SNELL & WILCOX

HD Prefix CPP1000
High Definition Compression Pre-processor

Operator's Manual

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About this Manual

This manual contains information for the operation of the HD Prefix CPP1000 unit.

Update/revision sheets should replace existing pages when supplied by the agent or Snell & Wilcox Ltd.

Note that the text in the lower left-hand corner of the page shows the release date in day, month, year sequence and the current revision.

Important Notice

No responsibility is taken by the manufacturer or supplier for any non-compliance to EMC standards due to incorrect installation.

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.

Erklärung der Sicherheitssymbole

D

Dieses Symbol weist den Benutzer auf wichtige Informationen hin, die in der begleitenden Dokumentation enthalten sind.

Dieses Symbol zeigt an, dass gefährliche Spannung vorhanden ist. Es befinden sich keine vom Benutzer zu wartenden Teile im Geräteinneren. Dieses Gerät sollte nur von geschultem Personal gewartet werden

Sicherheits-Warnhinweise

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

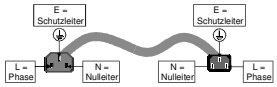
Die angeführten Service-/Reparatur-Anweisungen sind ausschließlich von qualifiziertem Service-Personal auszuführen. Um das Risiko eines lektroschocks zu reduzieren, führen Sie ausschließlich die im Benutzerhandbuch eschriebenen Anweisungen aus, es sei denn, Sie haben die entsprechende Qualifikation.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

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

Netzanschluss in anderen Ländern als der USA

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

GRÜN GELB E = Schutzleiter ⏚
BLAU N = Nulleiter
BRAUN L = P = Phase



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

Légende :

F

Ce symbole indique qu'il faut prêter attention et se référer au manuel.

Ce symbole indique qu'il peut y avoir des tensions électriques à l'intérieur de l'appareil. Ne pas intervenir sans l'agrément du service qualifié.

Précaution d'emploi :

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

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

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

Câble secteur de pays autres que les Etats-Unis

L'équipement est livré avec un câble secteur au standard IEC, moulé mâle/femelle.
Si vous souhaitez changr la prise mâle de votre cordon, voici les codes couleurs des fils :

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

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

Explicación de los Símbolos de Seguridad

ESP

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

Éste símbolo indica que voltajes peligrosos están presentes en el interior. No hay elementos accesibles al usuario dentro.
Esta unidad sólo debería ser tratada por personal cualificado.

Advertencias de Seguridad

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

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

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

Conexión de alimentación en otros países que no sean USA

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

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

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

Simboli di sicurezza: (I)

Questo simbolo indica l'informazione importante contenuta nei manuali appartenenti all'apparecchiatura. Consultare il manuale.

Questo simbolo indica che all'interno dell'apparato sono presenti tensioni pericolose. Non cercare di smontare l'unità.
Per qualsiasi tipo di intervento rivolgersi al personale qualificato.

Attenzione:

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

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

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

Connessione elettrica nei paesi diversi dagli Stati Uniti

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

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

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

Forklaring på sikkerhedssymboler (DK)

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

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

Sikkerhedsadvarsler

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

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

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

Nettilslutning i andre lande end USA

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

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

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

Förklaring av Säkerhetssymboler (S)

Denna symbol hänvisar användaren till viktig information som återfinns i litteraturen som medföljer. Se manualen.

Denna symbol indikerar att livsfarlig spänning finns på insidan.
Det finns inga servicevänliga delar inne i apparaten.
Denna apparat få endast repareras av utbildad personal.

Säkerhetsvarningar

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

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

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

Strömkontakter i länder utanför USA

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

GRÖN/GUL ledning ansluten till E (Skyddsjordad ledare)

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

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

Turvamerkkien selitys (FI)

Tämä merkki tarkoittaa, että laitteen mukana toimitettu kirjallinen materiaali sisältää tärkeitä tietoja. Lue käyttöohje.

Tämä merkki ilmoittaa, että laitteen sisällä on vaarallisen voimakas jännite. Sisäpuolella ei ole mitään osia, joita käyttäjä voisi itse huoltaa.
Huollon saa suorittaa vain alan ammattilainen.

Turvaohjeita

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

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

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

Sähkökytkentä

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

KELTA-VIHREÄ suojamaajohdin E-napaan
SININEN nollajohdin N-napaan
RUSKEA vaihejohdin L-napaan

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

Símbolos de Segurança

P

O símbolo triangular adverte para a necessidade de consultar o manual antes de utilizar o equipamento ou efectuar qualquer ajuste.

Este símbolo indica a presença de voltagens perigosas no interior do equipamento. As peças ou partes existentes no interior do equipamento não necessitam de intervenção, manutenção ou manuseamento por parte do utilizador. Reparações ou outras intervenções devem ser efectuadas apenas por técnicos devidamente habilitados.

Avisos de Segurança

PERIGO
RISCO DE CHOQUE ELÉCTRICO!
NÃO RETIRAR AS PROTECÇÕES
PARTES QUE NÃO REQUEREM
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

G

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

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

Προειδοποίηση Ασφαλείας

CAUTION

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

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

Σύνδεση τροφοδοσίας σε χώρες εκτός των ΗΠΑ

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

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

ΜΠΛΕ καλώδιο συνδέεται στο N
(Ουδέτερο Αγωγό)

ΚΑΦΕ καλώδιο συνδέεται στο L (Αγωγό Φάσης)

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

Products employing Lithium batteries

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

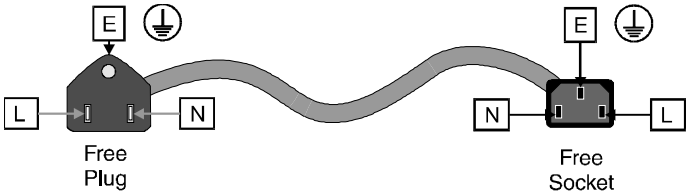
Power cable supplied for the USA

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)



For products with more than one power supply inlet

Caution: To reduce the risk of electric shock plug each power supply cord into separate branch circuits employing separate service grounds.

Rack Mounting the Enclosure

This product must not be rack mounted using only the front rack ears.

When rack-mounting the product, one of the following methods of installation must be used: -

- Place the unit on a suitably specified, and installed rack shelf and secure the product to the rack via the front rack ears or,
- Fit the unit using the rear rack mount kit available from Snell & Wilcox by quoting the order code FGACK RACK-MNT-KIT.

Safety Standard

This unit 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*

EMC Standards

This unit conforms 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

EMC Environment

The product(s) described in this manual conform to the EMC requirements for, and are intended for use in the commercial and light industrial environment (including, for example, theatres) E2

EMC Performance Information

Inrush current = 11.6 A (peak) at 0°.

EMC Performance of Cables and Connectors

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

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

COAXIAL CABLES
Coaxial cables connections (particularly serial digital video connections) shall be made with high-quality double-screened coaxial cables such as Belden 8281 or BBC type PSF1/2M.

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

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 unauthorised materials. Carefully unpack the carton and check for any shipping damage or shortages. Any shortages or damage should be reported to the supplier immediately.

Enclosures:

PREFIX CPP1000 Unit
Operator's Manual
Power cable

Manufacturers Notice

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Product Type

This manual is for use the following product:

HD Prefix CPP1000 High Definition Compression Pre-processor

Software Version Amendments

When shipped this product is fitted with software version 2.02.

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Product Support Procedure

If you experience any technical or operational difficulties with a Snell & Wilcox product please do not hesitate to contact us or utilize our online form to request assistance.

There is a lot of information you can give us that will enable us to diagnose your problem swiftly. Please read the following guidelines, as these suggestions will help us to help you.

Basic Information

For Units ..... Please provide the exact product Model, unit Serial Number and Software Version information.

For Cards or Modules . Please provide the Sub-Assembly Number, card Serial Number and the Software Version information.

Basic Application

Inputs ..... Please provide full details of the Input Signals being used including any references etc. and where they are being generated.

Outputs ..... Please provide full details of the Output Signals required and how they are being monitored.

System ..... Please provide a brief description of the system in which your S&W equipment is currently being used.

Basic Tests

Preset Unit ..... Please use the Preset Unit function to return the settings back to the factory default.

RollCall ..... Is your unit currently connected to a RollCall capable PC? This software is obtainable for free and provides a very user friendly GUI for virtually all S&W equipment - perfect for complex products, large systems or those with passive front panels.

Card Edge Info. ..... What is the status of the card edge LEDs or display? These can often provide information such as power status and input detection conditions.

Internal TPG ..... Many S&W products have an internal test pattern/tone generator. Please activate this to assist you with your problem analysis.

In addition to the above, please do not forget to provide us with all of the necessary contact information:

- Names
- Telephone & Fax numbers
- e-mail addresses
- Business address

A form has been provided for this information and will be found on the next page or an on-line form is available on the Snell & Wilcox website at:

http://www.snellwilcox.com/support/request

Product Support Request Form

Name: *		
Company:		
Address Details: *		
Post/ZIP Code:		
Country: *		
Telephone: *		
Fax:		
Email: *		
Local S&W Center: *		
Product Name: *		
Product Type: *	Switchers (i.e. Magic DaVE, Switchpack, Kahuna)	
	File & Data Transfer Products (i.e. RollCall, Memphis & iCR)	
	Video Products (i.e. Modular, Kudos Plus and Alchemist)	
Unit Serial Number: *		
Fault/Spare Part Information: * (please advise us how many units show this fault and the system layout showing all other manufacturers' products)		
*** Preferred Method of Contact:**	e-mail	
	Phone	

- **Item is required.**

Please mail to:	Snell & Wilcox Ltd., Southleigh Park House, Eastleigh Road, Havant, Hants, PO9 2PE. United Kingdom.	**Service Contact Information:** Tel: +44 (0) 2392 489058 Fax: +44 (0) 2392 489057 http://www.snellwilcox.com/support ftp://ftp.snellwilcox.com/support

Manual Revision Record

Date	Version No.	Issue No.	Change	Comments
091003	1	1		First Issue released
070104	2	1	Synchronizer added and new software release	New issue released
100504	2	2	New screens added + PSP form	New issue released
251006	2	3	New logo & support data added	New issue released

Description

HD Prefix CPP1000

Multi-standard high definition compression pre-processor

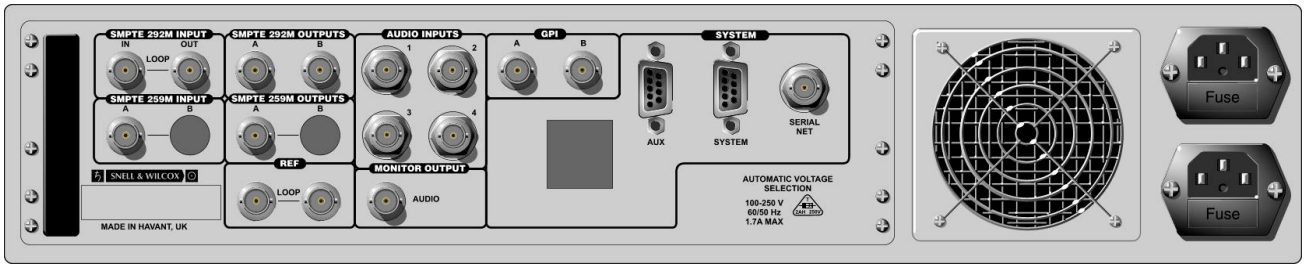
HD Prefix (CPP1000) is designed to optimize high definition signals prior to compression. It provides the dual benefits of improved picture quality for the viewer and lower bandwidth usage for the broadcaster.

Its development is based on the highly regarded CPP 100/200 Prefix devices, of which more than a thousand are in use in the SD domain, and twenty years experience in HD signal processing.

In HD transmissions, noise, grain and other signal artifacts can cause visible blockiness and “mosquito noise” when the pictures are compressed. This can result in disappointment and complaints by viewers, especially in relation to premium pay channel services.

HD Prefix is the only processor able to handle these problems effectively and economically in all HD and SD standards. Thanks to sophisticated noise and grain management and a uniquely powerful ability to remove unwanted signal elements, the bit-rate needed to compress the unit’s output is reduced. This means that valuable bandwidth can be freed up for additional channels or services. HD Prefix also offers advanced Metadata handling and insertion, including flagging of cuts and 3:2 cadences in order to further maximize encoder efficiency.

Designed for seamless and transparent integration into your system, HD Prefix provides reliable, 24/7 performance wherever picture quality is essential.



