grass valley
A THOMSON BRAND

XtenDD

DIGITAL PRODUCTION SWITCHERS

Planning and Installation

Revision 1

the most watched worldwide

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KEMA

CERTIFICATE

Number: 510057.001

The Quality System of:

Thomson Broadcast & Media Solutions

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400 Providence Mine Road
Nevada City, CA 95945

TBMS
17 rue du Petit Albi-BP 8244
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Woburn, MA 08101

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TBMS
2300 South Decker Lake Blvd.
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TBMS - PCB
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Cesson-Sevigne, Cedex
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Cesson-Sevigne, Cedex
France

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Technopole Brest Iroise
CS 73808
29238 Brest Cedex 3
France

Including its implementation, meets the requirements of the standard:

ISO 9001:2000

Scope: The design, manufacture and support of video hardware and software products and related systems.

This Certificate is valid until: June 14, 2006
Revision Date: September 9, 2003
Renewal Date: June 14, 2003
Issued for the first time: June 14, 2000

H. Pierre Sallé
President
KEMA-Registered Quality, Inc.

SAFETY INSTRUCTIONS

Safety regulations

The **Xten DD production switcher** is designed in conformity with the safety regulations EN60950 / VDE0805 (protection class 1) and is in an unobjectionable condition when leaving the factory.

Information on the following pages provides important safety guidelines for Operators and Service Personnel. Specific warnings and cautions will be found throughout the manual where they apply, but may not appear here. Please read and follow the important safety information, noting especially those instructions related to risk of fire, electrical shock or injury to person.
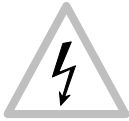
WARNING!
Any instructions in this manual that require opening the equipment cover or enclosure are for use by qualified service personnel only. To reduce the risk of electric shock, do not perform any servicing other than contained in the manual unless you are qualified to do so.

LISTED
PROFESSIONAL VIDEO EQUIPMENT
3S13

The **Xten DD production switcher** is designed accordingly to regulations of the Underwriters Laboratories Inc. ® Northbrook, Illinois US, certificated and registered under file no. E184475

The **Xten DD production switcher** is conform with the following European directives and CE marked:

- Low voltage directive   73/23/EEC

- Safety standard   EN 60950 / 1997

- EMC/EMI   89/336/EEC

- Interference emission   EN 55103-1 / 1996

- Interference immunity   EN 55103-2 / 1996

N4067

The **Xten DD production switcher** is conform with the following Australien regulations:

- EMC   AS/NZS 3548

- FCC   FCC 47 Part 15 Class A

FCC Rules
47 Part 15 Sec 15.105

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to the part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

ATTENTION!
Electrostatic sensitive devices on the p.c. board. Observe the following pre-caution instructions for handling!

Earthing connection
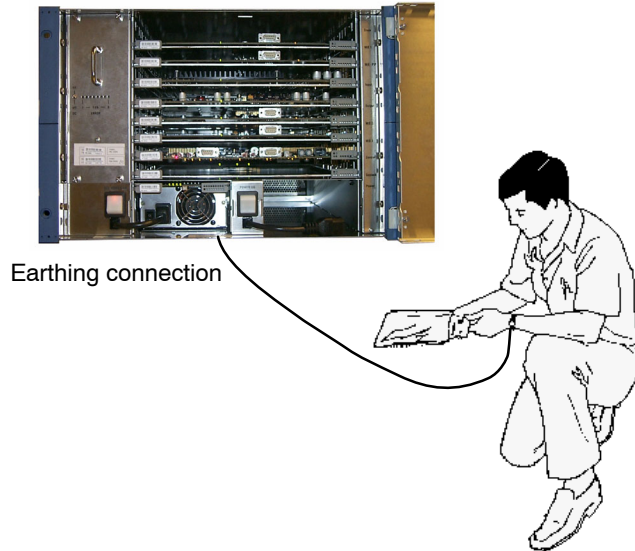
- Never remove or insert p.c. boards when the production switcher is switched on.

- Install or remove p.c. boards from the production switcher with the corresponding equipment only. Prior to withdrawing the p.c. board from the bag, apply an earthed wristlet (e.g. 3M Wristlet Serial 2200).

- The earthing connection of the production switcher has to be made via crocodile clip to a conductive point (e.g. mainframe).

- Use antistatical protective bags when carrying the p.c. boards.

Heavy weight   With the standard modules installed, the mainframe weights max. 35 kg (77 lbs). During installation and until secured in the rack, use an appropriate lifting device to lift and support the mainframe. Failure to follow this precaution can result in injury to personnel and damage to equipment.

