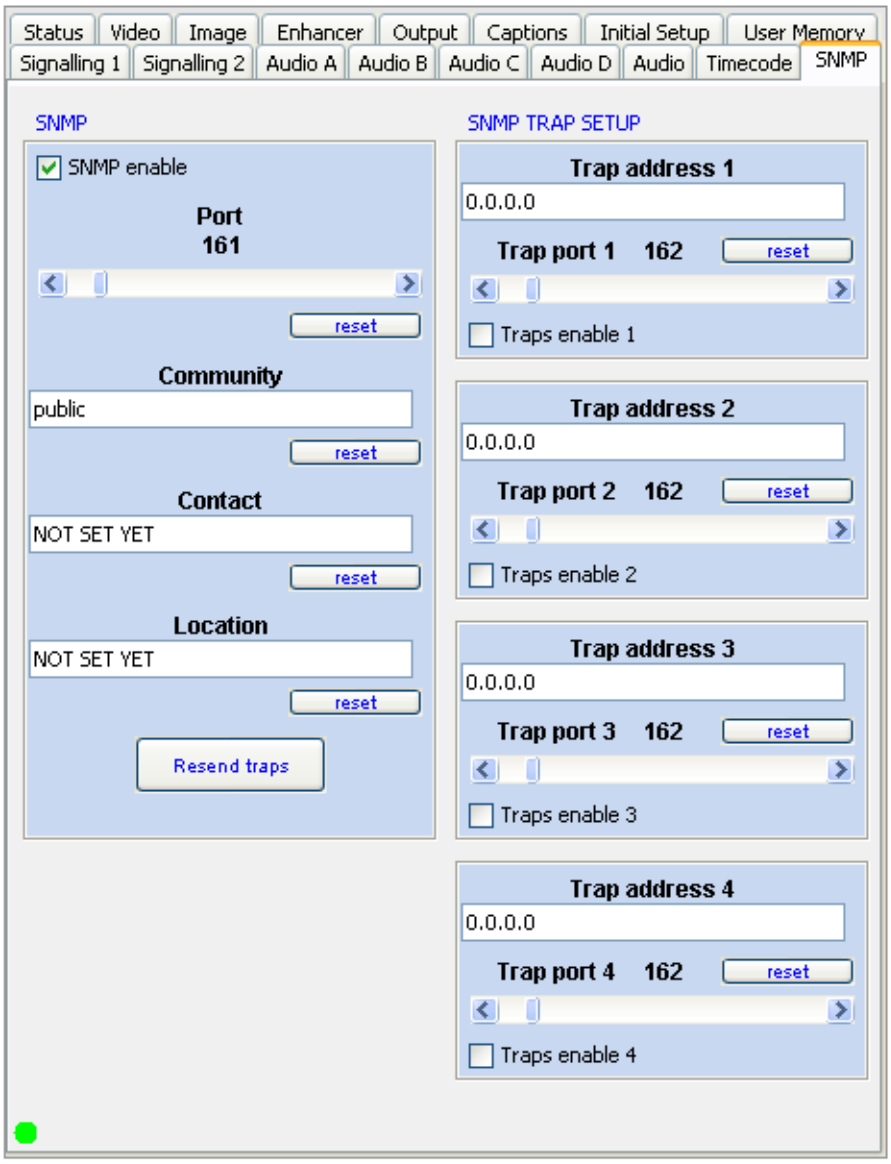
5.2.14 SNMP

SNMP is an acronym for Simple Network Management Protocol. It is a protocol within the TCP/IP suite and because of the popularity of TCP/IP, SNMP has become the de facto standard for managing data networks.

SNMP is a simple request / response protocol that communicates information values between two types of software entities:

- SNMP Managers (also called SNMP Applications or NMS - Network Management Systems)
- SNMP Agents (also called Elements, Devices or Units)

The information available from an SNMP agent is defined by sets of files called Management Information Base or MIB.



5.2.14.1 SNMP enable

Select the SNMP enable check box to activate the unit's SNMP functions.

5.2.14.2 Port

Use the slider bar to specify the port on which the unit listens for messages from the SNMP manager. The SNMP default port is 161 but other ports may be used.

5.2.14.3 Community

This allows you to set the SNMP community to public or private, the default is public.

5.2.14.4 Contact

Enter the contact email of the unit's SNMP agent.

5.2.14.5 Location

This specifies the physical location of the unit.

5.2.14.6 Resend Traps

When clicked the unit resends all current SNMP traps / notifications.

5.2.14.7 SNMP Trap Setup

SNMP traps 1 to 4 are configured in this section. The controls are the same for each.

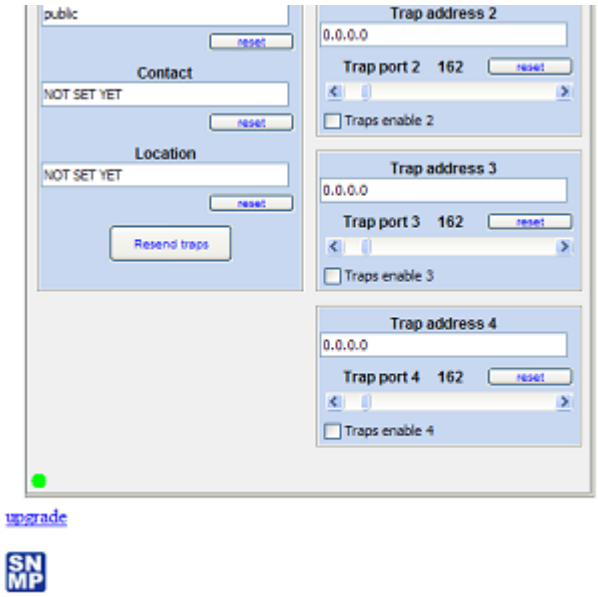
- *Trap address 1 - 4:* Configures the IP address to which traps (notifications) are sent. This address should correspond to the IP address of the SNMP Manager.
- *Trap port 1 - 4:* Configures the destination UDP port for traps. The manager should be configured to listen for traps on this port. The SNMP default is 162 but other port numbers may be used.
- *Trap enable 1 - 4:* Select the check box to enable the corresponding trap destination.

5.2.14.8 Obtaining MIB files

MIB files are stored locally on the unit.

To obtain the MIB files:

1. Click the SNMP logo in the lower-left corner of the browser window. The windows file dialog displays.



2. Save the files locally for use with your SNMP application.

Note: Included with the MIB files is a CSV file that details the available SNMP functions.

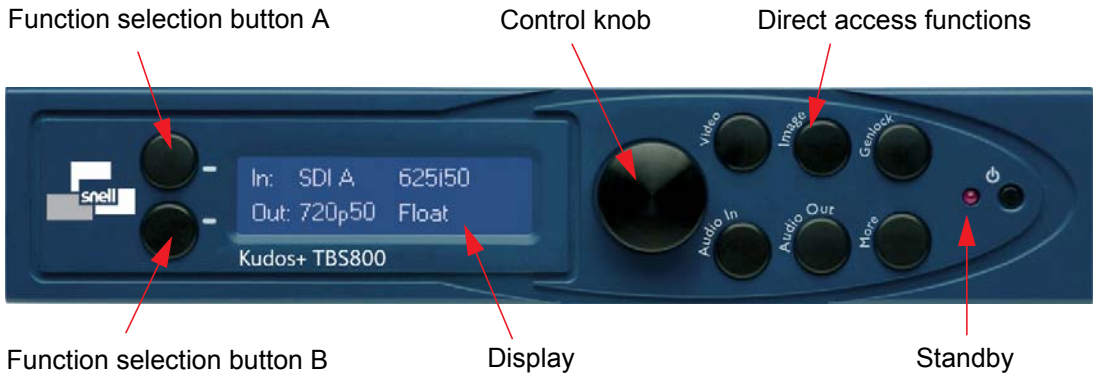
6. Operation via the Front Panel

The TBS800 can be controlled by means of the Front Panel interface. The layout of the active front panel is shown below. Applying power activates the unit; if it was powered down in standby mode, switch on using the standby button. Direct access functions are available via six buttons. The action of the control knob and function selection buttons are indicated by the display and vary depending upon the mode selected.

Note: Certain settings and functions cannot be adjusted by means of the front panel, and can only be adjusted by means of the Web interface. These are:

- Net Mask
- Default IP Add
- Default Gateway

6.1 Front Panel Control Descriptions



Item	Description
Standby	When the unit is switched off the LED is illuminated. When the unit is switched on the display and controls are active and the LED is extinguished.
Display	Provides status and control information
Control knob	Rotate to scroll through functions
Function selection button A	This button has two functions 1. This button toggles between the default screen (showing the status of the input, output and genlock) and the Input selection screen. 2. When the word 'Back' is shown on the display adjacent to this button, pressing it returns to the previous menu.
Function selection button B	The button has three functions 1. This selects the Output selection screen. 2. When the word 'Select' is shown on the display adjacent to this button, pressing it selects the desired user selection 3. When the word 'Preset' is shown on the display adjacent to this button, pressing it presets the chosen control.
Direct access functions	These buttons provide access to the unit's Video, Image, Genlock, Audio In and Audio Out menus, as well as to the More menu, which provides access to additional setup functions.