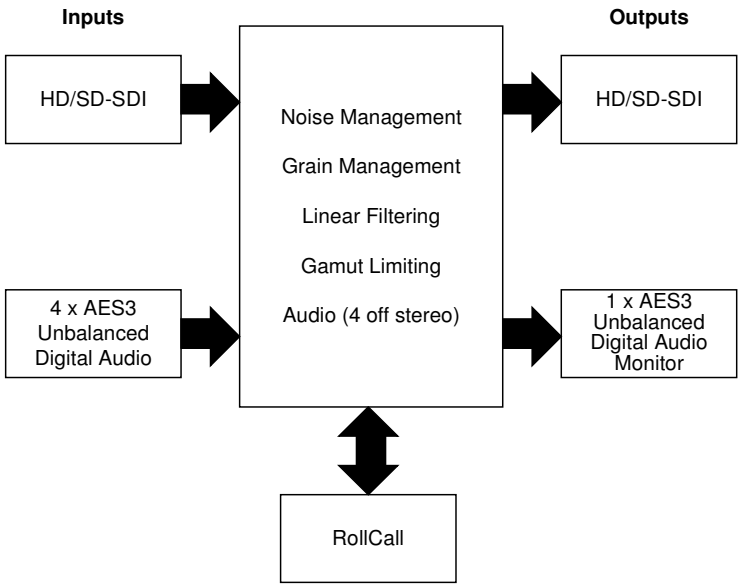
Basic Features

- Noise and grain management filters optimized for compressed signal paths
- Linear filtering
- All High definition and standard definition standards supported
- AES, AC3, Dolby™ E audio supported
- Metadata handling - including: cuts & 3:2 cadence
- Dual redundant PSU's
- Color gamut legalizer 4:4:4 internal processing

Detailed Features

- Primary Filter: Grain and Noise management Filter
- Secondary filter: Linear Brickwall & h\v aperture correction boost
- Comprehensive SMPTE274M, RP211, SMPTE 296M, SMPTE 259M-C standards
- Internal Processing minimum 10 bit 4:2:2 (4:4:4 used for color legalization)
- Clipper
- ProcAmp controls (Black stretch, White stretch, Chroma Gain)
- Color Hue Cb\Cr (360 degree) phase rotation
- Color gamut legalizer 4:4:4 internal processing
- Internal test pattern generation
- Transparent audio processing AES\EBU IEC858 & Dolby™ AC-3 Data stream in IEC958 interface
- External AES\EBU embedding\rate conversion 4 stereo pairs unbalanced BNC input (AES-3id-1995)
- Audio remapping up to 4 stereo pairs
- Audio monitor output
- Down-converted SMPTE 259M-C monitoring output (29I\25I\59p\50p) standards
- Transparent VANC & D-VITC processing
- User defined memories
- Split screens for demonstration purposes
- Picture Content Analysis (shot change, film cadence)
- Dual Redundant power supplies – Optional
- 2RU Rack Mounting (with provision for rear support brackets)
- Looped input SMPTE 292M\299M
- Input CRC validation
- Full remote control facility using Snell & Wilcox proprietary serial BNC system ‘RollCall’

I/O Diagram



Notes:

1. Dolby™ AC-3 standard is supported but is required to be externally locked to the video input. *(SubNote :reference locking is disabled with AC-3 inputs).*

2. The AES-3 or AC3 audio is also formatted into an AES stream and output to the rear panel for monitoring purposes.

3. The HD input is loop through type input.

4. A down-converted output (SMPTE259M-C) is also provided for monitoring purposes when the input is HD (29I\25I\59p\50p standards).

Technical Profile

Features

Signal Inputs

Serial Digital HD .....1 x HD SDI input SMPTE 292M\299M (with active loop through) via 2 x BNC connectors.

Serial Digital SD .....1 x SD SDI input SMPTE 259M-C via a BNC connector.

Digital Audio .....4 x Audio (AES Unbalanced, AES-3id-1995) via BNC connectors.

Genlock Reference.....Loop-through input via BNC connectors. Analog Black and Burst or Tri-Sync

Signal Outputs

Serial Digital HD .....2 x HD SDI outputs SMPTE 292M\299M via BNC connectors.

Serial Digital SD .....1 x SD SDI output SMPTE 259M-C via a BNC connector.

Digital Audio Monitor .....1 x Audio (AES Unbalanced) via BNC connector.

Communications

Network Control.....RollCall via BNC connector

Remote Interface.....RS422 via 1 x 9 way D-Type.

Controls

Input Select .....SD/HD

SD Input Standard Select ...625, 525 or Auto Select

HD Input Standard Select ... 1125(1080)30i, 30p, 30sf, 29i, 29p, 29sf, 25i, 25p, 25sf, 24p, 24sf, 23p, 23sf

1125(1035)30i, 29I

750(720)... 60p, 59p, 50p, 30p, 29p, 25p, 24p, 23p

750(576)... 50p

750(480)... 59p

or Auto Select

Video Bypass .....On/Off

Material .....Video, Film, 24PsF, Auto

2:2 Phase .....f1/f2, f2/f1, Auto

3:2 Phase .....Auto

Synchronizer

Genlock .....External Reference – HD Tri-Level and Bi Level syncs

Input Video

Delay

Free-Run

Horizontal Timing.....0 to 1 output line pixels in steps of 1 pixel.

Vertical Timing.....(reference, input) 0 to 1 output frame in steps of 1 line.

Vertical Timing (delay).....0 to 2 output frame less 2 lines relative to minimum delay in steps of 1 line.

Linear Filters..... On/Off

Band ..... YH, YV, CH, CV

YH Cutoff (HD)... Off, 32.2 MHz to 10.1 MHz

YH Cutoff (SD)... Off, 5.9 MHz to 1.9 MHz

YH Boost..... Off, 1 dB, 2 dB, 3 dB, 4.5 dB, 6 dB

YV Cutoff ..... Off, 95% to 35%

YV Boost..... Off, 1 dB, 2 dB, 3 dB, 4.5 dB, 6 dB

CH Cutoff (HD)... Off, 16.1 MHz to 5.6 MHz

CH Cutoff (SD)... Off, 3.0 MHz to 1.1 MHz

CH Boost ..... Off, 1 dB, 2 dB, 3 dB, 4.5 dB, 6 dB

CV Cutoff ..... Off, 95% to 35%

CV Boost ..... Off, 1 dB, 2 dB, 3 dB, 4.5 dB, 6 dB

Recursive ..... On/Off

Auto Noise ..... On, 0 to 15 in steps of 1 unit, Off

Luma ..... 0 to 31 in steps of 1unit

Chroma..... 0 to 31 in steps of 1unit

Bias ..... ±7 in steps of 1unit

Weighting..... White, Uniform, Black

View..... Movement, Difference

ProcAmp

White Stretch..... ±0.500 in steps of 0.001

Black Stretch ..... ±0.500 in steps of 0.001

Chroma Gain ..... 0.5 dB to 2.00 dB in 0.01 dB steps

Hue..... 0 to 359.0° in 0.5° steps

Clipper..... On/Off

White Max..... 940 to 1019 in steps of 1

Black Min..... 4 to 64 in steps of 1

White Knee..... 502 to 940 in steps of 1

Black Knee ..... 64 to 502 in steps of 1

Legalizer

Legalize ..... On/Off

View..... On/Off

Fix Luma..... On/Off

Upper..... 512 to 1019 in steps of 1

Lower..... 4 to 512 in steps of 1

Target ..... 64 to 940 in steps of 1

SetUp

Demo..... Off
Top
Bottom
Left
Right
Center
Outside

TPG ..... On/Off

TPG Move..... Field/F1/F2

TPG Speed ..... -32 to +31

Patterns .....75% Bars
100% Bars
Multiburst
Pluge
Pulse and Bar
Ramp
SMPTE Bars
Sweep
Tartan Bars

RollCall .....Name Unit, Unit ID

RollTrack..... 8 RollTracks

Logging.....Input status
Input standard
PSU status
Reference status
EDH/CRC status
Error count

On Fail

Event ..... None/Loss/Error/Any

Action.....Freeze Frame/Freeze Field/Black/TPG/Blank ANC

Freeze..... On/Off

Freeze mode..... Field/Frame

Blanking.....None, Chroma, Horizontal ANC, Vertical ANC

Audio

Enable .....Group 1, Group 2

Type Select.....PCM, Data

Embed (Group 1 and Group 2)
Disembed ½
Disembed 3/4
Disembed 5/6
Disembed 7/8
Disembed 9/10
Disembed 11/12
Disembed 13/14
Disembed 15/16
AES BNC 1
AES BNC 2
AES BNC 3
AES BNC 4
Tone
Mute

Monitor CRC **Errors**

HD

SD

Reset ..... Reset CRC
Reset CRC
Error count
Error count

HD Lum..... Luma CRC
Error count

HD Chr..... Chroma CRC
Error count

SD AP..... Active Picture
CRC Error count

SD FF..... Full Field CRC Error count

Audio Monitor. Group 1 1/2, Group 1 3/4, | Group 2 1/2, Group 2 3/4,
Tone
Mute

Specifications

Audio Processing Specifications

Inputs .....4 External AES\EBU unbalanced
BNC Embedded: Groups 1,2,3 and 4

Outputs.....Embedded: Groups 1 and 2
Audio remapping up to 4 channels
Rate conversion for PCM
Passes Dolby™-E and Dolby™ AC3 (this must be externally locked to the video input)

Signal Processing Specifications

Noise & Grain Management Motion adaptive Temporal
Recursive filter with advanced spatial fallback
Automatic Noise floor measurement

Linear Filter .....Brickwall & h/v aperture correction/boost

ProcAmp .....White Stretch
Black Stretch
Chroma Gain
Hue

Legalizer.....Color gamut legalizer 4:4:4 internal processing

Clipper.....Picture Content Analysis (shot change, film cadence)

Utils .....User defined and preset memories
Internal test pattern generation
Split screens for demonstration purposes
Transparent VANC & D-VITC processing

Power:

Type .....Dual redundant power supplies

Input Voltage Range.....115-230 V 60/50 Hz

Consumption .....100 W maximum

Mains Fuse Rating.....2 A (H) 250 V

.....

Mechanical:

Temperature Range .....0 to 40° C operating

Cooling .....1 Axial fan. Front to rear airflow.

Case Type.....2RU Rack Mounting (with provision for rear support brackets)

Dimensions .....483 mm x 530 mm x 95 mm (w x d x h)

Weight.....14kg

Installation

Unpacking the CPP1000

The units are packed in separate flight cases. The contents of the flight cases are as follows:

PREFIX CPP1000 Unit
Operator's Manual
Power cable
Prefix Operating Manual

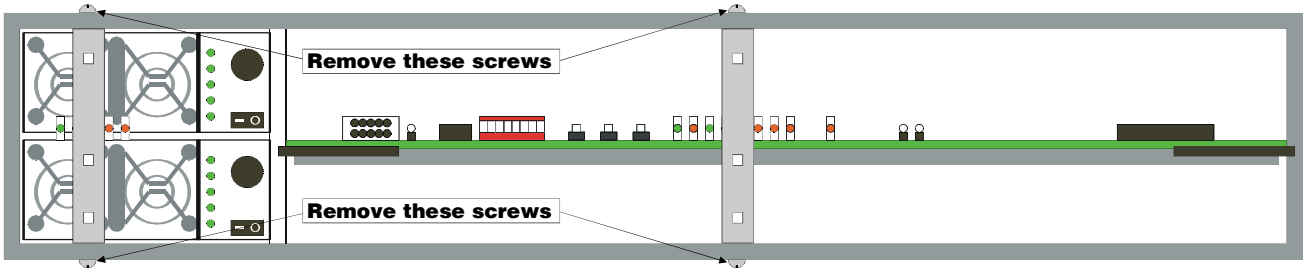
Unpack the carton carefully and check for any shortages or shipping damage. Immediately report any shortages or damage to Snell and Wilcox Limited. (See front page section 0)

Installation

Before installing the unit into an enclosure the transit fittings must be removed.

Open the front panel (see page 3.2) and remove the four screws securing the two transit fittings as shown in the diagram below.

The transit fittings must be refitted when transporting the unit so the screws and the transit fittings should be retained.



POWER CONNECTIONS

Power Supply

Mains power is supplied to the unit via two filtered IEC connectors. The upper connector is for the PSU installed in the upper position and the lower connector is for the PSU in the lower position. If only one PSU module is installed, only one power connection needs to be made.

TO REDUCE THE RISK OF ELECTRIC SHOCK, PLUG EACH POWER SUPPLY INTO SEPARATE BRANCH CIRCUITS EMPLOYING SEPARATE SERVICE GROUNDS.

The mains power rating is 1.7 A maximum from 100V - 250V a.c.

One, or optionally two, Snell & Wilcox generic power supply modules type SHDPSUA1501 are fitted. The LED indicators on the front panel of the module are described in the manual for the power supply.

Warning! When a single PSU is used the second PSU slot should always have the blanking panel fitted. Operating the equipment without this may result in damage to the equipment.

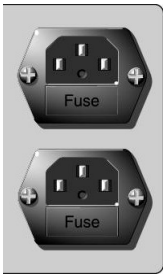
The power supply ON/OFF switches are located on the front of the power supplies inside the front panel.

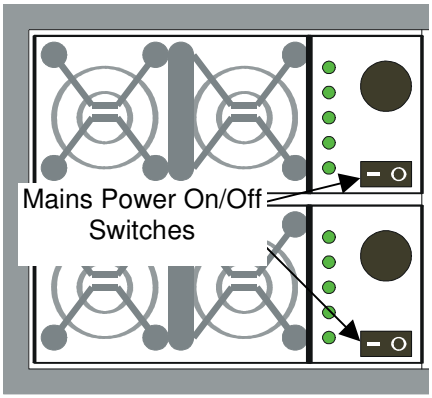
CAUTION: THIS UNIT MUST NOT BE OPERATED WITHOUT AN EARTH CONNECTION.

CAUTION: THE FAN EXIT VENTILATION HOLES AT THE SIDE AND REAR OF THE UNIT MUST NOT BE OBSCURED.