CAUTION!
Control Panel hinges may not be adequate to hold panel in the open position if mounted at more than 15 degrees.

DANGER - Risk of Injury!
Please close the control panel slowly. Do not let it drop!

Installation   The switcher is designed for operation with single-phase mains earthed neutral conductor.

- Panel: One mains cable standard, second mains cable with redundant power

- Mainframe: One mains cable standard, second mains cable with redundant power

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

When setting up and connecting the switcher, connect the external earth line **always** before connecting the power line.

Thus is ensured that in case of a short-circuit between mains and case, the voltage is led to earth. For this reason, **never** disconnect the earth line from the device while it is operated.

The switcher must be only connected to an earthed socket. Check functioning of the protective conductors. It must not be live. Any discontinuity in the protective conductor may lead to a situation in which operational safety of the switcher can not longer guaranteed. Earthing has to be performed according to the regional safety regulations. When installing the lines, it is necessary to observe the national standards.

Ventilation

When mounting the mainframe and panel, care should be taken to allow for adequate air circulation. Detailed information you can find in the respective sections in the installation manual of the switcher. Keep the mainframe door always closed during operation.

- The admissible ambient temperature range of the mainframe is within +5 °C and +35 °C. Optimum operation is ensured at an ambient temperature of 20 °C.

- The admissible ambient temperature range of the control panel is within +5 °C and +30 °C.

- Make sure that the switcher is protected against humidity and keep dry!

Mains voltage

The switchers are equipped with "Auto-Range" mains supplies and can be operate in the following voltage ranges:

- **Control panels**
  voltage range of 100 V to 240 V ±10 % AC

- **Mainframe**
  voltage range of 100 V to 240 V ±10 % AC

Before connecting power to the switcher, make sure that the voltage adjustment in the unit corresponds with the line voltage available in the studio.

Fuses

CAUTION! - Double-pole or neutral fusing!
After acting of the protective devices, parts of the equipment may remain under voltage. Each main input is is protected by two primary-side fuses located on the power terminal of the switchers units (mainframe, panel). Additionally, the power supply units will be protected by internal fuses.

When replacing the fuses, make sure that a fuse link of same type and same current rating is used. Never use a mended fuse! Do not short-circuit the fuseholder!

During operation

Operate the switcher in the closed condition only, i.e. the mainframe with closed door and locked panel. There are no parts inside the unit to be adjusted by the user or parts to be exchanged.
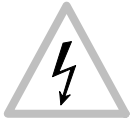
CAUTION!
Opening the mainframe door or the panel desk may give access to live parts.

In such cases, the unit has to be disconnected completely from the mains.

CAUTION!
This equipment has more than one power supply cord. To reduce the risk of electric shock disconnect two power supply cords before servicing.

If, however, working on the opened mainframe or opened panel is inevitable, this has only to be done by qualified service personnel being informed about the dangers involved.

Attention! Capacitors may still carry a residual charge!

If, for example, due to a failure, safe operation of the switcher is no longer ensured, put the switcher out of operation and secure it against further use.
Do not insert or remove plug-in cards during operation.
Make sure that no parts protrude into the air conditioning holes. This might lead to contact with dangerous voltages or to damages of sensitive circuit parts.
To prevent damages in the control panel gear no drinks in top of the desk. Penetrated liquids can lead to destroying the control panel boards. Make sure that no small parts (e.g. office parenthesis) fall into the opening under the levers. This can lead to short-circuits and damages.

Connecting cables

The EMC regulations are only applicable when correctly shielded cables are used for the installation of the equipment. This applies to video cables as well as control cables. Corresponding cables can be obtained from Thomson.

Run all connection cables in covered cable ducts (risk of stumbling).
For main connection, only use the supplied connection cable or a checked cable of the same type (three wire cord with earthed protective conductor).

Batteries

The controller boards of the mainframe and panel contains a lithium battery, which has to be exchanged every five years. The backup battery in the PC motherboard has to be exchanged every three years. Perform the exchange of the motherboard battery during operation to save the CMOS setup data.
Detailed information you can find in the section *Exchange of the lithium battery* in the service manual.
Used batteries must be disposed of carefully to avoid environmental damage.

Caution!
Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufactuerer. Dispose of used batteries according to the manufacturer's instructions.

