

MDE2000

Multi-Standard

Digital Encoder

*Note that information contained
in this manual is subject to
change without notice*

Operator's Manual

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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



Servicing instructions where given, are for use by qualified service personnel only. To reduce risk of electric shock do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so. Refer all servicing to qualified personnel.

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

Power connection in countries other than the USA

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

The colour code for the lead is as follows:

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



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

Légende :

(F)

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

Précaution d'emploi :



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)



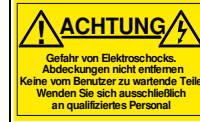
- ⚠ Attention si l'appareil a 2 alimentations, s'assurer que les cordons soient branchés sur la même phase.

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



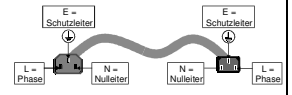
Die angeführten Service-/Reparatur-Anweisungen sind ausschließlich von qualifiziertem Service-Personal auszuführen. Um das Risiko eines lektroschocks zu reduzieren, führen Sie ausschließlich die im Benutzerhandbuch eschriebenen Anweisungen aus, es sei denn, Sie haben die entsprechende Qualifikation. 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.
- Vägguttaget som strömförsörjer apparaten bör finnas i närheten samt vara lättillgänglig.

Strömkontakter i länder utanför USA

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

GRÖN/GUL ledning ansluten till E (Skyddsjordad ledare)

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



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

Turvamerkkien selitys

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 suojajohdoin E-napaan
SININEN nollijohtoin N-napaan
RUSKEA vaihejohtoin L-napaan



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

Símbolos de Segurança



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

Avisos de Segurança



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

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

Ligação da alimentação noutros países que não os EUA

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

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



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

Επεξήγηση των Συμβόλων Ασφαλείας



- Αυτό το σύμβολο παραπέμπει το χρήστη σε σημαντικές πληροφορίες που συμπεριλαμβάνονται στο συνοδευτικό εγχειρίδιο.
- Αυτό το σύμβολο υποδεικνύει ότι στο εσωτερικό υφίστανται επικίνδυνες ηλεκτρικές τάσεις. Στο εσωτερικό δεν υπάρχουν επισκευασµα µέρη. Αυτή η μονάδα πρέπει να επισκευάζεται μόνο από ειδικά εκπαιδευμένο προσωπικό.

Προειδοποίηση Ασφαλείας



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

- Για να μειώσετε τον κίνδυνο ηλεκτροπληξίας, μην εκθέτετε τη συσκευή σε βροχή ή υγρασία.
- Πάντα να εξασφαλίσετε 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 βεριαωθείτε ότι και τα δύο καλώδια τροφοδοσίας είναι συνδεδεμένα σε εξόδους τροφοδοσίας που βρίσκονται στην ίδια φάση.

Products employing Lithium batteries

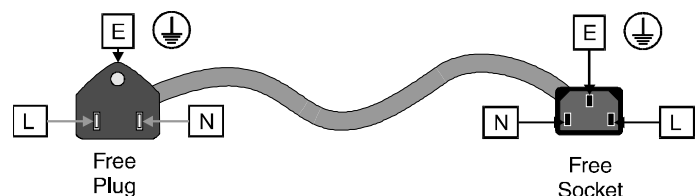
CAUTION

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

Power cable supplied for the USA

The equipment is shipped with a power cord with a standard IEC molded free socket on one end and a standard 3-pin plug on the other. If you are required to remove the molded mains supply plug, dispose of the plug immediately in a safe manner. The color code for the cord is as follows:

- GREEN** lead connected to E (Protective Earth Conductor)
- BLACK** lead connected to L (Live Conductor)
- WHITE** lead connected to N (Neutral Conductor)



For products with more than one power supply inlet

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

Rack Mounting the Enclosure



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



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

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

Safety Standard

This unit conforms to

BS EN 60950 :1992

Specification for safety of information technology equipment, including electrical business 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 8281 or BBC type PSF1/2M.

D-TYPE CONNECTORS

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

Packing List

The unit is supplied in a dedicated packing carton provided by the manufacturer and should not be accepted if delivered in inferior or unauthorised materials. Carefully unpack the carton and check for any shipping damage or shortages.

Any shortages or damage should be reported to the supplier immediately.

Enclosures:

- MDE2000 unit
- Operator's manual
- Power cable

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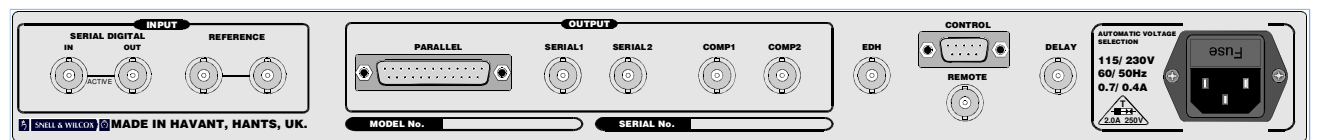
Description

The MDE2000 is a precision digital encoder delivering both analog and digital composite outputs from a digital component source. An integral legal color checker eliminates illegal color inputs from DVE or other sources prior to encoding