Supply Voltage

The power supplies are auto switching for input voltages in the ranges of 115-230 V 60/50 Hz nominal. No voltage adjustment procedure is required.





Environment

Although ruggedly constructed to meet the normal environmental requirements, it is important that there is a free flow of air at the front, left-hand side (looking from the front) and rear to dissipate the heat produced during operation. Installations should be designed to allow for this.

Remote Control

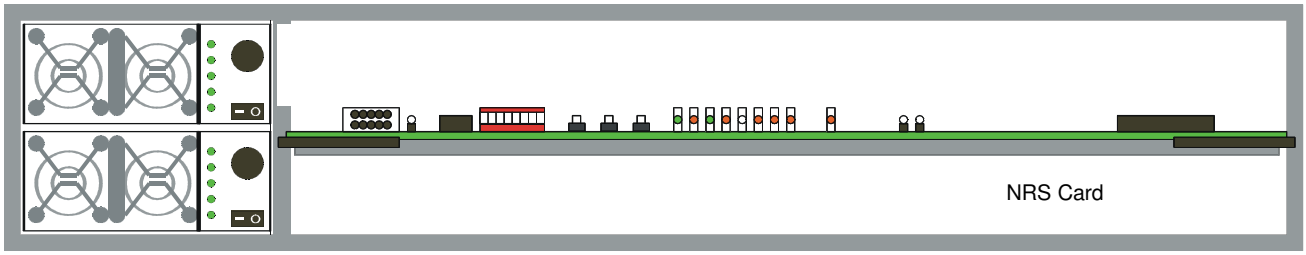
The unit may be controlled by using a remote control panel or PC via the RollCall control system.

OPENING/CLOSING THE FRONT PANEL

1) Use a suitable tool to undo the four screws at the sides of the front panel
2) Pull the front panel away from the rack assembly

Note: Closing the front panel is the reverse of this procedure.

INTERNAL VIEW SHOWING POWER SUPPLY AND CARD POSITION



Power Supplies (1 or optionally 2)

Installing/Removing Power Supplies

The HD Prefix is provided with one PSU as standard. There is an option for installing a second PSU to allow dual redundant operation. This may be a factory fitted option or can be done as an upgrade.

Installing PSU

1) Remove front panel
2) Remove blanking plate
3) Ensure the power supply's orientation
4) Slide power supply in and push home firmly
5) Tighten securing screws
6) Refit the front panel

Warning! When a single PSU is used the second PSU slot must always have the blanking plate fitted. Operating the equipment without this may result in damage to the equipment.

When installing a second PSU ensure that the blanking plate is kept in a safe place should it be required in the future.

Removing PSU

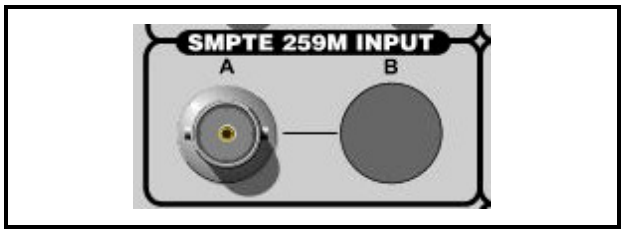
1) Remove front panel
2) Undo securing screws
3) Pull handle firmly
4) Fit new PSU or blanking plate
5) Refit front panel

INPUT CONNECTIONS

All the connectors are mounted on the rear panel of the unit and are appropriately annotated.

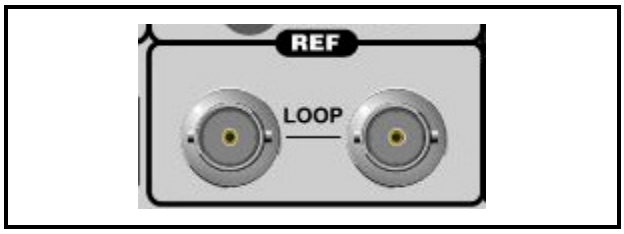
SMPTE292M Input

There is one HD SDI input, labeled IN.
The connection labeled OUT is an active loop through of the input.



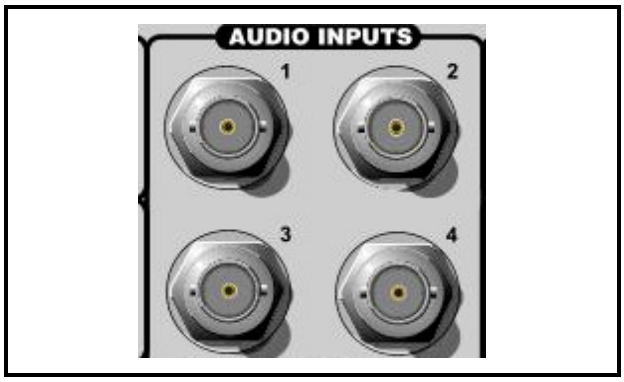
SMPTE259M Inputs A and B

There is one SD SDI input labeled A. Input B is not fitted.



Genlock Reference

An external analog reference signal may be connected to these loop-through connectors.



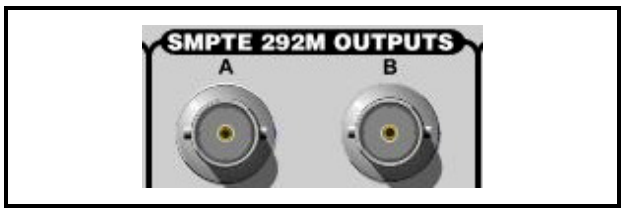
Audio Inputs

There are 4 unbalanced AES audio inputs. These can be selected as PCM or Data.

OUTPUT CONNECTIONS

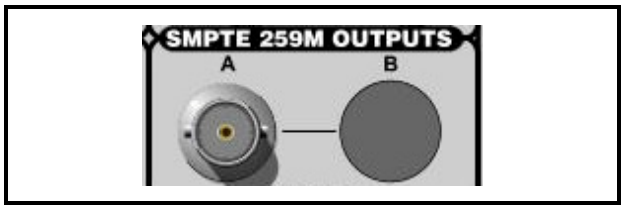
SMPTE292M Outputs A & B

There are two HD SDI outputs.



SMPTE259M Outputs A & B

There is one SD SDI output labeled A. Output B is not fitted.



Monitor Output

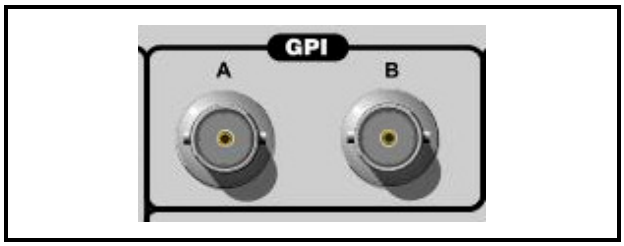
There is one AES audio monitoring output.

GPI

There are two GPI outputs.

GPI A provides an output to indicate a shot change.

GPI B provides an output to indicate input loss.



COMMUNICATION CONNECTIONS

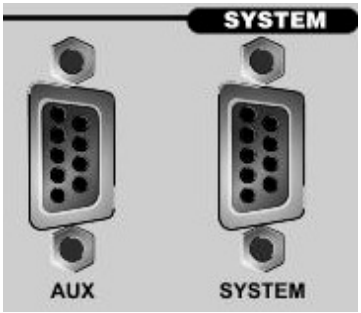
System - Serial Net

The unit can be controlled via this BNC connector using RollCall. The RollCall system should be connected using 75 Ohm "T" pieces in a similar manner to an "Ethernet" system. Both extremities of the system must be terminated in 75 Ohms.

A unique address for each unit on the RollCall system must be set. This is done from the RollCall Menu. If an address is already in use the RollCall™ the address must be changed and the power cycled. Note that in a RollCall™ segment, all units must have different unit address codes. For more information see the RollCall™ section.

Note: The coaxial link is bi-directional and therefore must not be passed through signal switching networks. Also, to allow hum and noise cancellation the screen of the coaxial connection must not be earthed.

System-Aux



This is an RS422 port and is provided for future use.

System-System

This is an RS422 port.

This port can be used for serial RollCall.

System-Ethernet

There is an Ethernet port and is provided for future use.

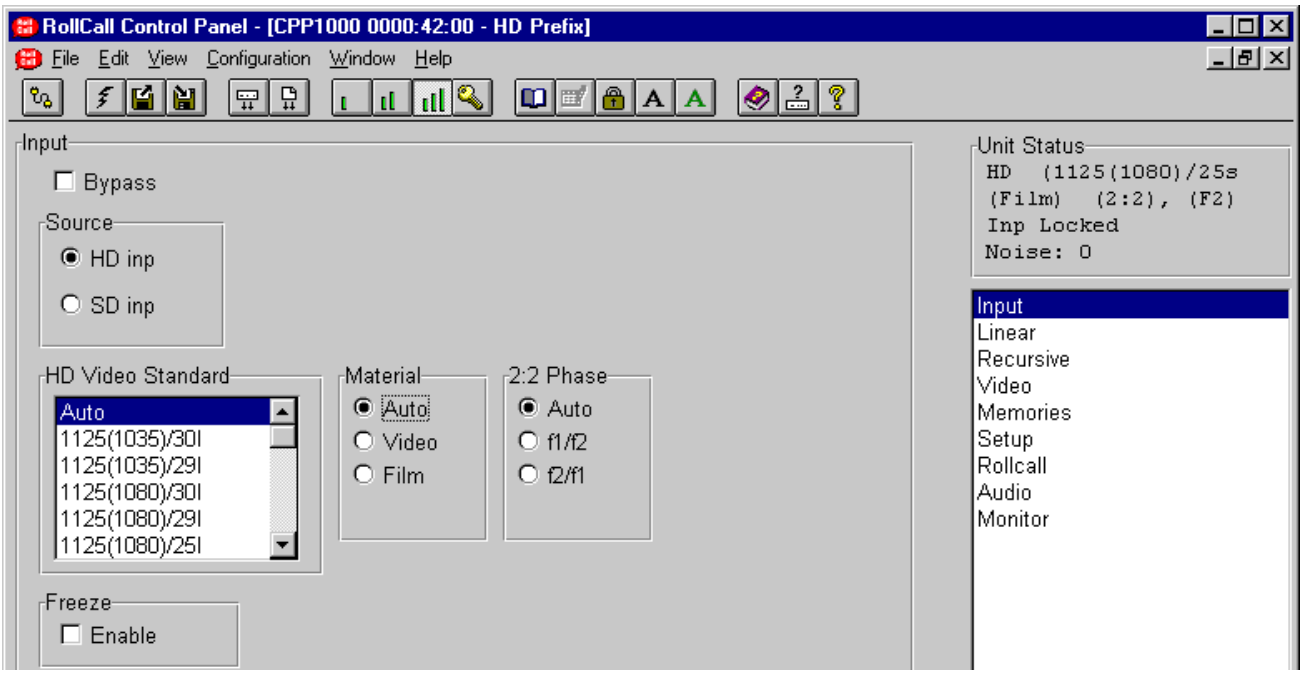
Operation

GENERAL OPERATING PRINCIPLES

The HD Prefix may be operated by using a remote control panel or PC via the RollCall control system.

RollCall PC Control Panel Screens for the CPP1000

Input



This screen is used to control the input signal to the CPP1000.

Bypass

This is used to disable the following functions:

- Linear Filter
- Recursive filter
- Color corrector
- Legalizer
- Enhancer

Source
The unit can process one signal; use **SD inp** to select the SD SDI input and use **HD inp** to select the HD SDI input

HD Video Standard
When the HD input is selected this allows the input standard to be selected. When **Auto** is selected the video standard is automatically detected and set.

Freeze

Enable
This freezes the data in the synchronizer.

SD Video Standard

When the SD input is selected this allows the input standard to be selected. When **Auto** is selected the video standard is automatically detected and set.

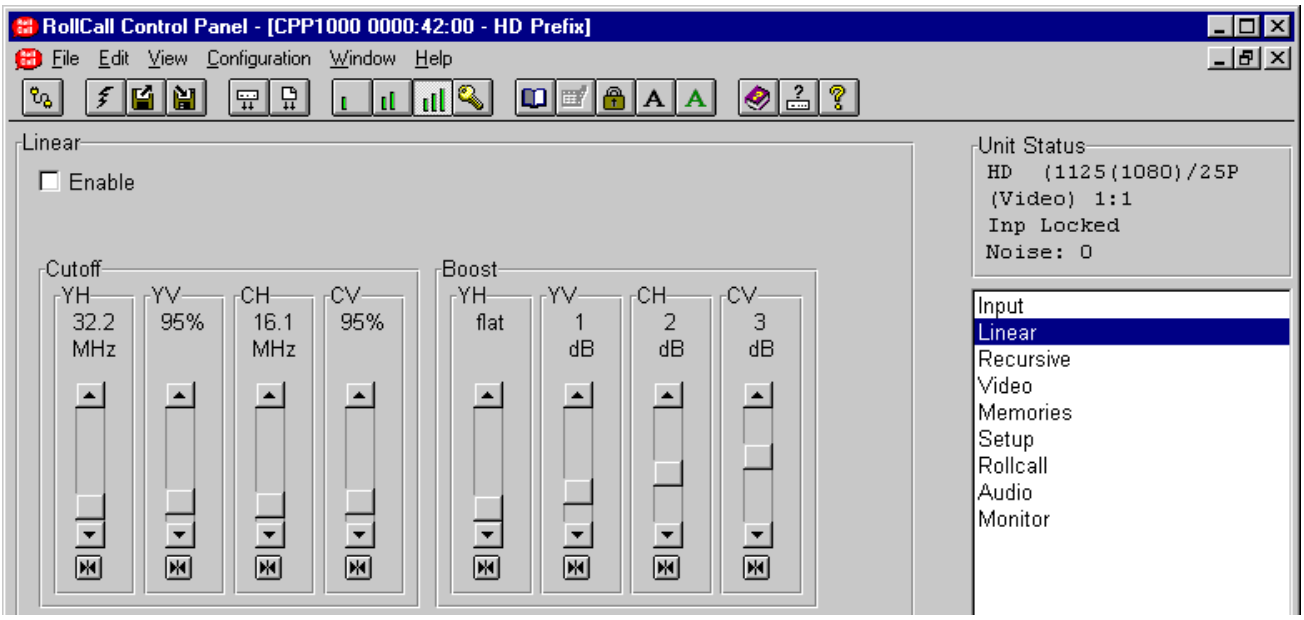
Material
This selects the type of the source material. When **Auto** is selected this is performed automatically.