SICHERHEITSHINWEISE

*Sicherheits-
bestimmungen*

Der **XtenDD Produktionsmischer** entspricht den Sicherheitsbestimmungen von EN60950 / VDE 0805 (Schutzklasse 1) und hat das Werk in sicherheitstechnisch einwandfreiem Zustand verlassen.

Um diesen Zustand zu erhalten und einen gefahrlosen Betrieb sicherzustellen, sind die nachfolgenden und die in den einzelnen Abschnitten des Handbuches aufgeführten Sicherheitshinweise, insbesondere die Hinweise bezüglich Brandgefahr, elektrischer Schlag und Verletzungsgefahren, zu beachten:
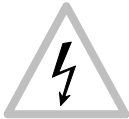
Achtung:

Alle Wartungsarbeiten dürfen nur von qualifiziertem Fachpersonal ausgeführt werden. Um die Gefahren eines elektrischen Schlages (hohe Spannungen, gefährliche Energien), Brandgefahr und Verletzungen zu vermeiden, sind bei Wartungsarbeiten, insbesondere wenn Gehäuseteile geöffnet werden, strikt die Angaben in der entsprechenden Anleitung zu befolgen. Andere als die angegebenen Wartungsarbeiten dürfen nur von Personen ausgeführt werden, die eine spezielle Befähigung dazu besitzen.

**LISTED
PROFESSIONAL VIDEO EQUIPMENT
3S13**

Der **XtenDD Produktionsmischer** ist gemäß den Bestimmungen der Underwriters Laboratories Inc. ® Northbrook, Illinois US hergestellt, und unter der Aktennr. E184475 zugelassen und registriert.

Der **XtenDD Produktionsmischer** ist in Übereinstimmung mit den folgenden europäischen Bestimmungen und mit dem CE-Zeichen versehen:

- Niederspannungsbest.   73/23/EEC

- Sicherheitsstandard   EN 60950 / 1997

- EMC/EMI   89/336/EEC

- Störstrahlung   EN 55103–1 / 1996

- Störsicherheit   EN 55103–2 / 1996

Der **XtenDD Produktionsmischer** ist in Übereinstimmung mit den folgenden australischen Bestimmungen:

- EMC AS/NZS 3548

- FCC FCC 47 Teil 15 Klasse A

ACHTUNG!
Auf den Platinen befinden sich elektrostatisch empfindliche Teile. Beachten Sie bei der Handhabung folgende Vorsichtsmaßnahmen:

Earthing connection
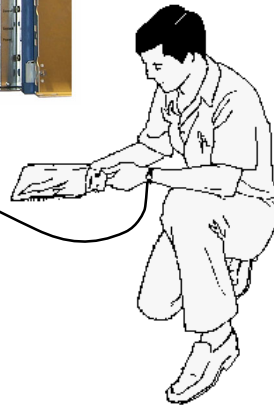
- Niemals Leiterplatten entfernen oder einsetzen wenn der Mischer eingeschaltet ist.

- Leiterplatten aus dem Mischer nur mit entsprechender Ausrüstung entnehmen. Vor Entnahme der Leiterplatten aus dem Schutzbeutel, geerdetes Handgelenkband anlegen (z.B. 3M Wristlet Serial 2200).

- Die Erdverbindung des Mischers muß über Krokodilklemmen zu einem leitenden Punkt (z.B. der Rahmen der E-Box) gemacht werden.

- Zum Tragen der Leiterplatten antistatische Schutzbeutel verwenden.

Hohes Gewicht Mit den Standard-Modulen bestückt wiegt die E-Box 35kg. Um Verletzungen von Personen oder Beschädigung des Gerätes zu vermeiden sind bei der Installation und Montage in einem Geräteschrank entsprechende Hebeeinrichtungen einzusetzen.

VORSICHT!
Die Schaniere des Bedienpults können möglicherweise das Bedienpult in geöffnetem Zustand nicht halten, wenn das Pult in einem Winkel von mehr als 15 Grad montiert ist.

VORSICHT - Verletzungsgefahr!
Bedienpult langsam schließen. Bedienpultdeckel nicht fallen lassen!

Installation Zur Spannungsversorgung ist ein Einphasen-Netz mit geerdetem Nulleiter notwendig.

- Bedienpult: Standardmäßig eine Netzleitung, Mit redundanter Netzversorgung zwei Netzleitungen.

- E-Box: Standardmäßig eine Netzleitung, Mit redundanter Netzversorgung zwei Netzleitungen.