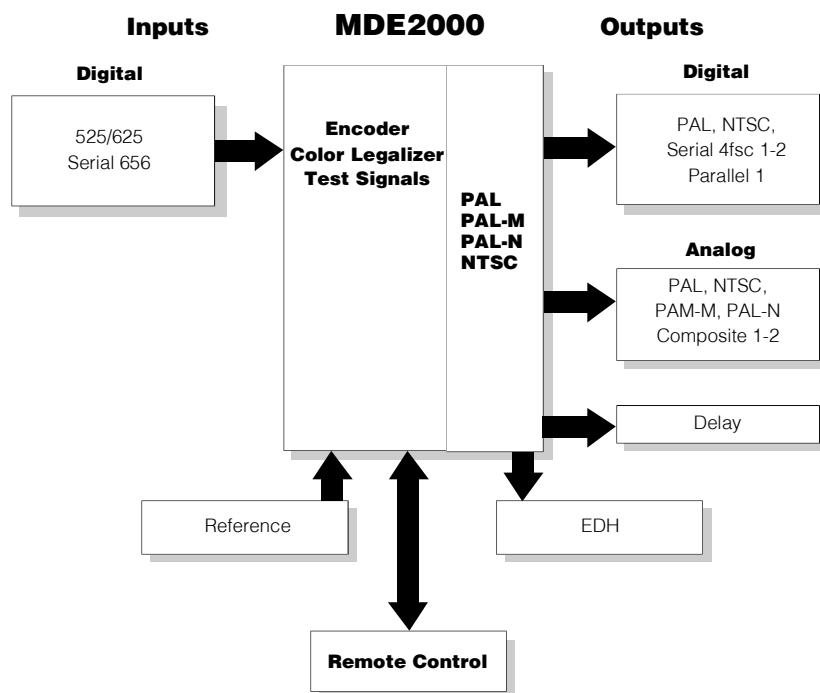
FRONT VIEW



REAR VIEW



Input-Output Characteristics



Features

- Multi-standard encoder for analog and digital working
- Legal color checker and limiter
- Audio delay flag
- 12-bit DAC
- Frame synchronizer
- Precise digital accuracy
- VITS passthrough
- Built-in line based test signals

Specifications

Features

Signal Inputs

Serial Component Video	525/625 Serial 656 via active loop-through connection
Reference input	Composite/black burst via loop-through connection

Signal Outputs

Serial Digital Composite	2 off (D2 to SMPTE 259M-C) PAL, NTSC, NTSC (Japan)
Parallel Digital Composite	1 via 25 way D connector
Analog Composite Video	2 x encoded outputs to CCIR report 624-3 (SMPTE ****) PAL, NTSC, NTSC (Japan), PAL L and PAL M
Delay	TTL signal representing the synchronizer delay time
EDH	TBA

Preset Controls **via 8 character card-edge display and menu system**

Test pattern	On/Off
Test pattern select	Color bars, Y Ramp, C Ramp, Y Sweep, C Sweep, Bowtie
Genlock H-Phase offset	±0.5 TV line in Sc cycles steps
Genlock V-Phase offset	±1 field in steps of 1 line
Genlock SC Phase offset	360° in steps of 0.1°
Delay	Up to 1 frame, within range of synchroniser
Sync Amplitude	40 IRE/300 mV ± **
Q Signal Bandwidth	Full/Narrow
Line Blanking Select	Lines 7-23, 320-336 (625), Lines 10-20, 272-282 (525) Individually
Legal Color Limiting	On/Off

Indicators

Via 8 character card-edge display and menu system

Specifications

Serial Component Input	SMPTE 259M-C CCIR Rec 656
Serial Input Return Loss	Better than -15 dB to 270 MHz
Serial Input Cable Length	Up to 175 m of High Quality Coax (ref 8281)
Reference Input Standard	525/625 (same standard as 656 input)
Composite or Black Burst Reference Level	Standard level ±3 dB
Reference Input Return Loss	Better than -35 dB to 5.5 MHz
Composite Encoding	12 bit (D2 – 10 bit)
Y Frequency Response	5.75 MHz ± 0.25 dB
U/I & V/Q Frequency Response	<-3 dB @ 1.3 MHz (Full) Q=-3 dB @ 600 kHz (narrow)
Differential Gain	Better than 0.5%
Differential Phase	Better than 0.5°
Luminance to chrominance delay	Less than 10ns.
Luminance K Factor 2T pulse	<0.5%.
NTSC setup	54mV (7.5 IRE)
Sch Phase	0° As per D2 specification
Electrical path length	Within 1 frame
Subcarrier pull-in range	±25 Hz
Subcarrier locking time	<1 s
Signal to Noise Ratio	>55 dB

EMC Performance Information

Environment	Commercial and light industrial E2
Peak Mains Inrush Current following a 5 second mains interruption	6.9 A
Performance Information	No performance degradations or cable length limitations

Power

Mains Power Voltage Range	88V to 264V AC 1.2A 45Hz to 60Hz
Fuse Rating	IEC320 Fused Inlet Socket 2A(T)

Installation

POWER CONNECTIONS

This is the IEC320 mains power connector suitable for a standard IEC type power cable and contains a 2 A(T) fuse.

This connector supplies power to the unit and should be connected to the mains supply. If a fused type plug is fitted to the cable a fuse of 7 A (F) rating should be installed.

POWER ON/OFF SWITCH

The power ON/OFF switch is located behind the hinged front panel.