2:2 Phase
This selects the phase for film originated material. When 2:2 type material is detected the phase can be set to:

Auto.....Automatic
f1/f2.....Field 1 dominant
f2/f1 .....Field 2 dominant

If the material is detected as 3:2 the phase is set automatically by the analysis.

Linear Filter



Overview.

A suite of linear filters allows fine control of the horizontal and vertical bandwidth of the luminance and chrominance signal.

Brickwall low-pass filters ranging from 5 MHz to 32 MHz provide good band-limiting facilities for MPEG encoding. These filters also provide variable peaking or boosting at each of the selected cut-off frequencies. The overall perception of picture sharpness can be raised by boosting prior to brickwall filtering.

The cutoff frequencies and boost values for each band are listed below, at each cutoff frequency any of the available boosts may be selected.

The boost value selected is the amount of gain applied to the filter response at the chosen cut-off frequency. The selectable boost facility is incorporated to allow the user to increase the perception of sharpness in the picture. The sharpness of a picture can sometimes be significantly reduced by filtering the high luminance frequencies so the inclusion of the extra boost helps to restore some of the sharpness to the picture. A boost of 6dB will result in the cut-off frequency being increased by up to 2 MHz. The actual amount of boost selected will be a trade-off between cut-off and picture sharpness.

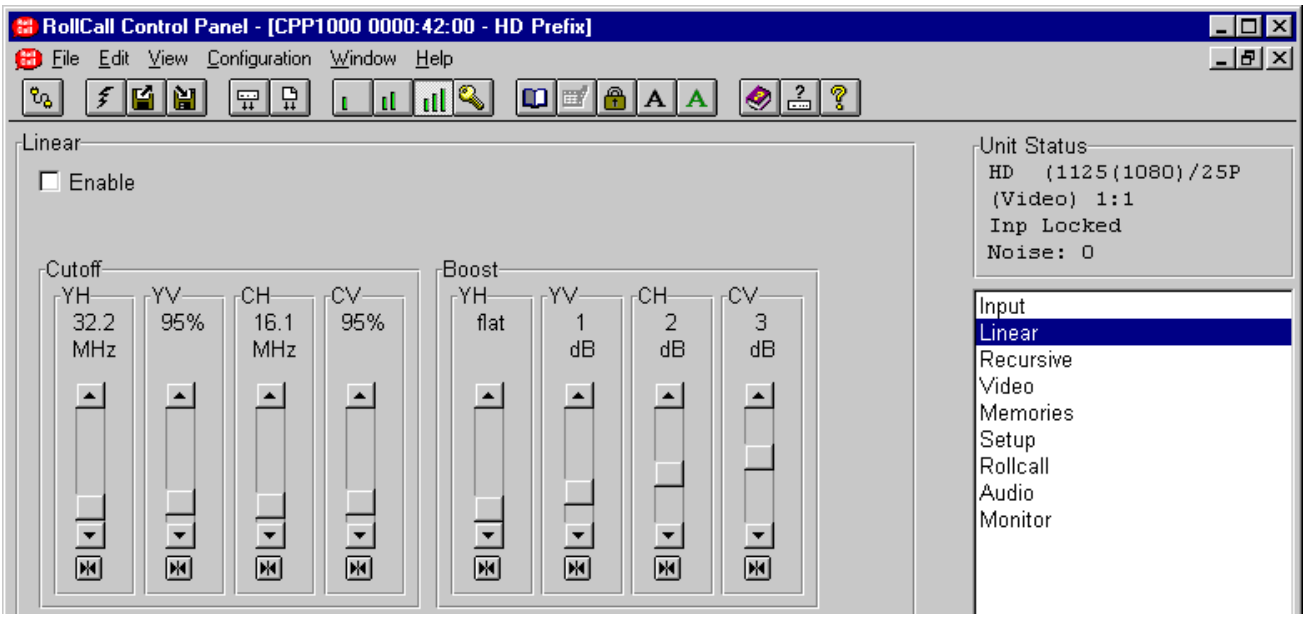
Note that for this and other screens the following applies:

The symbol represents the Preset function and will return the function to the default setting.

The and symbols at the ends of the scroll bar allow the value to be adjusted in discrete steps.

The value will be shown above the scroll bars.

Linear (continued)



Enable

When checked the linear filters will be enabled.

Cutoff

This function allows the cutoff frequencies to be selected.

YH (Luma Horizontal)

In HD the cutoff range is from 32.2 MHz to 10.1 MHz and Off.

In SD the cutoff range is 5.9 MHz to 1.9 MHz and Off.

YV Luma Vertical

The range is Off, 95% to 35%.

CH (Chroma Horizontal)

In HD the cutoff range is from 16.1 MHz to 5.6 MHz and Off.

In SD the cutoff range is 3 MHz (100%) to 1.1 MHz and Off.

CV (Chroma Vertical)

The range is Off, 95% to 35%.

Boost

This function allows the boost value (the amount of gain applied to the filter response at the chosen cut-off frequency) to be selected.

YH (Luma Horizontal)

The range is Flat, 1 dB, 2 dB, 3 dB, 4.5 dB, and 6 dB.

YV Luma Vertical

The range is Flat, 1 dB, 2 dB, 3 dB, 4.5 dB, and 6 dB.

CH (Chroma Horizontal)

The range is Flat, 1 dB, 2 dB, 3 dB, 4.5 dB, and 6 dB.

CV (Chroma Vertical)

The range is Flat, 1 dB, 2 dB, 3 dB, 4.5 dB, and 6 dB.

Note: The Luma and Chroma vertical filters are not available in 750(720) 30p, 29p, 25p, 24p and 23p.

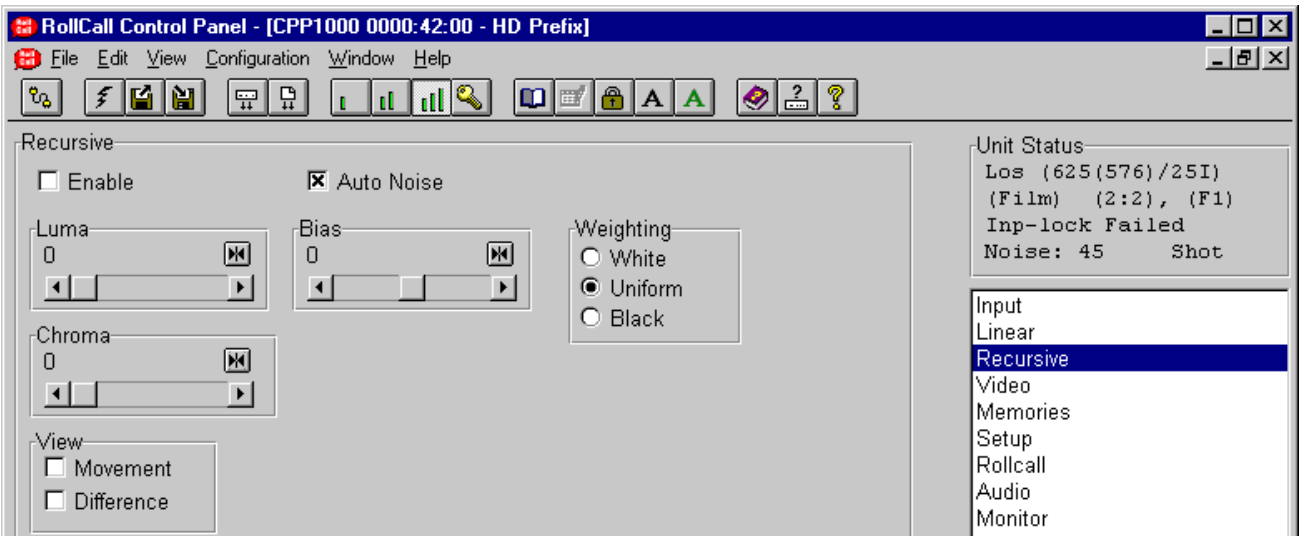
Recursive

Note that for this and other screens the following applies:

The ◄ and ► symbols at the ends of a scroll bar allow the value to be adjusted in discrete steps.

The ⏮ symbol represents the Preset function and will return the function to the default setting.

The numerical value is shown above the scroll bar.



Overview.

Recursive filters reduce noise by temporally averaging successive pictures. Utilizing a delay of exactly one picture or frame, noise can be reduced in stationary areas without loss of spatial (horizontal and vertical) resolution.

A complex noise-floor measurement algorithm is introduced to allow automated adjustment of the threshold control to a level that is just above the noise floor. This allows optimum noise reduction over any noisy source material.

Recursive

The **Enable** button may be toggled to enable and disable the recursive filter.

Luma

The **Luma** control changes the amount of noise reduction for the luminance by limiting the maximum level of noise reduction, where 31 is maximum and 0 is minimum. Preset is to 0. The actual level of noise reduction is dynamically adjusted on a pixel-by-pixel basis with regard to the noise reduction setting for the same pixel in the previous frame. Other factors such as movement contribute to the current pixel setting. This mechanism ensures that the optimum level of noise reduction is applied to each pixel.

Chroma

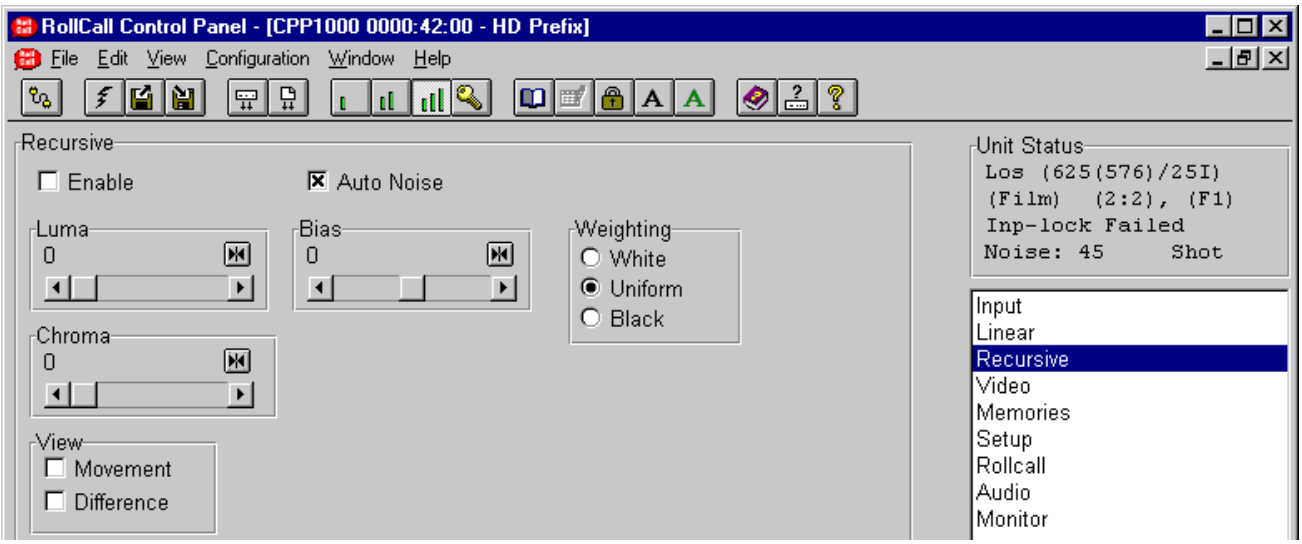
The **Chroma** control changes the amount of noise reduction for the chrominance by limiting the maximum level of noise reduction, where 31 is maximum and 0 is minimum. Preset is to 0. The actual level of noise reduction is dynamically adjusted on a pixel-by-pixel basis with regard to the noise reduction setting for the same pixel in the previous frame. Other factors such as movement contribute to the current pixel setting. This mechanism ensures that the optimum level of noise reduction is applied to each pixel.

