

# **Alchemist Platinum**

## **Motion Compensated Conversion Platform**

# Operator's Manual

© July 2006

**[www.snellwilcox.com](http://www.snellwilcox.com)**

Snell & Wilcox Ltd., Southleigh Park House, Eastleigh Road, Havant, Hants, PO9 2PE, United Kingdom.

For General Enquiry's contact: Tel: +44 (0) 2392 489000 Fax: +44 (0)23 9245 1411

For Technical assistance contact: Tel: +44 (0) 2392 489058 Fax: +44 (0) 2392 489057

Web: <http://www.snellwilcox.com/support> Ftp: <ftp://ftp.snellwilcox.com/support>

**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**



Service 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 :**



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

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



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

**Erklärung der Sicherheitssymbole**

**(D)**

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

**Sicherheits-Warnhinweise**



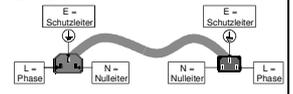
Die angeführten Service-/Reparatur-Anweisungen sind ausschließlich von qualifiziertem Service-Personal auszuführen. Um das Risiko eines lektroschocks zu reduzieren, führen Sie ausschließlich die im Benutzerhandbuch eschriebenen Anweisungen aus, es sei denn, Sie haben die entsprechende Qualifikation.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

- Um das Risiko eines Elektroschocks zu reduzieren, setzen Sie das Gerät weder Regen noch Feuchtigkeit aus.
- Stellen Sie immer sicher, dass das Gerät ordnungsgemäß geerdet und verkabelt ist.
- Dieses Equipment muss an eine Netzsteckdose mit Schutzleiter angeschlossen werden und einen zuverlässig identifizierbaren Nulleiter 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**



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.

**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 servicebare 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 lysnetudgange 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**

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

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

**Strömkontakter i länder utanför USA**

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

GRÖN/GUL ledning ansluten till E (Skyddsjordad ledare)

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



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

**Turvamerkkien selitys**

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, ellei ole asiantuntija. Voit saada sähköiskun. Jätä kaikki huoltotoimet ammattilaiselle.

- Sähköiskujen välttämiseksi suojaa laite sateelta ja kosteudelta.
- Varmistu, että laite on asianmukaisesti maadoitettu ja että sähkökytkennät on tehty oikein.
- Laitteelle tehoa syöttävässä järjestelmässä tulee olla SUOJAMAALIIKÄNTÄ (⊕) ja nolliiitännän 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 nollijohtin N-napaan  
RUSKEA vaihejohtin L-napaan



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

**Símbolos de Segurança**



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

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

**Avisos de Segurança**



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

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

**Ligação da alimentação noutros países que não os EUA**

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

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



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

**Επεξήγηση των Συμβόλων Ασφαλείας**



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



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

**Προειδοποίηση Ασφαλείας**



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

- Για να μειώσετε τον κίνδυνο ηλεκτροπληξίας μην εκθέτετε τη συσκευή σε βροχή ή υγρασία.
- Πάντα να εξασφαλίζετε τη σωστή μείωση 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 Αγωγός)

ΚΑΦΕ καλώδιο συνδέεται στο L (Αγωγός Φάσης)



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

**Products employing Lithium batteries**

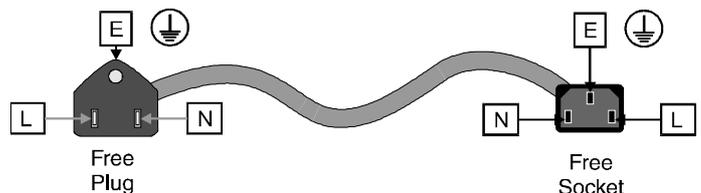
**CAUTION**

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

Alchemist Platinum conforms to the following standard:

### EN60950: 2000

Safety of Information Technology Equipment.



## 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, *either*

The commercial and light industrial environment (including, for example, theatres) E2

*or*

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

The applicable environment is stated in the Technical Profile section of the product operation manual under "EMC Performance Information/Environment."

## EMC Performance Information

Please refer to the *Technical Profile/Specifications* section of the product operation manual.

## 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 1694 or BBC type PSF1/2M.

### D-TYPE CONNECTORS

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

## About this Manual

This manual contains information for the operation of the Alchemist Platinum unit.

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

*Note that the date at the bottom of the page is the release date of the current revision.*

This manual covers the following product: \\snellwilcox.local\root\Marketing\Prodmgmt\Data

- Alchemist Platinum - Motion Compensated Conversion Platform

## 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:

- Alchemist Platinum
- Power cable
- Installation Manual
- Operation Manual

## Software Version Amendments

Notes about Versions Fitted ..... Version 8

## Manufacturers Notice

Copyright protection claimed includes all forms and matters of copyrightable material and information now allowed by statutory or judicial law or hereinafter granted, including without limitation, material generated from the software programs which are displayed on the screen such as icons, screen display looks etc.

Reproduction or disassembly of embedded computer programs or algorithms prohibited.

**Copyrighted names:** Microsoft Windows™

Information in this manual and software are subject to change without notice and does not represent a commitment on the part of Snell & Wilcox Ltd. The software described in this manual is furnished under a license agreement and may not be reproduced or copied in any manner without prior agreement with Snell & Wilcox Ltd. or their authorized agents.

*No part of this publication may be transmitted or reproduced in any form or by any means, electronic or mechanical, including photocopy, recording or any information storage and retrieval system, without permission being granted, in writing, by the publishers or their authorized agents.*

## Important Notice

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

## Table of Contents

SECTION	Page
0	Product Support Procedure ..... 0.9
1	Introduction
	Description ..... 1.1
	Features ..... 1.2
2	Specifications ..... 2.1
3	Installation
	Unpacking the Alchemist Platinum ..... 3.1
	Power Connections ..... 3.1
	Connections ..... 3.3
4	Operation ..... 4.1
	General Operating Principles ..... 4.1
	General Operating Information ..... 4.2
	Using the Dedicated Push Buttons ..... 4.3
	Input ..... 4.4
	Output ..... 4.5
	Convert..... 4.10
	Blur ..... 4.13
	Display ..... 4.16
	HD fixed aspect modes ..... 4.18
	Reference..... 4.19
	Memory ..... 4.20
	Utils ..... 4.21
	Audio ..... 4.23
	Set-up ..... 4.23

## Table of Contents (cont)

<b>RollCall PC Control Panel Screens for the Alchemist Platinum .....</b>	<b>4.27</b>
Input .....	4.27
Output .....	4.28
SD ProcAmp .....	4.30
HD ProcAmp .....	4.31
Enhance .....	4.32
Input Blank.....	4.33
Output Blank .....	4.34
Convert.....	4.35
Deft/P-Film .....	4.37
Video to Film.....	4.39
Blur .....	4.39
SD Display .....	4.40
HD Display .....	4.42
Active Area.....	4.43
PhC Active Windows .....	4.45
SeqActive Windows.....	4.45
Reference.....	4.46
Memory .....	4.47
SD Utils .....	4.48
HD Utils .....	4.49
Audio .....	4.50
RollCall.....	4.51
Auxiliary .....	4.52
RollTrack.....	4.53
Configure .....	4.54
<b>Active Control Panel Operation via the Rollcall Remote Control System .....</b>	<b>4.55</b>
<b>Alchemist Platinum DEFTplus Application Notes.....</b>	<b>4.56</b>
What is DEFT? (Digital Electronic Film Transfer).....	4.56
What are the Advantages of DEFT? .....	4.56
What is New in DEFTplus?.....	4.57
User Adjustable DEFTplus Controls .....	4.57
<b>Alchemist Platinum P-film Application Notes.....</b>	<b>4.60</b>
<b>Alchemist Platinum DEFTplus Interconnect Diagram - 525/59.94 to Slow PAL .....</b>	<b>4.62</b>
<b>Alchemist Platinum DEFTplus Interconnect Diagram – 525/59.94 to 1080/23.98PsF ...</b>	<b>4.64</b>
<b>External Devices.....</b>	<b>4.65</b>
<b>5 Appendix</b>	
RollTrack.....	5.1

## ***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**

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

- Item is required.

<p><b>Please mail to:</b> Snell &amp; Wilcox Ltd., Southleigh Park House, Eastleigh Road, Havant, Hants, PO9 2PE. United Kingdom.</p>	<p><b>Service Contact Information:</b> Tel: +44 (0) 2392 489058 Fax: +44 (0) 2392 489057 <a href="http://www.snellwilcox.com/support">http://www.snellwilcox.com/support</a> <a href="ftp://ftp.snellwilcox.com/support">ftp://ftp.snellwilcox.com/support</a></p>
---	--



# Description

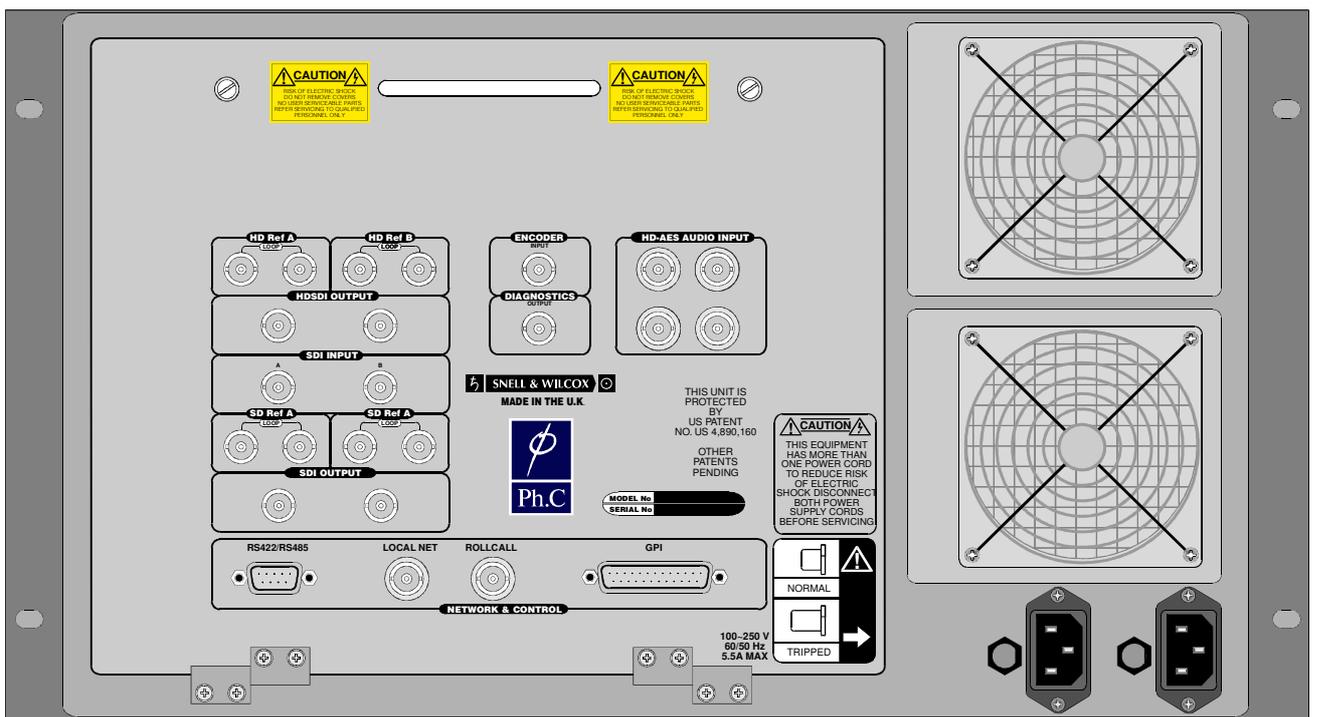
The Alchemist Platinum Ph.C motion-compensated standards converter delivers the precision standards conversion performance only possible from using phase correlation motion estimation technology. Transparent conversion is achieved using a 3-stage 46 point temporal spatial filter. Internal processing is performed at 4:4:4 resolution and at a minimum of 12-bit precision.

Alchemist Platinum Ph.C provides the most advanced standards conversion between standard

definition formats 525/59.94 & 625/50. High definition outputs are provided using a single step motion compensated upconversion process to 1080i, 1035i & 720p high definition standards.

With the DEFTplus option the Alchemist offers optimal conversion of mixed media inputs.

With the "Video to Film" option the Alchemist offers conversion of 50Hz or 60Hz interlaced formats to a progressive frame based output.



## Features

- The ultimate in standards conversion quality
- Motion-compensated conversion using Ph.C vectors – the most advanced motion estimation technique available
- 12-bit 4:4:4, internal processing
- Excellent signal to noise ratio >72dB
- Proprietary 46-point interpolation, delivering maximum vertical and diagonal resolution
- CleanCut™ interpolation, resulting in no smearing across scene changes
- Genlock, 2 x SDI references (Black Burst), 2 x HD references (Black Burst or Tri-Sync)
- Embedded audio, rate converted and delayed
- Advanced self-test diagnostics software
- Full RollCall™ remote control (including RollTrack™ for external audio delays)
- Self diagnostic test routine
- Options:
  - ◆ Standard Definition (2 x SDI) outputs
  - ◆ High Definition (2 x HD-SDI) outputs
  - ◆ DEFTplus
  - ◆ P-film
  - ◆ “Video to Film”
  - ◆ Dual redundant PSU's)

## Technical Profile

### Features

#### Signal Inputs

Serial Digital 2 x BNC SD 10-bit serial digital inputs at 270MHz – Rec. 601 and embedded audio SMPTE 272M

Analog Reference Separate SD and HD references  
HD ref: 2 x BNC HDTV Tri-syncs or SD Bi-sync for Genlock – SMPTE 240M/274M  
SD ref: 2 x BNC Bi-sync

#### Signal Outputs

Serial (SD option) 2 x BNC SD 10-bit serial digital outputs at 270MHz – Rec. 601 with embedded audio SMPTE 272M

Serial (HD option) 2 x BNC HDTV 10-bit serial digital outputs at 1.48GHz – SMPTE 292-1997 and embedded audio SMPTE 299M

#### Control Functions

Input Standard SD SDI – Rec. 601  
625(576)/50i,  
525(480)/59.94i

Output Standard (SD option) SD SDI – Rec. 601  
625(576)/59.94i,  
525(480)/50i

Output Standard (HD option) HD SDI – SMPTE 292M, 299M  
1125(1080)/59.94i,  
1125(1080)/60i,  
1125 (1080)/50i,  
1125(1035)/59.94i,  
1125(1035)/60i,  
1125(480)59.94p,  
1125(480)60p,  
750(720)/59.94p,  
750(720)/60p,  
750(720)/50p,  
750(576)/50p,  
750(480)/59.94p,  
750(480)/50p,

SD Film Output (Video to Film option) 625(576)/25PsF

HD Film Output (Video to Film option) 1125(1080)/25PsF  
1125(1080)/23.98PsF

SD Slow PAL (option of DEFTplus) 625(576)/23.98PsF  
625(576)/47.95i

HD Film Output (DEFTplus option) 1125(1080)/23.98PsF  
1125(1080)/47.95i

Input Loss Freeze/Black

Convert Ph.C Motion Compensation  
Active / Inactive area

Color-space conversion Auto, SMPTE 274, 240, BT709, REC 601

### Features

Genlock SD: Auto / Ref. A / Ref. B  
HD: Auto / Ref. A / Ref. B / Input  
Timing: Vertical / Horizontal

Memory 8 global memories.

Utilities Pattern On/Off.  
SD: EBU bars and SPMTE bars  
HD: 100% bars, 75% bars, SMPTE Bars, Tartan Bars, Pluge, Ramp, Sweep, Pulse & Bar, burst  
Mono, Freeze type: field or frame  
Gamut limit (SD only)  
Luminance clipper  
Control Source Front panel, RollCall

### Specifications

Internal Processing 12-bit 4:4:4 (Y: Cr: Cb)

Interpolation 3-stage 46 point temporal spatial filter

System delay (min delay) 150ms (60Hz to 60Hz)  
160ms (60Hz to 50Hz)  
170ms (50Hz to 60Hz)

180ms (50Hz to 50Hz)

System delay (normal) 317ms (60Hz to 60Hz)  
327ms (60Hz to 50Hz)

327ms (60Hz to 24Hz)

370ms (50Hz to 60Hz)  
380ms (50Hz to 50Hz)  
442ms (60Hz to Slow PAL)

#### Power

Input Voltage Range 100 V to 264 V rms., 50/60 Hz

Consumption 330 W

Mains Fuse Rating Re-settable circuit breaker

#### Mechanical

Temperature Range 0 to 40° C operating

Cooling 2 x axial fan, front-to-rear airflow

Weight Approximately 25 kg

Case Type 6 RU Rack Mounting

Dimensions 483 mm x 540 mm x 265 mm (w, d, h)

## Installation

### UNPACKING THE ALCHEMIST

The unit is packed in a single flight case. The contents of the flight case are as follows:

Alchemist unit  
2 Power cables  
1 Operating Manual  
1 Installation Manual

Unpack the flight case carefully and check for any shortages or shipping damage. Immediately report any shortages or damage to Snell and Wilcox Limited.

*Warning! The Alchemist Platinum unit weighs more than 25 kg. Appropriate manual handling precautions should be taken when lifting the unit.*

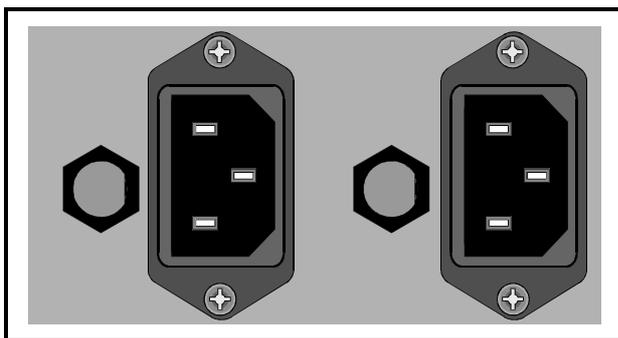


### CONNECTING POWER TO ALCHEMIST PLATINUM

Note: before connecting power to the unit please refer to the safety warnings on page 0.2.

#### Power Inlets

Mains power is supplied to the unit via two filtered IEC connectors. The right hand IEC connector (as viewed from the rear of the unit) powers the lower PSU.



The rated current for the unit is 5.5A at 100 V and 2 A at 250 V.

The standby switches are located on the left-hand side of the front panel.

Alchemist Platinum can support dual power supplies for redundancy. However this is an option, therefore a second PSU may not be fitted

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

#### Supply Voltage

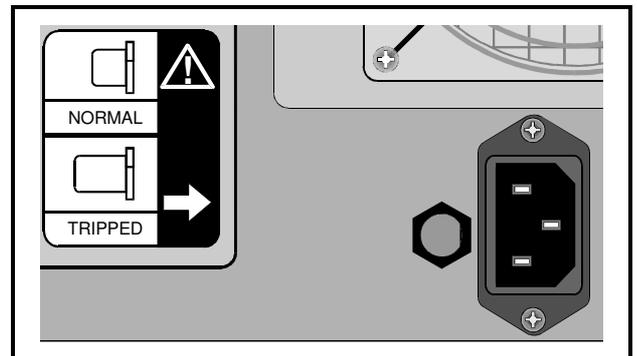
The unit automatically senses the nominal supply voltage and sets itself up accordingly. No voltage adjustment procedure is required.

#### Circuit Breakers

Alchemist Platinum has a circuit breaker on each mains input.

In the event of a fault a plunger will pop out and protrude from the rear of the breaker. To reset remove power from the unit, press the plunger back in and then restore power to the unit.

*Warning! If the breaker continually trips disconnect the unit and consult your dealer or service agent.*



**Environment**

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

*Caution! The ventilation holes on the rear and left hand side of the unit must not be obscured or damage to the equipment may result.*

*Warning! The Alchemist Platinum unit weighs more than 25 kg. Appropriate manual handling precautions should be taken when lifting the unit.*

**Remote Control**

The unit can be controlled via RollCall using the BNC connector.

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.

Note that in a RollCall™ segment, all units must have different unit address codes. For more information see 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.

---

For details of the menu system see Section 4 page 4.15, and for details of the RollCall system consult the Modular System Operation manual.

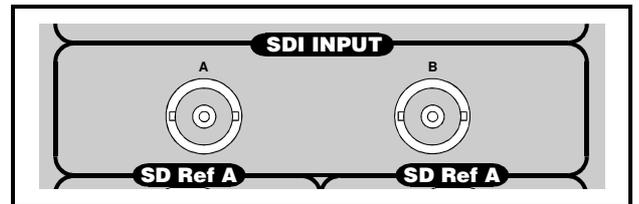
**CONNECTIONS**

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

**INPUTS**

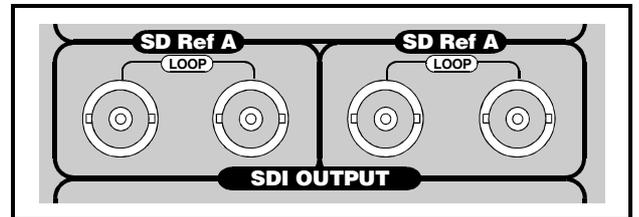
**SDI Serial Digital Input**

These are the two SDI serial digital inputs.



**SD Genlock Reference Ref A and B**

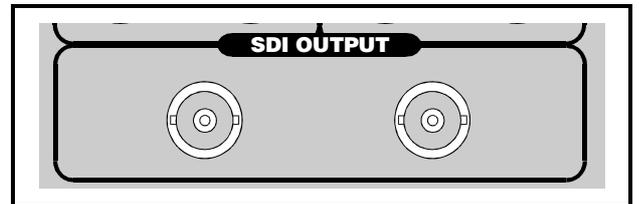
Two pairs of loop-through BNC connectors are provided that may be connected to external sources of reference signals.



**OUTPUTS (Covers SD and HD Output Options)**

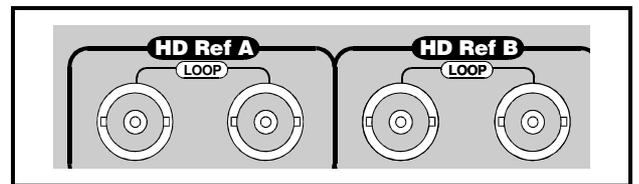
**SDI Serial Digital Output**

Alchemist Platinum provides two SD serial digital outputs.



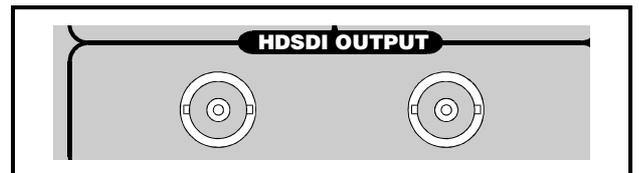
**HD Genlock Reference Ref A and B**

Two pairs of loop-through BNC connectors are provided that may be connected to external sources of reference signals.



**HD SDI Serial Digital Output**

Alchemist Platinum provides two HD serial digital outputs.