Beim Aufstellen und Anschließen des Mischers ist die Verkabelung einer externen Erdleitung **immer** vor der Verkabelung der Netzleitung vorzunehmen. Hiermit wird gewährleistet, daß im Falle eines Kurzschlusses zwischen Netz und Gehäuse die Spannung gegen Erde abgeleitet wird. Daher die Erdleitung **niemals** während des Betriebes vom Gerät lösen.

Der Mischer darf nur an eine geerdete Steckdose angeschlossen werden. Die Funktion des Schutzleiters ist zu überprüfen. Er darf keine Spannung führen. Jede Unterbrechung des Schutzleiters ist geeignet den Mischer gefährlich zu machen. Die Erdung muß nach den regionalen Sicherheitsbestimmungen vorgenommen werden. Bei der Leitungsinstallation sind die landesüblichen Normen zu beachten.

Belüftung

Bei der Montage der E-Box und des Bedienpultes ist auf ausreichende Belüftung zu achten. Detaillierte Angaben für die Belüftung finden Sie in den entsprechenden Abschnitten des Installationshandbuches. Die Tür der E-Box ist während des Betriebes immer geschlossen zu halten.

- Die zulässige Umgebungstemperatur beträgt für die E-Box +5 °C bis +35 °C. Optimaler Betrieb ist bei einer Umgebungstemperatur von 20 °C gegeben.

- Die zulässige Umgebungstemperatur beträgt für das Panel +5 °C bis +30 °C.

- Feuchtigkeitseinwirkungen (hohe Luftfeuchte, Flüssigkeiten) beeinträchtigen den Betrieb!

Netzspannung

Die Mischer sind mit einer "Auto-Range"-Netzversorgung ausgerüstet und können in den folgenden Spannungsbereichen betrieben werden:

- **Bedienpult**
  Spannungsbereich von 100 V bis 240 V ±10 % AC

- **Mainframe**
  Spannungsbereich von 100 V bis 240 V ±10 % AC

Vor dem Einschalten des Mischers ist diese Spannungsangabe noch einmal mit der zur Verfügung stehenden Netzspannung des Studios zu überprüfen.

Sicherungen

ACHTUNG - Zweipolige bzw. Neutralleiter-Sicherung!
Teile des Gerätes können auch nach dem Auslösen einer Sicherung unter Spannung bleiben!
Die Absicherung des Mischers erfolgt durch primärseitig angebrachte Schmelzeinsätze in den Netzanschlußeinheiten der Geräte (Bedienpult und E-Box). Beim Auswechseln dieser Sicherungen nur eine Sicherung vom angegebenen Typ und mit gleicher Nennstromstärke als Ersatz verwenden. Das Verwenden überbrückter Sicherungen oder das Kurzschließen des Sicherungshalters ist unzulässig.

Während des Betriebs

Der Mischer ist im geschlossenen Zustand zu betreiben, d.h. E-Box mit geschlossener Tür und Pult verriegelt. Im inneren der Geräte befinden sich keine Elemente, die vom Benutzer während des Betriebs einzustellen oder auszutauschen sind.

ACHTUNG: Beim Öffnen der E-Box Tür oder beim Öffnen des Pultes, können Teile zugänglich werden, die Netzspannung führen.

In solchen Fällen ist das Gerät vorher von der Netzspannung abzutrennen (mit redundanter Netzversorgung 4 Netzkabel!).

Sind Arbeiten an der geöffneten E-Box oder dem geöffneten Bedienpult unvermeidlich, so darf dies nur durch eine Fachkraft durchgeführt werden, die mit den damit verbundenen Gefahren vertraut ist.

ACHTUNG! Kondensatoren können noch geladen sein!

Ist - z. B. infolge eines Schadens - ein gefahrloser Betrieb nicht mehr möglich, muß der Mischer außer Betrieb gesetzt, vom Netz abgetrennt und gegen Wiederinbetriebnahme gesichert werden.

Platinen dürfen nicht während des Betriebes aus dem Mischer herausgezogen oder eingesteckt werden.

Keine Teile in die Lüftungsöffnungen stecken! Dies kann zu Kontakt mit gefährlichen Spannungen oder zur Zerstörung von empfindlichen elektronischen Bauteilen führen.

Zum Schutz vor Störungen und Beschädigung keine Getränke auf dem Bedienpult abstellen. Das Eindringen von Flüssigkeiten kann zu Zerstörung von Platinen führen. Ebenso sollten keine kleinen Metallteile, z. B. Büroklammern, auf dem Bedienfeld abgelegt werden. Durch die Öffnungsschlitze der Blendhebel können sie ins Gerät fallen und zu Kurzschlüssen und Zerstörungen führen.