Weighting

In some material there is a bias in the noise distribution to blacks or whites. This control and be used to adjust the bias to: -

White	more noise reduction in the whites than blacks
Uniform	uniform noise reduction
Black	more noise reduction in the blacks than whites

Recursive (continued)



View

Movement

The recursive **Vu Diff** control allows the user to fine-tune the Noise value if the Auto Noise mode is not used. To see the **Vu Diff** the filter must be enabled.

Difference

The recursive **Vu Move** control allows the user to directly view the difference between the noise reduced and the input images, in effect the amount of noise reduction the recursive filter is currently achieving. To see the **Vu Diff** the filter must be enabled.

Auto Noise Floor Measurement

The **Auto Noise** button provides access to the auto threshold mode, in this mode the noise floor is automatically measured and the threshold is adjusted dynamically set to an appropriate value for the current input noise level. The noise detection algorithm may be given a subjective bias to give more or less noise reduction. When the **Auto Noise** button is enabled, the **Noise** control changes to a **Bias** control. Modification of the bias should not be necessary under normal circumstances.

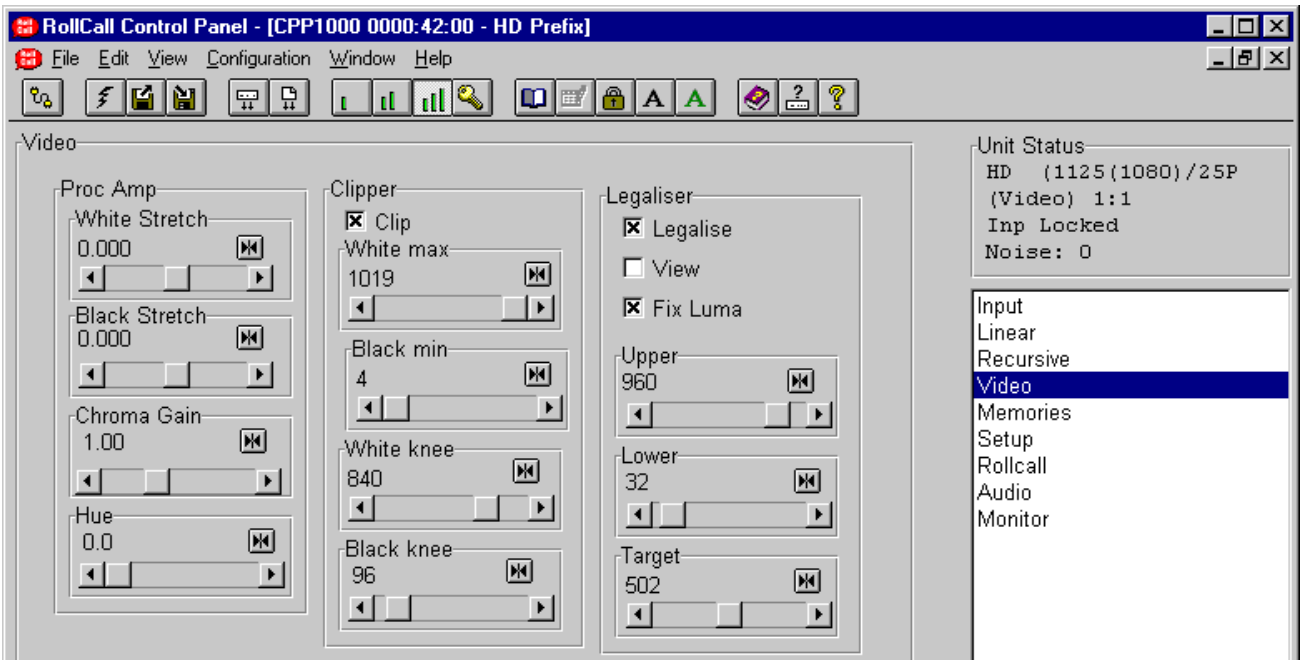
Noise

The **Noise** control sets the threshold for the motion detector. The lowest level of 0 gives the greatest sensitivity to motion, but allows more noise to break through, while 15 gives the greatest noise reduction but can lead to excessive filtering of low-level textures. Preset is to 0. When **Auto Noise** is enabled the threshold is dynamically set to an appropriate value for the current input noise level.

Bias

The **Bias** control adjusts threshold automatically detected and set by the automatic noise floor measurement.
Increasing the bias has the effect of raising the threshold and giving more noise reduction, alternatively the bias can be reduced giving less noise reduction. The range is ±7 units and preset is to 0.

Video



This page controls the video processing functions of the HD Prefix.

They are: -

Proc Amp

These controls adjust the video signal levels and gain.

Clipper

This can be used to prevent illegal values (black or white) from being propagated to a downstream device

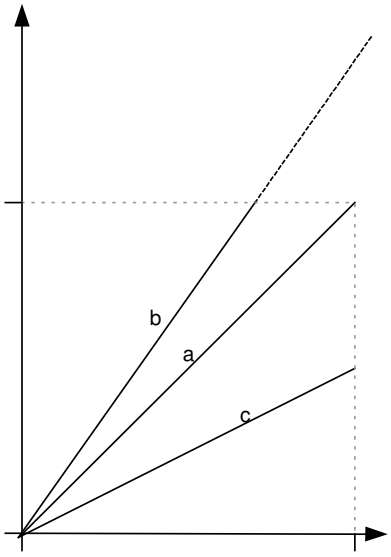
Legalizer

The legalizer is used to ensure that the image that is propagated to a downstream device is legal.

ProcAmp

White Stretch
(Range ±0.500 in steps of 0.001, Preset = 0)

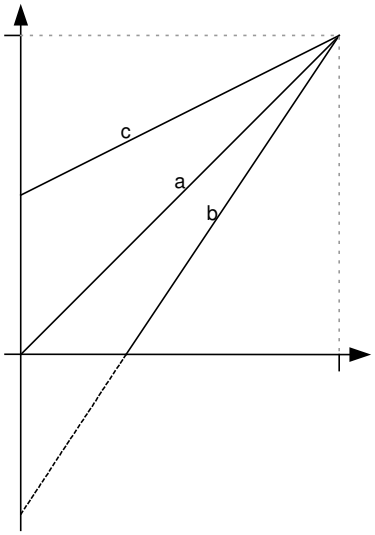
The diagram below shows how the white stretch can be used to stretch or crush whites.



a : normal
b : White crush
c : White stretch

Black Stretch
(Range ±0.500 in steps of 0.001, Preset = 0)

The diagram below shows how the black stretch can be used to stretch or crush blacks.



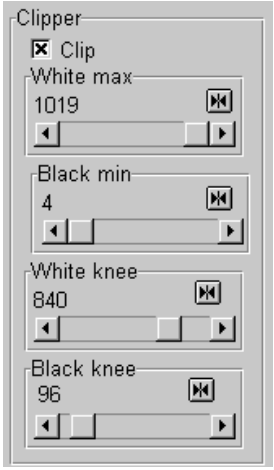
a : normal
b : Black crush
c : Black stretch

Chroma

The controls the video chroma gain. Range is 0.5 dB to 2.00 dB in 0.01 dB steps.
Preset = 0.0 dB

Hue
This controls the hue. Range is 0 to 359.0° in 0.5° steps. Preset is 0°.

Clipper



The clipper can be used to prevent illegal values (black or white) from being propagated to a downstream device such as an encoder where they may cause errors.

Clip
This enables the clipper.

White Max
This sets the upper limit for the clipper. Range is 940 to 1019 in steps of 1. Preset is 1019.

White Knee
This sets the knee for the upper limit of the clipper, this allows for a graceful cutoff at the upper limit. Range is 502 to 940 in steps of 1.Preset is 840.

Black Min
This sets the lower limit for the clipper. 4 to 64 in steps of 1. Preset is 4.

Black Knee
This sets the knee for the lower limit of the clipper, this allows for a graceful cutoff at the lower limit. Range is 64 to 502 in steps of 1. Preset is 96.

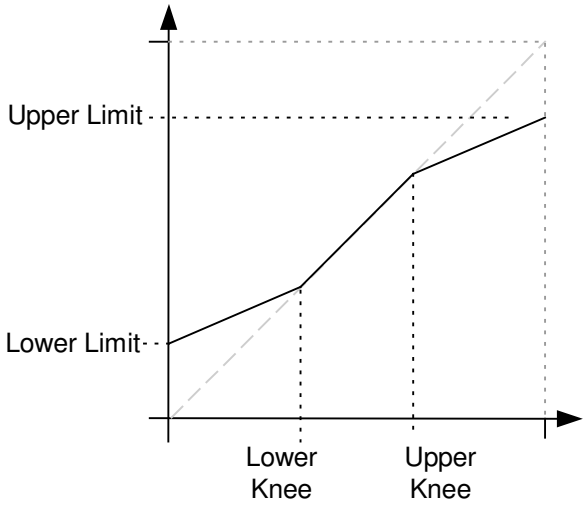
To achieve a hard clip at the upper limit set the **W Max** and **W Knee** to the same value. Similarly to achieve a hard clip at the lower limit set the **B Min** and **B Knee** to the same value.

Clipper Overview

When signal levels are too high or too low this can cause problems with devices such as encoders or displays. The clipper is used to limit (luminance) signals above and below predefined limits. This clipper allows full control over the minimum and maximum limits, in addition a knee allows for a gradual transition to the limit.

How the Clipper Works

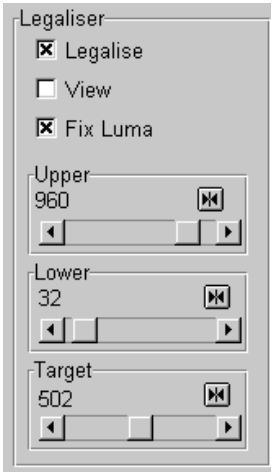
The clipper works by proportionally compressing the out of limit signals to bring them in to limit. This means that picture detail in blacks or whites that would normally be lost with a traditional hard clipper is preserved, as a proportion of the signal is removed. The knee and upper limit control give full flexibility to ensure that normal in-range signals are not affected.



Clipper Characteristics

Legalizer

The legalizer is used to ensure that the image that is propagated to a downstream device is legal.



Legalise
Enables the color gamut legalizer. The colorspace is automatically selected by the input standard.

Fix Luma
When this is enabled the luma level is fixed to the input and the chroma only is adjusted.

View
This indicates where the image is being legalized

Upper
This set the upper limit for the legalizer. Range is 512 to 1019 in steps of 1. Preset is 960.

Lower
This sets the lower limit for the legalizer. Range is 4 to 512 in steps of 1. Preset is 32.

Target
This sets the target for the legalizer, this would not normally need to be adjusted. Range is 64 to 940 in steps of 1. Preset is 502.

Legalizer Overview

Illegal colors are represented by values of RGB that that are outside the nominal range 0 to 700mV when converted to analogue values.

Illegal RGB colors are easily generated in YCbCr space because of the differences in the valid colorspace between RGB and YCbCr. This is illustrated in the drawing opposite, which shows a cube, which represents the YCbCr colorspace set by ITU Rec 601 and 656. Within the cube, it can be seen that RGB occupies a restricted colorspace in the shape of a paralleloid.

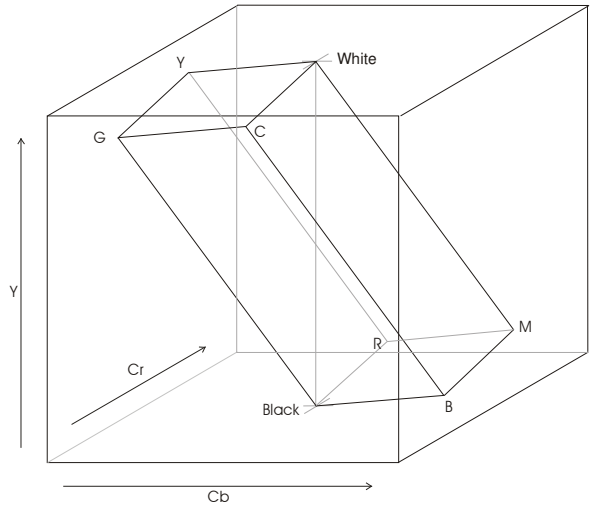
It can be seen that there are many YCbCr values, which are within the constraints of ITU Rec 601 colorspace, yet lie outside the RGB space defined by the paralleloid and would consequently generate illegal values when converted to analog form for display or recording.

Illegal RGB colors are easily generated by color processors that operate in YCbCr space and they are difficult to detect without specialized test equipment. Upon detection, there are a number of different techniques to bring them back into legal colorspace but they essentially achieve the same result of reducing saturation until the vector that represents the illegal color lies on the surface of the RGB paralleloid. More advanced color legalizers such as the one within CPP1000 are also able to stretch the luminance to achieve better subjective results.

The RGB value at which the clipper becomes active is determined by the upper and lower limits in the control panel. The nominal limits for RGB are 0mV (code 64) and 700mV (code 940).

The best mode of operation depends on the application. For completely unassisted operation, the most transparent results will be obtained by allowing the legalizer to automatically stretch the luminance whilst simultaneously desaturating the chrominance. This can be achieved by unchecking the “Fix Luma” selection in the legalizer control panel.