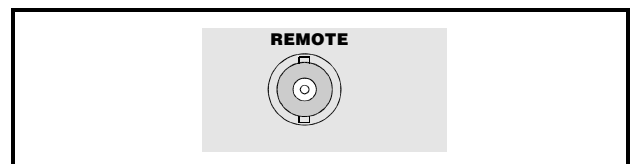
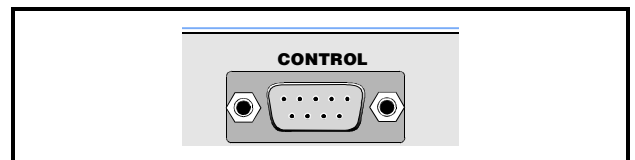
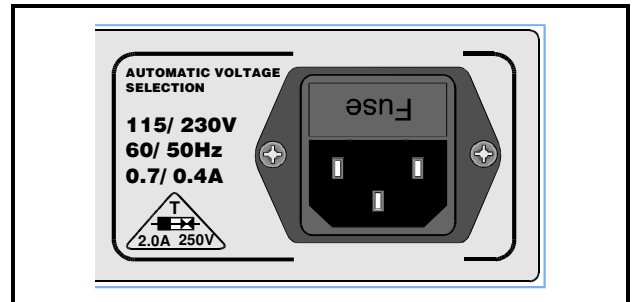
COMMUNICATION CONNECTIONS

Control

The RS 422 remote control interface is via this 9-pin female 'D' connector.

Remote

This BNC is for connection to the RollCall remote control system.



INPUT CONNECTIONS

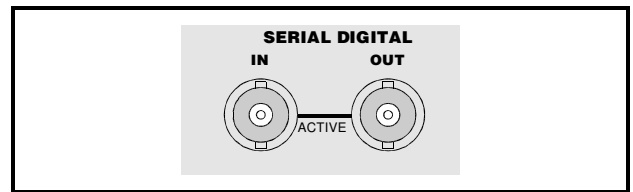
Serial Digital Input

This is the Serial Digital input for the unit via BNC connectors.

As the loop-through is an active type, the input signal must be connected to the connector marked INPUT and is internally terminated in 75 Ohms.

Return loss is >15dB and input cable lengths of up to 200 m may be used.

The OUTPUT connector provides a buffered output of the input signal.

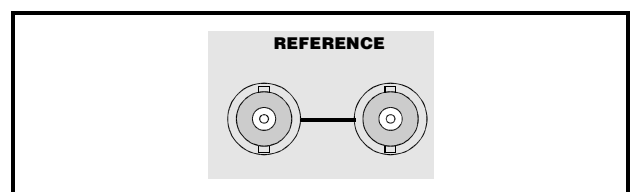
**Reference Input**

When a suitable signal is connected to this connector, the unit, and the output signals, will be synchronised to this signal.

The signal may be black burst or standard composite colour video

A passive loop-through connection is provided via BNC connectors and has a return loss of >35dB when correctly terminated with a 75 Ohm load.

When no reference is connected the unit will perform line lock to the F and H Data contained in the incoming video data.

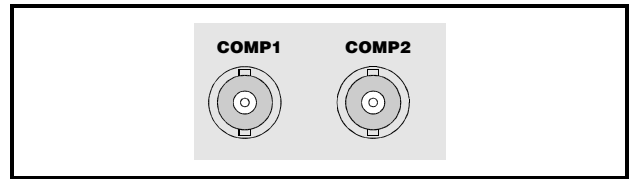


SIGNAL OUTPUT CONNECTIONS

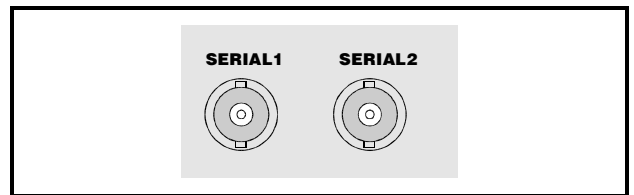
Composite Outputs

There are 2 isolated outputs of composite video available from the unit via BNC connectors.

Nominal output level is 1V p-p into 75 Ohms and Return Loss is >35dB to 5.5MHz.

**Serial Digital Outputs**

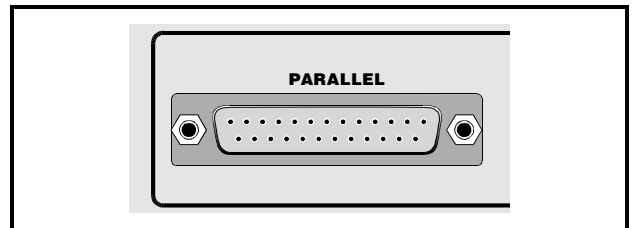
These are the 2 Serial Digital outputs of the unit via BNC connectors.

**Parallel Digital Output**

This is the Parallel Digital output for the unit via a 25-way 'D' female connector.

The pin-out is in accordance with SMPTE 29M-C and signal lines (11) are for 100 Ohms.

The signal is encoded in accordance with SMPTE 29M-C, D2 format.

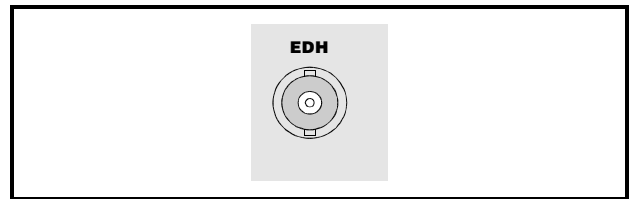


CONTROL OUTPUT CONNECTIONS

EDH

This connector provides an output from an opto-isolated open collector switch for reporting of EDH errors.

For details of the EDH system, see Appendix 1.

**DELAY (Synchroniser Delay)**

(For use with auto-tracking audio delay units)

This connector provides a TTL compatible signal representing the signal delay through the unit (synchroniser delay).