# Operation

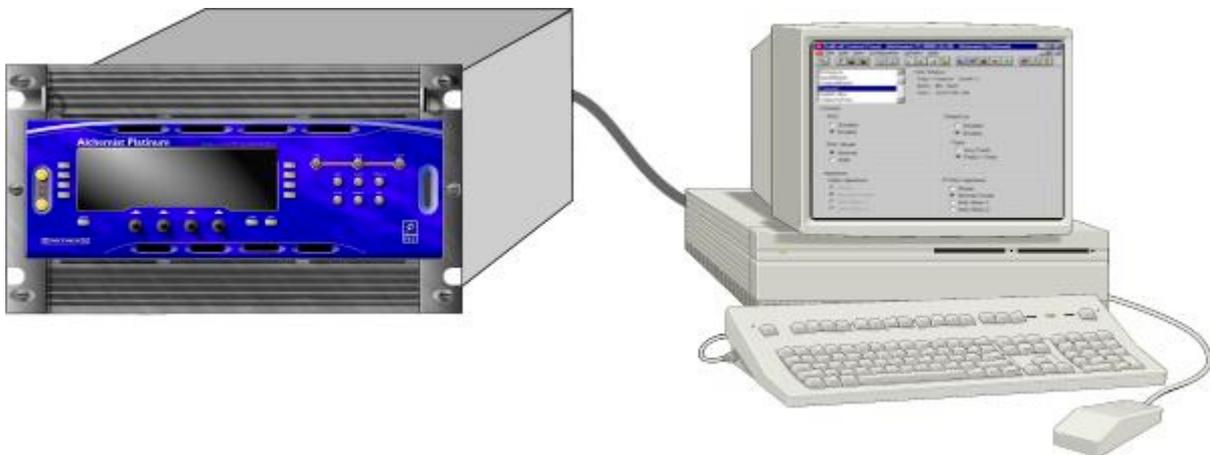
## General Operating Principles

The ALCHEMIST may be operated by two methods:

1. By using the front panel controls (see page 4.3)



2. Using RollCall PC Control Panel Screens (see page 4.27)



### OPERATION USING THE FRONT PANEL CONTROLS

All operational parameters and selections may be made by pressing dedicated push buttons and selecting items from a system of menus displayed in the window.

Menus are selected by push buttons and further menu selections made by using 4 spinwheels.

The spinwheels also allows continuously variable parameters, e.g. Gain, to be adjusted and the numerical value or setting to be seen in the window.

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



**General Operating Information**

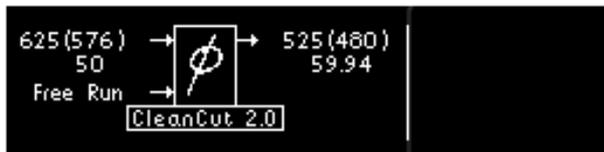
**Display Window**

The control window displays all selection menus sub-menus and unit status information.

Pressing the **Home**  button will display the home status screen in the display window from any position in the menu hierarchy.

It will display the current system set-up (showing the type, conversion mode and status of input and output signals).

**Home Display**

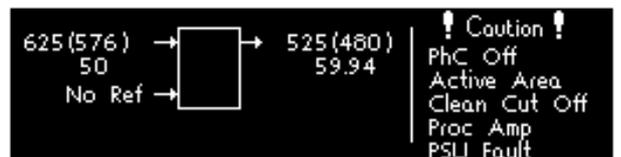


The home display shows various set-up information. In this example the input is 625 interlaced signal (576 active lines) at 50Hz field rate and the output signal is selected to be 525 interlaced signal (480 active lines) at 59.95Hz. There is no reference.

The following messages may also be displayed:

- Input Loss** - if no input is present
- Unknown** - if the input standard is not recognised
- No Audio** - if the input lacks embedded audio

**Warnings**



The right hand side of the home screen (to the right of the vertical bar) is reserved for warning messages. When certain controls affecting the conversion process are taken out of preset the word '! Caution !' is displayed followed by one or more messages indicating which controls have caused the warning.

The following warning messages can be displayed:

PhC Off, PhC Safe, Active Area, Clean Cut Off, Pattern, Freeze, Mono, Frz/Mono, Proc Amp, PSU Fault.



The **Back**  button allows a return to the last menu item that was *changed*. Up to 20 changed menu items may be retraced using this function.

**Preset** 

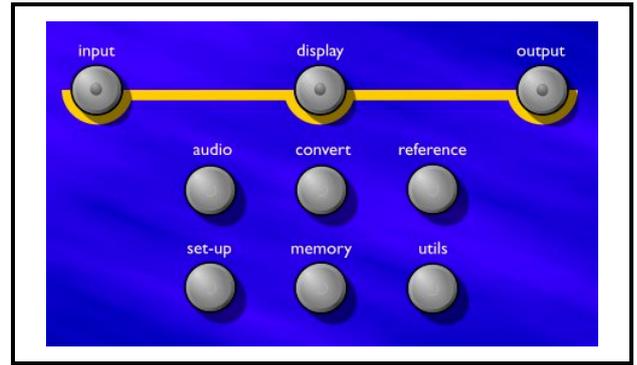
Pressing this button will return all settings of the displayed menu to zero or default settings.



### Using the Dedicated Push Buttons

Various specific operations may be carried out by using these push buttons to access particular functions.

When pressed the relevant menu will appear in the display window and the button LED will become illuminated, indicating the position in the menu structure.

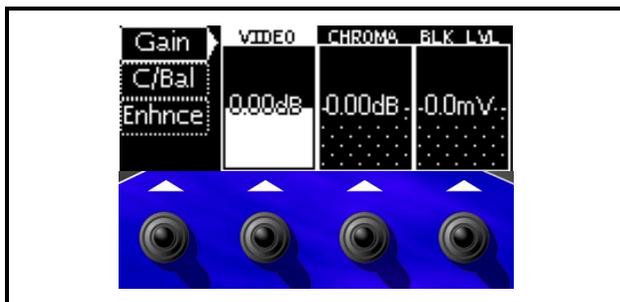


### Display Buttons



Pressing the button adjacent to the required item makes a selection and the display will then show the information relevant to that function.

### USING THE SPINWHEELS



The four spinwheels allow variable parameters, e.g. amount of *Video Gain*, in the example above, to be adjusted and the numerical value or setting to be seen in the window.



**Input**

This button will display the input menus, allowing input selection and control.

**Source**



A stand alone system will display the above Input Source menu and allow selection of the Serial Digital Interfaces A and B

If the system has been configured with a decoder (see External Devices section), the Input Source menu will be updated to offer additional inputs appropriate to the connected decoder. An example of this is shown below.



Note that when a decoder is connected and configured correctly, an additional 'Decoder' menu option appears on the Input screen. The options under this page will be described later in this section.

**Std (Standard)**



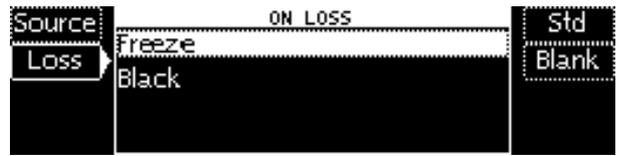
The input standard selections are Auto-Detect ,force 625(576) or force 525(480). The force positions may be used where the input standard is known, otherwise the Auto-Detect position (which automatically senses the input standard) should be used.

If a decoder is present and a composite input selected, other options may appear dependent on the decoder type. An example of this is shown below.



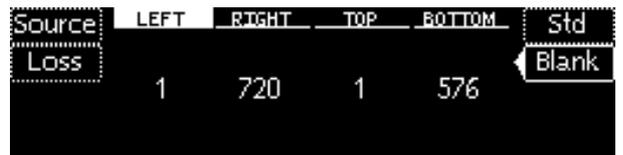
Preset selects the Auto position

**Loss**



In the event of the loss of the selected input signal, the output may be selected to become either a frozen picture or fade to black.

**Blank**



This function allows the adjustment of input blanking. It is used where the source video is known to have pixels/lines at the edge of the picture that are not required to be displayed. When set, the unit will blank any output data generated by the input data, regardless of the display control settings.

**LEFT**

Adjusts the left-hand edge of blanking. A setting of 1 indicates that no input pixels that are normally visible should be blanked, 2 causes the first input pixel to be blanked, etc.

**RIGHT**

Adjusts the right-hand edge of blanking. A value equal to the number of active pixels per line in the current input standard indicates that no input pixels that are normally visible should be blanked. Subtracting 1 from this causes the last input pixel to be blanked, etc.

**TOP**

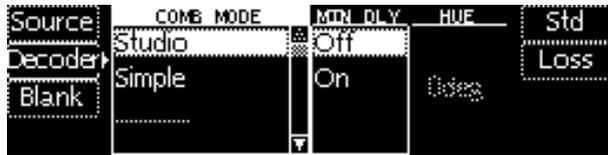
Adjusts the top edge of blanking. A setting of 1 indicates that no input lines that are normally visible should be blanked, 2 causes the first input line to be blanked, etc.

**BOTTOM**

Adjusts the bottom edge of blanking. A value equal to the number of active pixels per line in the current input standard indicates that no input lines that are normally visible should be blanked. Subtracting 1 from this causes the last input line to be blanked, etc.

**Decoder**

If a decoder is present, an additional menu page will appear under the input menu. An example of this page is shown below, however, the exact controls shown on this page will depend on the decoder.



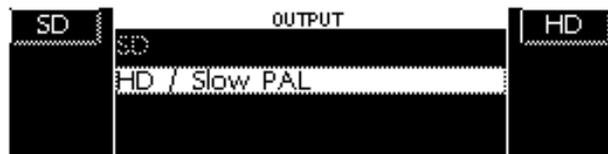
**Output**

The following menu items are all related to the control of the output of the system. Note that SD output or HD output or both may be available depending on the option ordered.



The Output control allows the system output to be toggled between SD and HD. The system cannot process SD and HD outputs simultaneously. The unselected output will carry bars.

The SD and HD pages allow control of their respective outputs, as described below



If the Alchemist has been purchased with the DEFTplus and SD out option, Slow PAL will appear next to the HD entry on the output page.

For further details see the DEFTplus application notes.

**SD (Standard Definition)**

Std (Standard)



**LINE STD**

This allows the output line standard to be selected.

The options as follows:

- 625(576)
- 525(480)

**RATE**

This allows the output video field rate (or frame rate for progressive standards) to be selected.

The options as follows:

- 25PsF
- 50i
- 59.94i

These output rates would not necessarily all be available for every output line standard. The line standard should be selected first, the field / frame rate menu will then update to reflect valid output rates for that particular line standard. Selecting 25Psf will activate "Video to Film" processing.

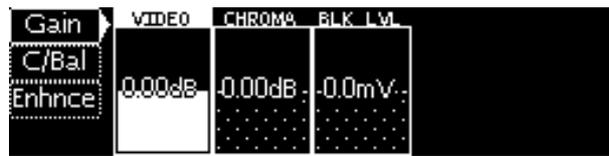
*Note that 25PsF is only available if the "Video to Film" option is fitted.*

If an encoder is connected and configured (see External devices section), an 'Encoding' menu is also displayed allowing selection of a composite output standard. Additional controls such as Pedestal and SECAM bottle may also appear depending on the encoder connected. An example is shown below.



The above encoder is capable of SECAM and NTSC, therefore the Pedestal and Bottle toggle buttons are visible.

**Proc (Processing Amplifiers)**



This menu allows level adjustments to be made to the output signal.

**VIDEO (GAIN)**

The video gain may be adjusted over a range of  $\pm 6$  dB in steps of 0.1 dB

*Note that this can produce output signals above standard levels.*

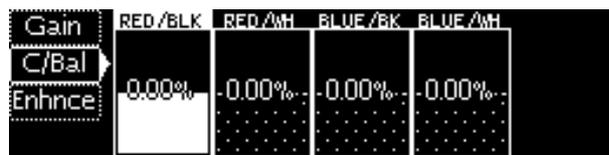
**CHROMA (GAIN)**

The chroma gain may be adjusted over a range of  $\pm 6$  dB in steps of 0.1 dB.

**BLK LVL (BLACK LEVEL)**

The black level of the output signal may be adjusted over a range of  $\pm 50$  mV in steps of 0.1 mV.

**C/Bal (Color Balance)**



The color balance of the picture may be adjusted using these controls.

There are two controls to adjust the amount of red in the picture and two for the amount of blue.

The **RED WH (White)** control will adjust the amount of red in the highlights (near peak level) and the **RED BK (Black)** will adjust the amount of red in the lowlights (near black level)

The range of control is  $\pm 25\%$  in steps of 0.1%

The **BLUE WH (White)** control will adjust the amount of blue in the highlights (near peak level) and the **BLUE BK (Black)** will adjust the amount of blue in the lowlights (near black level)

The range of control is  $\pm 25\%$  in steps of 0.1%

**Enhance (Enhancement)**

This controls the amount of detail enhancement that may be applied.



**Horiz**

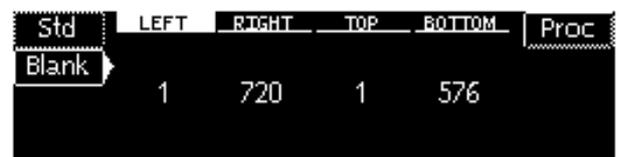
The enhancer adjusts the levels of high frequency horizontal information to make the output pictures appear sharper. The enhancer range is 0 to 100% in 1% steps and the default value is 0.

**Vert**

This menu controls the amount of detail processing in the vertical filters.

The enhancer adjusts the levels of high frequency vertical information to make the output pictures appear sharper. The enhancer range is 0 to 100% in 1% steps and the default value is 0.

**Blank**



This function allows the adjustment of output blanking. It is used where the source video is known to have pixels/lines at the edge of the picture that are not required to be displayed. When set, the machine will blank any output data generated by the input data, regardless of the display control settings.

**LEFT**

Adjusts the left-hand edge of blanking. A setting of 1 indicates that no input pixels that are normally visible should be blanked, 2 causes the first input pixel to be blanked, etc.

**RIGHT**

Adjusts the right-hand edge of blanking. A value equal to the number of active pixels per line in the current input standard indicates that no input pixels that are normally visible should be blanked. Subtracting 1 from this causes the last input pixel to be blanked, etc.

**TOP**

Adjusts the top edge of blanking. A setting of 1 indicates that no input lines that are normally visible should be blanked, 2 causes the first input line to be blanked, etc.

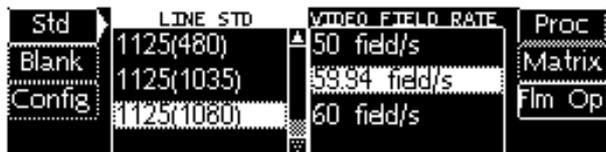
**BOTTOM**

Adjusts the bottom edge of blanking. A value equal to the number of active pixels per line in the current input standard indicates that no input lines that are normally visible should be blanked. Subtracting 1 from this causes the last input line to be blanked, etc.

**HD (High Definition)**

Selecting HD reveals the following menu:

**Std (Standard)**



**LINE STD**

This allows the output line standard to be selected.

The options as follows:

- 750(480)
- 750(576)
- 750(720)
- 1125(480)
- 1125(1035)
- 1125(1080)

**OUTPUT RATE**

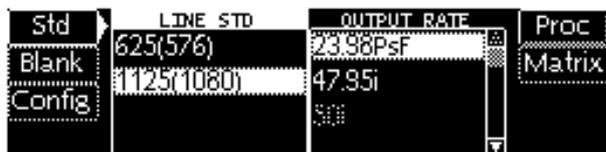
This allows the output video field rate (or frame rate for progressive standards) to be selected.

The options as follows:

- 23.98PsF
- 25PsF
- 47.95i
- 50i
- 59.94i
- 60i

These output rates would not necessarily all be available for every output line standard. The line standard should be selected first, the field / frame rate menu will then update to reflect valid output rates for that particular line standard.

With DEFT processing "OFF", a "video to Film" conversion can be performed by selecting 23.98PsF.



When performing a DEFTplus conversion i.e. DEFT processing is "ON", the user can select either a conversion to HD or Slow PAL. This is achieved by adjusting the LINE STD control. Once set the required OUTPUT RATE can be selected. The output rate may be set to either 23.98PsF or 47.95i.

*Note: Slow PAL is only available if both the DEFTplus and SD output options have been purchased and the Alchemist Platinum DEFTplus Co-processor is correctly connected and configured. See DEFTplus application notes.*

**23.98PsF**

In this mode all output frames will contain a 23.98Hz motion profile, irrelevant of the source type.

- Video elements will be converted to film using "video to film" conversion.
- 3:2 film elements will be converted by DEFT processing.
- Other frame-based elements will be converted according to the setting of the Varispeed control. If set to "smooth motion", interpolation will be performed at 23.98Hz.

**47.95i**

In this mode some output frames may contain a 47.95Hz motion profile depending on the source type.

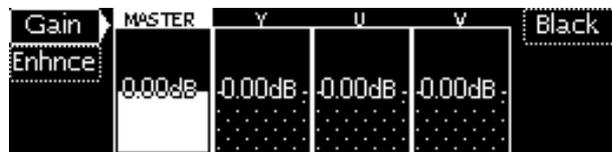
- Video elements will maintain motion changes on field boundaries (47.95Hz) using PhC motion compensation, in order to give to same look as the original content.
- 3:2 film elements will be converted by DEFT processing.
- Other frame-based elements will be converted according to the setting of the Varispeed control. If set to "smooth motion", interpolation will be performed at 47.95Hz.

*Note: As PAL is inherently an interlaced format, it is entirely appropriate for the Slow PAL output to contain 47.95Hz elements. In HD however, 1080/23.98PsF is a segmented frame format and therefore motion should only occur on frame boundaries. Apart from this definition, the process is essentially the same as conversion to Slow PAL and there is no fundamental reason why 47.95Hz elements cannot be portrayed within the 1080/23.98PsF standard. For this reason 1080/47.95i is a valid mode of operation provided by the unit, but is flagged as a warning on the front panel as it could produce unexpected results downstream if other equipment was expecting only strictly segmented frame content.*

**Proc (Processing Amplifiers)**

This menu allows level adjustments to be made to the output signal.

**Gain**

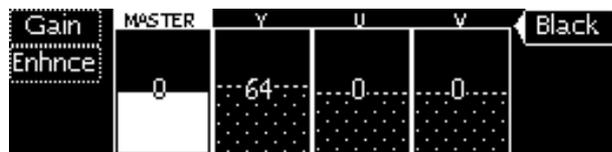


**GAIN**

These menu items allow the user to adjust the gain of the luminance (Y), blue color difference channel (U) and the red color difference channel (V). The Master gain is applied to all three channels simultaneously while the Y, U and V gains are only applied to the selected channel. Thus, the overall gain of any channel is the product of the master gain and the individual gain. The gain controls have a range of  $\pm 6\text{dB}$  with a preset value of 0dB. The options are:

- Master All 3 channels adjusted simultaneously
- Y } Individual channel adjustment
- U }
- V }

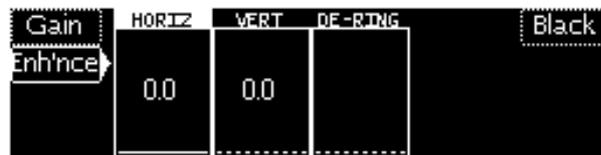
**Black**



These menu items allow the user to adjust the black level of the luminance (Y), blue color difference channel (U) and the red color difference channel (U) and the red color difference channel (V). The Master Black is applied to all three channels simultaneously while the Y, U and V Blacks are only applied to the selected channel. Thus, the overall black level of any channel is the sum of the master Black and the individual Black. The controls are shown in 10-Bit digital video levels. All Black controls have a range of  $-512$  to  $+511$ . The preset values of the Master, U and V Black is 0 while the preset value of the Luminance Black is 64.

**Enh'nce (Enhancement)**

This controls the amount of detail enhancement that may be applied.



**HORIZ**

The enhancer adjusts the levels of high frequency horizontal information to make the output pictures appear sharper. The enhancer range is 0 to 100% in 1% steps and the default value is 0.

**VERT**

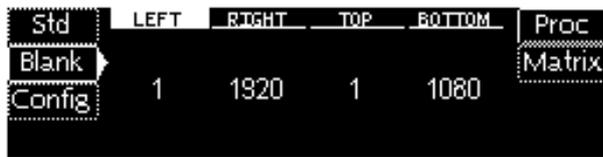
This menu controls the amount of detail processing in the vertical filters. The enhancer adjusts the levels of high frequency vertical information to make the output pictures appear sharper. The enhancer range is 0 to 100% in 1% steps and the default value is 0.

**DE-RING**

This menu controls the horizontal de-ringing filter. Often, when up-converted pictures are enhanced a substantial amount of ringing becomes visible on the output picture. Often this ringing is present on the source material but was not noticeable on a standard definition monitor. However, up-conversion and enhancement can emphasise this ringing. The Alchemist Platinum contains a special filter to minimise the amount of ringing without any softening of the picture.

The De-Ring range is 0 to 100% in 1% steps and the default value is 0.

Blank



This function allows the adjustment of output blanking. It is used where the source video is known to have pixels/lines at the edge of the picture that are not required to be displayed. When set, the machine will blank any output data generated by the input data, regardless of the display control settings.

LEFT

Adjusts the left-hand edge of blanking. A setting of 1 indicates that no input pixels that are normally visible should be blanked, 2 causes the first input pixel to be blanked, etc.

RIGHT

Adjusts the right-hand edge of blanking. A value equal to the number of active pixels per line in the current input standard indicates that no input pixels that are normally visible should be blanked. Subtracting 1 from this causes the last input pixel to be blanked, etc.

TOP

Adjusts the top edge of blanking. A setting of 1 indicates that no input lines that are normally visible should be blanked, 2 causes the first input line to be blanked, etc.

BOTTOM

Adjusts the bottom edge of blanking. A value equal to the number of active pixels per line in the current input standard indicates that no input lines that are normally visible should be blanked. Subtracting 1 from this causes the last input line to be blanked, etc.

Matrix

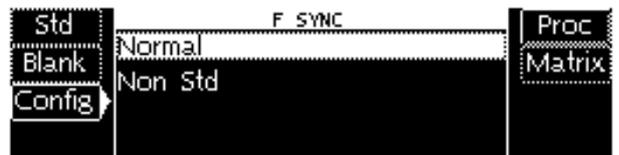


This controls the color space conversion applied to the signal. It defines the color space of the output signals. The input colorimetry is assumed to be as per REC 601.

The color correction options are:

- Auto            The best color space conversion for the signal process is selected. This is derived from the definition of the output video standard.
- SMPTE 274    Color space conversion to SMPTE 274 requirements is applied.
- SMPTE 240    Color space conversion to SMPTE 240 requirements is applied.
- BT 709        Color space conversion to SMPTE BT709 requirements is applied.
- REC 601       No color space conversion is applied.

Config



This menu allows various output signal options to be set up as follows:

F SYNC

This allows the type of output field sync to be selected. The options are:

- Normal        Suitable for most modern HD display monitors
- Non Std       This selection allows the output field sync to be compatible with older style 1035 HD display monitors such as the Legacy 1035 etc.



**Convert**

This function allows conversion options to be selected.



**PHC (Phase Correlation)**

This menu allows motion compensation to be enabled or disabled. When disabled conversion is linear.

**PHC MODE**

Normal

This is the default setting and the recommended mode of operation.

Safe

This mode is designed to improve performance of highly complex or dynamic source material. For example sped-up playback from a VTR or low detailed objects moving at extreme speeds. It also improves the conversion of aliased source video, such as computer generated captions with frame based vertical detail or over enhanced images. PhC safe mode may result in linear conversion of small fast moving objects. This mode incorporates the benefits of the 'A-Alias' conversion menu option as featured in software version 6 and earlier.

**DEFTPLUS**

This item allows DEFTplus conversion to be turned on or off. The control shown depends on the detected input standard. DEFTplus conversion is only relevant to and available for 525(480) inputs. When performing a DEFTplus conversion a sophisticated PhC based film sequence detector is used to enable the best possible conversion from film or video originated material.

*Note: A DEFTplus conversion can only be selected if the Alchemist has the option fitted.*

**DEFT**



**DETECT**

- Auto (default)
- Film 2:2
- Film 3:2
- Film VAR
- Animation
- Video

The detection algorithms have been optimized so that the maximum possible range of material can be converted in a single pass.

When set to 'Auto' the sequence detector will automatically identify film, video or variable frame rate film. However, this control can be used to guarantee the source is detected as a particular type and converted accordingly. An example use may be to guide the conversion when the input cannot be classified as purely of one type.