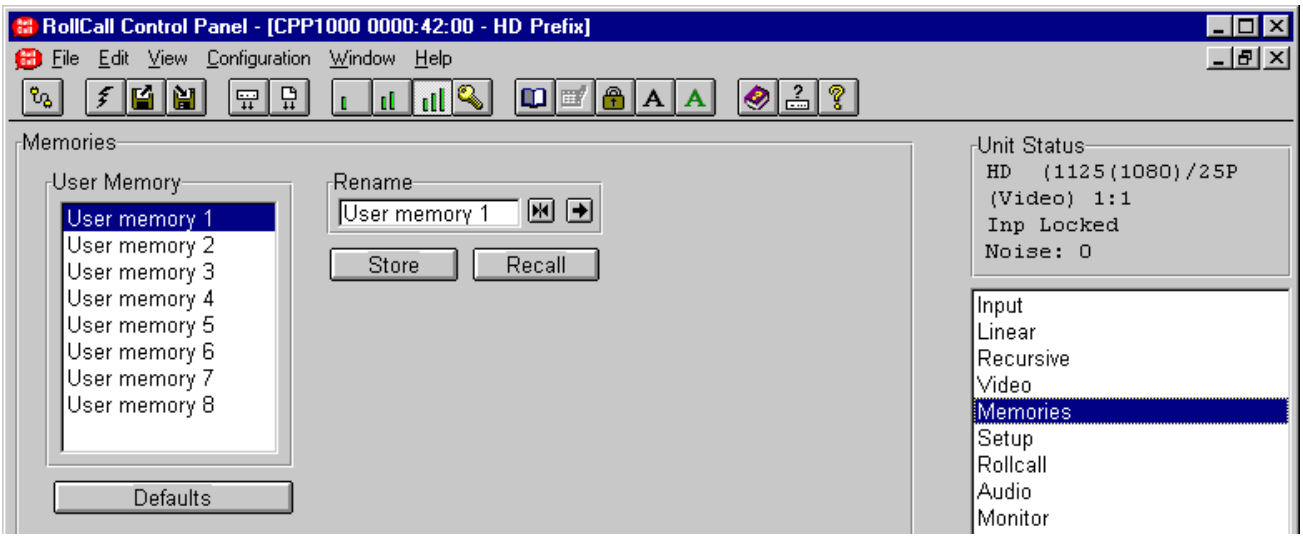
If the video has been color processed then it can be useful to have an indication of the pixels that are no-longer legal as a result of the color processing. The legalizer in CPP1000 is able to indicate on-screen which pixels are illegal and the extent to which they are outside RGB limits. Selection of the view mode in the legalizer control panel utilizes the chrominance channel to indicate the legality of the pixels by implementing a red overlay on pixels, which are illegal. The degree of saturation corresponds to the severity of the RGB error.



For critical applications, this information can be used in conjunction with the color processing to steer the color processing so that illegal color are not generated or alternatively it can be used to alter the legalizer settings to achieve the best visually subjective results. Most legalizers will simply desaturate the chrominance leaving the luminance unaltered with the consequence that highly saturated yellows become very pale. The CPP1000 legalizer is able to preserve the original saturation to a much higher extent by stretching the luminance towards the default target value of mid-gray (code level 502).

Very fine control can be achieved by adjusting the target value towards white or black depending on whether the illegal colors are predominantly caused by high (yellow) or low (red) luminance levels. The target value represents the location of the luminance value to which the illegal pixels are scaled. This level of control would only be used in conjunction with a color processor on extremely testing scenes where subjective differences are paramount. For normal operation the target value should be set to the default (mid gray).

Memories



User Memory

This item is used to select one of the eight memory locations.

Rename

To change the memory name, type the new name in the text area and then select (return).

Selecting Preset will return the text to the default name.

Store

Selecting this item will store the settings in the selected User memory location.

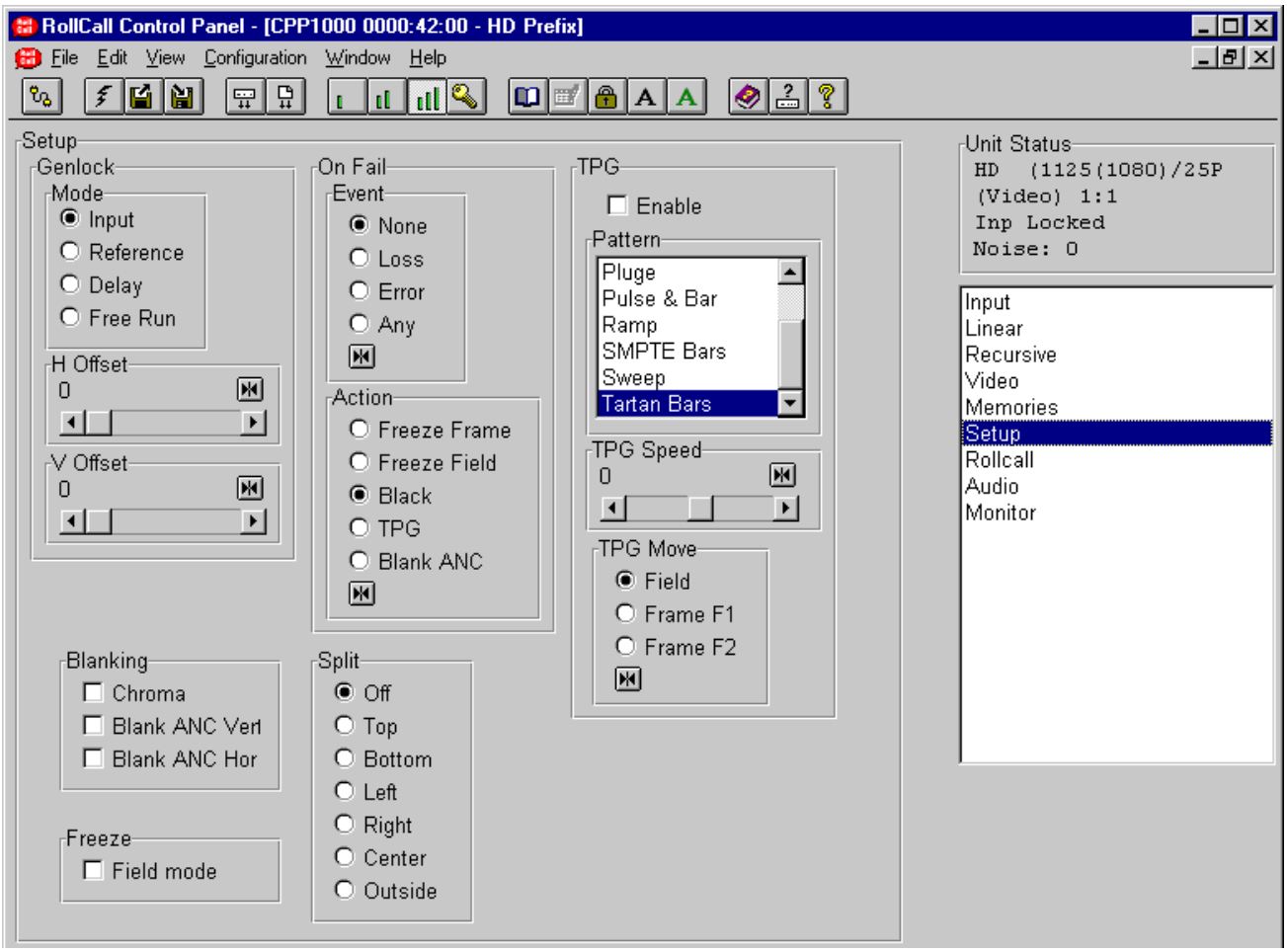
Recall

Selecting this item will recall the settings from the selected User memory location.

Defaults

Selecting this item will set all functions that are available at user level to their factory default values.

Setup



The Setup screen allows facilities such as test patterns and demo split modes to be selected.

Genlock - Mode

Input
The output is locked to input. When the input goes missing, the output is dependent on the "On Fail" selection.

Ref
The output signal is locked to reference. If the reference goes missing, the output will flywheel based on the last detected reference, but based on the internal clock generator.

Delay
The output is delayed relative to the input.

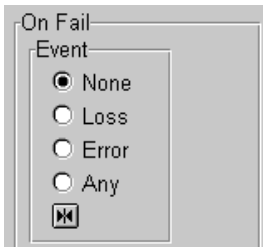
Free run
The output signal is locked to an internal clock generator.

H Offset
This sets the horizontal offset between the output and the external reference, if genlock to reference is selected, or between the output and the input, if genlock to input is selected. If not genlocked, this control will have no effect. For SD inputs, the output is taken to be the SD output. For HD inputs, the output is taken to be the HD output.

V Offset
This sets the vertical offset between the output and the external reference, if genlock to reference is selected, or between the output and the input, if genlock to input is selected. If not genlocked, this control will have no effect. For SD inputs, the output is taken to be the HD output. For HD inputs, the output is taken to be the HD output.

Setup (continued)

On Fail



Event

This defines what event is interpreted as a failure

None .....ignore the action even if an input loss or input error has been detected.

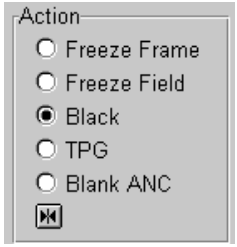
Loss .....when input loss is detected, implement the chosen “on fail action”.

Error.....when the input standard is not the same as the selected output standard, implement the chosen “on fail action”.

Any.....when the input standard is not the same as the selected output standard or the input has been lost, implement the chosen “on fail action”.

Selecting Preset P will return the setting to **None**.

Action



This is the action that is initiated when the selected on fail action occurs

Freeze Frame ..output last frame before on fail event.

Freeze Field.....output last field before on fail event.

Black .....output black raster.

TPG .....output pattern as set up in TPG section.

Blank ANC .....blank ancillary data space (kill audio).

Selecting Preset P will return the setting to **Black**.

Split

This is used to select a split screen; this can be used to demonstrate the performance of the filters on one part of the image leaving the other part of the image unprocessed.

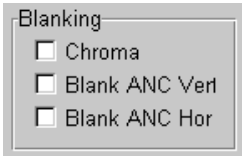
The choices available are: -

- Off (preset)
- Top
- Bottom
- Left
- Right
- Center
- Outside

Processing affected by the Split is

- Linear Filter
- Recursive Filter
- Legalizer
- Enhancer
- Color Corrector

Blanking



Chroma — The chroma in the active picture is blanked.

Blank ANC Vert — The data in the “active picture” part of vertical ancillary data space is blanked.

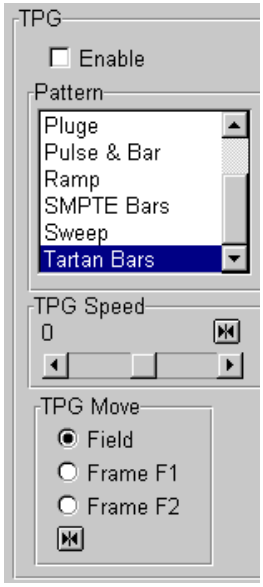
Blank ANC Hor — The data in the horizontal ancillary data space is blanked.

Freeze

Field mode — When this is enabled a frozen field is output, otherwise a frozen frame is output.

Setup (continued)

TPG



This item controls the Test Pattern generator.

Enable
This enables the test pattern generator function.

Pattern

This selects the test pattern to be used. The available patterns are: -

75% Bars (preset)
100% Bars
Multiburst
Pluge
Pulse and Bar
Ramp
SMPTE Bars
Sweep
Tartan Bars

If the pattern is changed whilst the TPG is enabled, there may be a short delay and disruption to the video whilst the pattern is loaded.

TPG Speed

This sets the movement speed in terms of fields or frame for the TPG. If this is set 0 then there is no movement and the pattern is static. A positive number results in movement to the right, with the bigger the number, the faster the movement. A negative number results in movement to the left, with the bigger the number, the faster the movement.