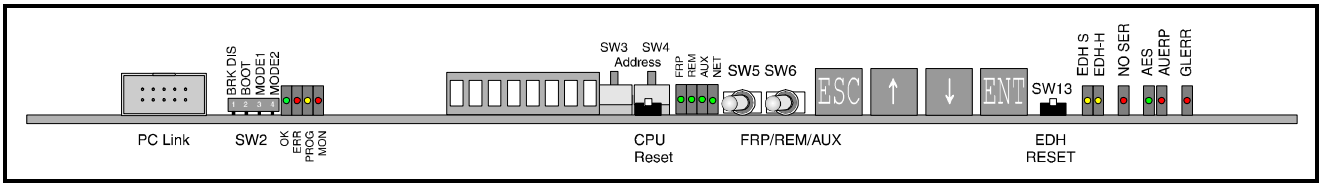
The signal will go high at the beginning of input field 1, stays high during the delay time, and then goes low at the end of the delay time.

The maximum delay time is 1 frame and the delay time increments in steps of 74ns.



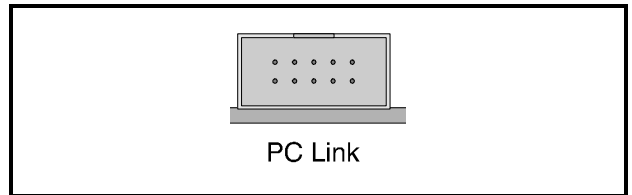
Operation

OPERATION USING CARD EDGE CONTROLS



PC CONNECTOR

This connector allows a connection to a PC for downloading software.

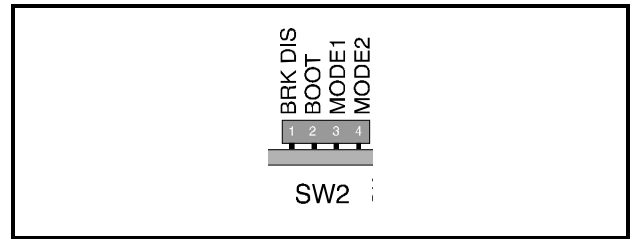


SWITCHES

SW2

This switch is for factory set-up only.

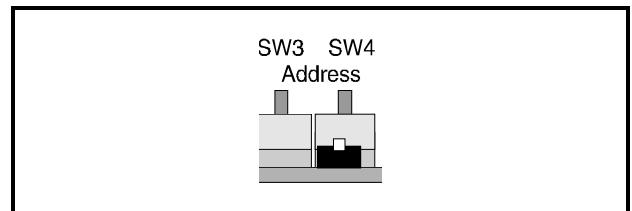
Do not change these settings.

**SW3 and SW4 (Network Address)**

These two switches enable the RollCall network address to be set. SW3 sets the MSB (most significant bit) and SW4 sets the LSB (least significant bit)

SW3 is factory set to 3 and SW4 to 1.

Do not change these settings

**SW5**

This 2-way switch has no function on this unit.

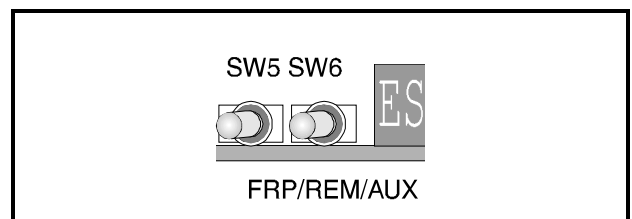
SW6

This 3-way switch sets where the MDE2000 receives control data.

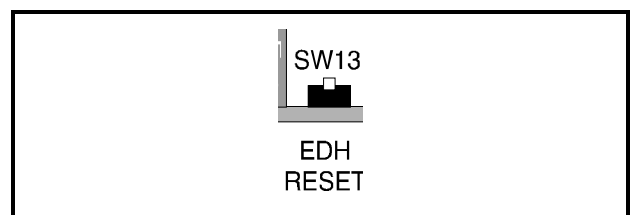
In the left hand position control is from the card edge.

In the centre position control is from the remote control system.

The right hand position has no function.

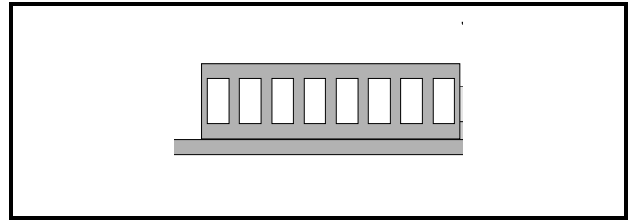
**SW13**

Pressing this button will reset the EDH counters to zero.



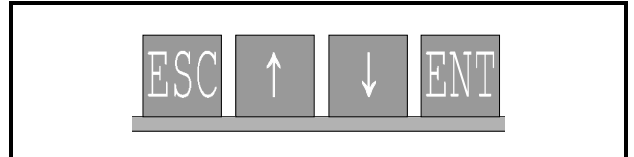
DISPLAY

This 8-digit dot-matrix display will show the settings for the MDE2000 that are set up by using the 4 card edge navigation buttons.



NAVIGATION BUTTONS

The ↑ and ↓ keys enable you to scroll up and down through the menu. The ESC (Escape) key returns you to the previous menu level.



These four buttons allow navigation through the menu system of the MDE2000.

ESC

The ESC (Escape) key returns to the previous menu level.