Film 2:2 refers to input where all frames last for 2 fields, that is, a frame rate of 30Hz. Film VAR refers to variable rate film or varispeed inputs in addition to 2:2 and 3:2.

*Note: Care should be taken to reselect input type when starting a new conversion.*

*The DEFTplus input type can only be selected if the Alchemist has been fitted with the DEFTplus option.*

**BIAS**

- Video 2
- Video 1
- Normal (default)
- Film 1
- Film 2

This control allows the sequence detector to be biased such that for borderline source material it is more likely to detect video or more likely to detect film. "Video 2" biases more strongly toward video than "Video 1". Similarly, "Film 2" biases more strongly toward film than "Film 1".

FilmVar



VARISPEED

This item is relevant to DEFTplus conversion of film originated inputs that cannot be processed strictly by DEFT. That is, if either of the following two conditions apply:

- (1) All film input other than 3:2 such as 2:2 (frames at 30Hz) or varispeed.
- (2) All film input when converting to an output rate other than 23.98PsF or 47i.

Clean Frames

This mode preserves clean frames and creates an output representative of the frames as they are received. Input frames may be dropped or repeated.

Clean Fields

This mode preserves clean fields by ensuring no interpolation between different input fields. Input fields may be dropped or repeated.

Smooth Motion

This mode attempts to maintain a smooth motion profile representative of the source by performing linear temporal interpolation.

P-FILM



This item allows P-film conversion to be turned on or off. The control shown depends on the detected input standard. P-film conversion is only relevant to and available for 625(576) inputs. When performing a P-film conversion a sophisticated PhC based film sequence detector is used to enable the best possible conversion from film or video originated material.

Note: A P-film conversion can only be selected if the Alchemist has the option fitted.

P-film



DETECT

- Auto (default)
- Film 2:2
- Film VAR
- Animation
- Video

The detection algorithms have been optimized so that the maximum possible range of material can be converted in a single pass.

When set to 'Auto' the sequence detector will automatically identify film, video or variable frame rate film. However, this control can be used to guarantee the source is detected as a particular type and converted accordingly. An example use may be to guide the conversion when the input cannot be classified as purely of one type.

Film 2:2 refers to input where all frames last for 2 fields, that is, a frame rate of 25Hz. Film VAR refers to variable rate film inputs where frames last for 2 or more fields.

Note: Care should be taken to reselect input type when starting a new conversion.

The P-film input type can only be selected if the Alchemist has been fitted with the P-film option.

BIAS

- Video 2
- Video 1
- Normal (default)
- Film 1
- Film 2

This control allows the sequence detector to be biased such that for borderline source material it is more likely to detect video or more likely to detect film. "Video 2" biases more strongly toward video than "Video 1". Similarly, "Film 2" biases more strongly toward film than "Film 1".

## Film



## FILM

This item is relevant to P-film conversions of all 625(576) film originated inputs when converting between standards at different temporal rates.

## Clean Frames

*This mode preserves clean frames and creates an output representative of the frames as they are received. Input frames may be dropped or repeated.*

## Clean fields

This mode preserves clean fields by ensuring no interpolation between different input fields. Input fields may be dropped or repeated.

## Smooth Motion

This mode attempts to maintain a smooth motion profile representative of the source by performing linear temporal interpolation.

## Aper (Aperture)



This item allows the type of conversion aperture to be selected. The aperture selected from the Video column applies to all conventional standards conversions. The aperture selected from the DEFT column applies whenever a DEFTplus conversion is enabled

*Note: Only the control applicable to the current conversion will be adjustable. The other is temporarily disabled.*

## VIDEO APERTURE / DEFT APERTURE

One of four possible conversion apertures can be applied to each conversion type.

## Sharp

This aperture maintains maximum possible vertical resolution from the source material.

*Note: This aperture should be used with caution when performing a DEFTplus conversion. An objectionable artifact may be visible should a mal-paired film frame occur.*

## Normal (Default)

This aperture maintains maximum viewable vertical resolution from the incoming source. It suppresses all "out of band" vertical frequency components.

## Anti-Alias 1

This aperture is designed for sources containing captions and graphics with high frequency frame based detail.

## Anti-Alias 2

This aperture is similar to Anti-Alias 1 but has greater effect.

*Note: For further information please refer to the DEFTplus application notes.*

## Vid/Film



## Anti-alias (default)

This mode is optimized to handle interlace aliases in the source.

## Sharp

This mode aims to preserve input fields with maximum integrity. It lends itself for use with dynamic material containing extreme motion speeds.

## Blur

The blur control modifies the PhC motion compensated video to film process in such a way that detail in moving areas of the image is reduced in the direction of movement. This is helpful when converting very sharp video material, typically when a fast camera shutter was used during capture. Use of the blur control allows this source material to look more like film originated sources.

*Note: This control is available only when using the anti-alias video to film aperture for the following conversions:*

525(480)/59.94i -> 1125(1080)/23.98PsF  
 525(480)/59.94i -> 625(576)/23.98PsF(Slow PAL)  
 625(576)/50i -> 625(576)/25PsF

The options are:

Auto Best result for most conversions.  
 0 – 8 9 steps of manual blur adjustment from 0 (none) to 8 (maximum blur).

A-Area (Active/Inactive Area)



PhC

These controls allow PhC motion compensation to be applied selectively to specific areas of the image. Typical applications include protecting static computer generated captions overlaid onto dynamic sports coverage. Very small, low contrast or transparent logos in front of dynamic action may also require protection.

This is done by specifying an active area and/or an inactive area of the image. The inactive area, when enabled, is converted linearly. Any region outside the active area, if enabled, will also be converted linearly. The remainder of the image will be converted using PhC motion compensation. To assist set up, a colored overlay may be activated. Active area is shown in green, inactive in red.

There follows an example of active and inactive areas in use



Example source with caption, dynamic video and logo



Colored overlay after adjustment to convert the source shown above.

Seq/Cut

These controls allow the sequence and cut detection to be restricted to specific areas of the image. A typical detection application would be to avoid sequence errors caused by artifacts near the image edges. A typical cut detection application would be to prevent the detection of cuts occurring within a specific region of the image.

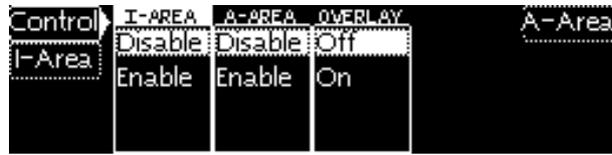
Both active and inactive active areas may be specified. The active area defines the region of the image that is analyzed to detect sequence and cuts. Inactive areas are ignored. To assist set up, a colored overlay may be activated. Active areas are shown in green, inactive in red.

*Note: Cut detection active/inactive area is only applicable for DEFT conversion or when 'Minimum Delay' mode is off.*

For both PhC and Seq/Cut active/inactive area selection the user should be aware that input blanked areas are automatically set up as inactive areas. However, input blanking settings do not change the range or values that define the user active/inactive areas.

Control

The control menu is identical for both PhC and Seq/Cut.



This menu allows control of the I-Area (inactive area) and the A-Area (active area).

**I-AREA** When enable is highlighted, the specified inactive region is not analyzed / converted linearly.

**A-AREA** When enable is highlighted, the specified active region is analyzed / PhC motion compensated **except** for any enabled inactive region.

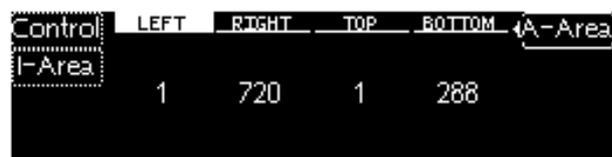
**OVERLAY** When On is highlighted, a colored overlay permits adjustment of active and inactive areas by eye. This control affects the overlay only.



NB: Care should be taken to ensure the I-AREA and A-AREA are disabled or readjusted on conversion of new source.

A-Area (Active Area)

This item allows the user to select an active area.



The Left, Right, Top and Bottom values may be adjusted using the spinwheels.

**LEFT** Adjusts the left-hand edge of the area. A setting of 1 indicates that the area coincides with the left-hand edge of the picture. 2 causes the area to be inset by 1 pixel, etc.

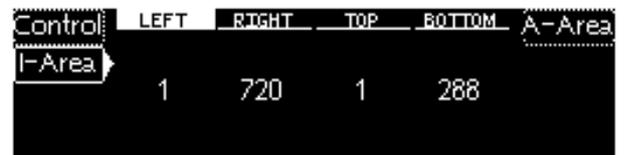
**RIGHT** Adjusts the right-hand edge of the area. A setting of 720 indicates that the area coincides with the right-hand edge of the picture, 719 causes the area to be inset by 1 pixel, etc.

**TOP** Adjusts the top edge of the area. For 625 line inputs a setting of 23 indicates that the area coincides with the top edge of the picture, 24 causes the area to be inset by 1 line, etc. For 525 line inputs a setting of 21 indicates that the area coincides with the top edge of the picture, 22 causes the area to be inset by 1 line, etc.

**BOTTOM** Adjusts the bottom edge of the area. For 625 line inputs a setting of 288 indicates that the area coincides with the bottom edge of the picture, 287 causes the area to be inset by 1 line, etc. For 525 line inputs a setting of 243 indicates that the area coincides with the bottom edge of the picture, 242 causes the area to be inset by 1 line, etc.

I-Area (Inactive Area)

This item allows the user to select an inactive area.



The Left, Right, Top and Bottom values may be adjusted in the same way as the A-Area.

Cuts



CLEANCUT 2.0

This menu allows CleanCut 2.0 to be enabled or disabled. CleanCut ensures no interpolation occurs between images either side of a cut. Under extreme circumstances it may be necessary to disable CleanCut under the rare circumstance of a false cut being detected.

TYPE

Any Field

Cuts are output on the closest output field boundary to the detected input cut.

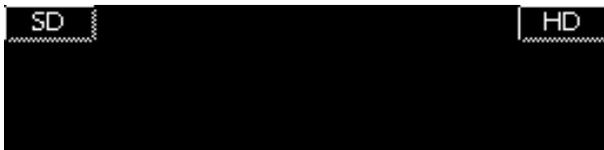
Field 1 only

Cuts are restricted such that the first field of a new scene always begins on a field one. This is dependent on the cut being detected correctly. Field 1 cuts may occasionally not be the preferred mode of operation. An example would be a small caption moving over a background cutting between different images. With Field 1 only selected there may be a small disturbance in the motion profile of the caption.



Display

This function is used to control the size, shape and position of the output picture.



The display controls for Standard Definition and High Definition are independent and need to be adjusted separately.

User Controls

Both SD and HD modes have a User display option, allowing independent adjustment of size, aspect, horizontal position and vertical position.

This allows the picture to be adjusted to meet custom requirements.

The Size, Asp, Pan and Pos controls can be found under the 'Var' tab. To make use of these custom settings, the User option should be selected under the Aspect Control menu.

Size



This adjusts the size of the whole image. Both vertical and horizontal size change together while maintaining the aspect ratio of the image.

Asp



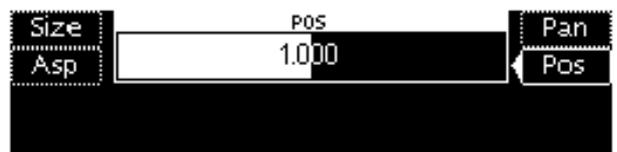
Adjusts the horizontal size of the image, allowing the shape (aspect ratio) of the output image to be changed.

Pan



This adjusts the horizontal position of the output image.

Position



This adjusts the vertical position of the output image.

**SD Fixed Aspect Modes**

There are eight SD fixed aspect ratio conversion modes, which are described in the table below.

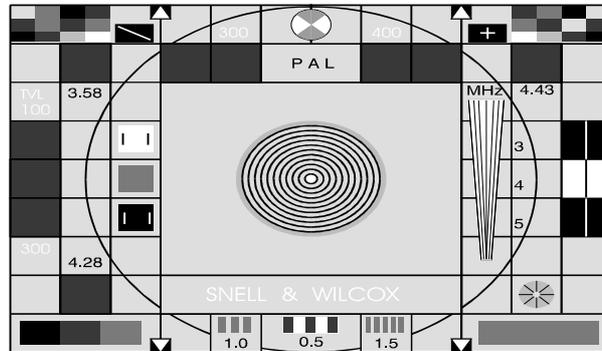
Input		Transformation	Output	
4:3	16:9		4:3	16:9
		Description: 4:3 to 16:9PB Ratios: V: 1 H: 3/4		
		Description: 4:3 to 14:9PB Ratios: V: 7/6 H: 7/8	Active image is vertically cropped	
		Description: 4:3 to 16:9FH Ratios: V: 4/3 H: 1		
		Description: 16:9LB to 4:3 Ratios: V: 4/3 H: 4/3		Active image is side cropped
		Description: 16:9LB to 14:9LB Ratios: V: 8/7 H: 8/7		Active image is side cropped
		Description: 16:9FH to 4:3 Ratios: V: 1 H: 4/3		Active image is side cropped
		Description: 16:9FH to 14:9LB Ratios: V: 6/7 H: 8/7		Active image is side cropped
		Description: 16:9FH to 4:3LB Ratios: V: 3/4 H: 1		

**HD fixed aspect modes**

There are three fixed aspect ratio conversion modes which are described below. They can be selected from the Aspect Control menu.

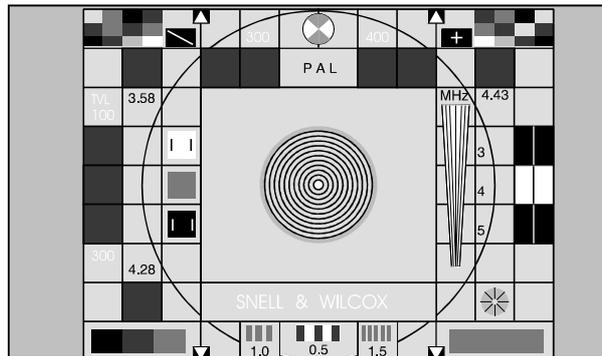
**Anamorphic > 16:9**

Produces a 16:9 output. The whole output screen is filled. Used when converting an anamorphic 16:9 image to a 16:9 display.



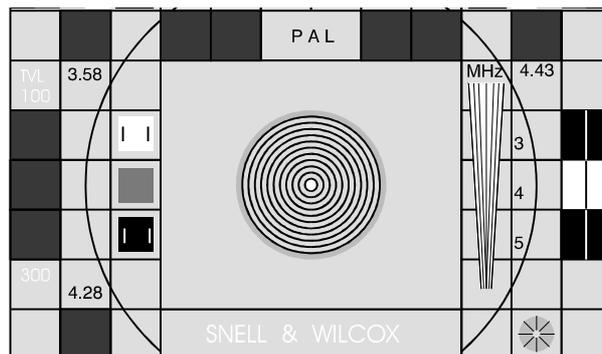
**4:3 > Full Height**

Produces a 4:3 output with all input picture information retained and blanked columns to the left and right of the image. Used when converting a 4:3 image to a 16:9 display when it is necessary to retain all of the input image.



**4:3 > Full Width**

Produces a 16:9 output. The whole output screen is filled and information at the top and bottom of the input image may be lost. Used when converting a 4:3 image to a 16:9 display when it is necessary to fill the entire output display.





**Reference**

This function allows genlock to be enabled and a reference source to be selected.



Selecting SD or HD will display the genlock menus for that format. Note that both the physical reference input connections, and the menus controlling genlock functionality are separate for SD and HD.



**Enable**

This allows the genlock function to be turned ON or OFF. When selected the unit will genlock to the selected reference source. When de-selected the unit will ignore any reference signals and will be in the free-run mode.

**SOURCE**

This allows the reference source to be selected.

**Auto**

The unit will scan the Reference A and Reference B inputs for a suitable reference signal, selecting the one most appropriate to the current output standard. The HD genlock will also look at the Input as a possible reference source.

Auto should be used in the majority of cases.

**Ref A**

Forces the unit to operate from the external reference A input. It will force it to be used regardless of whether it is the correct standard or not, or indeed if there is a reference signal connected at all. Therefore this setting should be used with caution.

**Ref B**

Forces the unit to operate from the external reference B input. It will force it to be used regardless of whether it is the correct standard or not, or indeed if there is a reference signal connected at all. Therefore this setting should be used with caution.

**Input (HD only)**

Forces the unit to lock to the video input. If the line/field rates differ, the system will still clock lock and indicate successful genlock.

**Valid References**

SD:  
625/50  
525/59.94

HD(including Slow PAL):  
1125/59.94  
1125/60  
1125/50  
1125/47.95  
1125/23.98  
720p/60  
720p/59.94  
720p/50  
625/50  
525/59.94  
625/47.95

**Timing**



The relative timing between the reference signal and the output signal may be adjusted using these controls. *Note that these controls may be set up even if the unit is not genlocked.*

**Horiz**

The horizontal or line timing may be adjusted over a range of one output line in steps of 1 pixel.

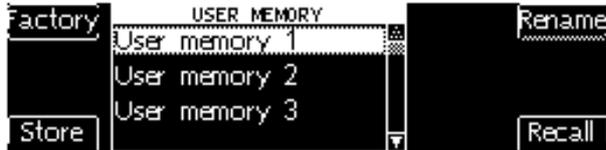
**Vert**

The vertical timing may be adjusted over a range of one output frame lines in steps of 1 line.



**Memory**

This menu is used to store and recall the various system memories. There are eight system memories available. Each memory contains a complete record of the machine settings.



The current machine setting is stored in the system memory. This will be recalled on powering-up (it can't be recalled by the user). If the user recalls a user-memory, its setting will be copied to the system memory, i.e. the previous system setting is lost. All machine settings, except of the following, can be stored to / recalled from individual user memories:

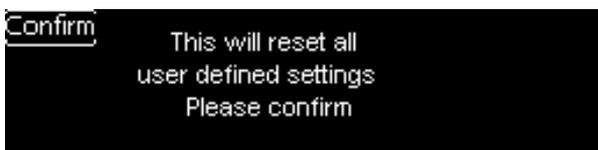
- Status of "action buttons" (like "Store", "Rename", "Recall") are not stored in any memory
- The names of memories, the selection of current memory, the GPI enable selection, the RollTrack addresses and the service controls are only stored on a system base (i.e. they don't change on recalling a user-memory).
- Input and output active values are remembered for the last standard selection while the unit is powered on.

**Default**  
 Recalling default will apply the default values to all parameters. It will not clear the user memories.

**Factory**

**! Warning !**  
**This will restore the unit to the factory settings and clear all the user memories and their names.**

As all user memories will be cleared on this action, a warning message will appear, asking for confirmation before execution.



**USER MEMORY**

This allows a user memory location to be selected. There are eight locations plus the default available.

**Store**

When selected this will store the system settings in the selected memory location. It is not possible to store user settings to the Default memory.

**Recall**

When selected this will change the system settings to those stored in the

**Rename**

When selected the user will be able to edit the name of the currently selected memory. It is not possible to change the name of the default memory.

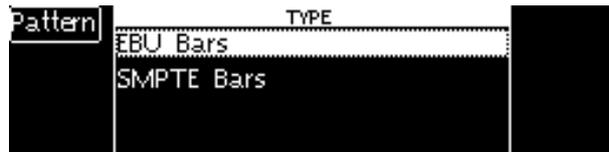


**Utils**

These menus allow various actions to be applied to the output signal. SD and HD settings are independent of one another.

**SD Settings**

**Pattern**



Pattern may be toggled on and off using the Pattern button. This can only be done if the menu relates to the currently selected output format (SD or HD).

**Type**

The pattern may be chosen as either EBU Bars or SMPTE bars

**Freeze**



Freeze may be toggled on and off with the Freeze button.

**Type**

The frozen picture may be chosen to be Field 1, Field 2, or a Frame.

**Mono**

The monochrome output may be toggled on or off with the Mono button.

**Clip**



The luminance clipper may be switched on or off.

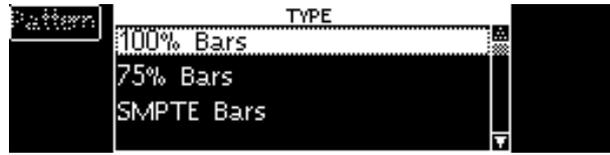
**Gamut**



This control allows a gamut limiter to be enabled.

HD Settings (Including Slow PAL)

Pattern



Pattern may be toggled on and off using the pattern button. This can only be done if the menu relates to the currently selected output format (SD or HD).

Type

The pattern may be chosen from the following:

- 100% bars
- 75% Bars
- SMPTE bars
- Tartan Bars
- Pluge
- Ramp
- Sweep
- Pulse & bar
- Burst

Freeze



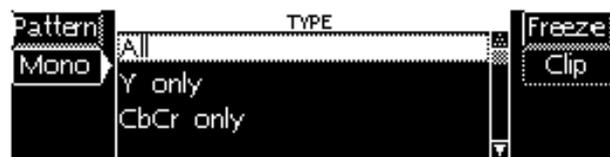
Freeze may be toggled on and off with the Freeze button.

Type

The frozen picture may be chosen to be Field 1, Field 2, or a Frame.

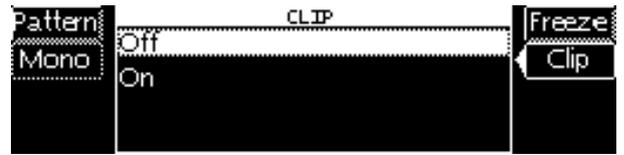
Mono

This control selects the monochrome output functions.



It allows the user to select which of the three video channels are turned on at the HD output. The three channels available are luminance (Y), the blue color difference signal (Cb) and the red color difference signal (Cr). The default setting is All which turns on all three channels.

Clip

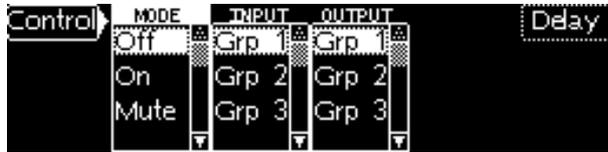


The luminance clipper may be switched on or off.



Audio

This menu allows the Audio parameters of the Alchemist to be set up.



Control

The embedded audio functionality can be controlled from this menu.

Mode

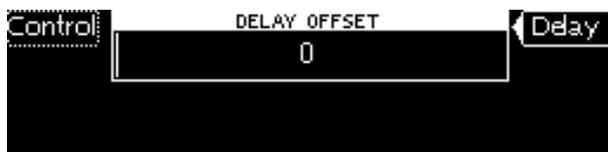
The audio state can be Off, On, Mute or Tone.

When the Audio is On, the output audio will be automatically delayed by the same amount as the video delay through the system.

Input, Output

Input and Output Group selection is available from this menu. Note that the Alchemist can only pass audio from one input group to one output group at any one time.

Delay



Delay Offset

The Delay Offset can be used to add additional delay to the audio path, in order to compensate for other equipment in the video signal path. This adjustment is in milliseconds.



Set-up

This menu provides additional system set-up parameters.



GPI

Enabling GPI causes the Alchemist to respond to 'closing contact' GPI signals from the connector on the rear of the unit. Corresponding Tally lines are also provided via the GPI connector. There are 6 GPI signals, each one triggering a memory recall (Memory locations 1 to 6).

MIN DLY

Off is the default mode and is the recommended mode of use. In this mode the latency through the Alchemist is approximately 317-380ms. If a reduced latency is required MIN DLY should be set to ON. In this mode the latency is approximately 150-180ms.