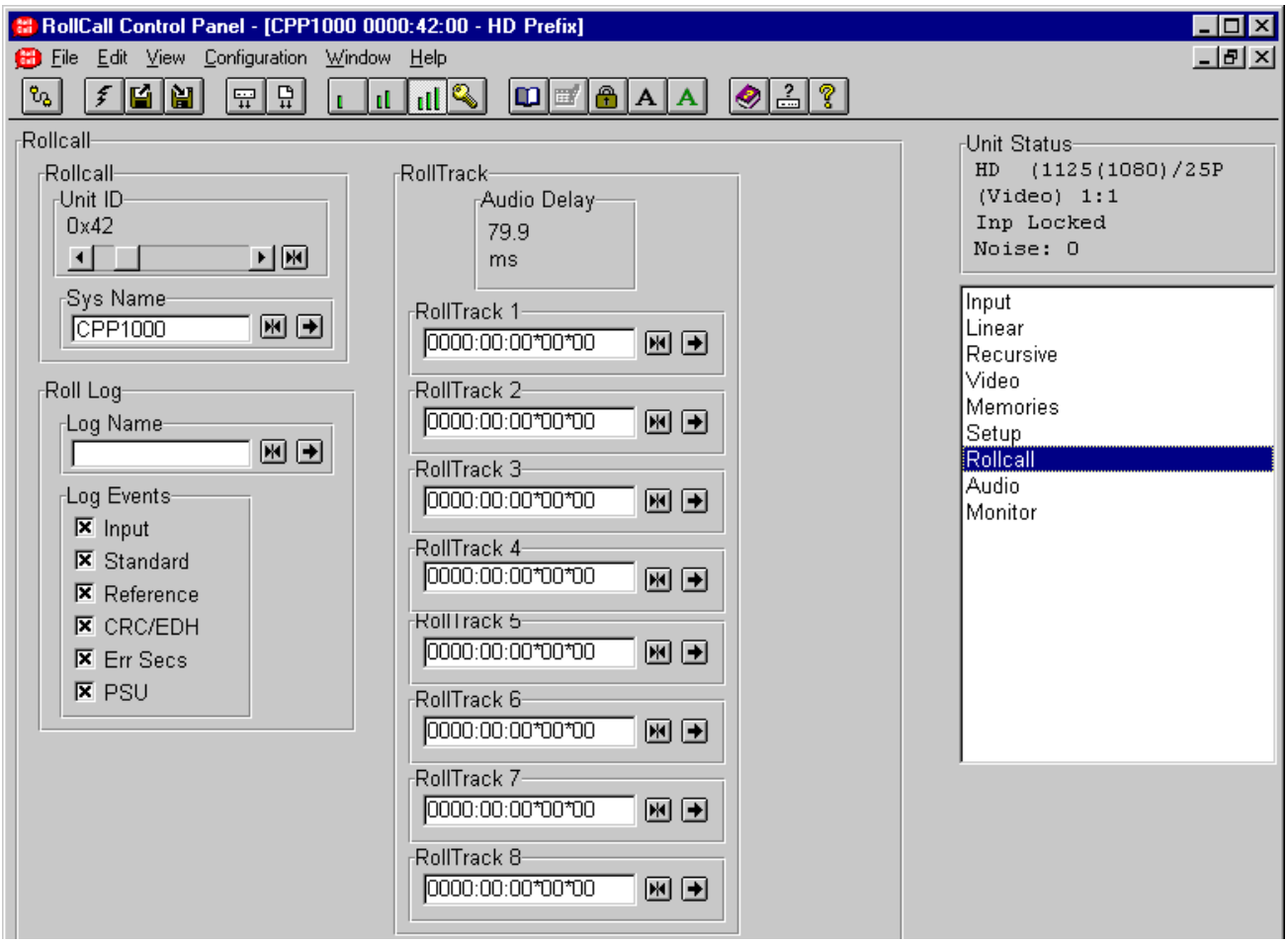
TPG Move

This selects the type of movement for the test pattern.

Field	field based movement
Frame F1	frame based movement F1 dominant
Frame F2	frame based movement F2 dominant

Selecting Preset will return the setting to **Field**.

RollCall



RollCall

If the CPP1000 is attached to a RollCall™ network with a logging device, information about various parameters can be made available to the logging device.

Unit ID

This is the RollCall address of this item of equipment. The unit number must be unique on each physical network segment. (Preset = 0x42)

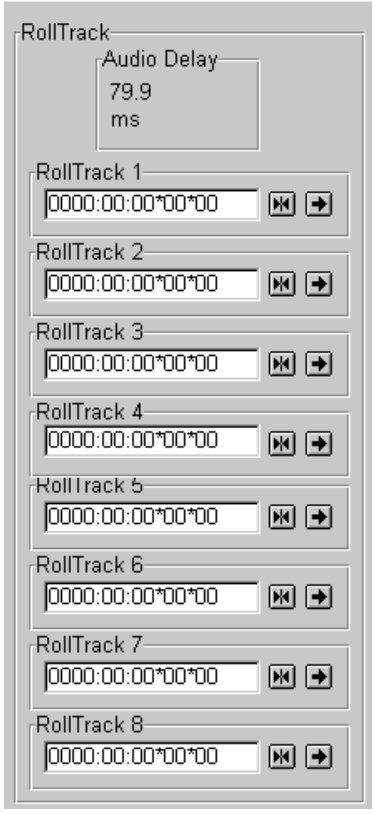
Sys Name

Sets the RollCall unit name. The default is CPP1000.

To change the name, type the new name in the text area and then select (return).

Selecting Preset will return the text to the default name.

RollCall (continued)



Rolltrack

The RollTrack function allows CPP1000 to automatically control remote audio/video delay modules using the RollCall system.

As the delay through the CPP1000 varies according to the processing underway, delay modules connected via the RollTrack system will automatically have their delay updated to match.

The delay sent out via the RollTrack system matches the internal audio delay of the CPP1000.

Audio Delay

This will show the total audio delay through the unit.

Rolltrack 1 to 8

In a typical setup, the network address will be 0000, the enclosure and slot address would match those of the destination module, and the channel number would be one of 14,15, 16 or 17 and the unit ID would be left at 00.

The CPP1000 RollTrack output becomes active as soon as the enclosure address is set to be non-zero and the Accept button is pressed.

Note that if the (return) button is not selected the changes will not take effect.

Selecting Preset will return the address to the default address.

Changing the RollTrack Address

The destination for the delay information is set from the RollTrack address as follows:

RollTrack allows up to 6 audio delays to be selected as a destination.

The string that looks like this:

0000:00:00x00x00

network address (usually 0000) in hex

0000:**00**:00x00x00

enclosure address in hex

0000:00:**00**x00x00

slot address of delay module in hex

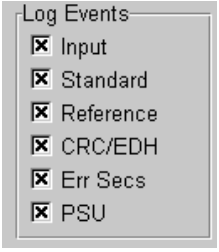
0000:00:00x**00**x00

the connection or channel number in decimal

0000:00:00x00x**00**

the unit ID

RollCall (continued)

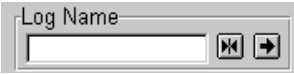


Log Events

This item allows information about five parameters to be made available for logging.

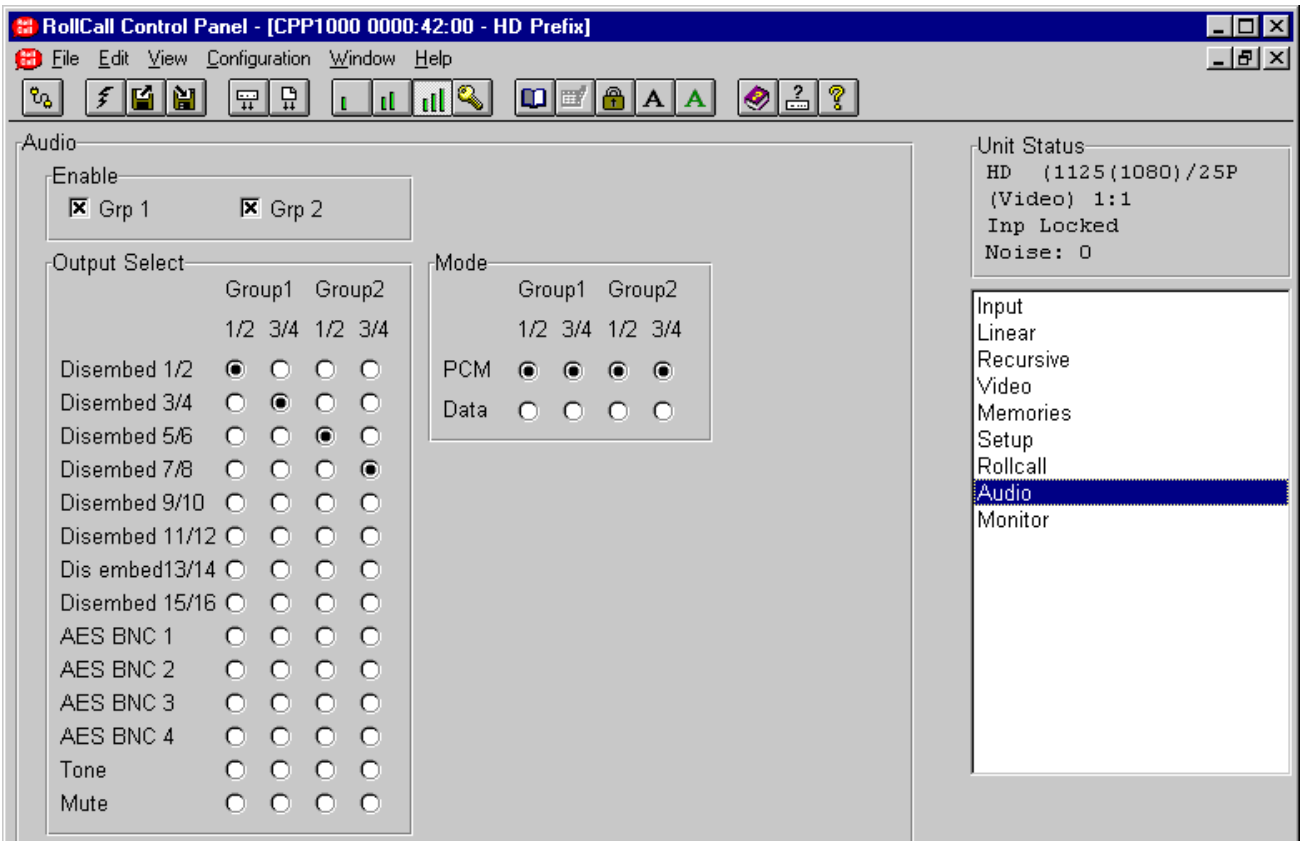
Input	When activated, a loss of input signal condition will be reported to the logging device.
Standard	When activated, the current operating standard will be reported to the logging device.
Reference	When activated, a loss of reference signal condition will be reported to the logging device.
CRC/EDH	When activated, CRC (HD) or EDH (SD) status will be reported to the logging device.
Errsec	When activated the error second count will be reported to the logging device.
PSU	When activated, the current state of the power supply will be reported to the logging device.

Log Name



If the Log Name is blank (obtained by pressing the preset button) and the cursor is at the left (no spaces), logging information is available to all logging devices on the RollCall network. If Log Name is set to the name of a particular logging device, only that device will receive information. The log name can be edited as described in the System Name section above.

Audio



Overview

The audio processing allows up to 4 AES inputs (each capable of holding one or two channels) to be processed. These can be from external AES BNC inputs or disembedded from the SDI signal. The system allows this to be treated as data or PCM. In the case of PCM the audio is rate converted. In the case of data the audio is not rate converted and must be synchronous to the input, the synchroniser must be input locked.

The audio can be embedded in the output SDI signal in Groups 1 and 2 if desired. Any of the audio inputs disembedded channels or AES BNC inputs can be mapped to any of the available output channels. In addition to this a channel can be set to mute or tone.

An AES monitor output allows any of the audio output channels to be monitored.

If both Group 1 and 2 are not enabled then any embedded signal in the SDI is passed through the system to the output. However if the 'Blank ANC Hor' function is enabled this will not happen and any embedded audio or data in the horizontal ancillary data space will be blanked.

Embedded audio may be passed without any processing if both groups 1 and 2 are not enabled. In this case the synchronizer must be input locked. This may be useful if more than two groups of audio are present.

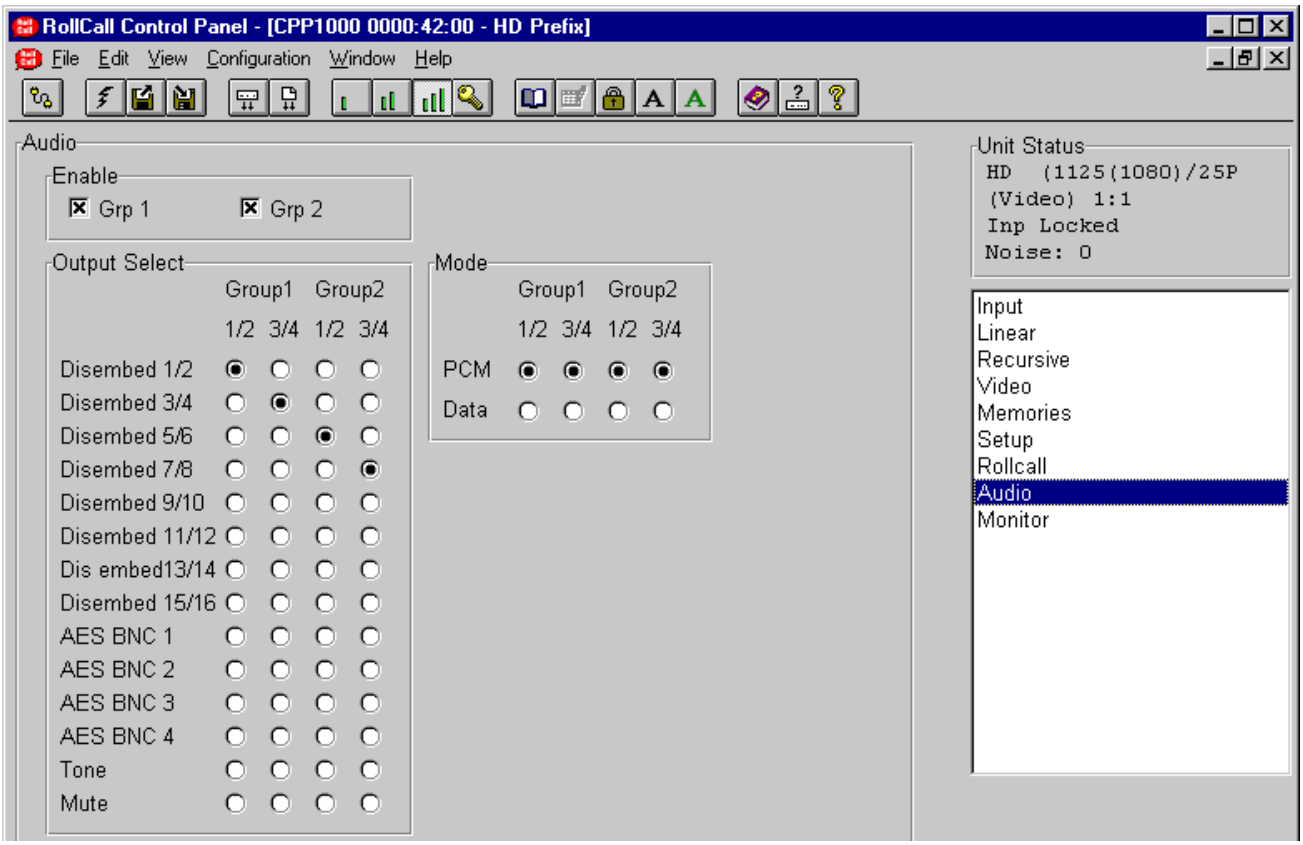
If only Group 1 is enabled then there will only be embedded audio in the SDI output in Group 1. The content can be selected from any of the embedded audio inputs or AES BNC inputs. Groups 2, 3 and 4 will not be present.