ENT

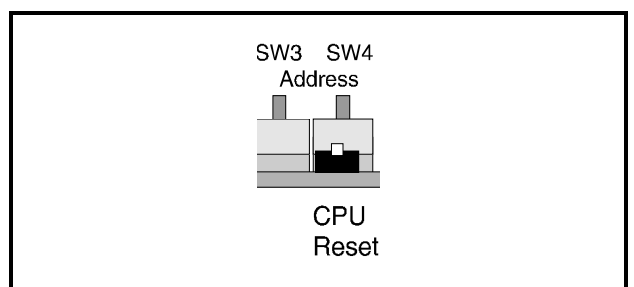
The ENT (Enter) key interrupts the Home Display and allows you to enter the menu structure. It is also used to display a selected option.

↑ & ↓

The ↑ and ↓ arrows allow scrolling through the menu items in the display window.

Reset Button

If for any reason the menu system should hang the CPU can be restarted with the CPU RESET switch.



GETTING STARTED

Connect up the unit so that there is a suitable Serial Digital video signal applied to the serial input. A reference signal may be connected if required.

The front panel is opened by using the two black catches at either end of the panel.

Pull the two catches upwards together and ease the front panel forwards. (extends approximately 50 mm)

The panel will then hinge down to a horizontal position allowing access to the internal controls.



Turn the unit on. The green LED to the left of the ON/OFF switch should be illuminated, and the fan should be audible.

The front panel display will indicate that the unit is powering up and that the CPU is being configured.

A message will then display the unit's name and the configuration status.

The initialisation sequence is now complete and the output should be an encoded version of the input.

THE MENU SYSTEM

To provide a full range of functions with just 4 buttons and an 8-digit display, a menu system is used.

During normal operation, the display slowly cycles through the status of current operation (Home Display). Typically these will be the line standard, the aspect ratio, genlock status and pattern generated if on.

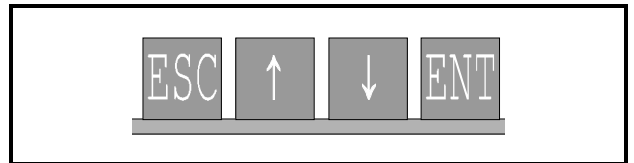
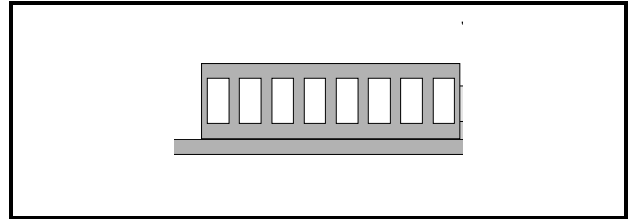
The ENT (Enter) key interrupts the Home Display and allows you to enter the menu structure. It is also used to display a selected option. The ↑ and ↓ keys enable you to scroll up and down through the menu. The ESC (Escape) key returns you to the previous menu level.

A ">" at the right of an option on display indicates that selecting the option (pressing ENT) will lead to another menu level without changing a system setting. If there is not a ">" at the right, pressing ENT will change the indicated system setting.

If the menu being displayed allows you to pick one of a number of options, the currently selected option is indicated by an "*" (asterisk) at the left.

Pressing ↑ and ↓ simultaneously returns a parameter to its preset value.

Pressing ENT and ESC simultaneously will return you to the Home Display.



TOP LEVEL MENU (Home)

STANDARD

This allows the output standard to be set.

Selections available are:

PAL D2
NTSC D2
PALM
PALN
NTSC Np

GENLOCK

Selects adjustment of the Genlock parameters. From the Home Screen, press ENT and scroll to Genlock. Press ENT and scroll between Source, H Time and V Time. Press ENT on the selected function.

Source selects the source of the genlock reference.

Auto: The MDE2000 will lock to an external analogue reference, if one is present and correct, otherwise it will lock to the input video.

Ext Ref: Forces the MDE2000 to lock to an external reference.

IP Vid: Forces the MDE2000 to lock to the input video.

Free Run: Turns off the Genlock function.

H Time allows you to adjust the horizontal Genlock timing with respect to the reference, in pixels.

V Time allows you to adjust the vertical Genlock timing with respect to the reference, in lines.

Sc Phi This allows adjustment of the subcarrier phasing with respect to the reference in steps of 0.1 degree.

UTILS

Clip ON Clip OFF

Clip allows you to turn the internal clipper on or off. The clipper limits the 10-bit data to 940 for white and 64 for black. Each time you press ENT, the message toggles between Clip Off and Clip On.

Gamut ON GamutOFF

Gamut Turns on or off the colour gamut checking system. When On it ensures that the colour values are legal.

Mono On/Mono Off This allows the picture to be either colour (OFF) or monochrome (ON)

QBW Nrrw QBW Wide In NTSC mode only, the bandwidth of the Q signal may selected as Wide or Narrow .

Test ON Test OFF

TP Type allows you to select the test pattern that will be produced when the internal TPG is switched on. From the Home Screen, press ENT and scroll to Setup. Press ENT and scroll to select TPG Type. Then press ENT again.

Scroll to the pattern type you require and press ENT. The patterns are digitally generated to exact levels; to preserve their integrity there is no adjustment.

Patterns available are:

100% Bar
75% Bar
EBU Bar
Y Ramp
UV Ramp
Y Sweep
C Sweep
Bowtie

VIDEO

Note that Video gain, Chroma gain and Black level adjustments cannot be made via the card edge controls.