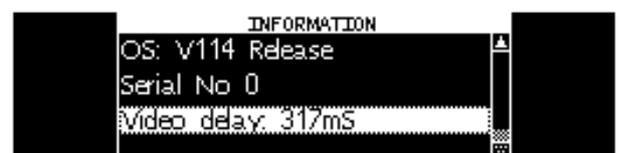
Note: If DEFTplus processing is enabled, the unit's delay is identical whether minimum delay is on or off. This is due to a fixed minimum delay required for analysis. If DEFTplus processing is disabled, it is recommended to leave minimum delay off as the additional analysis window allows maximum cut detection performance. Video latency will vary depending on the input and output formats selected. The current value can be obtained from the Info menu.

Info

This page will display a list of each of the boards in the system and their software release version number.



This page will also display the unit serial number and current video latency.



## RollCall

This menu allows RollCall network parameters to be set up.



The RollCall address may be changed but it is not effective until the unit is re-started.

## Name

This sets the RollCall unit name. The default is Alchemist Pt. The character selected for editing will be highlighted.



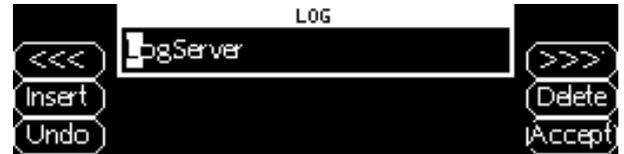
To edit a different character press either the upper left-hand button  adjacent to '<<<' or the upper right-hand button  adjacent to '>>>'. Once the character is selected turning the front panel knob changes the character.

Pressing the middle left-hand button  adjacent to 'Insert' adds a space character to the name at the highlight position. Pressing the middle right-hand button  adjacent to 'Delete' removes a character from the name at the highlight position.

Pressing the bottom left-hand button  adjacent to 'Undo' returns the name to its value when the Sys Name menu was last entered. Pressing the bottom right-hand button  adjacent to 'Accept' makes the changes active.

## Log

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



If the Log Name is **LogServer** (obtained by pressing the PRESET button) and the cursor is at the left (no spaces), logging information is available to all logging devices called LogServer 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 Name section above.

If the Log name is blank, logging information is available to all logging devices on the RollCall network.

Items (Log Items)



Selecting this item reveals a list showing information about four parameters that can be made available for logging.

The Log Items are:

Input Status

When activated, a loss of input signal condition will be indicated to the logging device.

Input Standard

When activated, the current input standard will be available to the logging device.

Reference Status

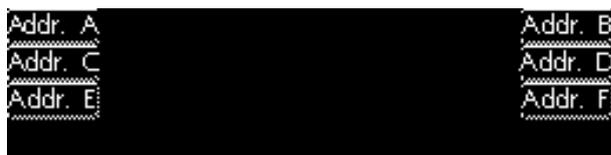
When activated, a loss of reference signal condition will be indicated to the logging device.

Output Standard

When activated, the current output standard will be available to the logging device.

Select the parameter to be changed. Pressing the bottom right-hand button  adjacent to 'Select' toggles the status of the selected parameter. Enabled parameters will be marked.

RollTrack



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

As the delay through the Alchemist varies according to the conversion mode, 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 Alchemist.

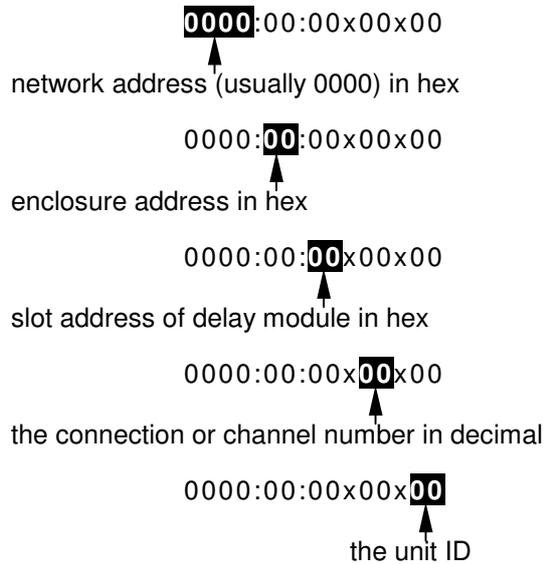
For more detailed information, see Section 5 the RollTrack System Appendix.

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

Selecting RollTrack provides a sub-menu that allows up to 6 audio delays to be selected as a destination. Selecting any of the 6 Address buttons produces an address editing menu as shown below.



The menu provides a string that looks like this:



A more detailed description of these items is given in the RollTrack section (Appendix) at the end of this manual.

In a typical set-up, 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 should be set to the RollCall ID of the destination unit.

The Alchemist 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 Accept button is not pressed at the end of editing the string, the changes will not take effect.

## Autotest

The Alchemist provides autotest functionality that allows the user to test boards in the system for any functional errors.

The autotest menu is selected by holding down **Home**  and pressing **Set-up** .



The user can select one of the boards in the system from the menu list. When the board the user wishes to test is highlighted, pressing 'Select' will initiate the test for that board. 'Testing' will be displayed until the result is available, either 'Passed' or 'Failed'. This may take up to one minute.

*Note: Ensure a valid SD SDI input is connected to the system prior to initiating any of the individual board tests.*

The user can continue to test boards from the list once each result is returned. However, the box must be re-powered before further video processing. To ensure this happens, other menu buttons will be temporarily disabled.

If any board tests are identified as 'Failed', please contact your nearest Snell & Wilcox agent to arrange servicing.

## Debug

The Debug menu is intended for use by Snell & Wilcox R&D personnel only and may result in incorrect operation, recoverable only by re-powering the system.

## RollCall PC Control Panel Screens for the Alchemist Platinum

### Input

This will display the input menus, allowing input selection and control.

### Source

A stand alone system will display the above Input Source menu and allow selection of the Serial Digital Interfaces A and B

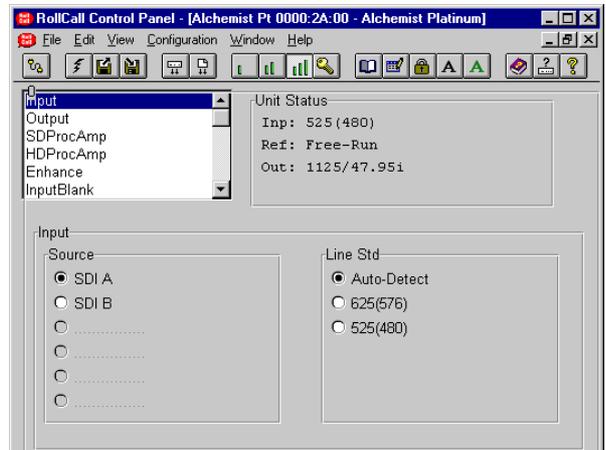
If the system has been configured with a decoder (see External Devices section), the Input Source menu will be updated to offer additional inputs appropriate to the connected decoder.

*Note that when a decoder is connected and configured correctly, an additional 'Decoder' menu option appears on the Input screen.*

### Line Std

The input standard selections are Auto-Detect ,force 625(576) or force 525(480). The force positions may be used where the input standard is known, otherwise the Auto-Detect position (which automatically senses the input standard) should be used.

If a decoder is present and a composite input selected, other options may appear dependent on the decoder type.



## Output

The following menu items are all related to the control of the output of the system.

*Note that SD output or HD output or both may be available depending on the option ordered.*

### Output

This allows the system output to be selected as SD or HD. The system cannot process SD and HD outputs simultaneously. The unselected output will produce bars.

The SD and HD sections allow control of their respective outputs, as described below.

If the Alchemist has been purchased with the DEFTplus and SD out option, Slow PAL will appear next to the HD entry on the output page.

For further details see the DEFTplus application notes.

#### SD Output Line Std

This allows the output line standard to be selected. The options as follows:

625(576)  
525(480)

#### SD Output Rate

This allows the output video field rate (or frame rate for progressive standards) to be selected.

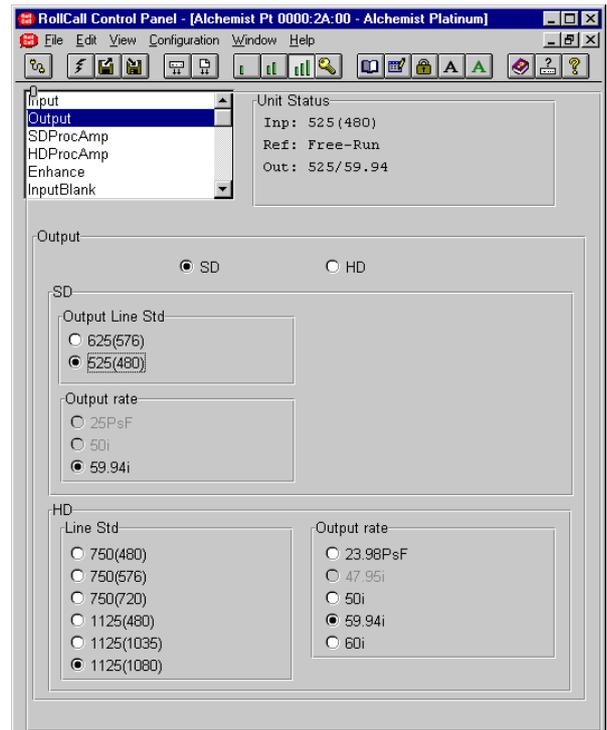
The options as follows:

25PsF  
50i  
59.94i

These output rates would not necessarily all be available for every output line standard. The line standard should be selected first, the field / frame rate menu will then update to reflect valid output rates for that particular line standard. Selecting 25Psf will activate "Video to Film" processing.

*Note that 25PsF is only available if the "Video to Film" option is fitted.*

If an encoder is connected and configured (see External devices section), an 'Encoding' menu is also displayed allowing selection of a composite output standard. Additional controls such as Pedestal and SECAM bottles may also appear depending on the encoder connected.



**Input (continued)****HD Line Std**

This allows the output line standard to be selected. The options as follows:

750(480)  
750(576)  
750(720)  
1125(480)  
1125(1035)  
1125(1080)

**HD Output Rate**

This allows the output video field rate (or frame rate for progressive standards) to be selected.

The options as follows:

23.98PsF  
25PsF  
47.95i  
50i  
59.94i  
60i

These output rates would not necessarily all be available for every output line standard. The line standard should be selected first, the field / frame rate menu will then update to reflect valid output rates for that particular line standard.

With DEFT processing "OFF", a "video to Film" conversion can be performed by selecting 23.98PsF.

When performing a DEFTplus conversion i.e. DEFT processing is "ON", the user can select either a conversion to HD or Slow PAL. This is achieved by adjusting the LINE STD control. Once set the required OUTPUT RATE can be selected. The output rate may be set to either 23.98PsF or 47.95i.

*Note: Slow PAL is only available if both the DEFTplus and SD output options have been purchased and the Alchemist Platinum DEFTplus Co-processor is correctly connected and configured. See DEFTplus application notes.*

**23.98PsF**

In this mode all output frames will contain a 23.98Hz motion profile, irrelevant of the source type.

- Video elements will be converted to film using "video to film" conversion.
- 3:2 film elements will be converted by DEFT processing.
- Other frame-based elements will be converted according to the setting of the Varispeed control. If set to "smooth motion", interpolation will be performed at 23.98Hz.

**47.95i**

In this mode some output frames may contain a 47.95Hz motion profile depending on the source type.

- Video elements will maintain motion changes on field boundaries (47.95Hz) using PhC motion compensation, in order to give to same look as the original content.
- 3:2 film elements will be converted by DEFT processing.
- Other frame-based elements will be converted according to the setting of the Varispeed control. If set to "smooth motion", interpolation will be performed at 47.95Hz.

*Note: As PAL is inherently an interlaced format, it is entirely appropriate for the Slow PAL output to contain 47.95Hz elements. In HD however, 1080/23.98PsF is a segmented frame format and therefore motion should only occur on frame boundaries. Apart from this definition, the process is essentially the same as conversion to Slow PAL and there is no fundamental reason why 47.95Hz elements cannot be portrayed within the 1080/23.98PsF standard. For this reason 1080/47.95i is a valid mode of operation provided by the unit, but is flagged as a warning on the front panel as it could produce unexpected results downstream if other equipment was expecting only strictly segmented frame content.*

## SD ProcAmp

This menu allows level adjustments to be made to the output SD signal. Preset values are to zero.

*Note that for this and other screens the following applies to the scroll bars:*

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

The numerical value will be shown next to the scroll bars and selecting Preset  will return the setting to the calibrated value for that item.

### Gain

#### Video

The video gain may be adjusted over a range of  $\pm 6$  dB in steps of 0.1 dB

*Note that this can produce output signals above standard levels.*

#### Chroma

The chroma gain may be adjusted over a range of  $\pm 6$  dB in steps of 0.1 dB.

#### Blk Lvl (Black Level)

The black level of the output signal may be adjusted over a range of  $\pm 50$  mV in steps of 0.1 mV.

### C/Bal (Color Balance)

The color balance of the picture may be adjusted using these controls.

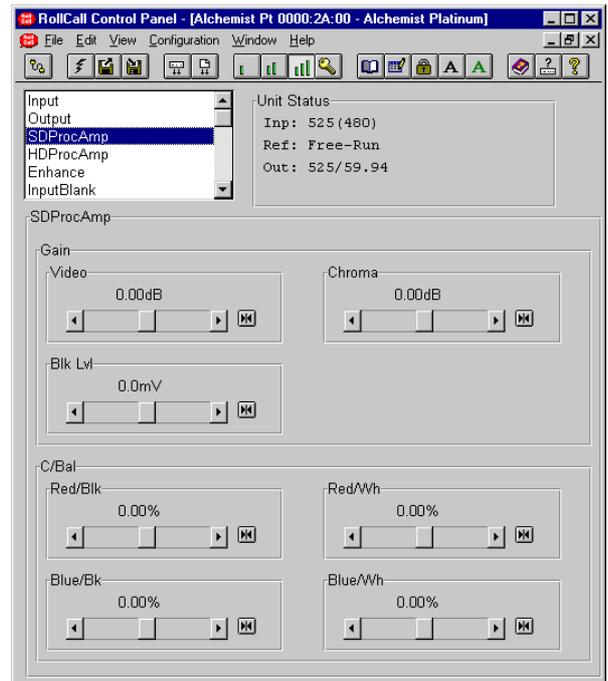
There are two controls to adjust the amount of red in the picture and two for the amount of blue.

The **Red Wh (White)** control will adjust the amount of red in the highlights (near peak level) and the **Red Blk (Black)** will adjust the amount of red in the lowlights (near black level)

The range of control is  $\pm 25\%$  in steps of 0.1%

The **Blue Wh (White)** control will adjust the amount of blue in the highlights (near peak level) and the **Blue Blk (Black)** will adjust the amount of blue in the lowlights (near black level)

The range of control is  $\pm 25\%$  in steps of 0.1%



**HD ProcAmp**

This menu allows level adjustments to be made to the HD output signal.

**Gain**

These items allow the user to adjust the gain of the luminance (Y), blue color difference channel (U) and the red color difference channel (V).

The Master gain is applied to all three channels simultaneously while the Y, U and V gains are only applied to the selected channel. Thus, the overall gain of any channel is the product of the master gain and the individual gain. The gain controls have a range of ±6dB with a preset value of 0 dB.

The options are:

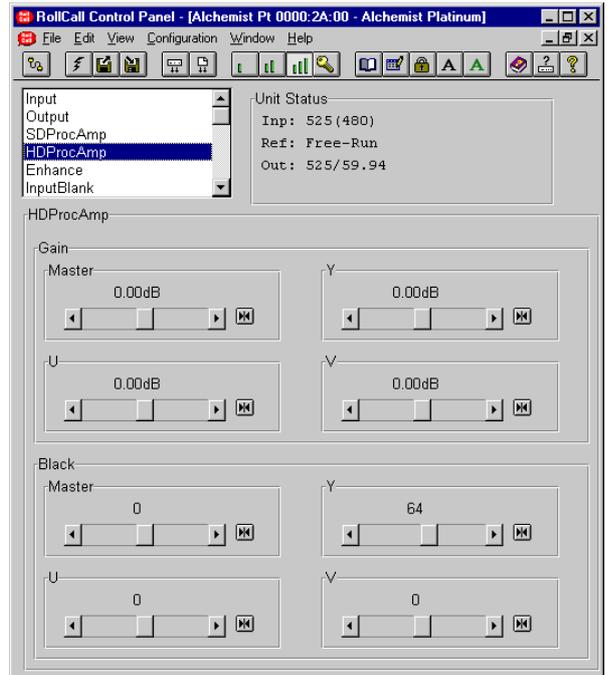
- Master All 3 channels adjusted simultaneously
- Y } Individual channel adjustment
- U }
- V }

**Black**

These items allow the user to adjust the black level of the luminance (Y), blue color difference channel (U) and the red color difference channel (V).

The Master Black is applied to all three channels simultaneously while the Y, U and V Blacks are only applied to the selected channel. Thus, the overall black level of any channel is the sum of the master Black and the individual Black.

The controls are shown in 10-Bit digital video levels. All Black controls have a range of -512 to +511. The preset values of the Master, U and V Black are 0 while the preset value of the Luminance Black is 64.



## Enhance

This controls the amount of detail enhancement that may be applied.

### SD Enhancement

#### Horiz

*The enhancer adjusts the levels of high frequency horizontal information to make the output pictures appear sharper. The enhancer range is 0 to 100% in 1% steps and the default value is 0.*

#### Vert

This menu controls the amount of detail processing in the vertical filters.

The enhancer adjusts the levels of high frequency vertical information to make the output pictures appear sharper. The enhancer range is 0 to 100% in 1% steps and the default value is 0.

This controls the amount of detail enhancement that may be applied.

### HD Enhancement

#### Horiz

*The enhancer adjusts the levels of high frequency horizontal information to make the output pictures appear sharper. The enhancer range is 0 to 100% in 1% steps and the default value is 0.*

#### Vert

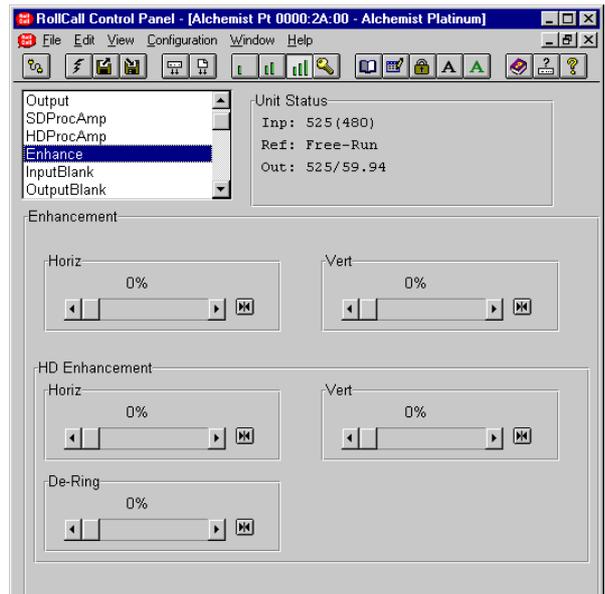
This menu controls the amount of detail processing in the vertical filters.

The enhancer adjusts the levels of high frequency vertical information to make the output pictures appear sharper. The enhancer range is 0 to 100% in 1% steps and the default value is 0.

#### De-Ring

This menu controls the horizontal de-ringing filter. Often, when up-converted pictures are enhanced a substantial amount of ringing becomes visible on the output picture. Often this ringing is present on the source material but was not noticeable on a standard definition monitor. However, up-conversion and enhancement can emphasize this ringing. The Alchemist Platinum contains a special filter to minimize the amount of ringing without any softening of the picture.

The De-Ring range is 0 to 100% in 1% steps and the default value is 0.



## Input Blank

This function allows the adjustment of input blanking. It is used where the source video is known to have pixels/lines at the edge of the picture that are not required to be displayed. When set, the unit will blank any output data generated by the input data, regardless of the display control settings.

### Left

Adjusts the left-hand edge of blanking. A setting of 1 indicates that no input pixels that are normally visible should be blanked, 2 causes the first input pixel to be blanked, etc.

### Right

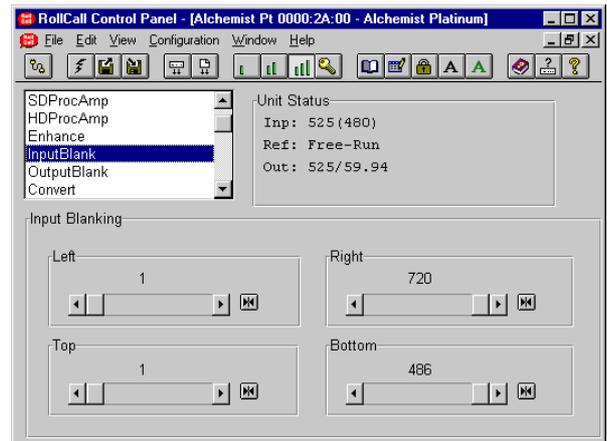
Adjusts the right-hand edge of blanking. A value equal to the number of active pixels per line in the current input standard indicates that no input pixels that are normally visible should be blanked. Subtracting 1 from this causes the last input pixel to be blanked, etc.

### Top

Adjusts the top edge of blanking. A setting of 1 indicates that no input lines that are normally visible should be blanked, 2 causes the first input line to be blanked, etc.

### Bottom

Adjusts the bottom edge of blanking. A value equal to the number of active pixels per line in the current input standard indicates that no input lines that are normally visible should be blanked. Subtracting 1 from this causes the last input line to be blanked, etc.



## Output Blank

This function allows the adjustment of output blanking. It is used where the source video is known to have pixels/lines at the edge of the picture that are not required to be displayed. When set, the machine will blank any output data generated by the input data, regardless of the display control settings.

### Left

Adjusts the left-hand edge of blanking. A setting of 1 indicates that no input pixels that are normally visible should be blanked, 2 causes the first input pixel to be blanked, etc.

### Right

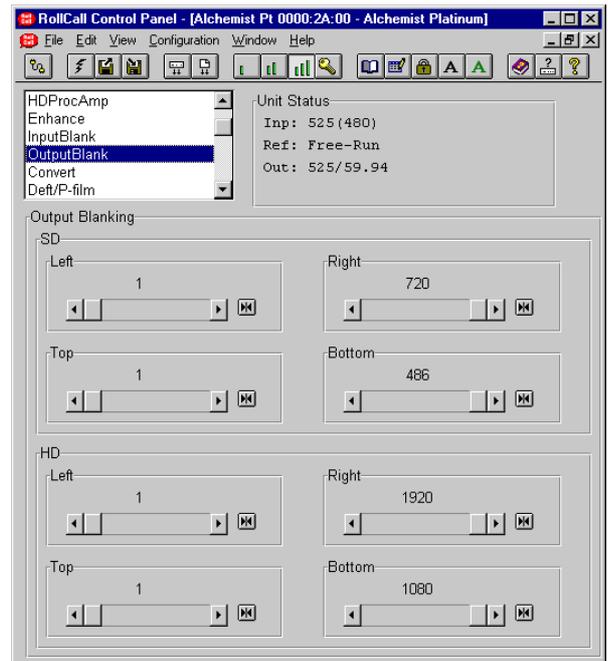
Adjusts the right-hand edge of blanking. A value equal to the number of active pixels per line in the current input standard indicates that no input pixels that are normally visible should be blanked. Subtracting 1 from this causes the last input pixel to be blanked, etc.

### Top

Adjusts the top edge of blanking. A setting of 1 indicates that no input lines that are normally visible should be blanked, 2 causes the first input line to be blanked, etc.

### Bottom

Adjusts the bottom edge of blanking. A value equal to the number of active pixels per line in the current input standard indicates that no input lines that are normally visible should be blanked. Subtracting 1 from this causes the last input line to be blanked, etc.



## Convert

This function allows conversion options to be selected.

### PhC (Phase Correlation)

This menu allows motion compensation to be enabled or disabled. When disabled conversion is linear.