Note: When an item is selected, it is highlighted with a - symbol at the beginning and end of the name. For example `-625i-`.

6.2 Front Panel Menu Structure

Nearly all of the controls available via the Web Interface are also accessible via the front panel. This section describes where the options described in the previous section can be located on the front panel and provides links to the descriptions.

6.2.1 Default Display

The default display indicates the current input and output and allows them to be selected.

- Press function select button A and rotate the control knob to change the input standard. See section 5.2.3 on page 28 for more information.
- Press function select button B and rotate the control knob to change the output standard. See section 5.2.6 on page 36 for more information.

6.2.2 Video Direct Access Button

The Video direct access button provides access to the unit's video settings. Press the button repeatedly to scroll through the following settings. Settings are adjusted by means of the control knob (to scroll through a list of options) and/or function select button B (to select a value or enable/disable and feature).

The video menu comprises the following functions:

Function	Reference
Black Level	See section 5.2.3.1 on page 28 for more information.
Contrast	See section 5.2.3.2 on page 28 for more information.
Color saturation	See section 5.2.3.3 on page 28 for more information.
Y gamma	See section 5.2.3.4 on page 29 for more information.
Legalizer	See section 5.2.3.5 on page 29 for more information.
NTSC hue	See section 5.2.3.7 on page 29 for more information.
Analog ped in	See section 5.2.3.8 on page 29 for more information.
Comb filter	See section 5.2.3.9 on page 29 for more information.
Analog ACC	See section 5.2.3.10 on page 29 for more information.
Analog CTI	See section 5.2.3.11 on page 30 for more information.
Analog NR	See section 5.2.3.12 on page 30 for more information.
CVBS out std	See section 5.2.3.13 on page 30 for more information.
CVBS out format	See section 5.2.3.14 on page 30 for more information.

6.2.3 Image Direct Access Button

The Image direct access button provides access to the unit's image settings. Press the button repeatedly to scroll through the following settings. Settings are adjusted by means of the control knob (to scroll through a list of options) and/or function select button B (to select a value or enable/disable and feature).

The Image menu comprises the following functions:

Function	Reference
Still process	See section 5.2.4.1 on page 31 for more information.
Enhanced still	See section 5.2.4.2 on page 31 for more information.
Auto zoom	See section 5.2.4.3 on page 32 for more information.
Manual zoom	See section 5.2.4.4 on page 32 for more information.
Convert scaling	See section 5.2.4.9 on page 32 for more information.
SD output format	See section 5.2.4.11 on page 32 for more information.
SD input format	See section 5.2.4.10 on page 32 for more information.
Use signalling	See section 5.2.4.14 on page 33 for more information.
Unknown is man	See section 5.2.4.14 on page 33 for more information.
Sync mode	See section 5.2.4.13 on page 33 for more information.
SD half line blank	See section 5.2.4.7 on page 32 for more information.
VANC blank	See section 5.2.4.8 on page 32 for more information.
H enhance	See section 5.2.5.1 on page 34 for more information.
H frequency	See section 5.2.5.2 on page 34 for more information.
H presets	See section 5.2.5.3 on page 35 for more information.
H gain	See section 5.2.5.4 on page 35 for more information.
H noise rejection	See section 5.2.5.5 on page 35 for more information.
H detail	See section 5.2.5.10 on page 36 for more information.
H sharpness	See section 5.2.5.11 on page 36 for more information.
V enhance	See section 5.2.5.6 on page 35 for more information.
V frequency	See section 5.2.5.7 on page 35 for more information.
V level	See section 5.2.5.8 on page 35 for more information.

6.2.4 Genlock Direct Access Button

The Genlock direct access button provides access to the unit's genlock settings. Press the button repeatedly to scroll through the following settings. Settings are adjusted by means of the control knob (to scroll through a list of options) and/or function select button B (to select a value or enable/disable and feature).

The Genlock menu comprises the following functions:

Function	Reference
Genlock	See section 5.2.6.3 on page 37 for more information.
H phase	See section 5.2.6.4 on page 37 for more information.
V phase	See section 5.2.6.5 on page 37 for more information.

6.2.5 Audio In Direct Access Button

The Audio In direct access button provides access to the unit's audio input settings. Press the button repeatedly to scroll through the following settings. Settings are adjusted by means of the control knob (to scroll through a list of options) and/or function select button B (to select a value or enable/disable and feature).

The Audio In menu comprises the following functions:

Function	Reference
Audio in A left to Audio in D Left	See section 5.2.11.1 on page 45 for more information.
Audio in A right to Audio in D right	See section 5.2.11.2 on page 45 for more information.
A L de-embed ch to D L de-embed ch	See section 5.2.11.1 on page 45 for more information.
A R de-embed ch to D R de-embed ch	See section 5.2.11.1 on page 45 for more information.
Pair routing A to Pair routing D	See section 5.2.11.4 on page 45 for more information.
Non-PCM A to Non-PCM D	See section 5.2.11.5 on page 45 for more information.
ADC A headroom	See section 5.2.12.1 on page 46 for more information.
ADC B headroom	See section 5.2.12.2 on page 46 for more information.
Tone frequency	See section 5.2.12.6 on page 47 for more information.
SDI Audio present	See section 5.2.2.5 on page 26 for more information.
AES present	See section 5.2.2.6 on page 26 for more information.
AES source	See section 5.2.12.6 on page 47 for more information.

6.2.6 Audio Out Direct Access Button

The Audio Out direct access button provides access to the unit's audio input settings. Press the button repeatedly to scroll through the following settings. Settings are adjusted by means of the control knob (to scroll through a list of options) and/or function select button B (to select a value or enable/disable and feature).

The Audio Out menu comprises the following functions:

Function	Reference
Gain A left to Gain D left	See section 5.2.11.6 on page 45 for more information.
Gain A right to Gain D right	See section 5.2.11.6 on page 45 for more information.
Embed grp 1 AB to Embed grp 4 CD	See section 5.2.12.5 on page 47 for more information.
DAC 1 level	See section 5.2.12.3 on page 47 for more information.
DAC 2 level	See section 5.2.12.4 on page 47 for more information.
Audio delay	See section 5.2.12.7 on page 47 for more information.
Current audio delay	This displays the unit's current audio delay.
Current video delay	This displays the unit's current video delay.

6.2.7 More Direct Access Button

The More direct access button provides access to those settings that do not fall under any if the categories controlled by the other direct access buttons. These include, but are not limited to, the unit's SNMP settings, Signalling Settings, Timecode settings and Configuration settings. Press the More button and then rotate the control knob to scroll through the following settings. Settings are adjusted by means of the control knob (to scroll through a list of options) and/or function select button B (to select a value or enable/disable and feature).

The More menu comprises the following functions:

Function	Reference
User Mem Recall	See section 5.2.8 on page 39 for more information.
User Mem Save	See section 5.2.8 on page 39 for more information.
User Men Clear	See section 5.2.8 on page 39 for more information.
Timecode	This displays the current timecode.
HD TC source	See section 5.2.13.1 on page 48 for more information.
Output timecode	See section 5.2.13.2 on page 48 for more information.
Timecode mode	See section 5.2.13.3 on page 49 for more information.
SD TC Enable	See section 5.2.13.4 on page 49 for more information.
SD(525) TC line	See section 5.2.13.5 on page 49 for more information.
SD(625) TC line	See section 5.2.13.6 on page 49 for more information.
Pattern	See section 5.2.4.5 on page 32 for more information.
Freeze	See section 5.2.4.6 on page 32 for more information.
Safe area marks	See section 5.2.4.12 on page 33 for more information.
In signalling (SD)	See section 5.2.9.1 on page 40 for more information.
L23 in line	See section 5.2.9.4 on page 42 for more information.
L23 out line	
L23 out	
L23 out format	
L23 user bits	
L23 force bits	
VI out	See section 5.2.9.3 on page 41 for more information.
VI out format	
VI pass data	
SMPTE 2016 out	See section 5.2.9.2 on page 41 for more information.
Force RP186	See section 5.2.10 on page 43 for more information.
Force AFD	
Force ETSI	
Force 2016	
Captions	See section 5.2.2.8 on page 26 for more information.
CEA608cc	See section 5.2.7.1 on page 38 for more information.
CEA708cc	
CEA708 line	
WST line	See section 5.2.7.2 on page 38 for more information.
WST output	
RDD08 i/p line	
RDD08 Output	
RDD08 o/p line	

Function	Reference
SNMP enable	See section 5.2.14.1 on page 50 for more information.
SNMP port	See section 5.2.14.2 on page 50 for more information.
Trap address 1 to Trap address 4	See section 5.2.14.7 on page 51 for more information.
Trap port 1 to Trap port 4	
SNMP traps 1 to SNMP traps 4	
Resend traps	See section 5.2.14.6 on page 51 for more information.
DHCP	See section 5.2.1.1 on page 24 for more information.
Version	See section 5.2.1.6 on page 24 for more information.
MAC address	This displays the unit's MAC address.
Serial number	This displays the unit's serial number.
Licence file	This displays the currently installed license file information.
Current IP add	This displays the unit's current IP address.
IP net mask	See section 5.2.1.2 on page 24 for more information.
Default IP add	
Default gateway	
FP lock	This enables or disables the front panel lock.
Factory defaults	See section 5.2.1.4 on page 24 for more information.
About	This displays information about the TBS800 unit.