To make adjustments to these parameters use RollCall or an active front panel (option) to access the Video menu. See page 4.13.

VITS

This allows you to control the blanking of the vertical interval lines. Note that for 625/50 operation the lines are 7-22 and 320-335, and for 525/59.94 operation the lines are 10-20 (and line 21 if set up to L21 Capt, as above) and 272-282. From the Home Screen, press ENT and scroll to VITS. Press ENT and scroll to select the function you require. Then press ENT again.

If the input and output of the unit are not locked together, occasional frames will be dropped from the VITS data, as it is not possible to interpolate the data in these lines. It is strongly recommended that if the VITS signal is to be passed through the unit, the unit is operated with the output video frequency locked to the input.

PassAll passes all the VITS lines through the MDE2000 untouched. When selected and ENT is pressed, the message "Done" appears.

BlankAll blanks all the VITS lines. When selected and ENT is pressed, the message "Done" appears.

Field 1 allows you to selectively pass/blank field 1 vertical interval lines. Similarly, **Field 2** allows you to selectively pass/blank field 2 vertical interval lines.

Setline: selects which vertical interval lines of the appropriate field are to be blanked/passed.

State: turns on and off the blanking for the lines set in Setline. Pressing ENT toggles the message between "Pass" and "Blanked".

L23 Blk

This sets the blanking action applied to line 23. There are three options.

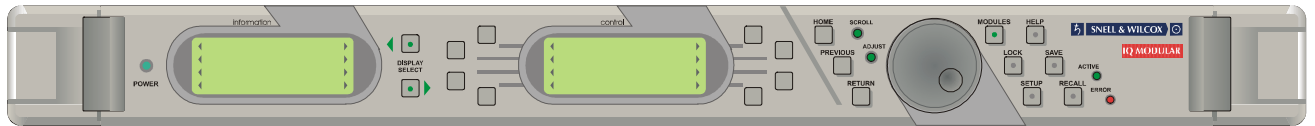
Not Blk

The input signalling will not be blanked

.5 Line

The first half line of the line 23 signalling will be blanked.

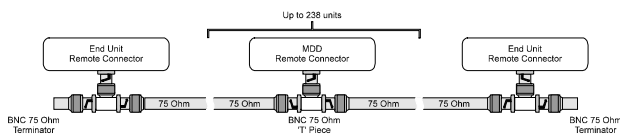
OPERATION FROM A KUDOS ACTIVE FRONT PANEL FITTED TO A SHOEBOX



OPERATIONAL OVERVIEW

The MDE2000 has provision to be remotely controlled via two different interfaces, either S&W RollCall, or RS422.

Interface to the "RollCall" communications network is via the single BNC connector. Connections should be made by means of a 'T' piece ($Z_0=75$ Ohms) to a 75 Ohm cable system as shown below. It should be noted that both extremities of the cable system must be terminated in 75 Ohms and the maximum number of units limited to 240 on one single cable run.



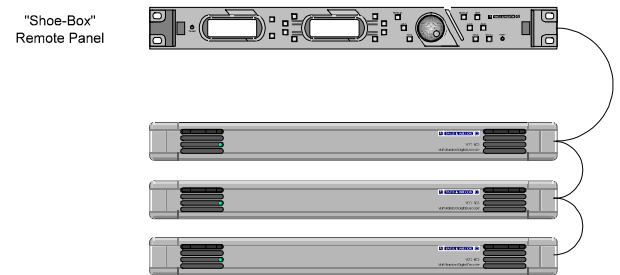
The communications network is a specially designed remote control network system and many more units can be accommodated by using a "Network Bridge". Remote control can come from either a dedicated front panel or "shoe-box" or a standard IBM compatible PC. Full protocol documentation and more detailed information is available on request from the supplier.

The RS 422 remote control interface is via the 9-pin female 'D' connector. Protocol information is also available on request from the supplier.

BASIC ROLLCALL OPERATION

All the features from the menu system are available remotely with the same options structure. This maintains compatibility and facilitates easy operation for users familiar with the unit.

The most common remote configuration is shown below where many units are connected to the network for remote control by one remote panel or "shoe-box".