If only Group 2 is enabled then there will only be embedded audio in the SDI output in Group 2. The content can be selected from any of the embedded audio inputs or AES BNC inputs. Groups 1, 3 and 4 will not be present.

If Group 1 and 2 are enabled, there will be embedded audio in the SDI output in Group 1 and 2. The content can be selected from any of the embedded audio inputs or AES BNC inputs. Groups 3 and 4 will not be present.

When Group 1 or Group 2 is enabled any data, other than D-VITC, in the horizontal ancillary data space will be blanked. D-VITC will move so that its packet commences immediately after the audio on that line.

Audio (continued)



Enable (Grp 1)

This enables embedding of audio data into Group 1 in the output. The audio data to be embedded into Group 1 is selected from **Grp 1 Chan 1/2** and **Grp 1 Chan 3/4**. Preset is enabled.

Enable (Grp 2)

This enables embedding of audio data into Group 2 in the output. The audio data to be embedded into Group 2 is selected from **Grp 2 Chan 1/2** and **Grp 2 Chan 3/4**. Preset is enabled.

Output Select

This allows the user to choose what audio is to be embedded in the output. The same options are available for Group 1 3/4, Group 2 1/2 and Group 2 3/4.

Preset for Group 1 1/2	Disembed 1/2
Preset for Group 1 3/4	Disembed 3/4
Preset for Group 2 1/2	Disembed 5/6
Preset for Group 2 3/4	Disembed 7/8

Group 1 Channel 1/2

The options available are: -

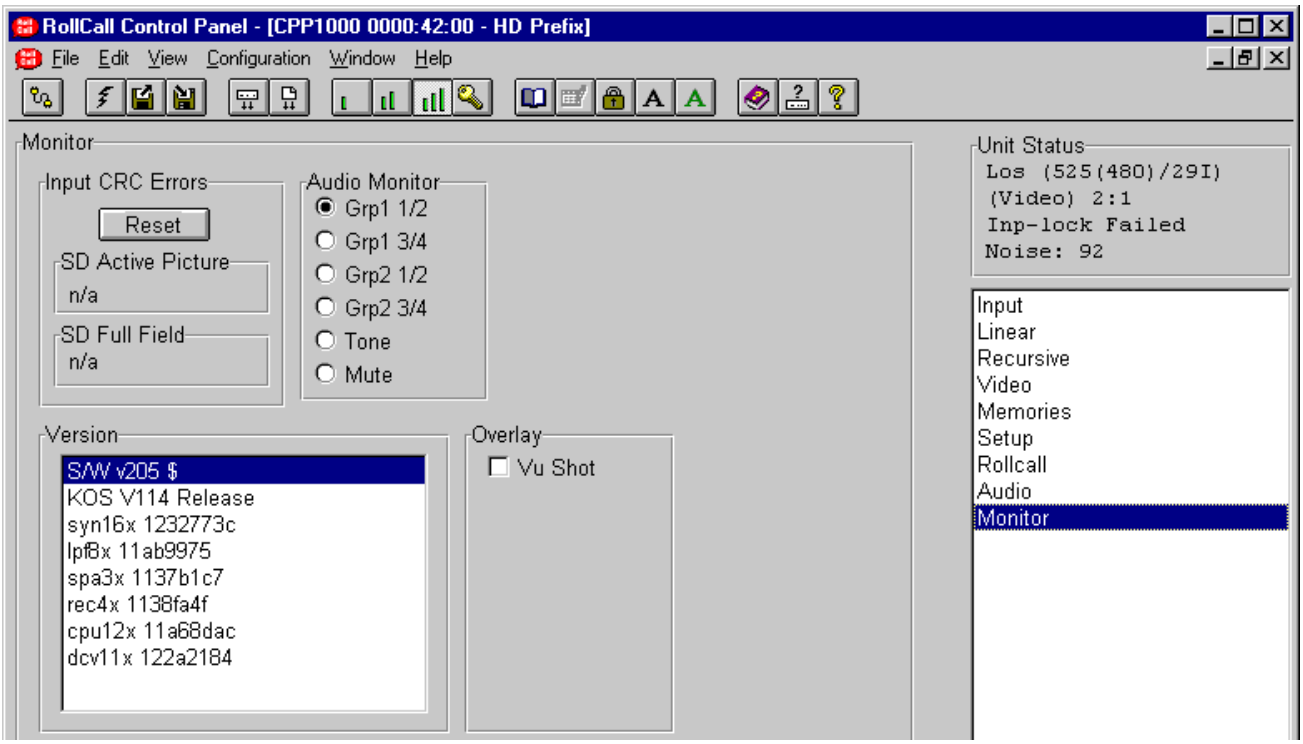
Disembed 1/2
Disembed 3/4
Disembed 5/6
Disembed 7/8
Disembed 9/10
Disembed 11/12
Disembed 13/14
Disembed 15/16
AES BNC 1
AES BNC 2
AES BNC 3
AES BNC 4
Tone
Mute

Mode

PCM Select this option if the audio is PCM and can be rate-converted. Preset is enabled.

Data Select this option if the audio is a compressed format, such as AC3 and therefore cannot be rate converted.

Monitor



Input CRC Errors

This monitors the incoming SDI for CRC errors.

These are listed as Luma and Chroma CRC errors when the HD input is selected and AP (active picture) and FF (full field) CRC errors when the SD input is selected.

Reset is used to restore the error count to zero.

Audio Monitor

This selects the audio for the audio monitor output. Any of the selected Groups embedded in the output may be selected.

Version

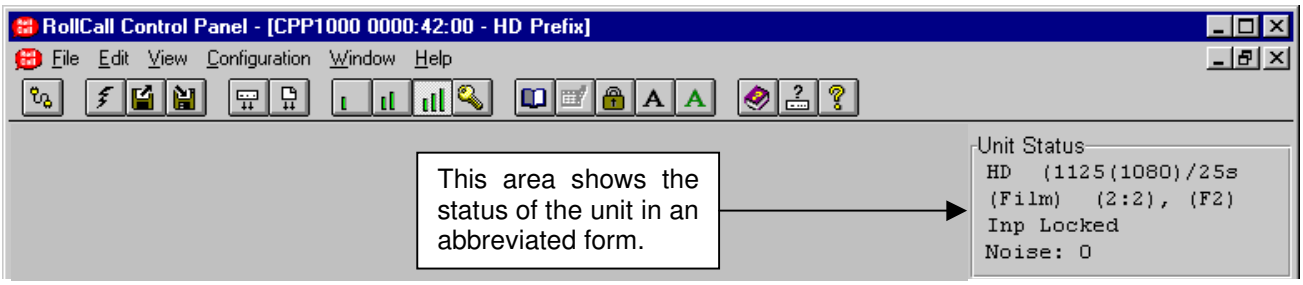
This displays the operating system version and the software version.

Overlay

Vu Shot

When enabled CPP1000 will detect a shot change and provide an output at the GPI connector.

Unit Status



Line 1: This shows the input source and standard

First Item *Source*		Meaning
HD		High Definition SDI input is selected
SD		Standard Definition SDI Input is selected
Los		A signal is not detected at the selected input
Err		The detected input signal standard does not match the manual set input standard

	Second Item *Standard*	Meaning
	1125(1035)/30i	This is a list of the standards for the unit. When brackets are used to surround the entire value it means that the standard has been automatically detected.
	1125(1035)/29i	
	1125(1080)/30i	
	1125(1080)/29i	
	1125(1080)/25i	
	1125(1080)/30P	
	1125(1080)/29P	
	1125(1080)/25P	
	1125(1080)/24P	
	1125(1080)/23P	
	1250(1080)/25i	
	750(720)/60P	
	750(720)/59P	
	1125(1080)/24SF	
	1125(1080)/23SF	
	1125(480)59P #1	
	750(720)/50P	
	750(576)50P #2	
	750(480)60P #2	
	750(480)59P #2	
	1125(1080)/30SF	
	1125(1080)/29SF	
	1125(1080)/25SF	
	750(720)/30P	
	750(720)/29P	
	750(720)/25P	
	750(720)/24P	
	750(720)/23P	
	525(480)/29i	
	625(576)/25i	

#1 This standard is auto detected as 1125(1080). It can be set manually if required.

#2 These standards are auto detected as 750(720). They can be set manually if required.

Line 2: This shows the Material and Phase

First Item *Material*		**Meaning**
(video)		Automatic mode Video detected
(film)		Automatic mode Film Detected
video		Manual mode Set to video
film		Manual mode Set to Film
video?		Manual mode Set to video, but film detected
film?		Manual mode Set to Film, but film detected

	Second Item *Phase*	**Meaning**
	2:1	Video
	1:1	Progressive
	(3:2)	Automatic Film Mode (60,59.94,30,29,97)
	2:2 F1	Manual Film Mode Manual field 1 dominant
	2:2 F2	Manual Film Mode Manual field 2 dominant
	2:2 (F1)	Manual Film Mode Automatic field 1 dominant
	2:2 (F2)	Manual Film Mode Automatic field 2 dominant
	2:2 F1?	Manual Film Mode Manual field 1 dominant, but Field 2 dominance detected
	2:2 F2?	Manual Film Mode Manual field 2 Dominant Field 1 dominance detected
	(2:2) F1	Automatic Film Mode Manual field 1 dominant
	(2:2) F2	Automatic Film Mode Manual field 2 dominant
	(2:2) (F1)	Automatic Film Mode Automatic field 1 dominant
	(2:2) (F2)	Automatic Film Mode Automatic field 2 dominant
	(2:2) F1?	Automatic Film Mode Manual field 1 dominant, but Field 2 dominance detected
	(2:2) F2?	Automatic Film Mode Manual field 2 Dominant Field 1 dominance detected

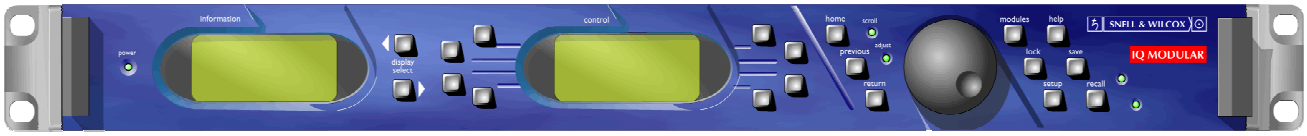
Line 3: This shows the genlock status.

Item	Meaning
Inp Locked	Genlock Mode : Input Locked Successfully
Inp-lock failed	Genlock Mode : Input Failed to lock,probably input loss
Ref Locked	Genlock Mode : Reference Locked Successfully
Ref Loss	Genlock Mode : Reference Reference not detected
Ref Ambiguous	Genlock Mode : Reference The reference rate is a multiple of the input rate
Ref-lock Failed	Genlock Mode : Reference Failed to lock, incorrect reference standard
Fixed Delay	Genlock Mode : Delay
Free Run	Genlock Mode : Free Run

Line 4 : This shows noise and shot information.

Item	Meaning
'Noise xx'	This is a measure of the noise floor in the recursive filter.
'shot'	When a shot change is detected, the word 'Shot' is displayed momentarily.

Operating the CPP1000 from an Active Control Panel via the Rollcall Remote Control System



The Menu Structure

All operational parameters and selections are made using a system of menus displayed in two LCD windows.

Menus are selected by push buttons adjacent to the display windows and further menu selections made by pressing a push button.

The spinwheel also allows continuously variable parameters, (where applicable) to be adjusted and the settings seen in the LCD window.

Various specific operations may be achieved by operating dedicated push buttons.

The system may be considered structured as a set of menus and sub-menus which are displayed in the windows. The windows will display the current status of the controlled module and other information messages. (e.g. error comments, warnings etc.) and the names of the lower-level menus which may be scrolled through using the spinwheel.

A new menu may be selected by pressing the appropriate dedicated function button.

For specific operational details of the active front panel consult the operating manual supplied with the active front panel.

The menu items shown on the structure diagrams will have the same functions and ranges as those displayed by the templates.