Appendix A. Automated Aspect Ratio Control

A.1 Recognized Input Signalling

The TBS800 can be configured to respond automatically to a variety of Aspect Ratio signalling standards, controlling both the ARC conversion that is performed, and the new signalling that can be inserted at the unit's video outputs.

The following table shows how the three signalling content types are interpreted, depending on whether the signalling was received from an SD or HD source.

- SMPTE 2016 can be extracted from both SD and HD sources
- AFD can be extracted from SD Video Index, or 625i with L23
- ETSI is only extractable from 625i with L23

Detected Signalling			Interpretation	
SMPTE 2016	**AFD**	**ETSI**	**SD Input**	**HD Input**
4/3 AFD 8 Coded Frame 4/3 AFD 9 Coded Frame	4/3 AFD 0 Coded Frame	4/3 FF	Normal 4/3	Normal 16/9
4/3 AFD 8 Coded Frame 4/3 AFD 9 Coded Frame	4/3 AFD 1 – 4/3	4/3 FF	Normal 4/3	Normal 16/9
4/3 AFD 10 16/9LB	4/3 AFD 2 – 16/9	16/9 Center	16/9 LB	Normal 16/9
4/3 AFD 11 14/9 LB	4/3 AFD 3 – 14/9	14/9 Center	Normal 4/3	Normal 16/9
4/3 AFD 4 > 16/9 LB	4/3 AFD 4 4/3	>16/9 Center	16/9 LB	Normal 16/9
4/3 AFD 13 4/3 Alt 14/9	4/3 AFD 5 – 4/3 SP 14/9	SP 14/9	Normal 4/3	Normal 16/9
4/3 AFD 14 16/9LB Alt 14/9	4/3 AFD 6 – 16/9 SP 14/9		16/9LB	Normal 16/9
4/3 AFD 15 16/9LB Alt 4/3	4/3 AFD4/3 7 – 16/9 SP 4/3		16/9LB	Normal 16/9
16/9 AFD 2 Coded Frame 16/9 AFD 10 16/9 16/9 AFD 8 Coded Frame	16/9 AFD 0 - Coded Frame	16/9FF	16/9 Anamorphic	Normal 16/9
16/9 AFD 9 4/3PB	16/9 AFD 1 - 4/3		16/9 Anamorphic	Normal 16/9
16/9 AFD 2 Coded Frame 16/9 AFD 10 16/9 16/9 AFD 8 Coded Frame	16/9 AFD 2 – 16/9	16/9FF	16/9 Anamorphic	Normal 16/9
16/9 AFD 3 14/9PB 16/9 AFD 11 14/9PB	16/9 AFD 3 - 14/9		16/9 Anamorphic	Normal 16/9
16/9 AFD 4 >16/9LB	16/9 AFD 4 – AFD 4		16/9 Anamorphic	Normal 16/9
16/9 AFD 13 4/3PB Alt 14/9	16/9 AFD 5 - 4/3 SP 14/9		16/9 Anamorphic	Normal 16/9
16/9 AFD 14 16/9 Alt 14/9	16/9 AFD 6 – 16/9 SP 14/9		16/9 Anamorphic	Normal 16/9
16/9 AFD 15 16/9 Alt 4/3	16/9 AFD 7 – 16/9 SP 4/3		16/9 Anamorphic	Normal 16/9
4/3 AFD 3 14/9LB Top		14/9 Top	Normal 4/3	Normal 16/9
4/3 AFD 2 16/9LB Top		16/9 Top	Normal 4/3	Normal 16/9
4/3 AFD 0 Undefined			Normal 4/3	Normal 16/9
4/3 AFD 1 Reserved			Normal 4/3	Normal 16/9
4/3 AFD 5 Reserved			Normal 4/3	Normal 16/9
4/3 AFD 6 Reserved			Normal 4/3	Normal 16/9
4/3 AFD 7 Reserved			Normal 4/3	Normal 16/9
4/3 AFD 12 Reserved			Normal 4/3	Normal 16/9
16/9 AFD 0 Undefined			16/9 Anamorphic	Normal 16/9
16/9 AFD 1 Reserved			16/9 Anamorphic	Normal 16/9
16/9 AFD 5 Reserved			16/9 Anamorphic	Normal 16/9
16/9 AFD 6 Reserved			16/9 Anamorphic	Normal 16/9
16/9 AFD 7 Reserved			16/9 Anamorphic	Normal 16/9
16/9 AFD 12 Reserved			16/9 Anamorphic	Normal 16/9

A.2 Applied Signalling

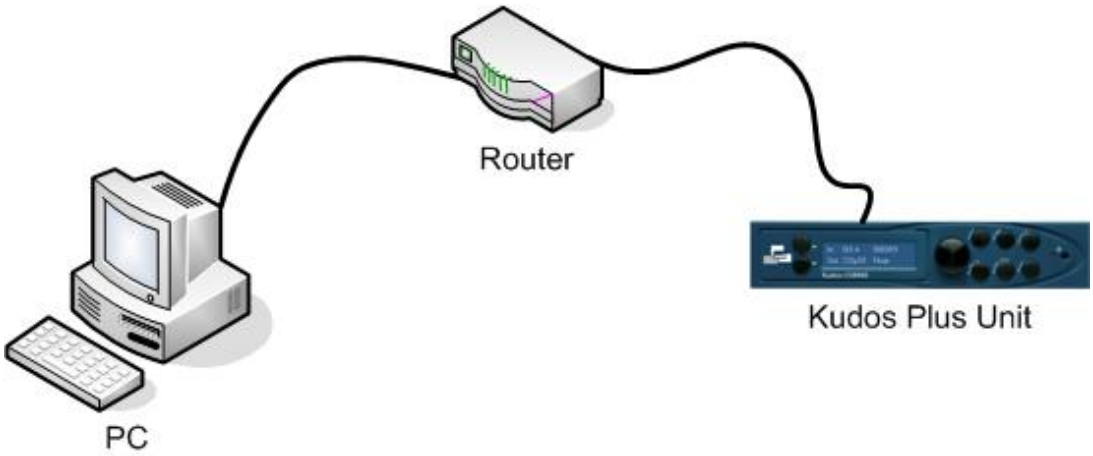
The "Interpretation type", from table 1, for example "Normal 4/3" is used in the table 2, along with the conversion settings, to identify what conversion will be performed (the "Output" column), and its associated signalling.