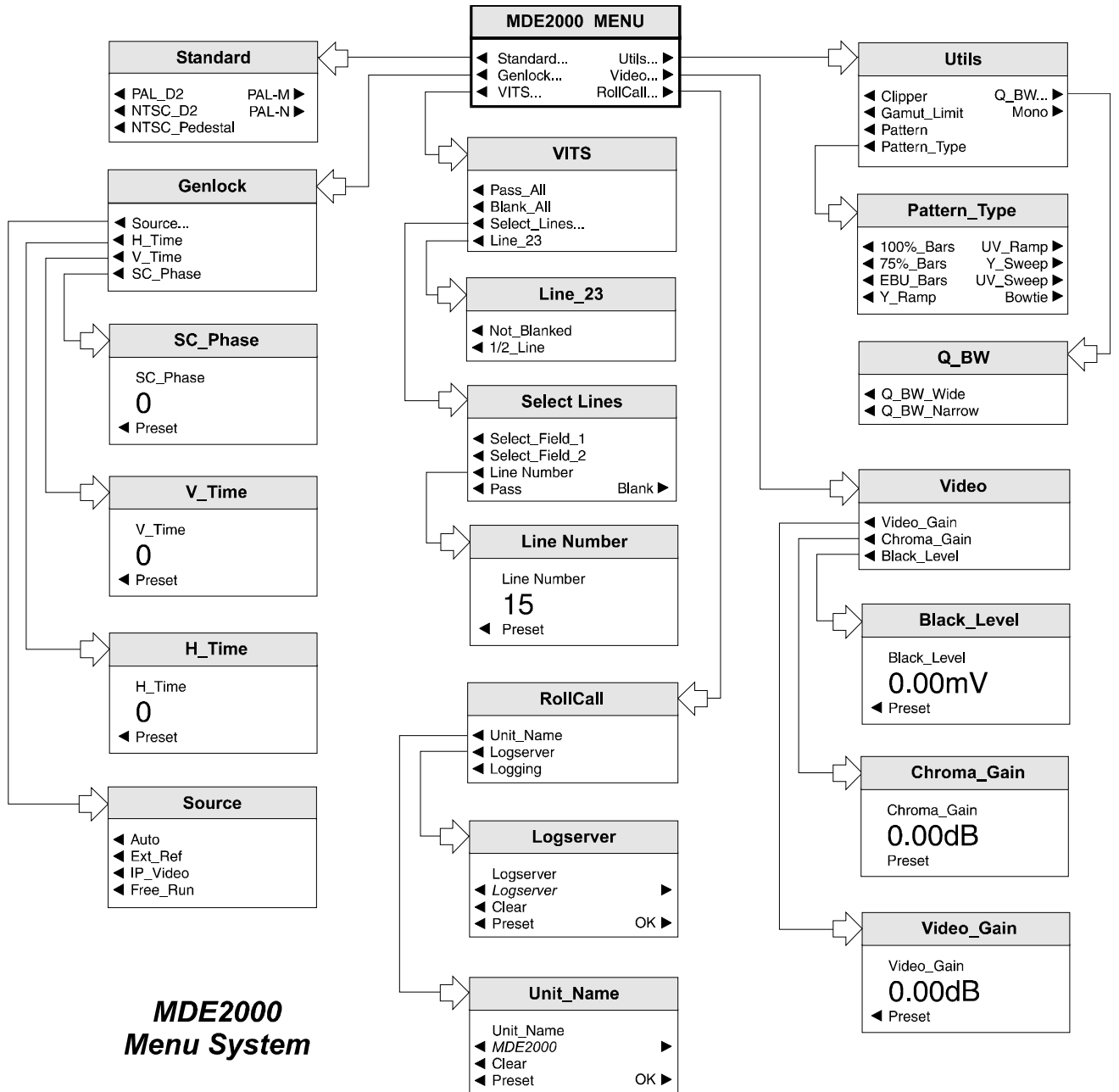
Typical Set-up

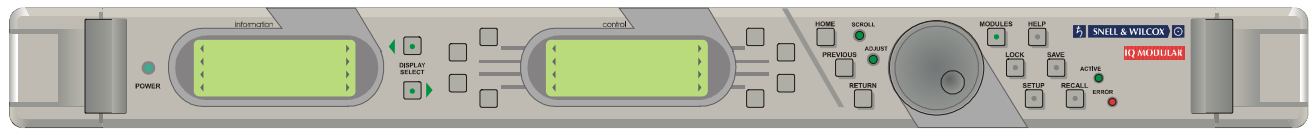
The network address for the card is set via the menu system option "NETWORK". The card defaults to address 16. When installing a network it is recommended that a table similar to the one at the end of the manual be kept up-to-date to allow fast and accurate allocation of new unit addresses.

The card edge menu system is disabled when the unit is being remotely controlled. Any attempt to change parameters will be blocked and an error message "REMOTE ACCESS - Hold down all keys to disconnect" will be displayed. By holding all 4 menu keys together the remote user will be disconnected from the unit and control will be returned to the local card edge keys.

Parameter changes are reflected both locally and remotely. For example, if the output is changed to the colour field test pattern by a remote unit then any further access from the card edge to the PATTERNS option will indicate this change. Similarly, if the card edge changes a parameter then this will be reflected on the display panel of the remote unit.

For more detailed information about the operation of the remote panel or PC software please consult their relevant manuals. e.g. Shoebox operator's manual.





THE ROLLCALL MENU SYSTEM

(See 'MDE2000 Menu System' drawing on previous page)

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

Menus are selected by push buttons and further menu selections made by rotating a spinwheel and pressing a push button.

The spinwheel also allows continuously variable parameters, e.g. Gain, to be adjusted and the setting to be seen in the LCD window.

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

The system may be considered structured as a set of menus and sub-menus that are displayed in the central LCD window. The left hand LCD window will display the current input/output standard selections of the unit and information messages. The DISPLAY buttons allows the information displayed to toggle between the modules current setup and more detailed data including software version etc.

The highest level menu is called the Main Menu and contains the names of the lower-level menus that may be scrolled through using the spinwheel.

The sub-menu may be then be selected by pressing the push button adjacent to the arrowhead in the text line of the menu name.

This sub-menu will then be displayed in the window and will have the option of selecting another sub-menu in the same manner, or allow the adjustment of a particular parameter. Parameters enabled will appear as highlighted reverse text (white text on a black background)

Note that the spinwheel will be operative when the LED labelled SCROLL is illuminated, indicating that a menu with more than four text lines is being displayed. Operating the spinwheel then allows the other text lines to be displayed.

MENU DETAILS

◀ Standard...

This menu selection allows the output standard of the unit to be set.

◀ PAL_D2	PAL-M ▶
◀ NTSC_D2	PAL-N ▶
◀ NTSC_Pedestal	

◀ Genlock...