#### PhC Mode

Normal

This is the default setting and the recommended mode of operation.

Safe

This mode is designed to improve performance of highly complex or dynamic source material. For example sped-up playback from a VTR or low detailed objects moving at extreme speeds. It also improves the conversion of aliased source video, such as computer generated captions with frame based vertical detail or over enhanced images. PhC safe mode may result in linear conversion of small fast moving objects. This mode incorporates the benefits of the 'A-Alias' conversion menu option as featured in software version 6 and earlier.

### CleanCut

This menu allows CleanCut 2.0 to be enabled or disabled. CleanCut ensures no interpolation occurs between images either side of a cut. Under extreme circumstances it may be necessary to disable CleanCut under the rare circumstance of a false cut being detected.

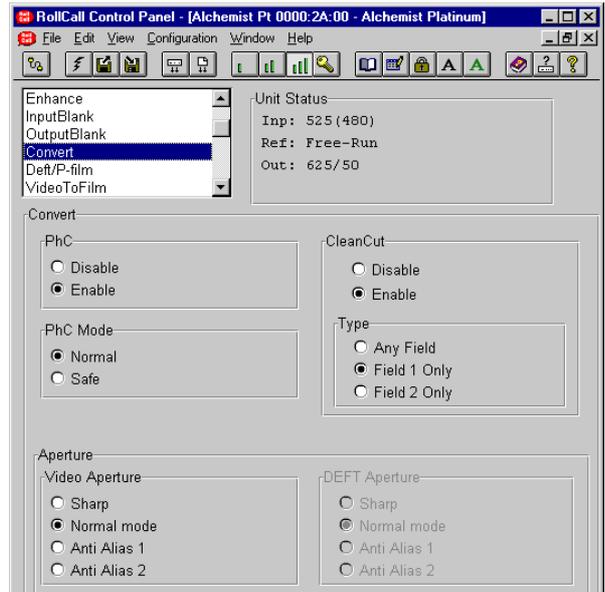
#### Type

Any Field

Cuts are output on the closest output field boundary to the detected input cut.

Field 1 Only/Field 2 Only

Cuts are restricted such that the first field of a new scene always begins on a field one. This is dependent on the cut being detected correctly. Field 1/2 cuts may occasionally not be the preferred mode of operation. An example would be a small caption moving over a background cutting between different images. With Field 1/2 Only selected there may be a small disturbance in the motion profile of the caption.



**Convert (continued)**

**Aperture**

This item allows the type of conversion aperture to be selected. The aperture selected from the Video column applies to all conventional standards conversions.

*Note: Only the control applicable to the current conversion will be adjustable. The other is temporarily disabled.*

**Video Aperture/P-Film Aperture**

One of four possible conversion apertures can be applied to each conversion type.

**Sharp**

This aperture maintains maximum possible vertical resolution from the source material.

**Normal mode (Default)**

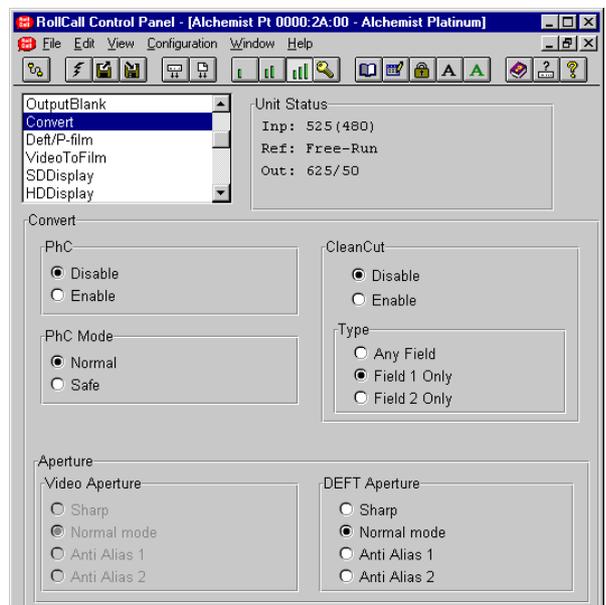
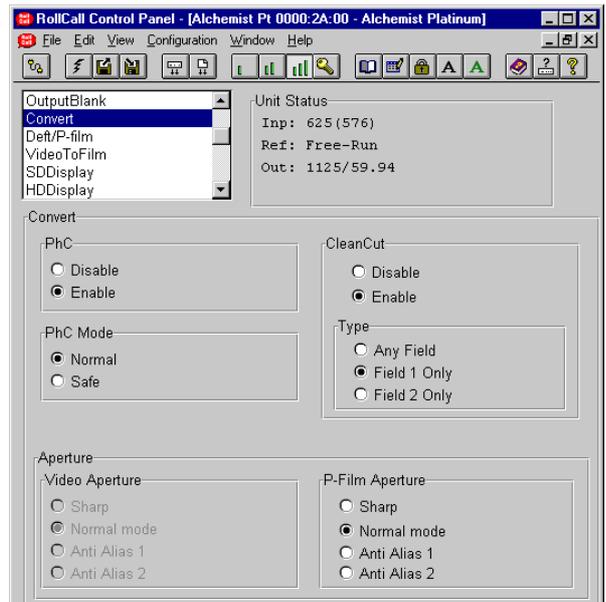
This aperture maintains maximum viewable vertical resolution from the incoming source. It suppresses all “out of band” vertical frequency components.

**Anti-Alias 1**

This aperture is designed for sources containing captions and graphics with high frequency frame based detail.

**Anti-Alias 2**

This aperture is similar to Anti-Alias 1 but has greater effect.



## Deft/P-Film

### P-Film

This item allows P-film conversion to be turned on or off. The control shown depends on the detected input standard. P-film conversion is only relevant to and available for 625(576) inputs. When performing a P-film conversion a sophisticated PhC based film sequence detector is used to enable the best possible conversion from film or video originated material.

*Note: A P-film conversion can only be selected if the Alchemist has the option fitted.*

### Detection

The detection algorithms have been optimized so that the maximum possible range of material can be converted in a single pass.

When set to **'Auto'** the sequence detector will automatically identify film, video or variable frame rate film. However, this control can be used to guarantee the source is detected as a particular type and converted accordingly. An example use may be to guide the conversion when the input cannot be classified as purely of one type.

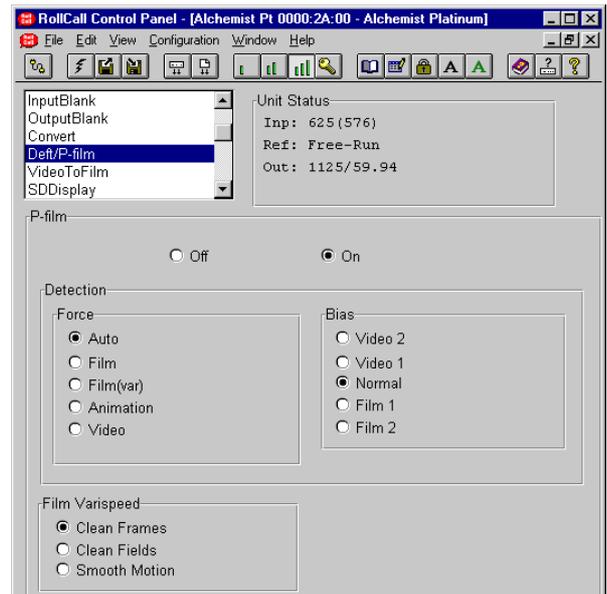
**Film** refers to input where all frames last for 2 fields, that is, a frame rate of 25Hz. **Film (Var)** refers to variable rate film inputs where frames last for 2 or more fields.

Note: Care should be taken to reselect input type when starting a new conversion.

The P-film input type can only be selected if the Alchemist has been fitted with the P-film option.

The **Animation** mode is optimized to detect variable frame rate animation, specifically sharp 2D cartoons with large plain areas outlined by thin black lines.

The **Video** mode will force the detector to a video conversion mode. All input will be treated as video.



### Bias

This control allows the sequence detector to be biased such that for borderline source material it is more likely to detect video or more likely to detect film. **"Video 2"** biases more strongly toward video than **"Video 1"**. Similarly, **"Film 2"** biases more strongly toward film than **"Film 1"**.

### Film Varispeed

*This item is relevant to DEFTplus conversion of film originated inputs that cannot be processed strictly by DEFT. That is, if either of the following two conditions apply:*

- (1) All film input other than 3:2 such as 2:2 (frames at 30Hz) or varispeed.
- (2) All film input when converting to an output rate other than 23.98PsF or 47i.

### Clean Frames

This mode preserves clean frames and creates an output representative of the frames as they are received. Input frames may be dropped or repeated.

### Clean Fields

This mode preserves clean fields by ensuring no interpolation between different input fields. Input fields may be dropped or repeated.

### Smooth Motion

This mode attempts to maintain a smooth motion profile representative of the source by performing linear temporal interpolation.

**Deft/P-Film (continued)****Deft**

This item allows DEFTplus conversion to be turned on or off. The control shown depends on the detected input standard. DEFTplus conversion is only relevant to and available for 525(480) inputs. When performing a DEFTplus conversion a sophisticated PhC based film sequence detector is used to enable the best possible conversion from film or video originated material.

**Detection**

The detection algorithms have been optimized so that the maximum possible range of material can be converted in a single pass.

When set to 'Auto' the sequence detector will automatically identify film, video or variable frame rate film. However, this control can be used to guarantee the source is detected as a particular type and converted accordingly. An example use may be to guide the conversion when the input cannot be classified as purely of one type.

Film 2:2 refers to input where all frames last for 2 fields, that is, a frame rate of 30Hz. Film VAR refers to variable rate film or varispeed inputs in addition to 2:2 and 3:2.

*Note: Care should be taken to reselect input type when starting a new conversion.*

*The DEFTplus input type can only be selected if the Alchemist has been fitted with the DEFTplus option.*

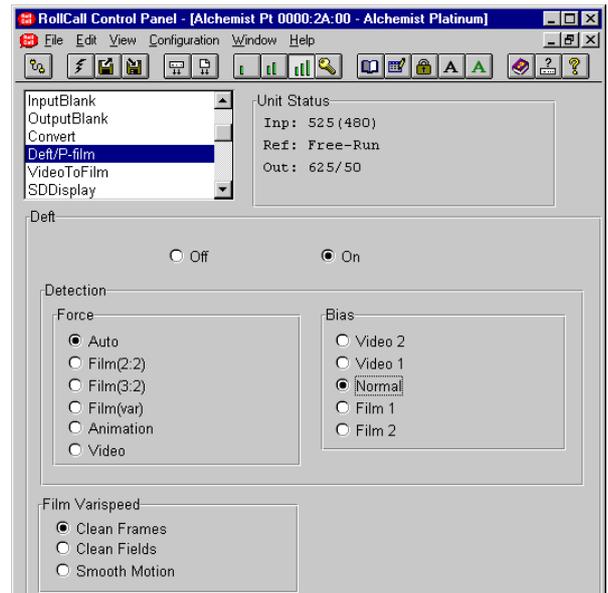
**Bias**

This control allows the sequence detector to be biased such that for borderline source material it is more likely to detect video or more likely to detect film. "Video 2" biases more strongly toward video than "Video 1". Similarly, "Film 2" biases more strongly toward film than "Film 1".

**Film Varispeed**

*This item is relevant to DEFTplus conversion of film originated inputs that cannot be processed strictly by DEFT. That is, if either of the following two conditions apply:*

- (3) All film input other than 3:2 such as 2:2 (frames at 30Hz) or varispeed.
- (4) All film input when converting to an output rate other than 23.98PsF or 47i.

**Clean Frames**

This mode preserves clean frames and creates an output representative of the frames as they are received. Input frames may be dropped or repeated.

**Clean Fields**

This mode preserves clean fields by ensuring no interpolation between different input fields. Input fields may be dropped or repeated.

**Smooth Motion**

This mode attempts to maintain a smooth motion profile representative of the source by performing linear temporal interpolation.

## Video to Film

### Process

#### Sharp

This mode aims to preserve input fields with maximum integrity. It lends itself for use with dynamic material containing extreme motion speeds.

#### Anti-alias (default)

This mode is optimized to handle interlace aliases in the source.

#### Blur

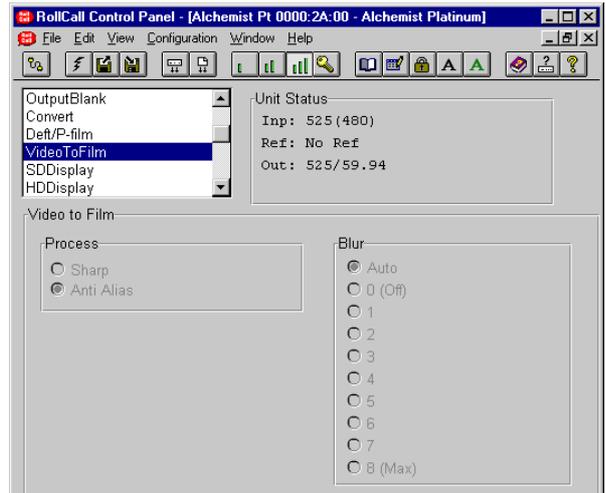
The blur control modifies the PhC motion compensated video to film process in such a way that detail in moving areas of the image is reduced in the direction of movement. This is helpful when converting very sharp video material, typically when a fast camera shutter was used during capture. Use of the blur control allows this source material to look more like film originated sources.

*Note: This control is available only when using the anti-alias video to film aperture for the following conversions:*

525(480)/59.94i -> 1125(1080)/23.98PsF  
 525(480)/59.94i -> 625(576)/23.98PsF(Slow PAL)  
 625(576)/50i -> 625(576)/25PsF

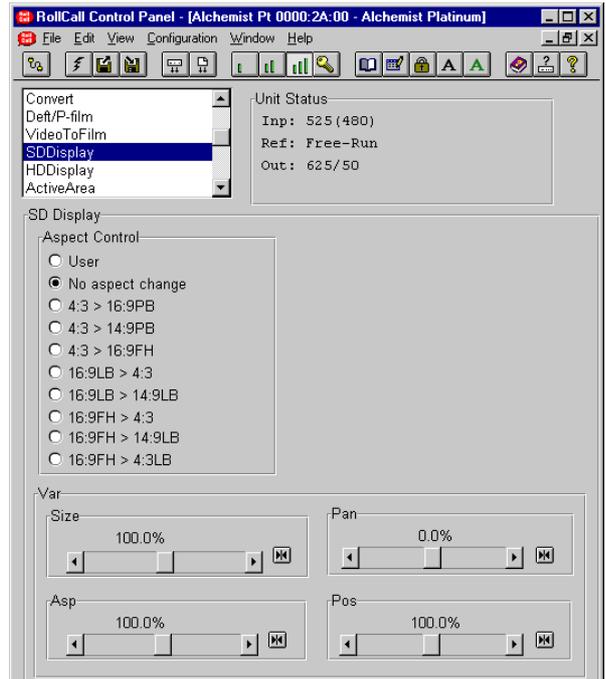
The options are:

Auto Best result for most conversions.  
 0 – 8 9 steps of manual blur adjustment from 0 (none) to 8 (maximum blur).



**SD Display**

This controls the size, shape and position of the SD output picture.



**Aspect Control**

There are eight SD fixed aspect ratio conversion modes, which are described in the table below.

Input		Transformation	Output	
4:3	16:9		4:3	16:9
		Description: 4:3 to 16:9PB Ratios: V: 1 H: 3/4		
		Description: 4:3 to 14:9PB Ratios: V: 7/6 H: 7/8	Active image is vertically cropped	
		Description: 4:3 to 16:9FH Ratios: V: 4/3 H: 1		
		Description: 16:9LB to 4:3 Ratios: V: 4/3 H: 4/3		Active image is side cropped
		Description: 16:9LB to 14:9LB Ratios: V: 8/7 H: 8/7		Active image is side cropped
		Description: 16:9FH to 4:3 Ratios: V: 1 H: 4/3		Active image is side cropped
		Description: 16:9FH to 14:9LB Ratios: V: 6/7 H: 8/7		Active image is side cropped
		Description: 16:9FH to 4:3LB Ratios: V: 3/4 H: 1		

**SD Display (continued)****Var**

This allows the picture to be adjusted to meet custom requirements.

**Size**

This adjusts the size of the whole image. Both vertical and horizontal size change together while maintaining the aspect ratio of the image.

**Asp**

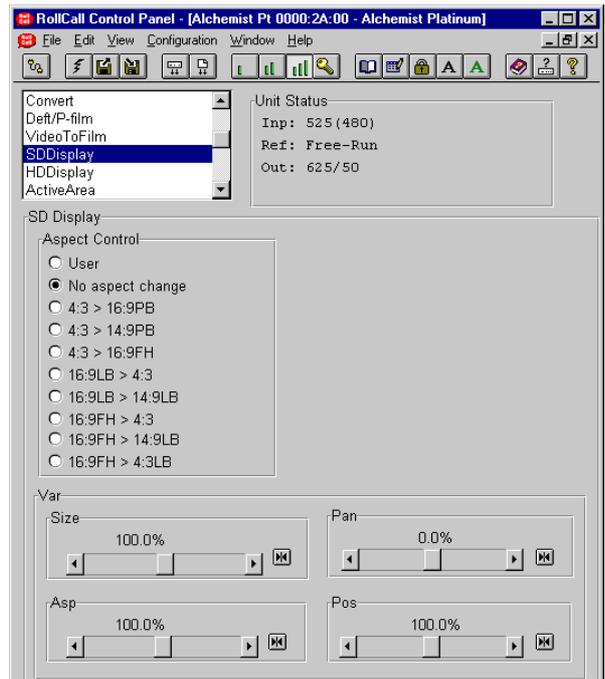
Adjusts the horizontal size of the image, allowing the shape (aspect ratio) of the output image to be changed.

**Pan**

This adjusts the horizontal position of the output image.

**Pos(ition)**

This adjusts the vertical position of the output image.



**HD Display**

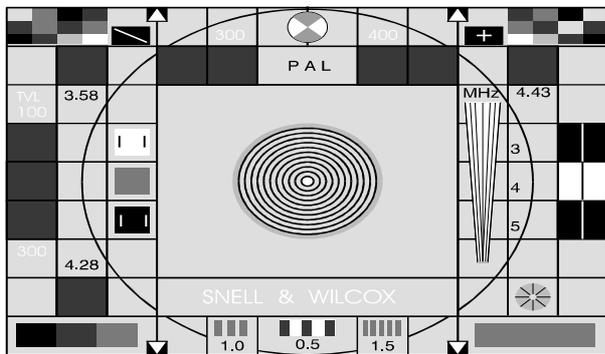
This controls the size, shape and position of the HD output picture.

**Aspect Control**

There are three fixed aspect ratio conversion modes which are described below.

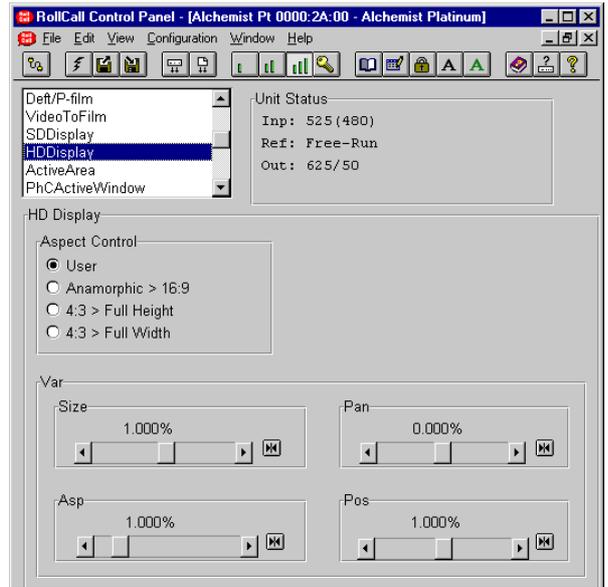
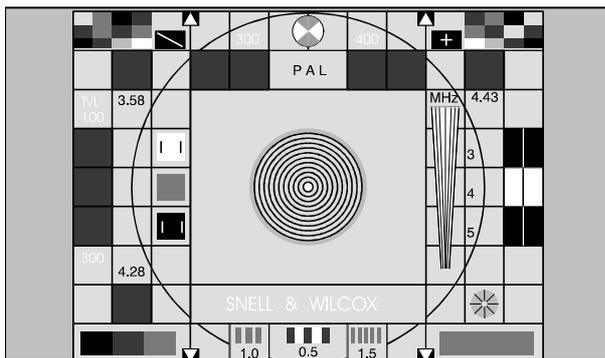
**Anamorphic > 16:9**

Produces a 16:9 output. The whole output screen is filled.  
Used when converting an anamorphic 16:9 image to a 16:9 display.



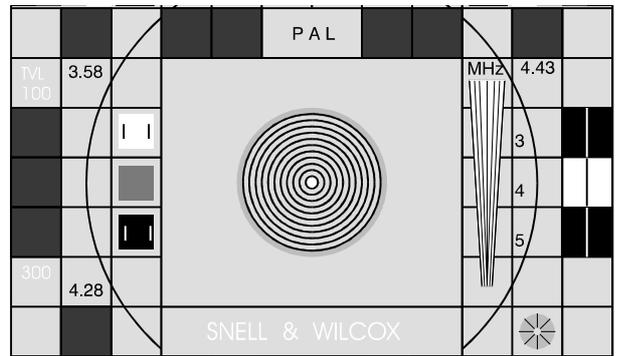
**4:3 > Full Height**

Produces a 4:3 output with all input picture information retained and blanked columns to the left and right of the image. Used when converting a 4:3 image to a 16:9 display when it is necessary to retain all of the input image.



**4:3 > Full Width**

Produces a 16:9 output. The whole output screen is filled and information at the top and bottom of the input image may be lost. Used when converting a 4:3 image to a 16:9 display when it is necessary to fill the entire output display.



**Var**

This allows the picture to be adjusted to meet custom requirements of size and position as described in the SD Display function.

**Active Area**

**PhC Active Area**

These controls allow PhC motion compensation to be applied selectively to specific areas of the image. Typical applications include protecting static computer generated captions overlaid onto dynamic sports coverage. Very small, low contrast or transparent logos in front of dynamic action may also require protection.

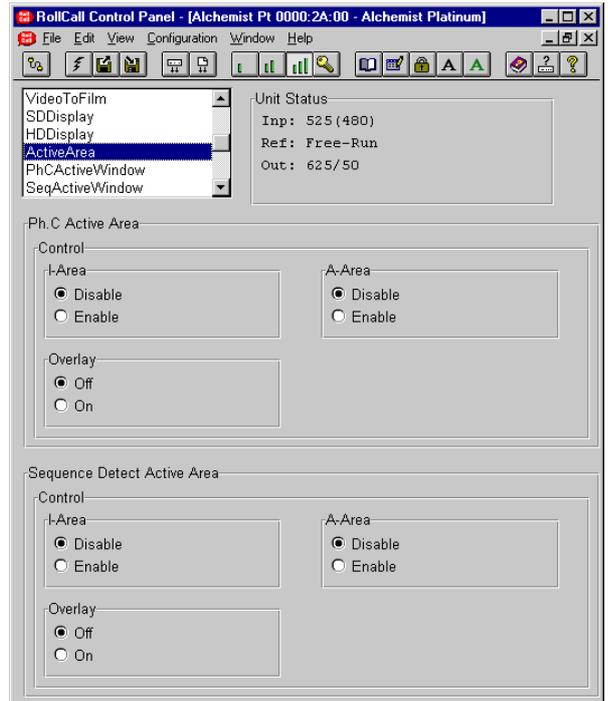
This is done by specifying an active area and/or an inactive area of the image. The inactive area, when enabled, is converted linearly. Any region outside the active area, if enabled, will also be converted linearly. The remainder of the image will be converted using PhC motion compensation. To assist set up, a colored overlay may be activated. Active area is shown in green, inactive in red. Below is an example of active and inactive areas in use:



Example source with caption, dynamic video and logo.