Conversion					Signalling Out		
Conversion type	**Input**	**Convert Scaling**	**SD Out Format**	**Output**	**SMPTE 2016**	**AFD**	**ETSI**
HD -> HD	HD Normal 16/9	X	X	HD Normal 16/9	16/9 AFD 8 Coded Frame		
SD -> HD	SD Normal 4/3	Fit to width	X	HD Normal 16/9	16/9 AFD 8 Coded Frame		
	SD Normal 4/3	14/9	X	HD Normal 16/9	16/9 AFD 11 14/9PB		
	SD Normal 4/3	Fit to height	X	HD Normal 16/9	16/9 AFD 9 4/3PB		
	SD 16/9 LB	X	X	HD Normal 16/9	16/9 AFD 8 Coded Frame		
	SD 16/9 Anamorphic	X	X	HD Normal 16/9	16/9 AFD 8 Coded Frame		
HD -> SD	HD Normal 16/9	Fit to width	Normal 4/3	SD Normal 4/3	4/3 AFD 10 16/9LB	4/3 AFD 2 -16/9	16/9 Centre
	HD Normal 16/9	14/9	Normal 4/3	SD Normal 4/3	4/3 AFD 11 14/9LB	4/3 AFD 3 -14/9	14/9 Centre
	HD Normal 16/9	Fit to height	Normal 4/3	SD Normal 4/3	4/3 AFD 8 Coded Frame	4/3 AFD 0-Coded Frame	4/3 FF
	HD Normal 16/9	X	16/9 Anamorphic	SD 16/9 Anamorphic	16/9 AFD 8 Coded Frame	16/9 AFD 0-Coded Frame	16/9FF
SD -> SD	SD Normal 4/3	X	Normal 4/3	SD Normal 4/3	4/3 AFD 8 Coded Frame	4/3 AFD 0-Coded Frame	4/3 FF
	SD 16/9 LB	Fit to width	Normal 4/3	SD 16/9 LB	4/3 AFD 10 16/9LB	4/3 AFD 2 – 16/9	16/9 Centre
	SD 16/9 LB	14/9	Normal 4/3	SD 14/9 LB	4/3 AFD 11 14/9LB	4/3 AFD 3 -14/9	14/9 Centre
	SD 16/9 LB	Fit to height	Normal 4/3	SD Normal 4/3	4/3 AFD 8 Coded Frame	4/3 AFD 0-Coded Frame	4/3 FF
	SD 16/9 Anamorphic	Fit to width	Normal 4/3	SD 16/9 LB	4/3 AFD 10 16/9LB	4/3 AFD 2 – 16/9	16/9 Centre
	SD 16/9 Anamorphic	14/9	Normal 4/3	SD 14/9 LB	4/3 AFD 11 14/9LB	4/3 AFD 3 – 14/9	14/9 Centre
	SD 16/9 Anamorphic	Fit to height	Normal 4/3	SD Normal 4/3	4/3 AFD 8 Coded Frame	4/3 AFD 0-Coded Frame	4/3 FF
	SD Normal 4/3	Fit to width	16/9 Anamorphic	SD 16/9 Anamorphic	16/9 AFD 8 Coded Frame	16/9 AFD 0-Coded Frame	16/9FF
	SD Normal 4/3	14/9	16/9 Anamorphic	SD 16/9 Anamorphic	16/9 AFD 11 14/9PB	16/9 AFD 3 – 14/9	16/9FF
	SD Normal 4/3	Fit to height	16/9 Anamorphic	SD 16/9 Anamorphic	16/9 AFD 9 4/3PB	16/9 AFD 1 – 4/3	16/9FF
	SD 16/9 LB	X	16/9 Anamorphic	SD 16/9 Anamorphic	16/9 AFD 8 Coded Frame	16/9 AFD 0-Coded Frame	16/9FF
	SD 16/9 Anamorphic	X	16/9 Anamorphic	SD 16/9 Anamorphic	16/9 AFD 8 Coded Frame	16/9 AFD 0-Coded Frame	16/9FF

Appendix B. Upgrade Procedure

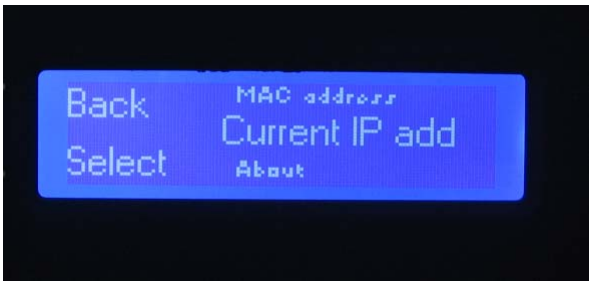
This appendix describes how to upgrade Kudos+Plus units via an IP connection.

The following diagram illustrates the basic connection process:

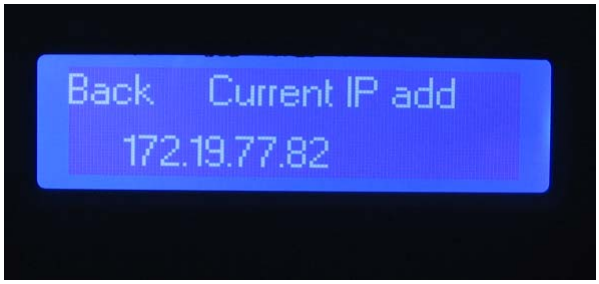


To perform an upgrade of any of the listed units, perform the following procedure.

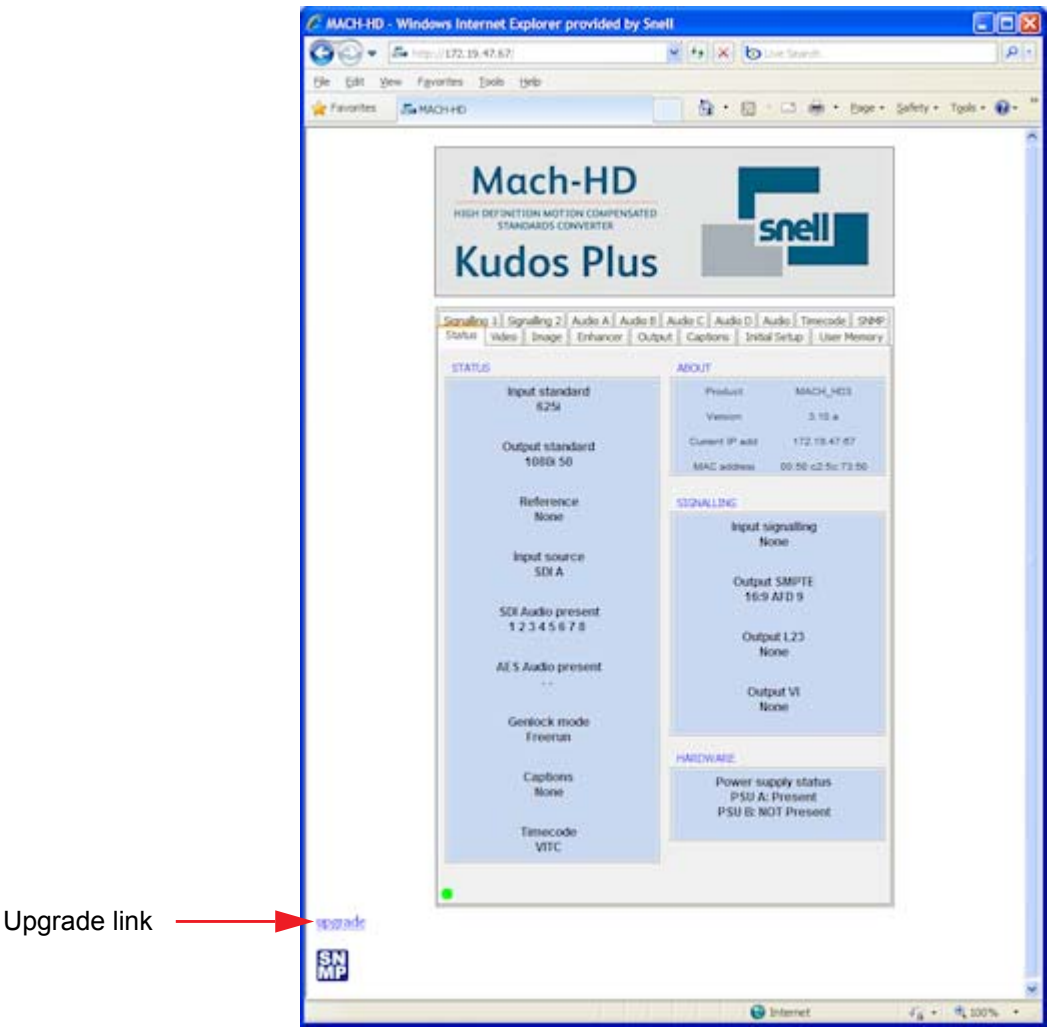
1. Confirm the IP address of the unit being upgraded. To do this, press the ‘More’ button on the front of the unit and then scroll through to menu to ‘Current IP add’.



2. Press Select, and note the IP address.

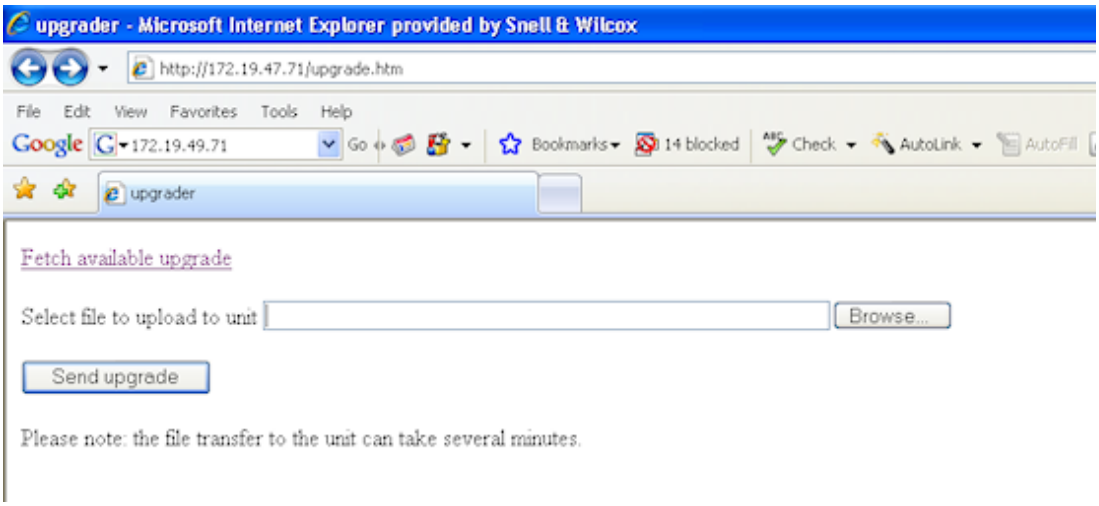


3. On the PC, open a Web browser. In the address bar enter the IP address of the unit to be upgraded.
4. Press return and confirm that the Web browser indicates that it is connecting to the unit. The unit's applet will upload to the PC.
5. Click the upgrade link in the lower-left corner of the browser window.