Anschlußkabel

Die EMV-Bestimmungen werden nur eingehalten, wenn bei der Installation der Geräte vorschriftsmäßig abgeschirmte Kabel verwendet werden. Dies gilt sowohl für Video- als auch für Steuerkabel. Entsprechende Kabel sind bei Thomson erhältlich. Sämtliche Anschlußkabel in abgedeckten Kabelschächten verlegen (Stolpergefahr). Für den Netzanschluß ist nur das mitgelieferte Anschlußkabel oder ein geprüftes Kabel gleichen Typs zu verwenden.

Batterien

Auf den Controllern in der E-Box und im Bedienpult ist je eine Lithium-Batterie eingebaut, die im Abstand von etwa 5 Jahren ausgetauscht werden muß. Die Backup-Batterie im PC-Motherboard ist nach jeweils drei Jahren auszutauschen. Siehe hierzu im Abschnitt *Austausch der Lithium-Batterie* in dem Service Handbuch.

Die verbrauchte Batterie muß vorschriftsmäßig entsorgt werden, um Umweltschäden zu vermeiden.

VORSICHT!
Explosionsgefahr, wenn Batterie falsch eingesetzt wird. Nur durch Batterien desselben oder vom Hersteller empfohlenen Typs ersetzen.
Verbrauchte Batterien entsprechend den Herstellerangaben entsorgen.

CONTENTS

4.   Connection and Startup

1. GENERAL

1.1 OVERVIEW Xten DD FAMILY

Configuration overview

Mainframe Configurations

LAN

DD35 GUI PC *

Service PC

*Note:
For more details there are separate manuals available.
They can be ordered under the order numbers:

DD35 GUI PC	RU 0063, 0 212 247 500
RSAT1	RU 0061, 0 212 174 600
RSAT2	RU 0065, 0 351 763 000
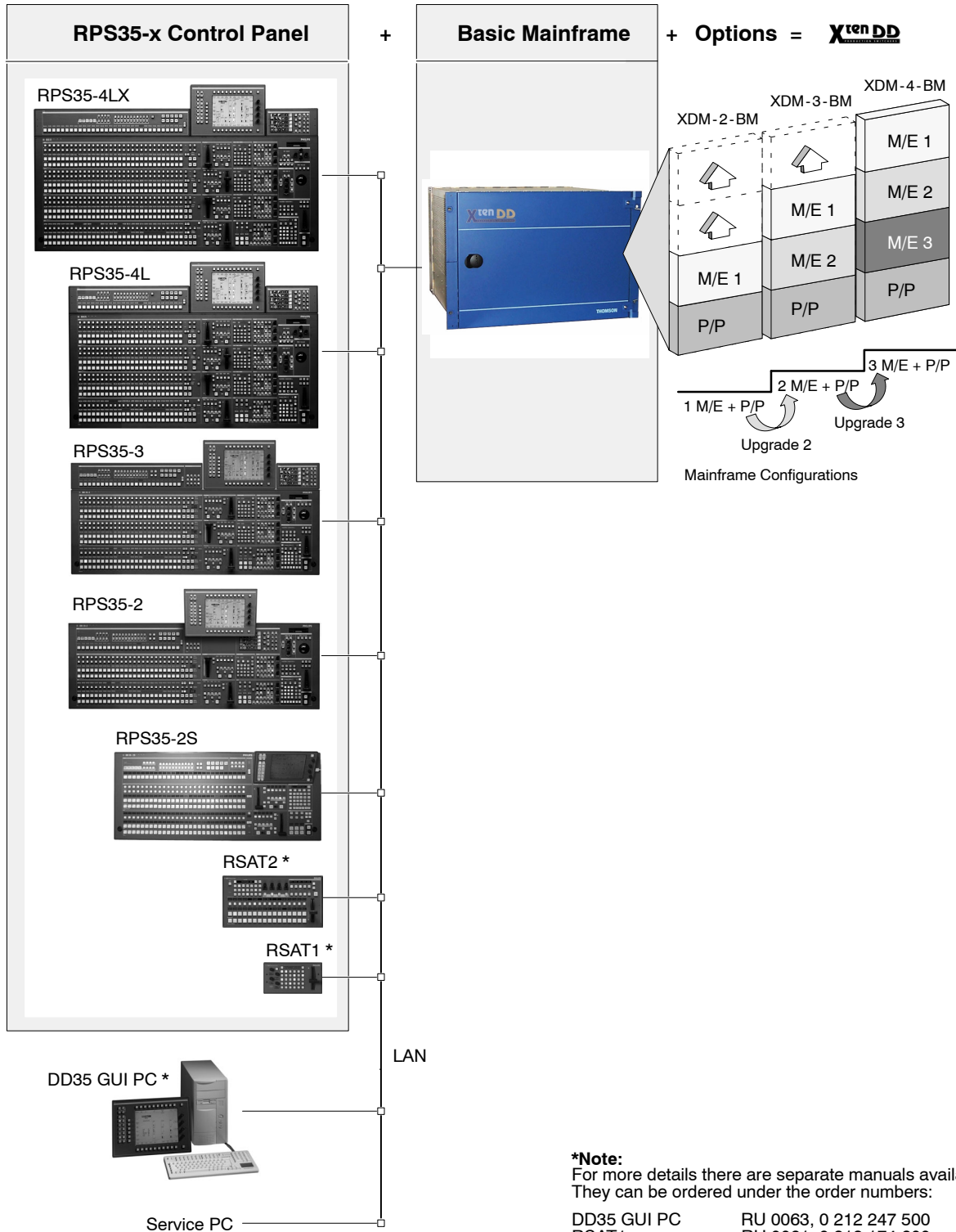
1.2 KEY FEATURES