Colored overlay after adjustment to convert the source shown above.



**Control**

This allows control of the I-Area (inactive area) and the A-Area (active area).

**I-Area** When enable is checked, the specified inactive region is not analyzed / converted linearly.

**A-Area** When enable is checked, the specified active region is analyzed / PhC motion compensated **except** for any enabled inactive region.

**Overlay** When On is checked, a colored overlay permits adjustment of active and inactive areas by eye. This control affects the overlay only.



**NB:** Care should be taken to ensure the I-Area and A-Area are disabled or readjusted on conversion of new source.

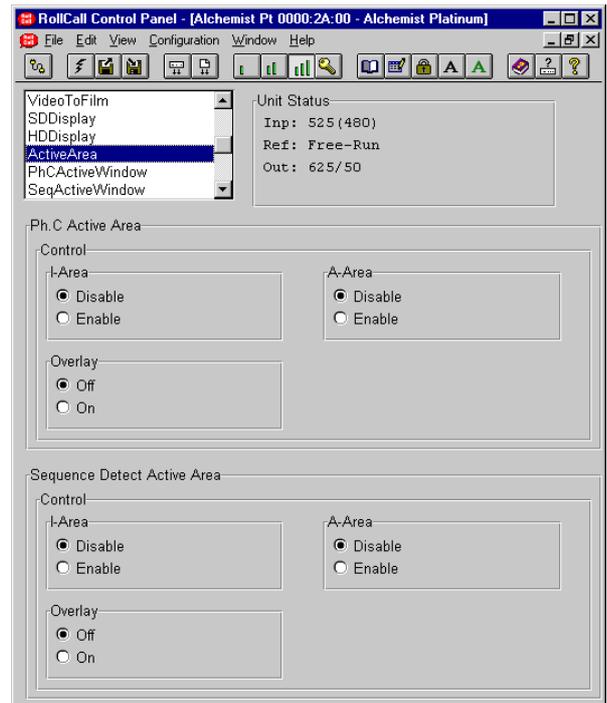
**Active Area (continued)****Sequence Detect Active Area**

These controls allow the sequence and cut detection to be restricted to specific areas of the image. A typical detection application would be to avoid sequence errors caused by artifacts near the image edges. A typical cut detection application would be to prevent the detection of cuts occurring within a specific region of the image.

Both active and inactive active areas may be specified. The active area defines the region of the image that is analyzed to detect sequence and cuts. Inactive areas are ignored. To assist set up, a colored overlay may be activated. Active areas are shown in green, inactive in red.

*Note: Cut detection active/inactive area is only applicable for DEFT conversion or when 'Minimum Delay' mode is off.*

For both PhC and Sequence/Cut active/inactive area selection the user should be aware that input blanked areas are automatically set up as inactive areas. However, input blanking settings do not change the range or values that define the user active/inactive areas.



**PhC Active Windows**

**Active Area**

This item allows the selection of the active area.

The Left, Right, Top and Bottom values may be adjusted using the scroll bars.

**Left**

Adjusts the left-hand edge of the area. A setting of 1 indicates that the area coincides with the left-hand edge of the picture. 2 causes the area to be inset by 1 pixel, etc.

**Right**

Adjusts the right-hand edge of the area. A setting of 720 indicates that the area coincides with the right-hand edge of the picture, 719 causes the area to be inset by 1 pixel, etc.

**Top**

Adjusts the top edge of the area. For 625 line inputs a setting of 23 indicates that the area coincides with the top edge of the picture, 24 causes the area to be inset by 1 line, etc. For 525 line inputs a setting of 21 indicates that the area coincides with the top edge of the picture, 22 causes the area to be inset by 1 line, etc.

**Bottom**

Adjusts the bottom edge of the area. For 625 line inputs a setting of 288 indicates that the area coincides with the bottom edge of the picture, 287 causes the area to be inset by 1 line, etc. For 525 line inputs a setting of 243 indicates that the area coincides with the bottom edge of the picture, 242 causes the area to be inset by 1 line, etc.

**Inactive Area**

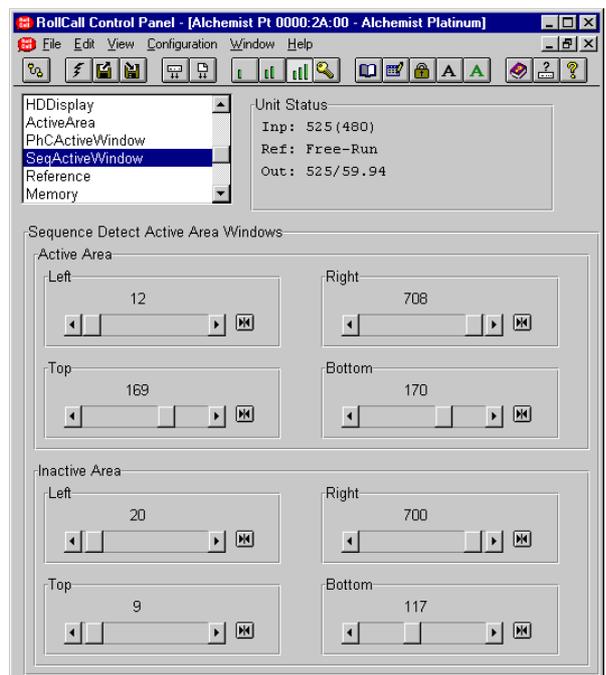
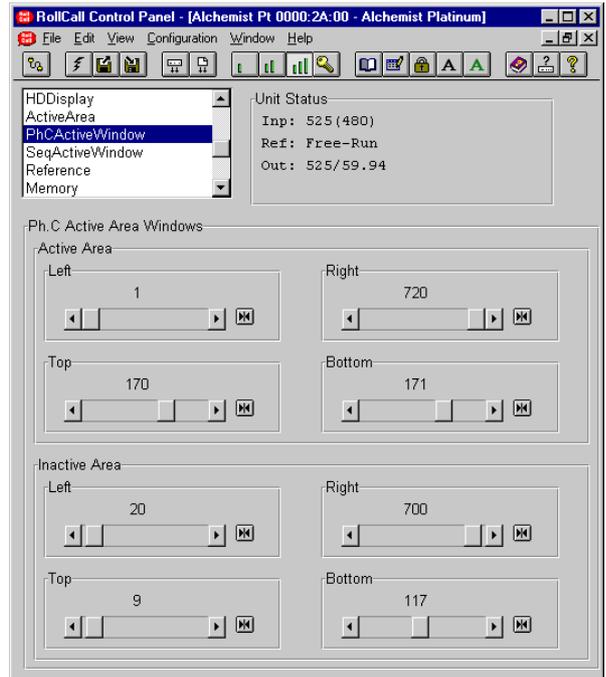
This item allows the selection of the inactive area.

The Left, Right, Top and Bottom values may be adjusted in the same way as the Active Area.

**SeqActive Windows**

**Sequence Detect Active Area Windows**

These areas may be setup in the same way as the PhC widows above.



**Reference**

This function allows genlock to be enabled and a reference source for SD and HD to be selected.

**Enable**

When checked the unit will genlock to the selected reference source. When unchecked the unit will ignore any reference signals and will be in the free-run mode.

**Source**

This allows the reference source to be selected.

**Auto**

The unit will scan the Reference A and Reference B inputs for a suitable reference signal, selecting the one most appropriate to the current output standard. The HD genlock will also look at the Input as a possible reference source.

Auto should be used in the majority of cases.

**Ref A or Ref B**

Forces the unit to operate from the external reference A or B input. It will force it to be used regardless of whether it is the correct standard or not, or indeed if there is a reference signal connected at all. Therefore this setting should be used with caution.

**Input (HD only)**

Forces the unit to lock to the video input. If the line/field rates differ, the system will still clock lock and indicate successful genlock.

**Timing**

The relative timing between the reference signal and the output signal may be adjusted using these controls.

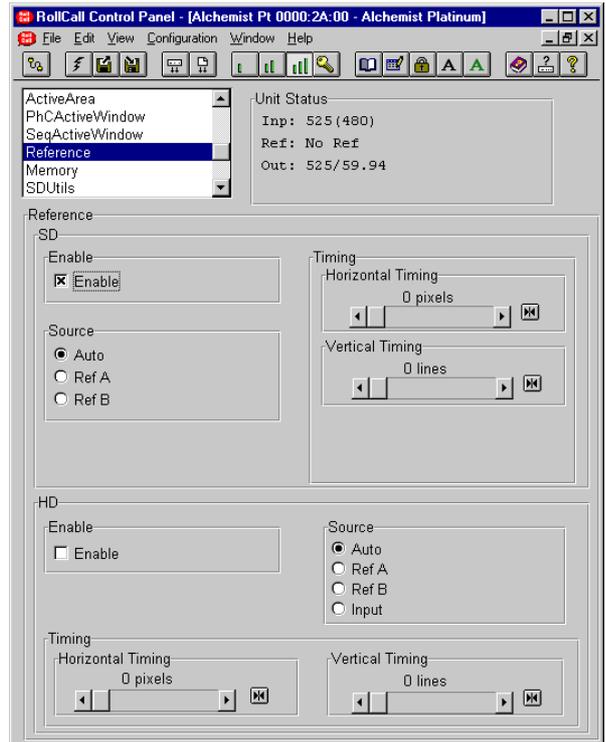
*Note that these controls may be set up even if the unit is not genlocked.*

**Horiz**

The horizontal or line timing may be adjusted over a range of one output line in steps of 1 pixel.

**Vert**

The vertical timing may be adjusted over a range of one output frame lines in steps of 1 line.



**Valid References**

SD	HD(including Slow PAL)
625/50	1125/59.94
525/59.94	1125/60
	1125/50
	1125/47.95
	1125/23.98
	720p/60
	720p/59.94
	720p/50
	625/50
	525/59.94
	625/47.95

**Memory**

**User Memory**

This allows a user memory location to be selected. There are eight locations plus the default available.

**Store**

When selected this will store the system settings in the selected memory location. It is not possible to store user settings to the Default memory.

**Recall**

When selected this will change the system settings to those stored in the

**Rename**

This allows the name of the selected memory to be changed.

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

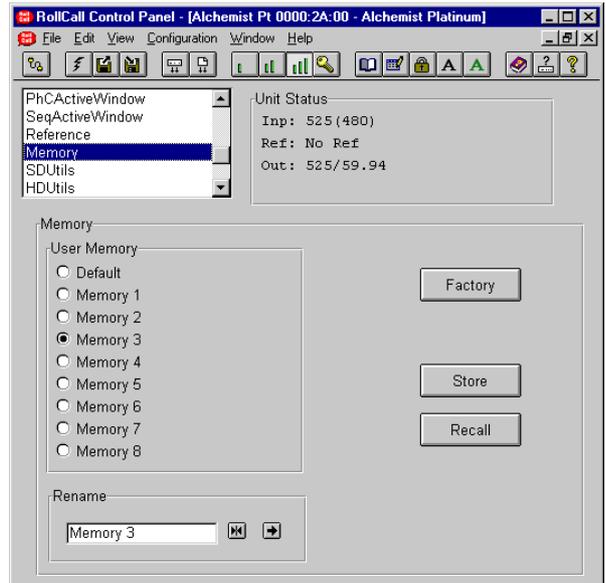
Selecting Preset  will return the text to the default name.

It is not possible to change the name of the default memory.

**Factory**

**! Warning !**  
**This will restore the unit to the factory settings and clear all the user memories and their names.**

As all user memories will be cleared on this action, a warning message will appear, asking for confirmation before execution.



## SD Utils

This allows various actions to be applied to the SD output signal.

### Pattern

Checking the enable box will turn on the pattern.

#### Type

The pattern may be chosen as either EBU Bars or SMPTE bars.

#### Freeze

Checking the enable box will select the freeze function.

#### Type

The frozen picture may be chosen to be Field 1, Field 2, or a Frame.

#### Mono

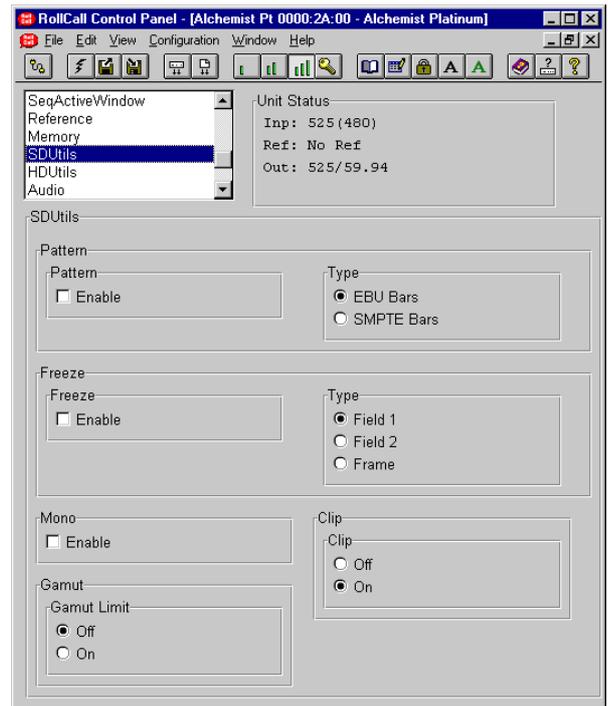
Checking the enable box will produce a monochrome output.

#### Clip

This allows the luminance clipper to be switched on or off.

#### Gamut

This allows the gamut limiter to be switched on or off.



**HD Utils**

This allows various actions to be applied to the HD output signal.

**Pattern**

Checking the enable box will turn on the pattern.

**Type**

The pattern may be chosen from the following:

- |             |             |
|-------------|-------------|
| 100% bars   | Ramp        |
| 75% Bars    | Sweep       |
| SMPTE bars  | Pulse & bar |
| Tartan Bars | Burst       |
| Pluge       |             |

**Freeze**

Checking the enable box will select the freeze function.

**Type**

The frozen picture may be chosen to be Field 1, Field 2, or a Frame.

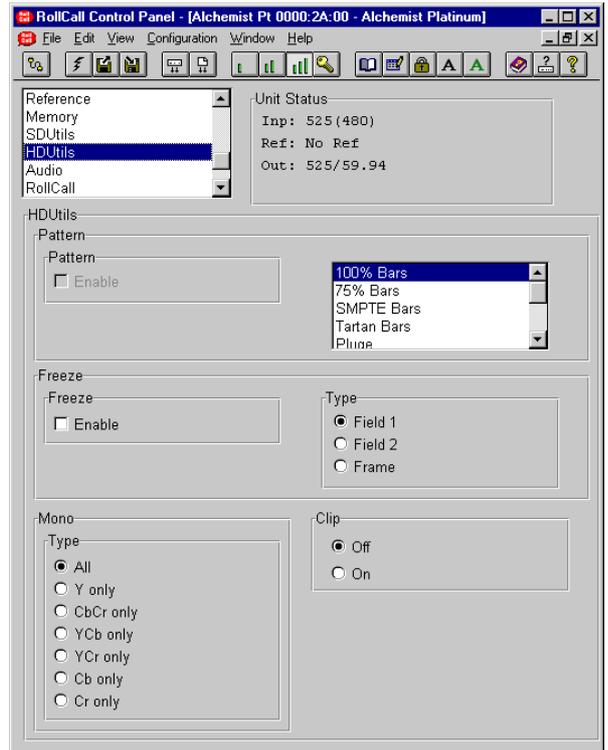
**Mono**

This control selects the monochrome output functions.

This allows the selection of which of the video channels is turned on at the HD output. The channels available are luminance (Y), the blue color difference signal (Cb) and the red color difference signal (Cr). The default setting is All which turns on all three channels.

The selections are:

- |           |   |
|-----------|---|
| Y only    | Luminance only                                  |
| CbCr only | Blue and Red color difference signal only       |
| YCb only  | Luminance and Blue color difference signal only |
| YCr only  | Luminance and Red color difference signal only  |
| Cb only   | Blue color difference signal only               |
| Cr only   | Red color difference signal only                |



**Clip**

This allows the luminance clipper to be switched on or off.

## Audio

This menu allows the Audio parameters of the Alchemist to be set up.

### Control

The embedded audio functionality can be controlled from this section.

#### Mode

The audio state can be Off, On, Mute or Tone.

When the Audio is On, the output audio will be automatically delayed by the same amount as the video delay through the system.

#### Input and Output

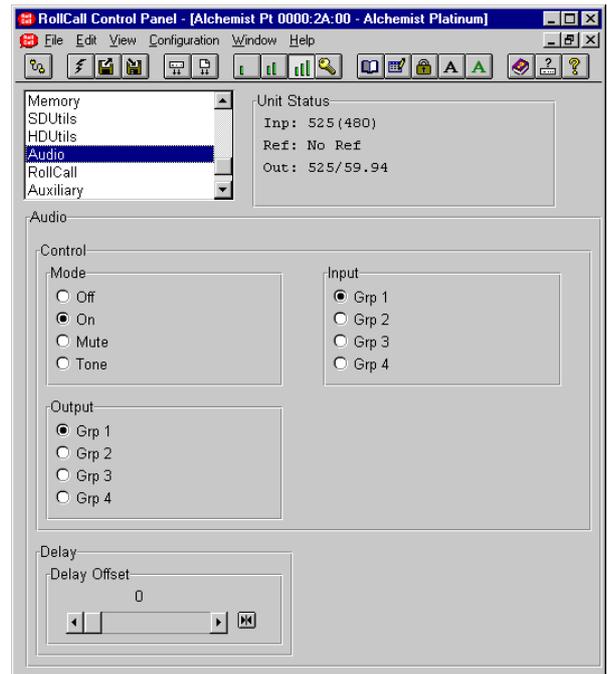
Input and Output Group selection is available from this item. Note that the Alchemist can only pass audio from one input group to one output group at any one time.

#### Delay

This allows the audio delay to be set.

#### Delay Offset

The Delay Offset can be used to add additional delay to the audio path, in order to compensate for other equipment in the video signal path. This adjustment is in milliseconds.



**RollCall**

This allows RollCall network parameters to be set up.

**Addr(ress)**

The RollCall address may be changed here but it is not effective until the unit is re-started.

**Name**

This sets the RollCall unit name. The default name is Alchemist Pt.

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.

**Log**

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

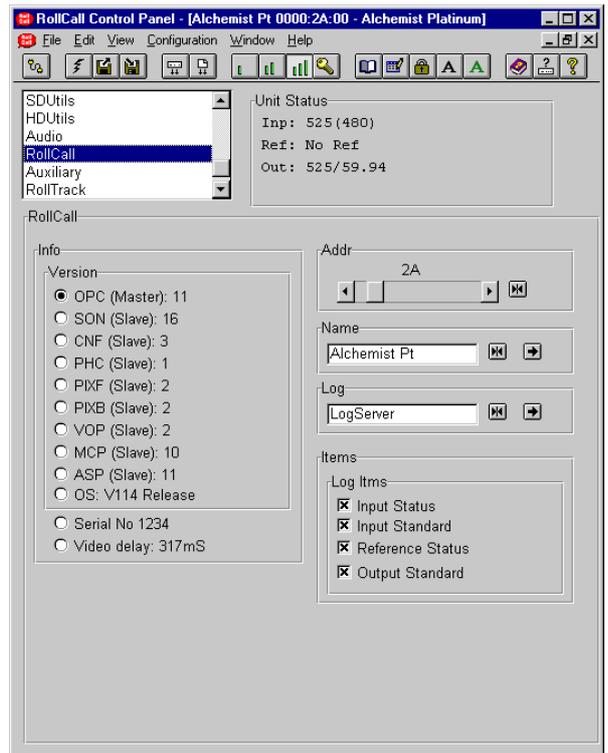
If the Log Name is **LogServer** (obtained by selecting ) logging information is available to all logging devices called LogServer on the RollCall network.

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 Name section above.

If the Log name is blank, logging information is available to all logging devices on the RollCall network.

**Info**

This displays a list of each of the boards in the system and their software release version number, the unit serial number and current video latency.



**Items (Log Items)**

This is a list of four parameters that can be made available for logging.

**Input Status**

When activated, a loss of input signal condition will be indicated to the logging device.

**Input Standard**

When activated, the current input standard will be available to the logging device.

**Reference Status**

When activated, a loss of reference signal condition will be indicated to the logging device.

**Output Standard**

When activated, the current output standard will be available to the logging device.

## Auxiliary

The external devices need to be configured to send RollCall log messages to the Alchemist. To do this their log server control needs to be set to the same network name as the Alchemist.

### Auxiliary Devices

This allows the addresses and ports for all the supported devices to be set up.

The **Addr** and **Port** controls need to be set to the address and port of the corresponding device. The devices can be at any valid RollCall address / port.

The Formatter items will only appear if the Alchemist has the DEFTplus option and Slow PAL output.

Selecting Preset  will return the item to the default setting.

### Operation

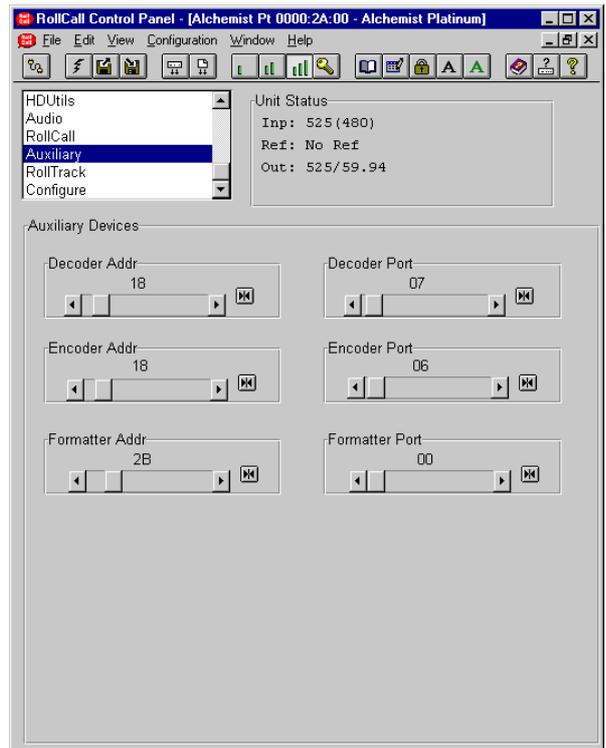
Once an external device has been configured and successfully recognized by the system, the menu structure of the Alchemist will update accordingly. In the case of a decoder for example, the input menu tree will update to provide common decoder functions. The controls and parameters available will depend on the device that is connected. Examples of the controls available are shown in the Input section of this Operation guide.

Functions of a connected device, not available from the Alchemist menus can still be controlled via a Shoebox or PC Template via RollCall; the Alchemist will not override these parameters.

### Audio Delay Tracking

If required, the external decoder can be configured to send RollTrack packets to the Alchemist, reflecting its system delay. The Alchemist will then add this to its own system delay and applies an equivalent delay to its embedded audio path. This 'decoder delay' will only be applied if the composite input is selected.

The RollTrack string should be set up in the normal way, with the channel number being set to 14.



**RollTrack**

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

As the delay through the Alchemist varies according to the conversion mode, delay modules connected via the RollTrack system will automatically have their delay updated to match.