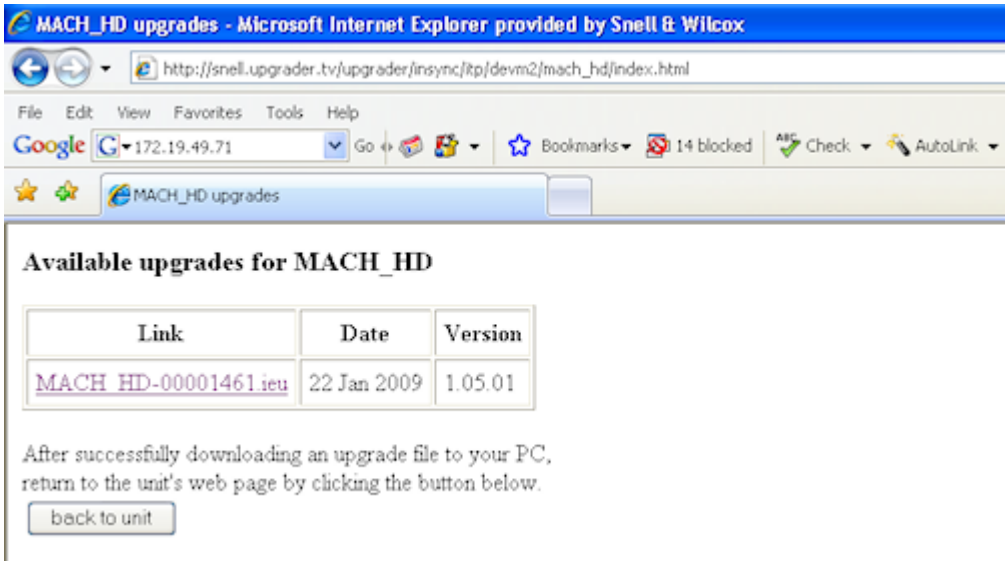
Upgrade link

The following page displays.



6. Click the Fetch available upgrade link.

   The following page displays.

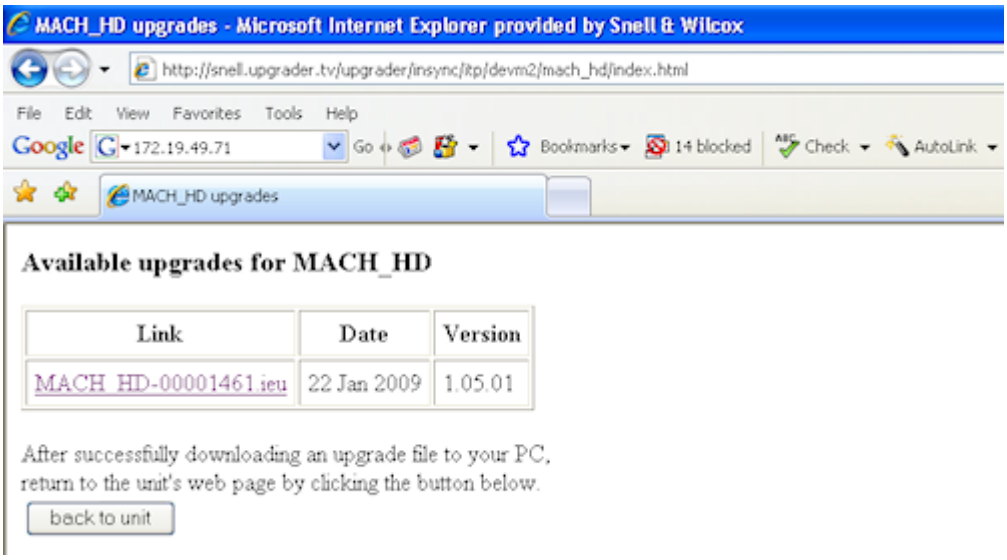


7. Click on the link to download the ".ieu" file.

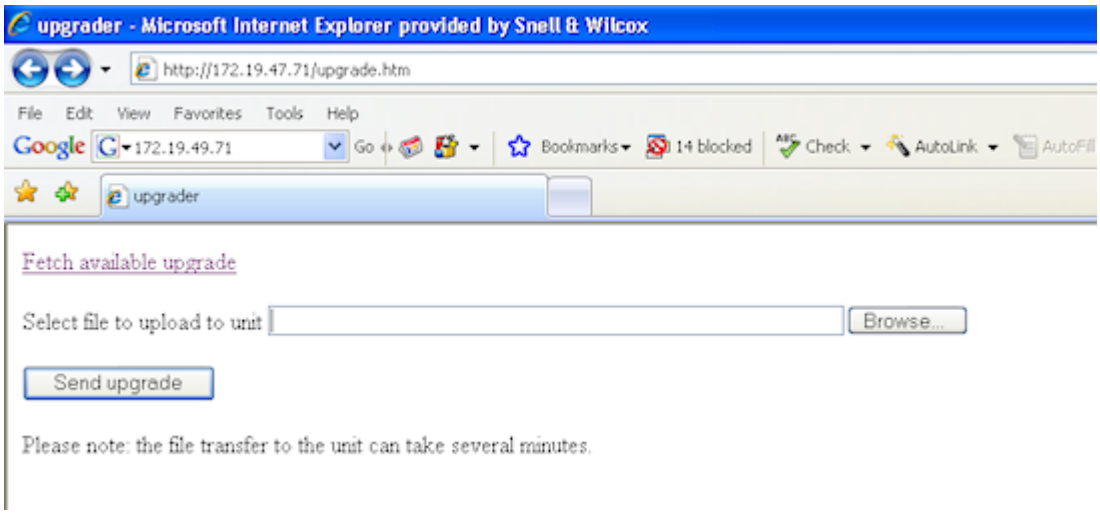
   A dialog displays, prompting the file to be saved.

8. Save the file to a suitable location on a local drive.

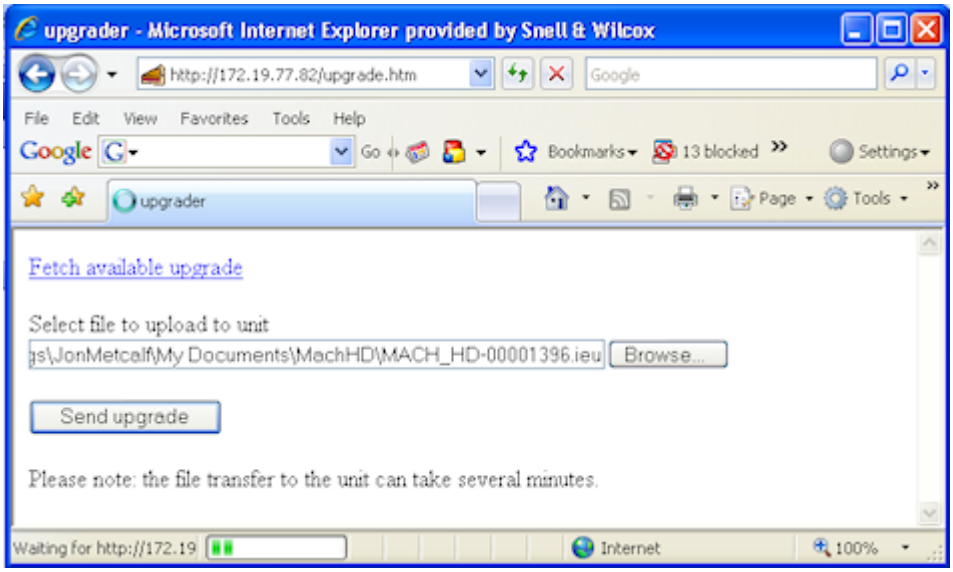
9. Click ‘back to unit’.



   The following page displays.



10. Browse to the downloaded file and click the Send upgrade button.



The Upgrader Tab rotates and activity is indicated in the Progress Bar.

Note: The upgrade process may take up to 10 minutes. Once the file transfer is complete, the software should self install.

11. When the upgrade process has completed, the unit will restart. At this point the Applet will lose connection with the unit being upgraded.

    The following page displays. This is normal.