- Seven RU high mainframe

- Up to 4 M/E stages

- Up to 90 Inputs

- Up to 36 Inputs

- Up to 20 Aux Busses

- 4 Dynachrome® Chroma Keyers per M/E and up to 8 DSKs in P/P

- Machine Control

- Internal 4 channel DVE (delivering 3D planar effects)

- Internal RAM Recorder (providing 32 seconds of internal clip store)

1.3   PANEL OVERVIEW

1.3.1   RPS35-2S CONTROL PANEL

The production switcher panel RPS35-2/S with one mixing level M/E and one Program/Preset, as well as the touch screen display panel.
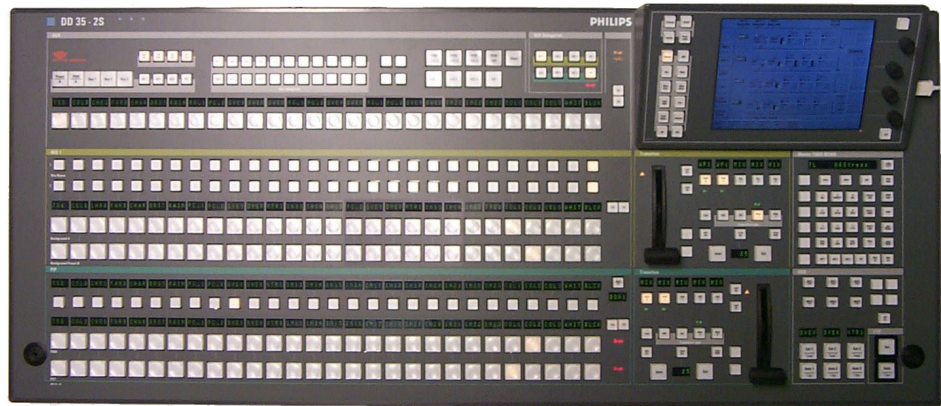
Fig. 101: Control panel RPS35-2S

Panel		Order number
RPS35-2S	**Control panel** (OnAir normal lighting)	000 351 860 510
RPS35-2S-HL	**Control panel** (OnAir highlighting)	000 351 862 510
Options		**Order number**
RC 2453	Input mnemonics for RPS 35-2S P/P, MaKE, M/E 1 and AUX Initial order only.	000 212 265 311
RC 2456	Input mnemonics for RPS 35-2S AUX, M/E 1 and P/P without MaKE mnemonics Initial order only.	000 212 265 610
RC 2351	Fanless Power Supply Initial order only.	000 351 772 100
RC 2376	Redundant Power Supply Initial order only.	000 351 774 600
RC 2380	Operating System Windows NT for PC	000 351 775 800