This allows the selection of the Genlock source and adjustable parameters.

◀ Source...
◀ H_Time
◀ V_Time
◀ SC_Phase

Selections available are:

◀ Auto

The MDE2000 will lock to an external analogue reference, if one is present and valid, otherwise it will lock to the input video.

◀ Ext_Ref

This will force the MDE2000 to lock to an external reference.

◀ IP_Video

This will force the MDE2000 to lock to the input video.

◀ Free_Run

This will turn off the Genlock function.

◀ H_Time

This allows the adjustment of the horizontal Genlock timing with respect to the reference, in steps of 1 pixel.

Overall range is 0 to 863 pixels in PAL mode and 0 to 857 in NTSC mode.

Selecting Preset returns the setting to the calibrated value of 0.

◀ V_Time

This allows adjustment of the vertical Genlock timing with respect to the reference, in steps of 1 line.

Overall range is 0 to 524 (NTSC) and 0 to 624 (PAL)

Selecting Preset returns the setting to the calibrated value of 0.

◀ SC_Phase

This allows adjustment of the subcarrier phasing with respect to the reference in steps of 0.1 degree.

Overall range is 0 to 359.9 °

Selecting Preset returns the setting to the calibrated value of 0.

◀ VITS...

- ◀ Pass_All
- ◀ Blank_All
- ◀ Select_Lines...
- ◀ Line_23

This allows control of the blanking of the vertical interval lines. Note that for 625/50 operation the lines are 7-22 and 320-335, and for 525/59.94 operation the lines are 10-20 (and line 23 if set up to L23 Capt, as above) and 272-282.

Note that if the input and output of the unit are not locked together, occasional frames will be dropped from the VITS data, as it is not possible to interpolate the data in these lines. It is strongly recommended that if the VITS signal is to be passed through the unit, the unit is operated with the output video frequency locked to the input.

◀ Pass_All

When enabled this passes all the VITS lines through the unit untouched.

◀ Blank_All

When enabled this blanks all the VITS lines.

◀ Select_Lines

This function allows particular VITS lines in either Field 1 or Field 2 to be selected to be passed or blanked.

◀ Select_Field_1/2

This function allows the VITS lines of either field 1 or field 2 to be selected.

◀ Line_Number

This function reveals a numerical display that allows which vertical interval line of the selected field to be blanked or passed.

◀ Pass

When enabled the selected line in the selected field will be passed through the unit.

Blank ▶

When enabled the selected line in the selected field will be blanked and not through the unit

◀ Utils...

- ◀ Clipper
- ◀ Gamut_Limit
- ◀ Pattern
- ◀ Pattern_Type

Q_BW... ▶
Mono ▶

◀ Clipper

This function allows the internal clipper to be turned On or Off.

The clipper limits the 10-bit data to 940 for white and 64 for black.

◀ Gamut_Limit

This turns the colour gamut checking system On or Off. When it is On it ensures that the colour values are always legal.

◀ Pattern

When enabled the output will become the test pattern as selected by the ◀ **Pattern_Type** function.

◀ Pattern_Type

This allows the selection of a particular pattern that will be produced when the ◀ **Pattern** function is enabled.

The patterns are digitally generated to exact levels; to preserve their integrity there is no adjustment.

Patterns available are:

- ◀ 100%_Bars
- ◀ 75%_Bars
- ◀ EBU_Bars
- ◀ Y_Ramp
- UV_Ramp ▶
- Y_Sweep ▶
- UV_Sweep ▶
- Bowtie ▶

Q_BW ▶

In NTSC mode only, the bandwidth of the Q signal may selected as Wide or Narrow.

Mono ▶

When enabled the picture will become monochrome.

Video ▶

◀ Video_Gain
 ▶ Chroma_Gain
 ▶ Black_Level

This function allows adjustments to be made to the gains and levels of the video signal.

◀ Video_Gain

This selection reveals a numerical readout display for the gain of the composite video signal. The overall range of adjustment is ± 6 dB.

Selecting Preset returns the setting to the calibrated value of 0 dB.

◀ Chroma Gain

This selection reveals a numerical readout display for the gain of the chrominance signal. By rotating the spinwheel the chroma gain may be adjusted by ± 6 dB

Selecting Preset returns the setting to the calibrated value of 0 dB.

◀ Black Level

This selection reveals a numerical readout display for the Y pedestal or black level. By rotating the spinwheel the pedestal may be adjusted by ± 88 mV units in steps of 1 mV.

Selecting Preset returns the setting to the calibrated value of 0 mV.

RollCall ▶

◀ Unit_Name
 ▶ Logserver
 ▶ Logging

This selection allows RollCall data to be setup.

◀ Unit_Name

Selecting this item will reveal a window that will allow the name of the unit to be changed from the default name of *MDE2000*.

To edit the text the buttons adjacent to the upper text line in the menu are used to select the character position in the text and the spinwheel used to select the character.

(The right ▶ and left ◀ buttons select the cursor position and the spinwheel selects the character; the clear button sets the text line to all zero's and the OK button accepts the new name)

◀ Logserver

Selecting this item will reveal a window that will allow the name of the logserver to be changed from the default name of *Logserver*.

To edit the text the buttons adjacent to the upper text line in the menu are used to select the character position in the text and the spinwheel used to select the character.

(The right ▶ and left ◀ buttons select the cursor position and the spinwheel selects the character; the clear button sets the text line to all zero's and the OK button accepts the new name)

◀ Logging

When enabled this activates the logging function.