12. Close the Web browser window.

13. To check that the new software has installed, press the More button and then scroll down to Version. Select this and check that it reflects the new update.

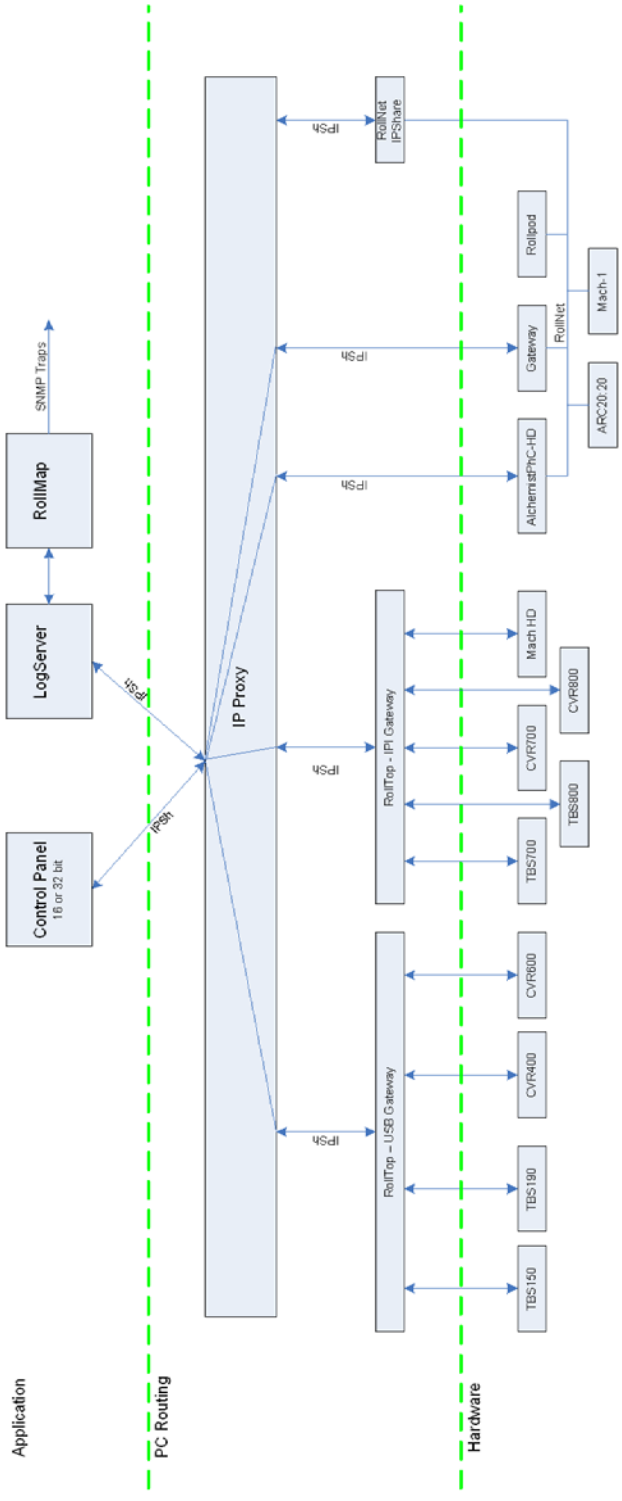
Appendix C. Kudos+ USB/IP Gateway

C.1 Overview

This document describes the USB/IP gateway software for Kudos+Plus TBS150, CVR400, TBS190, CVR600, CVR700, TBS700, CVR800, CVR900, TBS800 and Mach HD products.

The USB/IP Gateway is a PC application that allows the Kudos+Plus products listed above to be integrated into a RollCall Control and Monitoring network. Once integrated, supported products can be controlled by the 16 or 32 bit Control Panel and integrated into a complex RollMap control and monitoring solution.

The diagram below illustrates how RollTop fits into the RollCall suite.



The RollTop application is available free of charge from the Snell Service department.

Please contact your local Snell Sales office for more information about the other RollCall applications and services mentioned.

Note:

- Kudos+Plus products that connect through RollTop - USB Gateway, or RollTop - IPI Gateway do **not** support control from RollPod, RPAN, IQSPI or IQCGPI products.
- Mach1 and ARC20:20 products support native RollCall control and monitoring via their ArcNet connector. Further details can be found in the relevant product user manual.

To use the USB/IP Gateway to connect to and control Kudos+Plus units, the following steps must be performed.

1. The USB/IP software must be installed. See section C.2.
2. If control of a USB device (TBS150, CVR400, TBS190, CVR600) is required, the USB hardware must be set up. See section C.3.

   If USB control is not required, this step can be omitted.
3. The RollTop Gateway service must be started. See section C.4.
4. RollCall must be configured to connect to the computer running the RollTop Gateway service. See section C.5.

Only after the above configuration steps have been completed can you connect to a unit.

- To connect to a USB enabled unit (TBS150, CVR400, TBS190, CVR600). See section C.6
- To connect to an IP enabled unit (CVR700, TBS700, CVR900, TBS800, Mach HD). See section C.7.

Finally, the Log Server to be used (if required) can be specified. See section C.8.

C.2 Installation

Before you can connect to a Kudos+ unit by means of the USB/IP Gateway, you must install the USB/IP Gateway software.

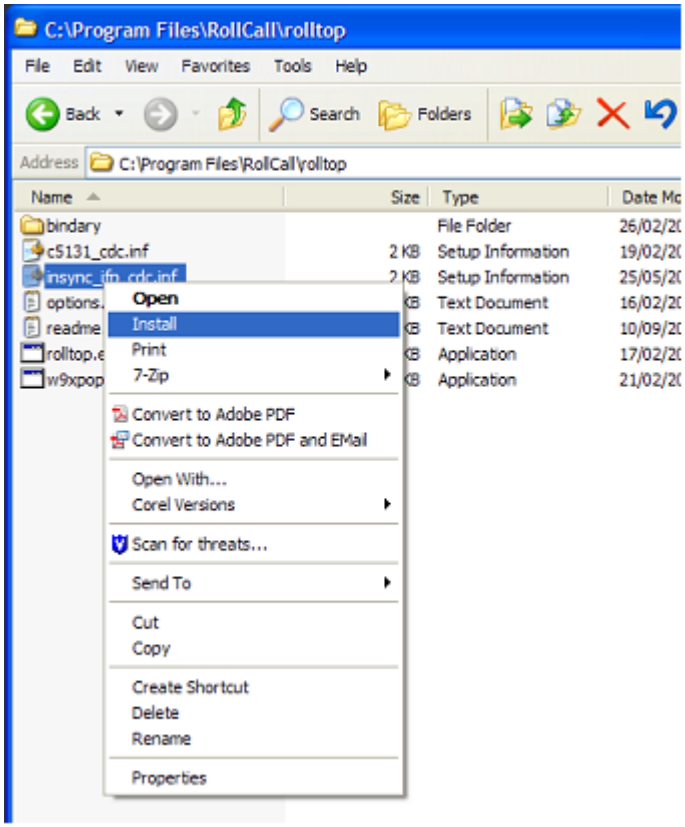
To install the USB/IP Gateway software:

1. Create a rolltop folder in the RollCall folder.

   That is, C:\Program Files\RollCall\rolltop

2. Unzip the contents of the provided ZIP file into this folder.

3. Right click on the insync_ifp_cdc.inf file in this folder (C:\Program Files\RollCall\rolltop\insync_ifp_cdc.inf), and from the menu that displays, select Install.



C.3 USB Setup

(Required for TBS150, CVR400, TBS190, CVR600 only)

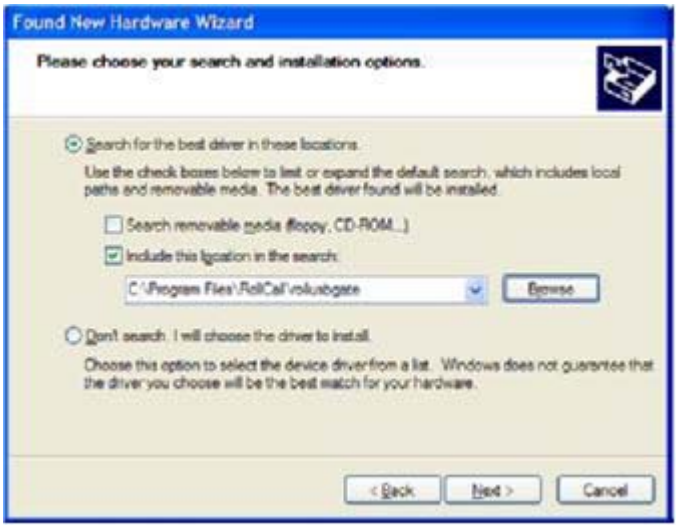
Plug in remote USB device to control; for example, TBS190UDV or CVR600UDV.

Note: If the hardware is not found, install the drivers manually from the installation directory.