1.3.2   RPS35-2 CONTROL PANEL SET

The production switcher panel set RPS35-2 comprises the basic unit RPD35-2 with one mixing level M/E and one Program/Preset, as well as the stand-alone display panel RPV35-4TS.
The mnemonics for P/P and Make Memo Aux are standard.
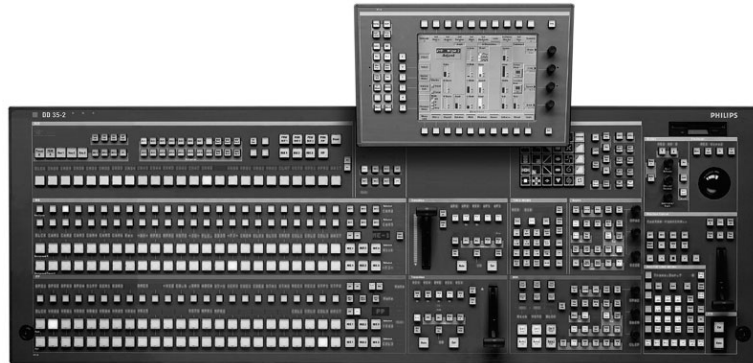
Fig. 102: Control panel set RPS35-2

Panel		**Order number**
RPS35-2	**Control panel set** (OnAir normal lighting) including:	000 351 860 410
RPD35-2	Basic panel	000 351 861 810
RPV35-4TS	Display panel	000 351 852 010
RPS35-2-HL	**Control panel set** (OnAir highlighting) including:	000 351 862 410
RPD35-2-HL	Basic panel	000 351 863 210
RPV35-4TS	Display panel	000 351 852 010
Options		**Order number**
RC 2396	RPV mounting frame used to mount the RPV display panel onto the base panel	000 351 777 410
RC 2362	Input mnemonics extension Initial order only.	000 351 773 200
RC 2351	Fanless Power Supply Initial order only.	000 351 772 100
RC 2148	Emergency Hard Disk Drive IDE, min. 2 GB. Must be ordered initially together with basic panel. Operating Software pre-configured.	000 351 745 000
RC 2376	Redundant Power Supply Initial order only.	000 351 774 600
RC 2380	Operating System Windows NT for PC	000 351 775 800
RC 2397	Stand tiltable for display panel	000 351 777 510

1.3.3   RPS35-3 CONTROL PANEL SET

The production switcher panel set RPS35-3 comprises the RPD35-3 with two mixing levels M/E and one Program/Preset, the display panel RPV35-4TS, the wipe panel RPW35-3/-4 and the aux panel RPA35-3.
The mnemonics for P/P, Make Memo and Aux are standard.
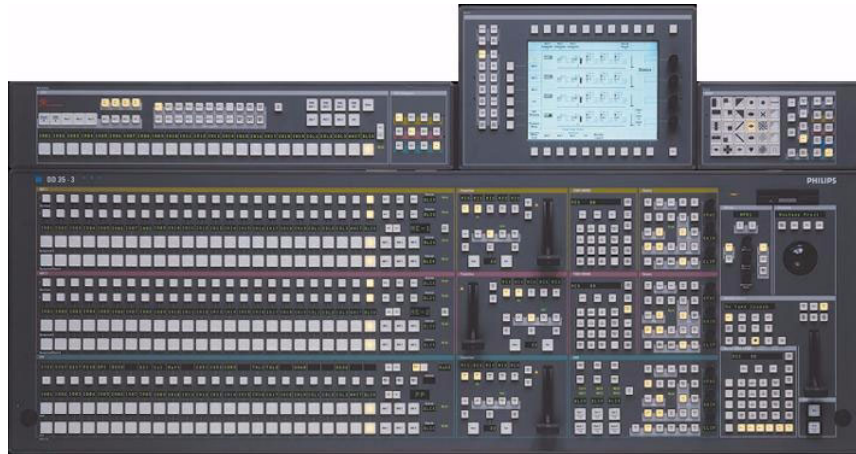
Fig. 103: Control panel set RPS35-3

Panel		Order number
RPS35-3	**Control panel set** (OnAir normal lighting) including:	000 351 860 310
RPD35-3	Basic panel	000 351 861 410
RPV35-4TS	Display panel	000 351 852 010
RPA35-3	Aux panel	000 351 861 510
RPW35-3/-4	Wipe panel	000 351 861 710
RPS35-3-HL	**Control panel set** (OnAir highlighting) including:	000 351 862 310
RPD35-3-HL	Basic panel	000 351 863 010
RPV35-4TS	Display panel	000 351 852 010
RPA35-3-HL	Aux panel	000 351 863 110
RPW35-3/-4	Wipe panel	000 351 861 710
Options		**Order number**
RC 2360	Mounting frame set	000 351 773 000
RC 2351	Fanless Power Supply Initial order only.	000 351 772 100
RC 2214	Detachment cables (2.5 m) AUX or Wipe. For AUX or Wipe the set must be ordered separately (usually 2x needed!)	000 351 747 000