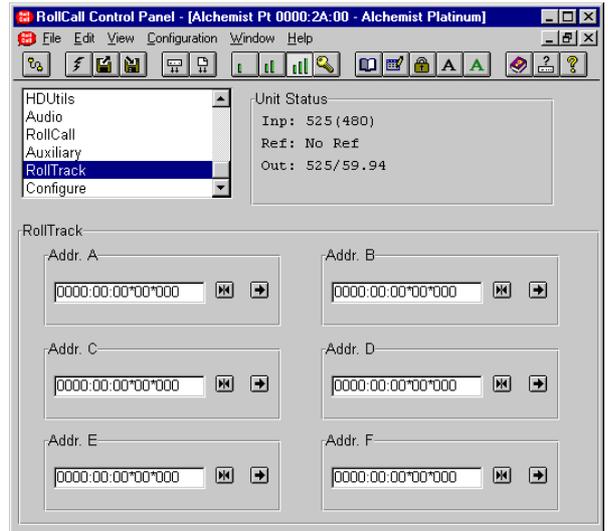
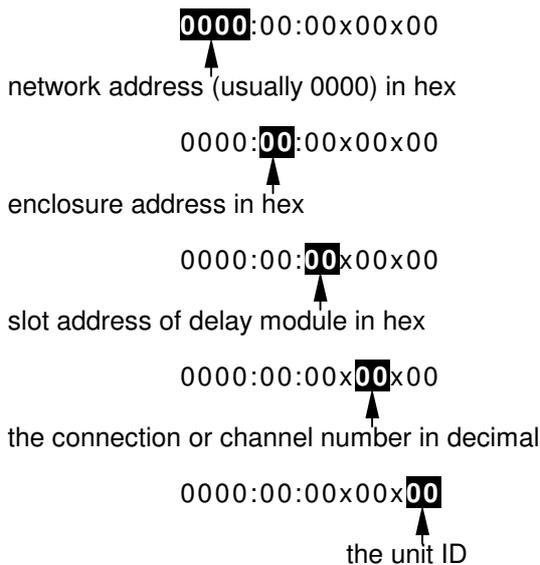
The delay sent out via the RollTrack system matches the internal audio delay of the Alchemist.

For more detailed information, see Section 5 the RollTrack System Appendix.

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

Up to 6 audio delays can be selected as a destination.

The string looks like this:



A more detailed description of these items is given in the RollTrack section (Appendix) at the end of this manual.

In a typical set-up, 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 should be set to the RollCall ID of the destination unit.

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

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

Note that if the save  button is not selected the changes will not take effect.

Selecting Preset  will return the address to the default address.

**Configure**

This allows various functions to be set.

**On Loss**

In the event of the loss of the selected input signal, the output may be selected to become either a frozen picture or fade to black.

**Matrix**

This controls the color space conversion applied to the signal. It defines the color space of the output signals. The input colorimetry is assumed to be as per REC 601.

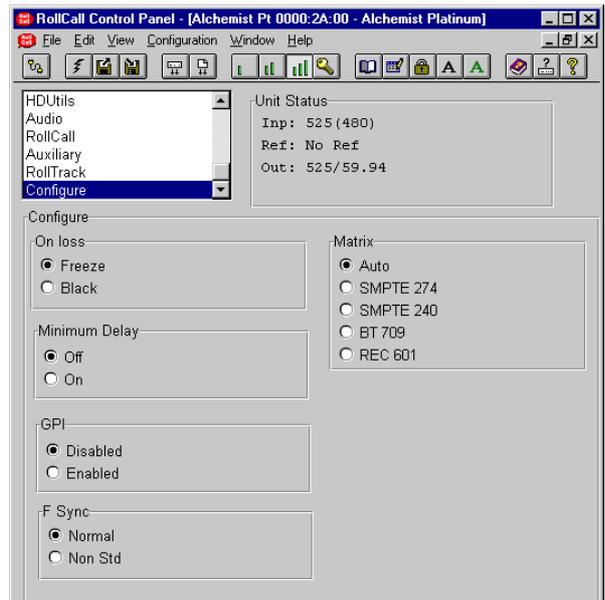
The color correction options are:

- Auto            The best color space conversion for the signal process is selected. This is derived from the definition of the output video standard.
- SMPTE 274    Color space conversion to SMPTE 274 requirements is applied.
- SMPTE 240    Color space conversion to SMPTE 240 requirements is applied.
- BT 709        Color space conversion to SMPTE BT709 requirements is applied.
- REC 601       No color space conversion is applied.

**F Sync**

This allows the type of output field sync to be selected. The options are:

- Normal        Suitable for most modern HD display monitors
- Non Std       This selection allows the output field sync to be compatible with older style 1035 HD display monitors such as the Legacy 1035 etc.



**Minimum Delay**

Off is the default mode and is the recommended mode of use. In this mode the latency through the Alchemist is approximately 317-380ms. If a reduced latency is required Minimum Delay should be set to ON. In this mode the latency is approximately 150-180ms.

*Note: If DEFTplus processing is enabled, the unit's delay is identical whether minimum delay is on or off. This is due to a fixed minimum delay required for analysis. If DEFTplus processing is disabled, it is recommended to leave minimum delay off as the additional analysis window allows maximum cut detection performance. Video latency will vary depending on the input and output formats selected. The current value can be obtained from the Info menu.*

**GPI**

Enabling GPI causes the Alchemist to respond to 'closing contact' GPI signals from the connector on the rear of the unit. Corresponding Tally lines are also provided via the GPI connector. There are 6 GPI signals, each one triggering a memory recall (Memory locations 1 to 6).

### Active Control Panel operation via the Rollcall Remote Control System

#### The Menu System

All operational parameters and selections are made using a system of menus. There are two LCD windows on the remote control panel, the left hand display shows the current state information for the system being controlled and the right hand display shows the menu structure and parameters.

Menus are selected by push buttons adjacent to the display windows. Where appropriate menus may be scrolled using the spin wheel. The spin wheel also serves as an interface for altering parameters once they have been selected.

The menu structure is hierarchical and similar to that of the main panel. Any parameters controllable from the main panel may also be controlled from the remote panel, with the exception of autotest.

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

---

**Alchemist Platinum DEFTplus Application Notes**

The DEFTplus option features a sophisticated PhC based sequence detector, which is used to dynamically control the multi-stage 46 point format/vertical resize filter. The combination of these two processes provides the ultimate in standards conversion. This document contains notes concerning the operation of the various modes and options.

**Definition of Terms**

A number of terms are used frequently in this document so they are defined here to avoid ambiguity.

**Progressive Segmented Frame (PsF):**

The segmented frame format splits a progressive image into two sequential 'fields' transported in a format at double the frame rate. It is identical to 2:2 film in terms of its motion profile.

**Film and Video:**

What is film and what is video in this context? The unit is concerned with the motion profile of objects in the source. Video is identified as program material whose content moves at every field boundary. For example, with 525 line, 59.94 fields per second source material, a camera pan will cause the scene to move 59.94 times a second. If the source material was PsF, objects are only allowed to move on frame boundaries. Thus our example camera pan would only produce 29.97 different scene positions each second. Each of our input frames produces two fields, one with each sense of interlaces. If the source material was 3:2 film, objects are only allowed to move after two fields, then three fields, then two fields etc. Our example camera pan would only produce 23.98 different scene positions each second.

Of course this simple example doesn't hold true in practice. Still scenes are fundamentally ambiguous and could be considered as video or film. Edited and varispeed film material can have orphan fields where there is object motion on two or more successive fields. However, these special cases are compensated for.

**Sequence Detection:**

This is the act of finding film frame boundaries. For "perfect" PsF or 3:2 sequence, this will produce a regular pattern of frames. For "non-perfect" sequences the pattern will not be regular and might have discontinuities at edit points for example.

**Varispeed:**

Varispeed refers to film originated material which has been played off speed. For example, speed up could be performed by dropping the third field in a

three field frame. Slow down could be achieved by generating an extra field 2. Because the unit must deliver output frames at a constant rate in real time, frame drops or repeats have to occur. This may result in an uneven motion profile. Varispeed does not impair the operation of 'clean cut'.

**What is DEFT? (Digital Electronic Film Transfer)**

Historically DEFT represents a motion artifact free conversion from NTSC film originated video material to PAL. The post production trend is to shoot material on film (24Hz) and then perform a telecine transfer to videotape (59.94Hz/3:2). A DEFT conversion process takes this 3:2 material, detects the sequence and eliminates the redundant field in the 3 field frame, and can therefore produce PAL images at a frame rate of 23.98Hz. This video is recorded on a specially modified PAL videotape machine. The 23.98 to 25Hz frame shift is achieved by replaying the material back on a standard videotape machine.

DEFT is complicated further by the editing process. This is generally performed once the film has been transferred to 3:2 NTSC. Once edited on videotape there is a potential for disruptions in the 3:2 sequence. These can be 3 field sequences adjacent to other 3 field sequences, and 2 field sequences adjacent to other 2 field sequences. Also there are cases where we have single fields present that are not part of any sequence (orphan fields). These disruptions must be detected in order to steer the interpolation process and prevent the introduction of motion artifacts.

**What are the Advantages of DEFT?**

In the presence of film material it is possible to modify the conversion filters to improve the interpolation process. For example, it is theoretically possible to extract more vertical resolution from film inputs. This can improve the conversion in areas of high vertical detail.

Knowledge of the positions of the film frames boundaries means that the conversion can be performed with no artifacts caused by moving objects. This gives a clean output image and the additional advantage of allowing efficient frame based MPEG encoding.

## What is New in DEFTplus?

The DEFTplus option features a sophisticated PhC based sequence detector that dynamically controls the multi-stage 46 point conversion aperture to allow artifact free conversion of both film and video on a shot by shot basis in real time.

As described previously, the DEFT process is designed to convert film originated material in the best way possible from NTSC to PAL. However, many programmes contain both film and video clips cut together throughout the program. Under these circumstances, DEFT alone cannot perform a conversion of the video material. DEFTplus offers optimal handling of video as well as film originated sources by switching seamlessly from the normal DEFT process to an equally optimal conversion of the video originated content.

Two video conversion options exist depending on the requirement. It may be that a 24Hz master of the programme is required. To achieve this a 'video to film' conversion must be performed. For high quality results, motion compensation is required to create a smooth 24Hz motion profile and prevent aliases in the source from creating an unpleasant artifact in areas of high vertical detail. The unit performs this conversion using information from the Phase Correlation motion estimator. Features of this process allow the creation of a programme with a single consistent frame based appearance.

DEFTplus alternatively allows the creation of a unique type of Slow PAL output where video clips retain a video motion profile. Source movement at 59.94Hz is converted to movement at 47.95Hz by applying PhC motion compensation. This can be a preferable conversion as 24Hz temporal sampling is fundamentally poor at representing fast, dynamic movement typically found in sports footage, for example. The result of this conversion is a Slow PAL master where source material maintains its original film or video appearance.

In addition to converting film originated 3:2 with broken cadence, DEFTplus can also deal with frame based sources at 30Hz and varispeed material. Users can choose to enable the interpolation necessary to create an acceptable motion profile from these problematic sources, or alternatively use the best available frame from the source without applying any temporal smoothing.

## User Adjustable DEFTplus Controls

### Type

#### **Auto (default)**

In auto mode the unit will automatically detect input type. The film elements can contain discontinuities in the 3:2 sequence and orphan fields.

#### **Film (3:2)**

This mode will force the detector to identify 3:2 pull-down only. The sequence detector will expect breaks in the 3:2 sequence on shot changes only. i.e. the programme does not contain varispeed.

#### **Film (2:2)**

This mode will force the detector to identify 2:2 (segmented frames at 30Hz) only. The sequence detector will expect breaks in the 2:2 sequence on shot changes only.

#### **Film (VAR)**

This mode will limit the detector to detecting film inputs only including 2:2, 3:2, variable frame rate or varispeed. It will never interpret the input as video.

#### **Animation**

This mode is optimised to detect variable frame rate animation, specifically sharp 2D cartoons with large plain areas outlined by thin black lines.

#### **Video**

This mode will force the detector to a video conversion mode. All input will be treated as video.

Note: The input type should only have to be 'forced' for exceptional source material. By defining or restricting the input source types detected, in turn guarantees the type of conversion performed. This may be useful for particularly complex clips such as:

- Images containing areas with different motion profiles
- Video captions/DVE effects over film

### **Varispeed**

DEFT conversion extracts frames from 3:2 pulldown to create a segmented frame output at 23.98Hz. For all other frame based inputs with a net frame rate not of 24Hz, or for conversion to any output rate other than 23.98PsF or 47.95i, there are two conversion choices.

### **Clean Frames**

This mode preserves frames as they are received and does not apply interpolation. For frame based inputs other than continuous 3:2, such as varispeed, this may require the loss or repetition of some frames which cause discontinuities in the motion profile of any moving objects. This mode is recommended for sources that already have an uneven motion profile such as animation.

In clean frames mode, converting from 3:2 film to 50i will create a sequence containing mostly frames of two fields in length. However, because the input frame rate of 24Hz is less than the output format's 25Hz frame rate, some output frames must be three fields in length to perform a real time conversion. For this reason, this mode is not recommended for 3:2 film. It is appropriate for variable frame rate film/animation.

### **Clean Fields**

This mode ensures there is no interpolation between different input fields. It is designed for use when multiple sources have been combined in the same image. If the different elements have a different film sequence this mode avoids any possible double imaging artefacts. This mode is more sensitive to aliases in the source and therefore best used only when the circumstances outlined above make it necessary.

### **Smooth Motion**

This mode attempts to maintain a smooth motion profile representative of the source by performing linear temporal interpolation when necessary. It operates in one of two modes depending on the output temporal rate. If 47.95i is selected, the unit will motion smooth on each output field i.e. the conversion will introduce motion changes on field boundaries. Alternatively, if 23.98PsF is selected the Platinum will motion smooth whilst retaining a segmented frame output i.e. there will only be motion changes on frame boundaries only. Smoothing to 47.95i is capable of giving better results than smoothing to 23.98PsF because the higher temporal rate allows a greater number of interpolations. This improves perceived sharpness and motion profile.

### **Bias**

#### **Video 2**

#### **Video 1**

#### **Normal (default)**

#### **Film 1**

#### **Film 2**

This control allows the sequence detector to be biased such that for borderline source material, it is more likely to detect video or more likely to detect film. "Video 2" biases more strongly toward video than "Video 1". Similarly, "Film 2" biases more strongly toward film than "Film 1".

If the 'Input Type' has been set to any one of the three 'film' settings then biasing toward video will increase the likelihood of detecting orphan fields (despite detection of video being prevented).

If the source material has distinct properties of film or video motion, it will be detected correctly in any of the bias settings. Bias becomes useful when converting material that does not contain a clear motion signature. This can occur for many reasons, such as:

- Severely intercut film, varispeed or video
- Film containing overlaid or transparent video effects/graphics
- Excessively enhanced or compressed video clips
- Film originated source with video noise or field based noise reduction

## **Apertures**

### **Sharp**

This aperture maintains maximum possible vertical resolution from the incoming material. It should be used with caution when performing a DEFTplus conversion as it is intolerant to sequence detection errors. Should a mal-paired film frame occur during conversion a high vertical frequency tearing of the moving object may be visible. (This is commonly known as Tearing or Venetian Blinding)

### **Normal (Default)**

This aperture maintains maximum viewable vertical resolution from the incoming source, whilst suppressing all "out of band" vertical frequency components. In the video context this reduces excessive interlace twitter. For film inputs it suppresses any sequence detection errors.

### **Anti-Alias 1**

This aperture is designed for conversion to HD of sources containing captions and graphics with high frequency frame based detail. In addition to the benefits of the normal aperture, the visibility of sequence detection errors is even further reduced.

### **Anti-Alias 2**

This aperture has all the advantages of Anti-Alias 1 with respect to Normal, but to a greater extent.

**Alchemist Platinum P-film Application Notes**

The P-film option features a sophisticated PhC based sequence detector which is used to dynamically control the multi-stage 46 point format/vertical resize filter. This document contains notes concerning the operation of the various modes and options.

**Definition of Terms**

A number of terms are used frequently in this document so they are defined here to avoid ambiguity.

**Progressive Segmented Frame (PsF):**

The segmented frame format splits a progressive image into two sequential 'fields' transported in a format at double the frame rate. It is identical to 2:2 film in terms of its motion profile.

**Film and Video:**

What is film and what is video in this context? The unit is concerned with the motion profile of objects in the source. Video is identified as program material whose content moves at every field boundary. For example, with 625 line, 50 fields per second source material, a camera pan will cause the scene to move 50 times a second. If the source material was PsF, objects are only allowed to move on frame boundaries. Thus our example camera pan would only produce 25 different scene positions each second. This is the most common arrangement of frames from film originated material in 625 line video. However, in practice film originated material may be filmed or transferred to video such that there are fewer frames per second. In this case the same image may appear in 4 or more fields. However, these special cases are compensated for.

**Sequence Detection:**

This is the act of finding film frame boundaries. For "perfect" PsF sources, this will produce a regular pattern of frames. For "non-perfect" sequences the pattern will be irregular and may have incomplete frames at edit points.

**Film Dominance:**

Dominance refers to the way frames are split between fields. Normal dominance for film originated material in 625(576) video is for a frame to appear in a field one and the following field two. Occasionally material may be encountered where the frame begins on a field two and ends on the following field one. This is sometimes referred to as reverse dominance. P-film is designed to detect either dominance correctly.

**What is P-film?**

P-film enables discrimination between video and film originated sources allowing specific, optimised apertures to be applied to each source automatically on a shot by shot basis. Film sequence detection allows the reconstruction of frames enabling more resolution to be preserved. P-film can also increase the perceived resolution of film originated sources by optionally creating a sequence of uninterpolated output fields representative of the input frames as they are received.

**User Adjustable P-film Controls****Type****Auto (default)**

In auto mode the unit will automatically detect input type. The film elements can contain any frame or cut dominance.

**Film (2:2)**

This mode will force the detector to identify 2:2 (segmented frames at 25Hz). It will not detect video originated inputs. The sequence detector will detect either possible 2:2 dominance.

**Film (VAR)**

This mode will limit the detector to detecting film inputs only. Frame size can vary and can be an even or odd number of fields in length.

**Animation**

This mode is optimized to detect variable frame rate animation, specifically sharp 2D cartoons with large plain areas outlined by thin black lines.

**Video**

This mode will force the detector to a video conversion mode. All input will be treated as video.

Note: The input type should only have to be 'forced' for exceptional source material. By defining or restricting the input source types detected, in turn guarantees the type of conversion performed. This may be useful for particularly complex clips such as video captions overlaid on film.

**Film****Clean Frames**

This mode preserves frames as they are received and does not apply temporal interpolation. Output fields are generated from the nearest input frame. Taking a conversion from 625(576)/25PsF to 525(480)/59.94i as an example, the output frame lengths (in fields) are 2:2:3:2:3 repeated. Note this **not** continuous 3:2.

**Clean Fields**

This mode ensures there is no interpolation between different input fields. It is designed for use when multiple sources have been combined in the same image. If the different elements have a different film dominance this mode avoids any possible double imaging artefacts. This mode is more sensitive to aliases in the source and therefore best used only when the circumstances outlined above make it necessary.

**Smooth Motion**

This mode smoothes the motion profile of film sources by performing linear temporal interpolation.

**Bias****Video 2****Video 1****Normal (default)****Film 1****Film 2**

This control allows the sequence detector to be biased such that for borderline source material, it is more likely to detect video or more likely to detect film. "Video 2" biases more strongly toward video than "Video 1". Similarly, "Film 2" biases more strongly toward film than "Film 1".

If the 'Input Type' has been set to any one of the two 'film' settings then biasing toward video will increase the likelihood of detecting orphan fields (despite detection of video being prevented). If the source material has distinct properties of film or video motion, it will be detected correctly in any of the bias settings. Bias becomes useful when converting material that does not contain a clear motion signature. This can occur for many reasons, such as:

- Film containing overlaid or transparent video effects/graphics
- Excessively enhanced or compressed video clips
- Film originated source with video noise or field based noise reduction

**Apertures****Sharp**

This aperture maintains maximum possible vertical resolution from the incoming material. It should be used with caution when performing a P-film conversion as it is intolerant to sequence detection errors. Should a mal-paired film frame occur during conversion a high vertical frequency tearing of the moving object may be visible. (This is commonly known as Tearing or Venetian Blinding)

**Normal (Default)**

This aperture maintains maximum viewable vertical resolution from the incoming source, whilst suppressing all "out of band" vertical frequency components. In the video context this reduces excessive interlace twitter. For film inputs it suppresses any sequence detection errors.

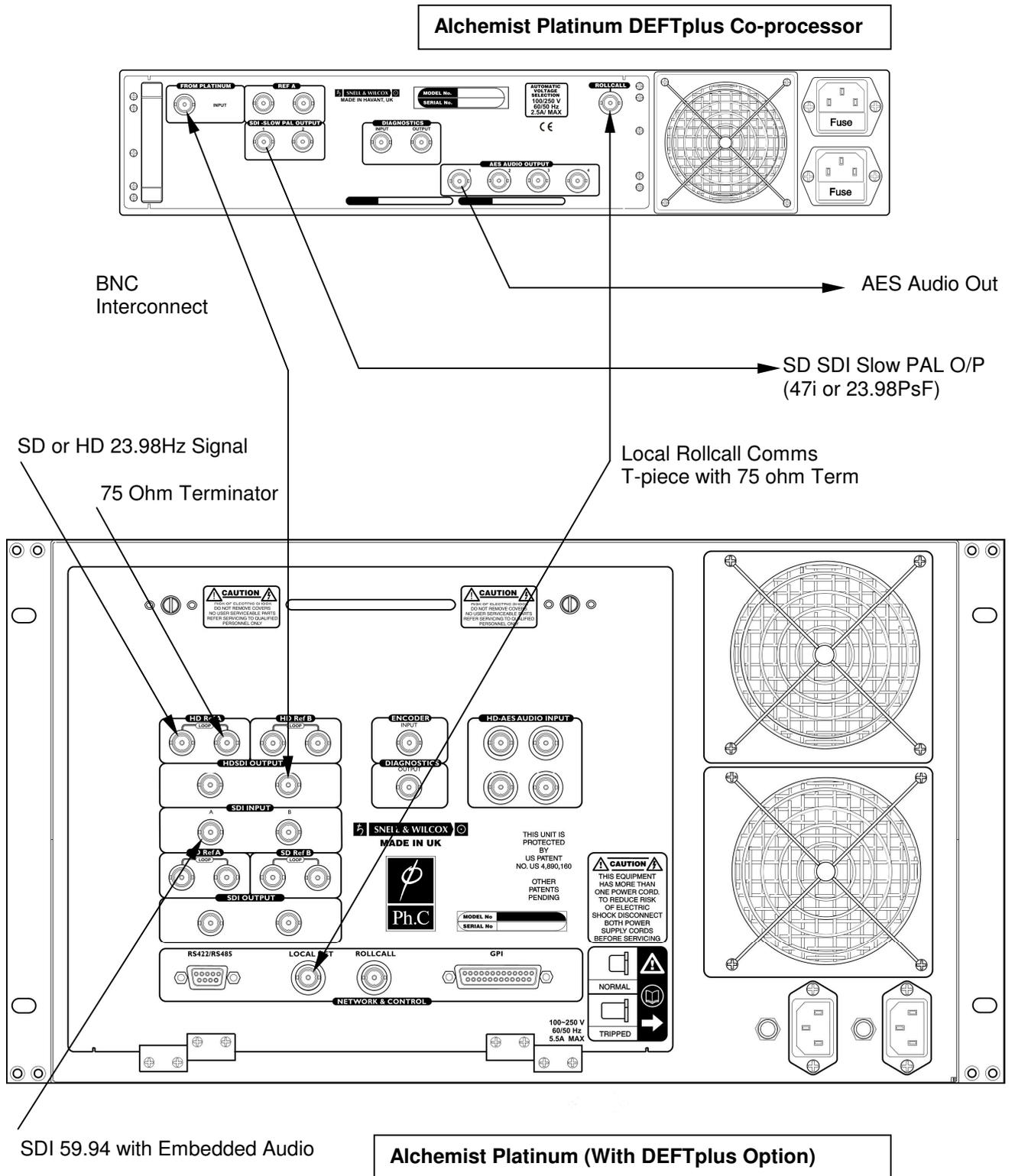
**Anti-Alias 1**

This aperture is designed for conversion to HD of sources containing captions and graphics with high frequency frame based detail. In addition to the benefits of the normal aperture, the visibility of sequence detection errors is even further reduced.