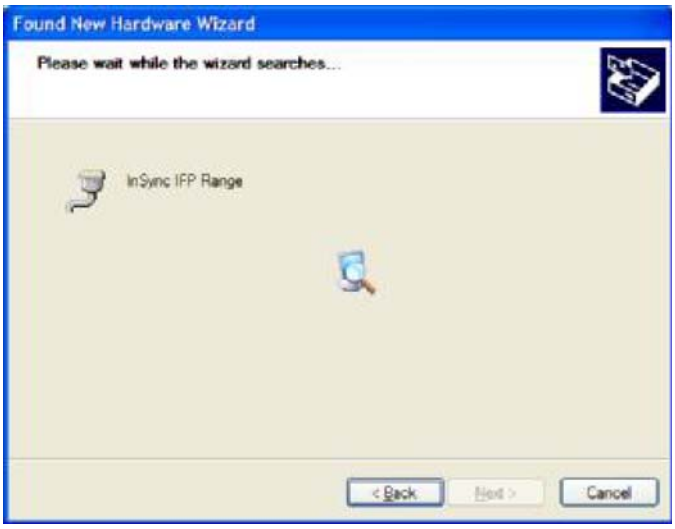
1. Select Install from a list or specific location and then click **Next**.

Note: Early versions of the product will be identified as AT89C5131 CDC USB to UART MGM instead of 'Insync IFP Range'.

2. Select Include this location in the search and browse to the RollTop folder. (`C:\Program Files\RollCall\rolltop`).



3. Wait for the new hardware wizard to search.



4. If this Hardware Installation warning displays, click **Continue Anyway**.

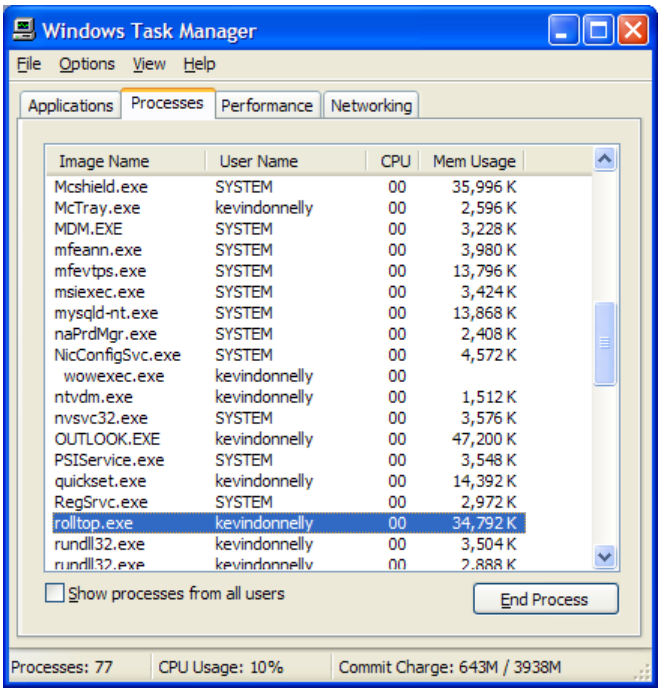
5. Click **Finish** to close the wizard.

C.4 Running the RollTop Gateway

The RollTop Gateway must be started before you can connect to any units.

To run the RollTop Gateway:

1. Double-click **rolltop.exe** to start the service.
   `(C:\Program Files\RollCall\rolltop\rolltop.exe)`
2. Check in the Windows Task manager to verify that the service is running.

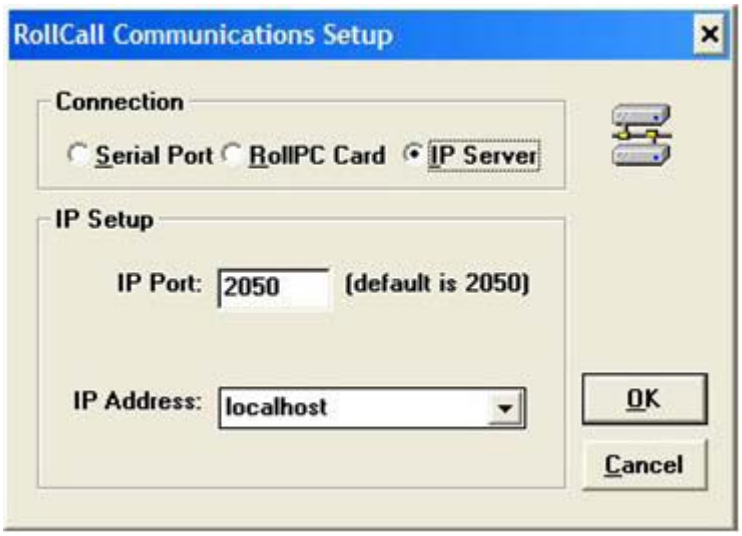


C.5 Configuring RollCall

To connect to the computer running the RollTop.exe program, RollCall needs to be configured.

Configure RollCall communications to:

- Use an IP Server connection
- Communicate via IP Port 2050
- Connect to IP Address Localhost



Note: For setups requiring connection to other RollCall networks, the RollCall IP Proxy should be used (advanced configuration settings to be advised).

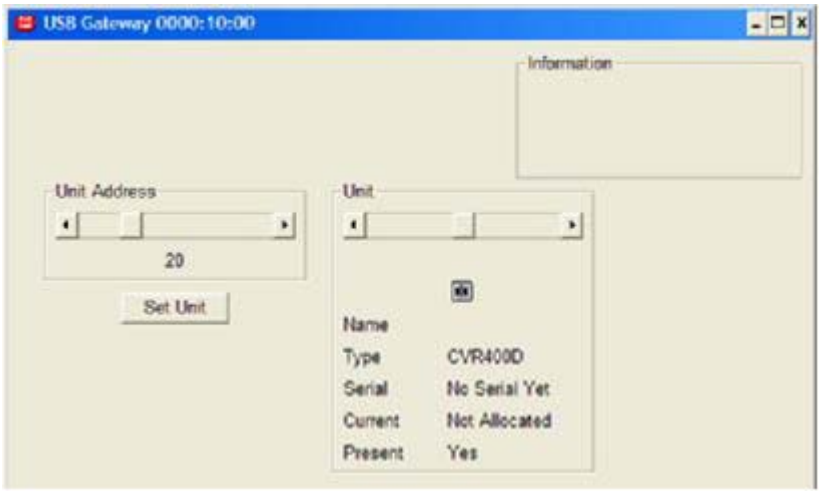
Refer to the RollCall Operator's Manual if you require further information about RollCall.

C.6 Connecting to a USB Unit

(CVR400, TBS150, TBS190, CVR600)

1. Open the RollCall listing and connect to the USB gateway.

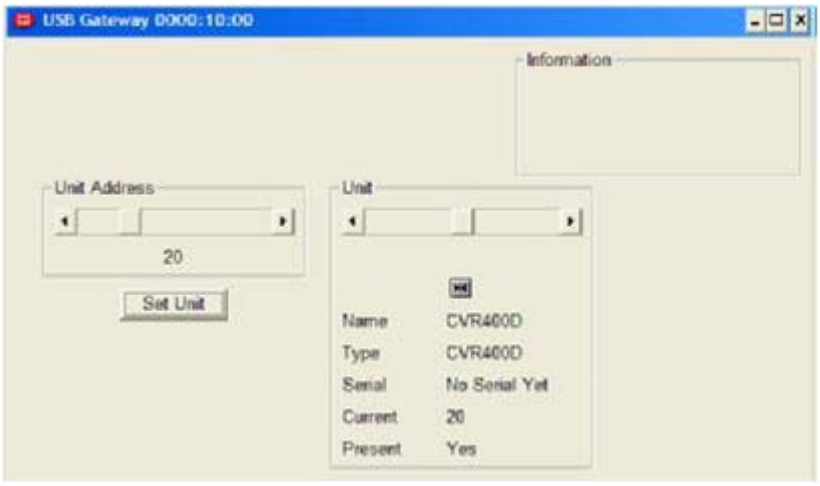
2. A RollCall address must be assigned to each unit. This is done in the USB gateway template.



First, select the desired address using the Unit Address slider bar.

Select the desired unit from the right. Click on the left and right arrows to find the desired unit, the Name, Type and Serial number of USB controllable units are displayed as they are browsed. Where a unit has already been allocated a serial number, this is shown. Additionally, if the unit is currently connected to the USB bus, this is also indicated.

When the desired unit has been reached, click Set Unit and the information will be updated.