**Anti-Alias 2**

This aperture has all the advantages of Anti-Alias 1 with respect to Normal, but to a greater extent.

Alchemist Platinum DEFTplus Interconnect Diagram - 525/59.94 to Slow PAL



Note: The Alchemist Platinum DEFTplus Co-processor does not require an external reference. It is automatically configured to operate in an "input locked" genlock mode,

### **Slow PAL System Configuration**

In order to perform a Slow PAL conversion the Alchemist and Co-processor must be connected via RollCall. This is achieved using the Local Net Connection on the back of the Alchemist. Just as with any other RollCall style infrastructure the network must be terminated at each end with 75ohm terminators. Assuming the Alchemist and Co-processor have their respective unit addresses configured correctly, the Alchemist will automatically configure the Co-Processor. Once complete an acknowledgement will be received at which stage the Slow PAL menu item will appear next to the HD entry on the output menu page.

### **Local Net Configuration**

The default RollCall address for the Co-processor is 2B Hex. If required this address may be changed. First remove the passive front panel from the Co-processor. On the top card (HIO) there are two hex rotary switches SW1 and SW2. These specify the unit's address. SW1 is the first character of the address, SW2 the second e.g. the address of 2B would be specified by selecting 2 on SW1 followed by B on SW2. Re-install card and front panel.

The Alchemist must then be configured with the equivalent address. Under Setup/RollCall/Devices there is a menu item Format. Using the rotary switches the address may be set. Once complete the Slow PAL menu will appear next to the HD entry on the output page.

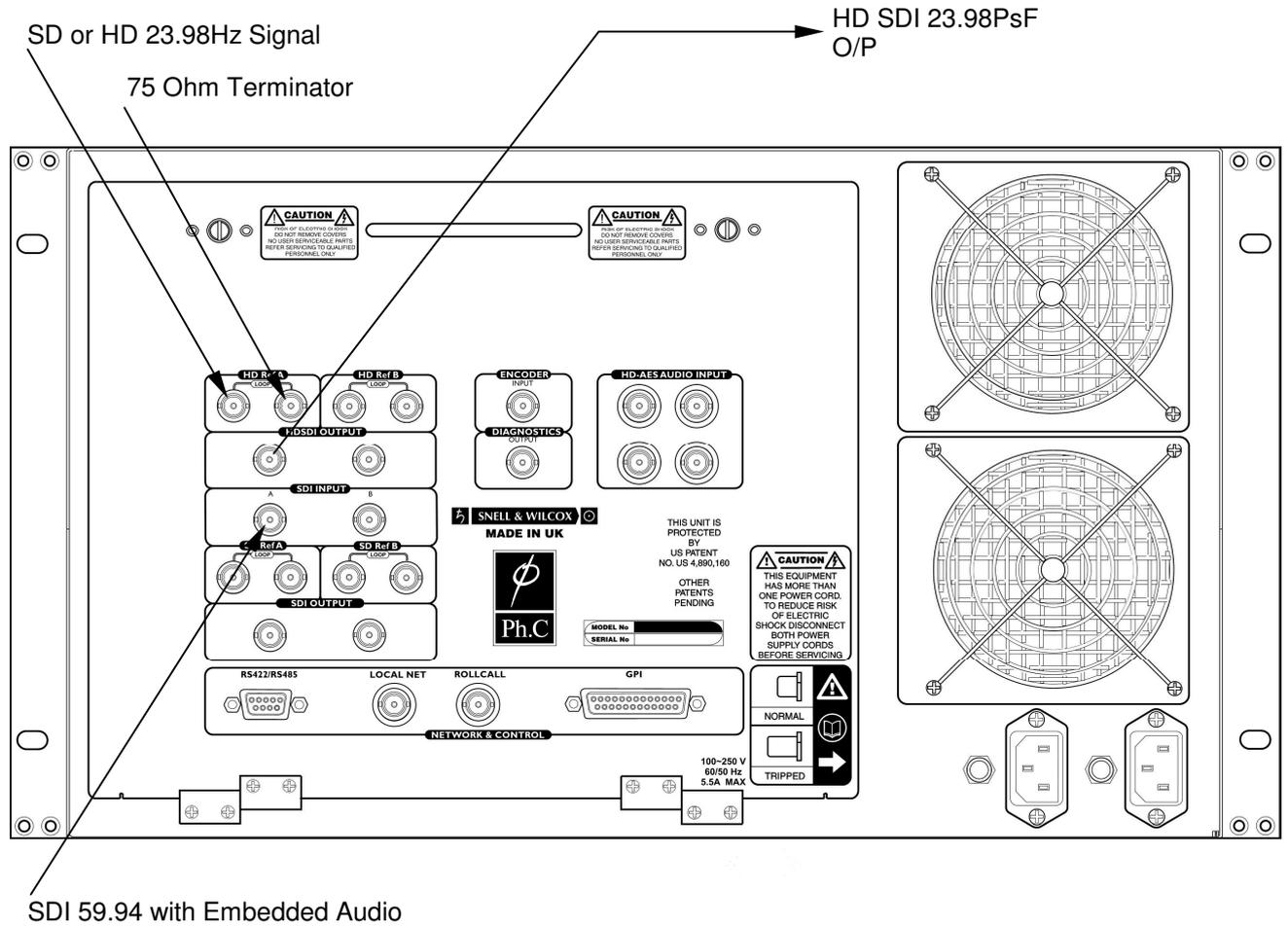
### **Audio**

Audio input is via the SD SDI input, embedded. For a Slow PAL conversion audio output is provided as unbalanced AES. Note embedded audio is not supported in Slow Pal SDI. Audio is delayed to be co-timed with the video output.

Input and output audio groups should be specified within the audio menu. AES output 1 will always contain the first 2 channels of the specified output group and AES output 2 will contain the second two channels of the specified output group.

For example if output group 1 is selected, AES output 1 will deliver channels 1 and 2; AES output 2 will deliver channels 3 and 4 and AES outputs 3 and 4 will deliver a test tone only.

Alchemist Platinum DEFTplus Interconnect Diagram – 525/59.94 to 1080/23.98PsF



Alchemist Platinum (With DEFTplus Option)

**External Devices**

**Overview**

Alchemist Platinum can be configured to control external devices and incorporate key menu items into its own menu structure. This allows control of certain parameters, implemented on external devices, as if they are integrated functions of the Alchemist.

This feature can be used to integrate control of composite I/O functionality into the Alchemist menus even though the actual device performing the operation is an external decoder or encoder.

Supported External devices are:

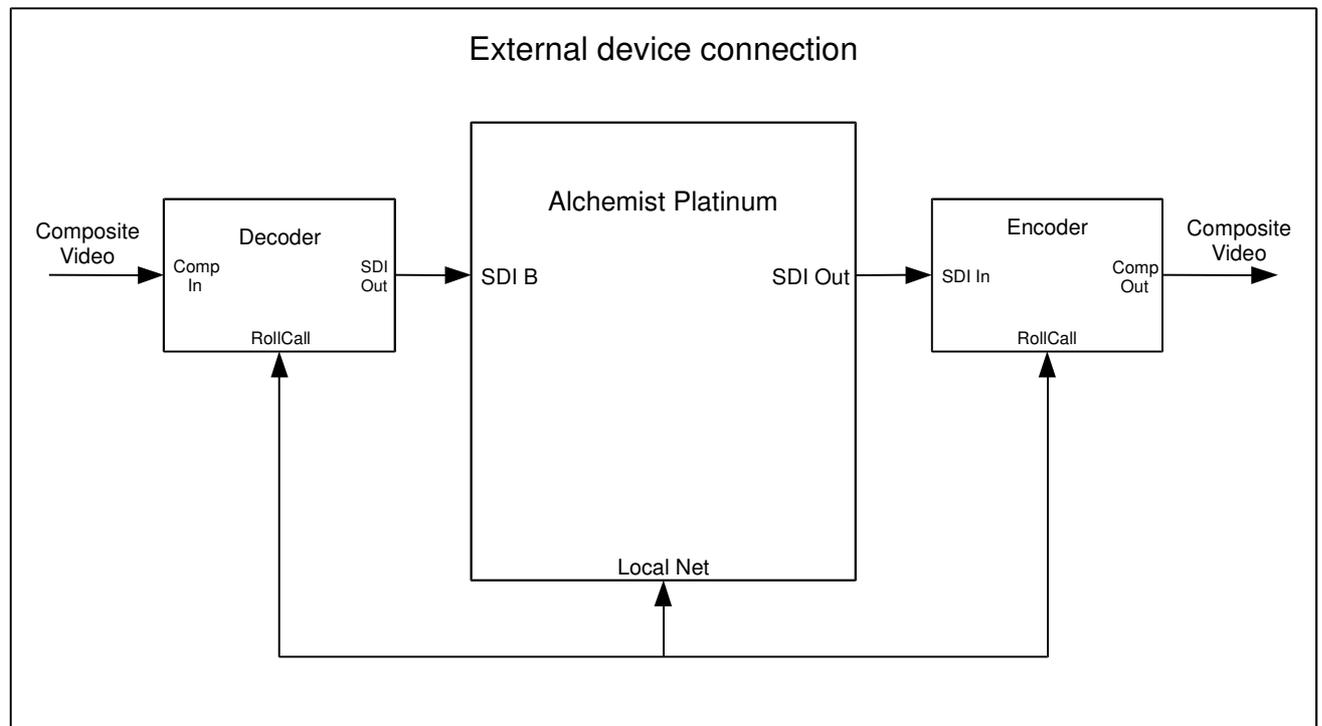
- MDD2000 Decoder
- IQDAMDD Decoder
- MDE2000 Encoder
- IQDMSES Encoder

As the features of each of the above encoders/decoders differ, the menus and the available parameters in the Alchemist menu structure will change depending on the connected device.

**Device connection**

To provide control and communication with an external device, the Alchemist and the device must be connected via RollCall. This is achieved using the Local Net connection on the back of the Alchemist. Just as with any other RollCall style infrastructure, the network must be terminated at each end with 75ohm terminations. Multiple external devices may be connected to this Local Network in the normal way.

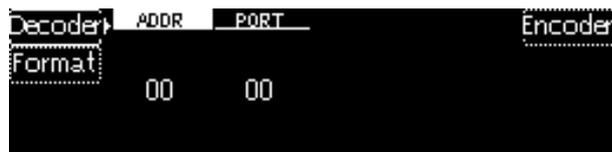
In addition to the RollCall connection, an external decoder must have its SDI output connected to the SDI B input on the Alchemist. An encoder can be connected to either SDI output from the Alchemist.



**Configuration**

The external devices need to be configured to send RollCall log messages to the Alchemist. To do this their log server control needs to be set to the same network name as the Alchemist.

Under the Setup / RollCall / Devices menu, there are controls to set up the addresses and ports for all the supported devices. The menu below shows the configuration screen for the decoder.



The ADDR and PORT controls need to be set to the address and port of the corresponding device, in this case the decoder. The devices can be at any valid RollCall address / port.

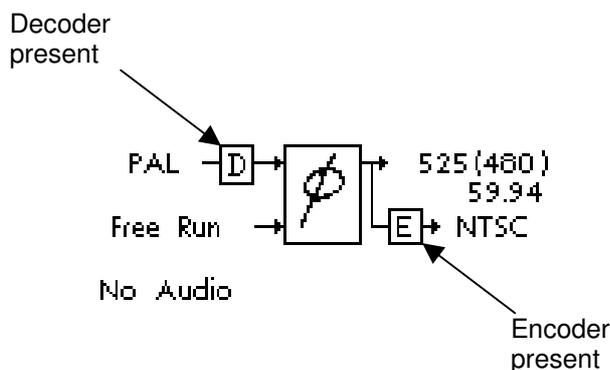
The Format page will only appear if the Alchemist has the DEFTplus option and Slow PAL output.

**Operation**

Once an external device has been configured and successfully recognized by the system, the menu structure of the Alchemist will update accordingly. In the case of a decoder for example, the input menu tree will update to provide common decoder functions. The controls and parameters available will depend on the device that is connected. Examples of the controls available are shown in the Input section of this Operation guide.

Functions of a connected device, not available from the Alchemist menus can still be controlled via a Shoebox or PC Template via RollCall; the Alchemist will not override these parameters.

The use of an encoder or decoder is indicated on the home screen of the Alchemist as shown below.



Encoder present will only be indicated with an SD output. The composite input needs to be selected from the input menu in order for the decoder indication on the home screen to be active.

**Audio Delay Tracking**

If required, the external decoder can be configured to send RollTrack packets to the Alchemist, reflecting its system delay. The Alchemist will then add this to its own system delay and applies an equivalent delay to its embedded audio path. This 'decoder delay' will only be applied if the composite input is selected.

The RollTrack string should be set up in the normal way, with the channel number being set to 14.

## RollTrack Audio Delay Tracking

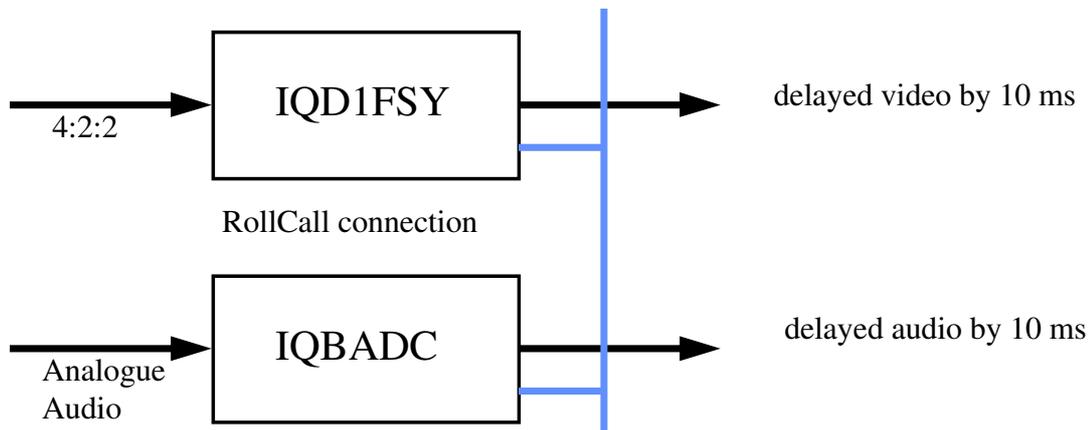
RollTrack is a feature of RollCall™ (Snell & Wilcox’s proprietary remote control system), that allows devices to communicate across the RollCall network with no direct user intervention.

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

The current products that implement RollTrack Audio Delay Tracking are:

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

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



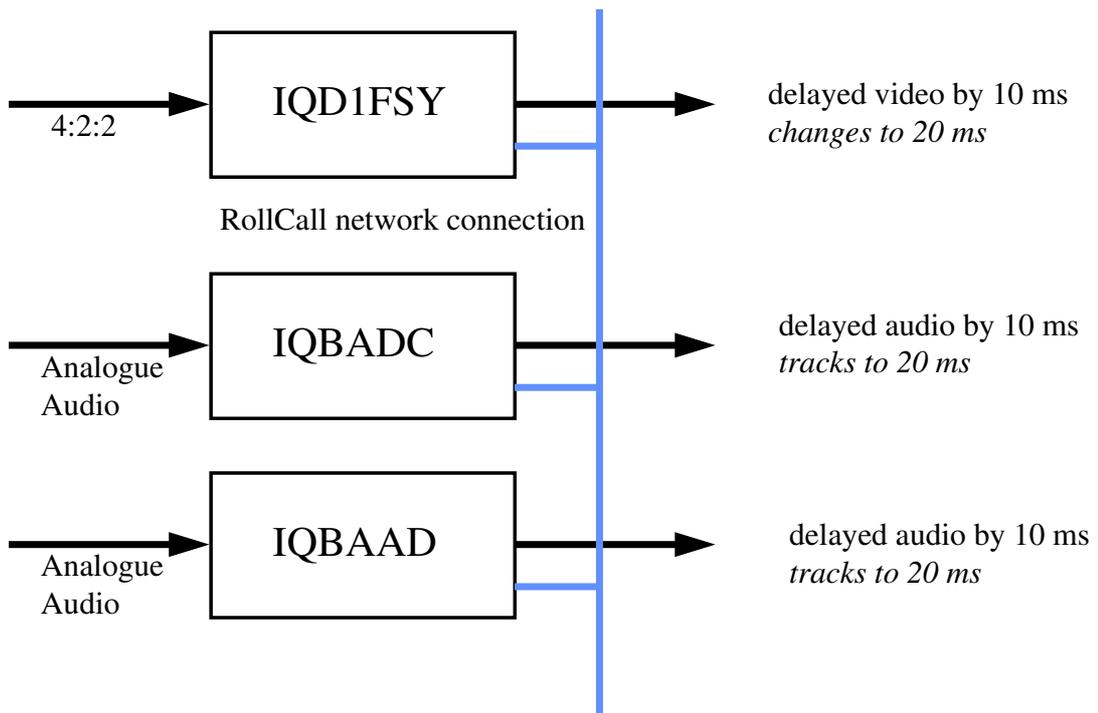
The next level of configuration is where there are multiple Frame Synchronizers (for example) each connected through RollCall™ to their own tracking Audio Delay. (It is worth stating that the synchronizers and audio delays do not have to be in the same enclosure; the addressing scheme, discussed later, allows for the units to be positioned anywhere in the RollCall™ domain.)

The maximum number of video units and audio delays in a RollCall™ system is set by the maximum limit of the number of modules in a RollCall™ network and is currently 3840 on a single network without bridges.

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

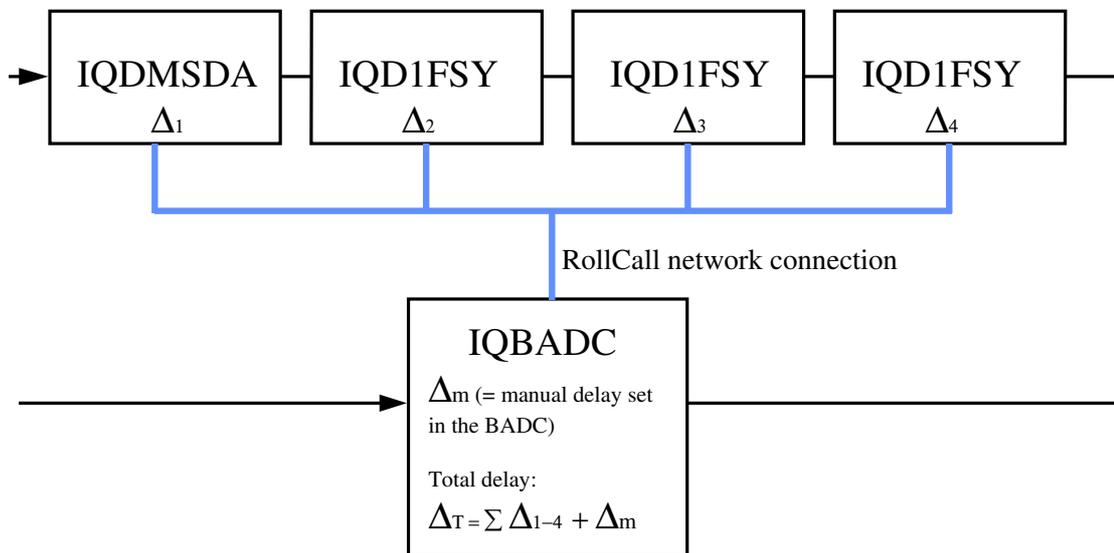
Module	ID
IQBADC	51
IQBDAC	52
IQBAAD	53
IQBDAD	54
IQBSYN	89
IQBADCD	107

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



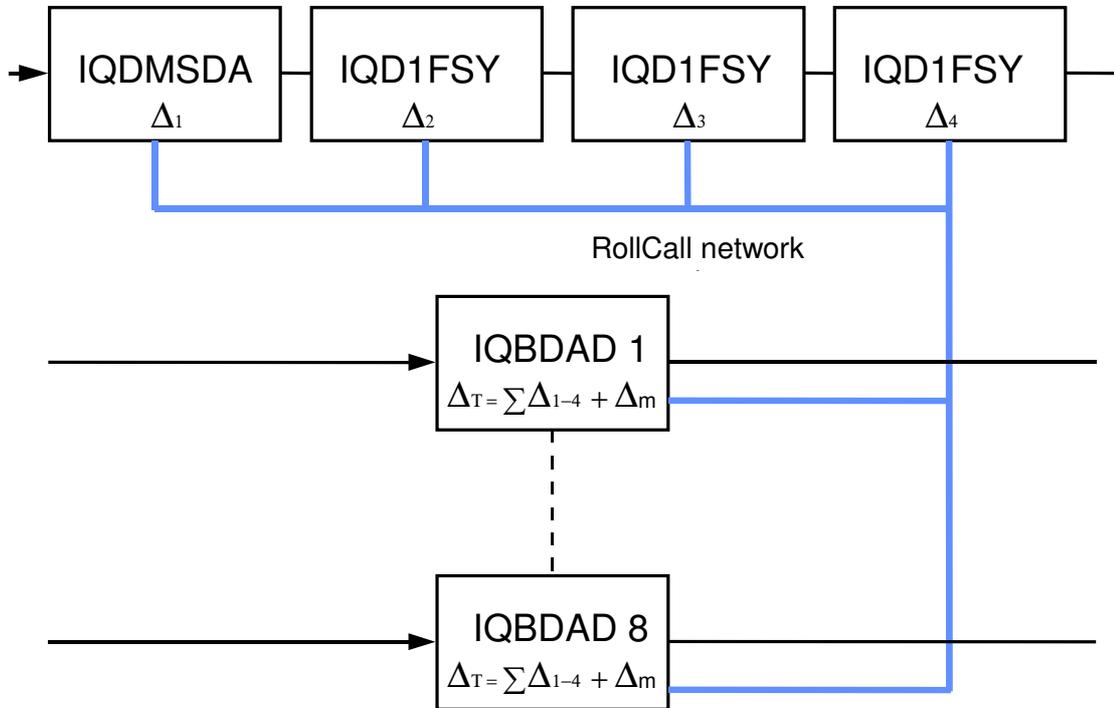
From one to eight audio delay products can be connected via RollCall™ to a single frame synchronizer, for example. If the synchronizer delay changes, then however many audio delays are connected will track the delay. The audio delays can also have a manual delay which will be added to the RollTrack delay.

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



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

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



As any of the delay times change in the video path so will the audio delay time track this delay. A virtual connection is made between from, say, an IQD1FSY to an IQBDAD by:

- selecting the *Setup...* Menu of the IQD1FSY
- then selecting the *Audio\_Delay...* Menu
- then choosing from *Unit\_1* to *Unit\_8*
- then entering the unique network address of the IQBDAD in the form  $nnnn:xx:yy*z*d$  where  $nnnn$  = network address and in most cases will be 0000(hex);
- $xx$  = IQ enclosure address (hex);
- $yy$  = slot address of the IQBDAD (hex)
- $z$  = the connection (or channel) number (decimal) - see table below.
- $d$  = the unique identification of the destination unit (decimal) The ID entered must match the receiving units own ID or else the command will be ignored. If the ID value is set to 00, the receiving unit does not perform an ID match and will always accept the incoming command
- then selecting the *Delay...* Menu of the IQBDAD
- then selecting *RollTrack*

Example of Network Addresses with Channel Numbers and ID Numbers

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

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