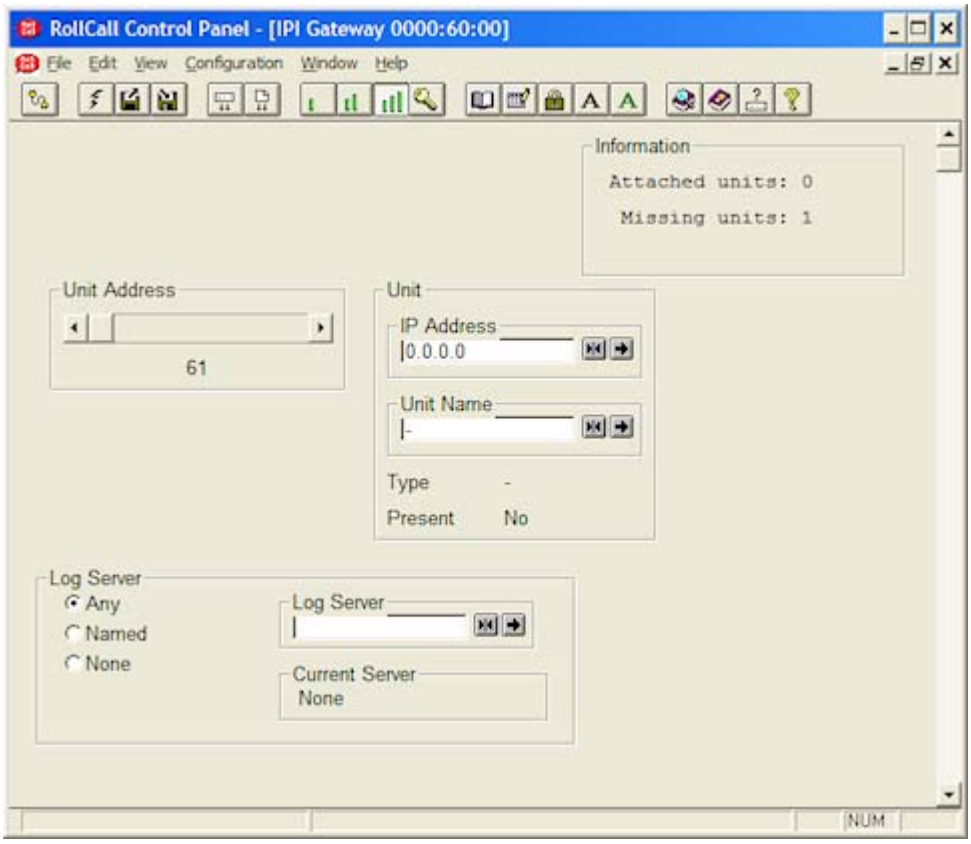
3. Re-open the RollCall listing, and the unit can now be seen. The unit can now be connected to.

C.7 Connecting to an IP Enabled Unit

(CVR700, TBS700, CVR800, CVR900, TBS800, Mach HD)

1. Open the RollCall listing and connect to the IPI Gateway.

2. A RollCall address must be assigned to each unit. This is done in the IPI Gateway template.



3. Using the Unit Address slider bar, select the desired address for the unit.

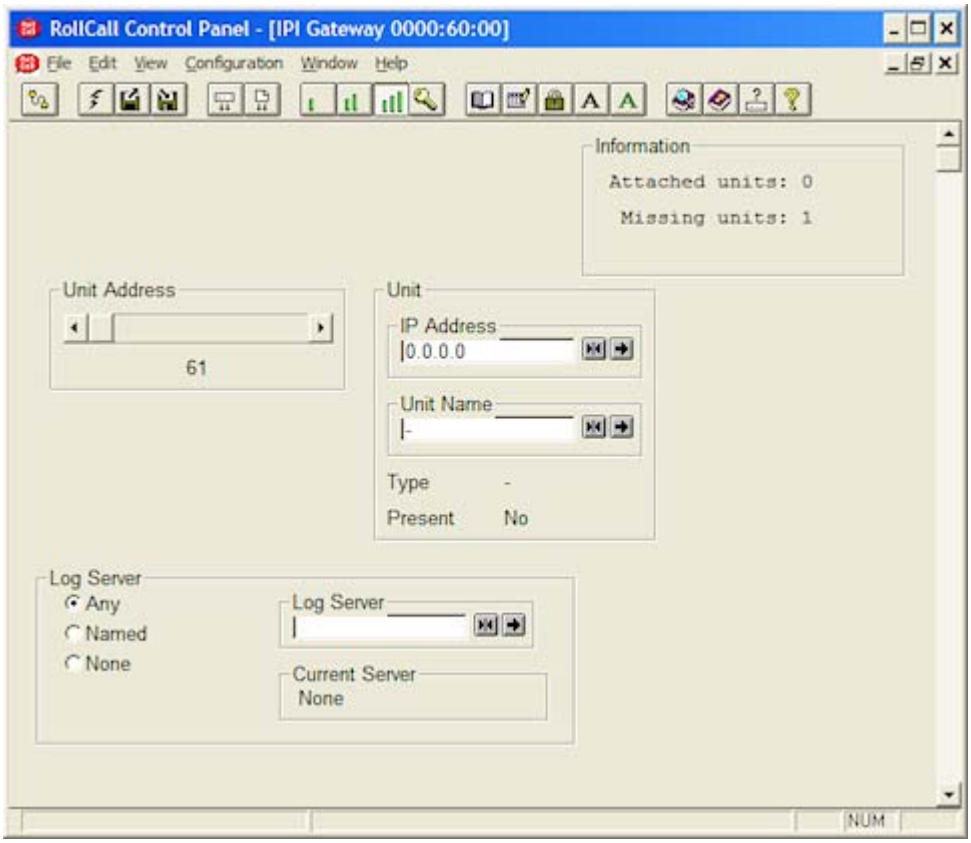
In the IP Address field, type the IP address of the unit. To determine the IP address of the unit, on the unit's front panel, press the More button and then select "Current IP addr" using the scroll knob.

After entering the IP Address, the arrow button next to the field will turn red. Click the arrow to confirm the change. If a unit is found at the specified IP address, this is indicated as well as its name and type. The unit name can be changed if required.

4. Re-open the RollCall listing, and the unit can now be seen. The unit can now be connected to.

C.8 Specifying a Log Server

The Log Server section on the USB Gateway and IPI Gateway templates enables the characteristics of the Log Server, if present, to be specified.



Any: When this option is selected, the Gateway will send information to any Log Server on the system.

Named: When this option is selected, the Gateway will only send log information to the Log Server specified in the Log Server field. Note that the name is case-sensitive.

None: When this option is selected, the Logging function will be disabled.

Current Server: This displays the name of the Log Server to which log information is being sent. If no Log Server is found on the system it will display None.

C.9 Troubleshooting

C.9.1 General Notes

- It is important to perform some actions in a specific order - Power up units, then run RollTop, then initiate your RollCall application.
- If you unplug USB cables, ensure that you plug them back into the same PC port
- RollTop may not function reliably with early revisions of some Kudos+Plus products. If your product is listed below, and you have one of the identified product revisions, please contact your local service facility for upgrade assistance.
  - TBS700V1.04, V1.05, V1.06a, V2.06a
  - CVR700V1.04, V1.05, V1.06a, V2.06a
  - Mach-HDV1.04, V1.05, V1.06a, V2.06a

  The product version can be identified from the front panel by pressing the More button and then selecting "Version" using the scroll knob.

C.9.2 USB device specifics

If a USB device does not re-appear after a unit has been power cycled, the following procedure should help

1. Quit your RollCall application (e.g. Control panel)
2. Use task manager to end the RollTop process
3. Re-run the RollTop Application
4. Re-start the RollCall application

If the above procedure does not work, it may be necessary to delete corrupt USB drivers through the PC's "Device Manager".

1. Start by physically disconnecting all Kudos+Plus USB devices from the PC.
2. If this is the first time you have used this procedure, add a new "System Variable"

   Start > Control Panel > System > Advanced > Environment Variables > System Variables > New
3. Enter the following:

   Variable Name: `DEVMGR_SHOW_NONPRESENT_DEVICES`

   Variable Value: `True`
4. Click OK to accept

Then, to clear USB device listings:

1. Start > Control Panel > Hardware > Device Manager > Ports (COM & LPT)
2. If there are any entries in the list described as “USB Device” with a yellow exclamation mark, right click over this and select “uninstall” agree to the prompt that follows.
3. If there are any menus like any of the following:

   "AT89C5153 CDC USB to UART MGM (COM16)"

   "InSync IFP Range"

Perform the uninstall procedure identified above (Right click, uninstall) Having deleted any potentially corrupt USB drivers, you will need to re-install your USB hardware as before - from the "USB Setup" step on page 5 of this document.

It is possible to verify that your USB device has installed OK by checking for an appropriate USB driver. Check the USB device listing,

Start > Control Panel > Hardware > Device Manager > Ports (COM & LPT)

If a unit is present and correctly installed, there will be an entry similar to one of the following:

"AT89C5153 CDC USB to UART MGM (COM16)"

"InSync IFP Range"

If you have more that one unit, you may see multiple devices listed.