Options		Order number
RC 2148	Emergency Hard Disk Drive IDE, min. 2 GB. Must be ordered initially together with basic panel. Operating Software pre-configured.	000 351 745 000
RC 2376	Redundant Power Supply Initial order only.	000 351 774 600
RC 2380	Operating System Windows NT for PC	000 351 775 800

1.3.4   RPS35-4/32 CONTROL PANEL SET

The production switcher panel set RPS35-4/32 comprises the RPD35-4/32 with three mixing levels M/E and one Program/Preset, the display panel RPV35-4TS, the wipe panel RPW35-3/-4 and the aux panel RPA35-4/32.
The redundant power supply and input mnemonics are standard.
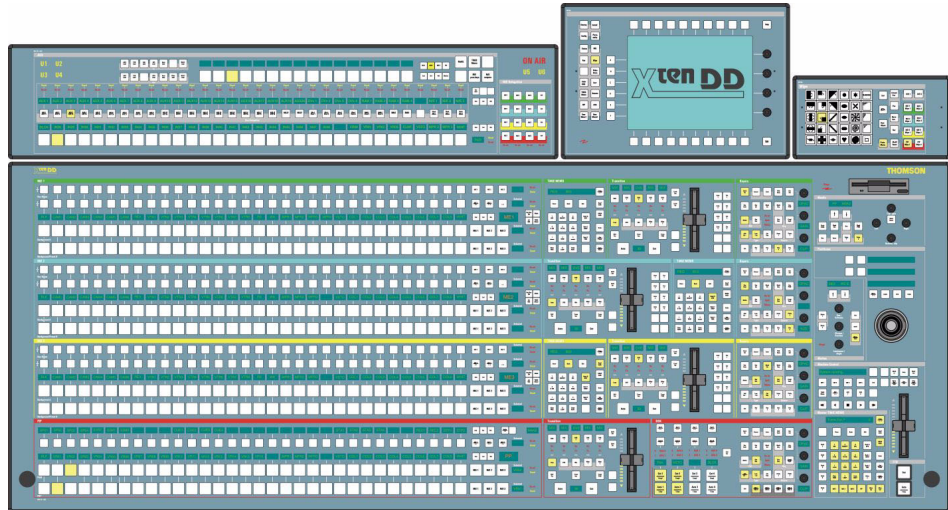
Fig. 104: Control panel set RPS35-4/32

There are two versions available:

1. Control Panel Set RPS35-4/32
    OnAir normal lighting as all other DD35 family panels

2. Control Panel Set RPS35-4/32 HL
    OnAir highlighting, where crosspoint buttons are high tallied when the bus is OnAir and low tallied when not OnAir

	Panel	Order number
RPS35-4/32	**Control panel set** (On Air normal lighting) including:	000 351 850 010
RPD35-4/32	Basic panel	000 351 855 000
RPV35-4TS	Display panel	000 351 852 010
RPA35-4/32	Aux panel	000 351 853 000
RPW35-3/-4	Wipe panel	000 351 861 710
RPS35-4/32 HL	**Control panel set** (OnAir highlighting) including:	000 351 863 310
RPD35-4/32 HL	Basic panel	000 351 862 610
RPV35-4TS	Display panel	000 351 852 010
RPA35-4/32 HL	Aux panel	000 351 862 810
RPW35-3/-4	Wipe panel	000 351 861 710

Options		Order number
RC 2840	Mounting frame set	000 351 854 000
RC 2148	Emergency Hard Disk Drive IDE, min. 2 GB. Must be ordered initially together with basic panel. Operating Software pre-configured.	000 351 745 000
RC 2380	Operating System Windows NT for PC	000 351 775 800

1.4   NETWORKING

The networking of panels and mainframe is at the core of the concept of the **Xten DD** production switcher system. The ability to connect multiple panels to one mainframe, or to connect multiple mainframes to one panel, opens up many new possibilities. A whole production facility can now use the resources it needs when and where they are needed, without wasting time. Control can be delegated to where it is needed.

1.5   OVERALL BLOCK DIAGAM VIDEO

90 EXTERNAL SIGNALS INTERNAL SIGNALS

1
18
INPUT MODULE RY 3403

WHITE PAR/SER BUFFER BUFFER BUFFER BUFFER

KEY 1
KEY 2
KEY 3
KEY 4
KEY 5

WIPE PROCESSOR **ME 1**
KEY PROCESSOR
M/E PROCESSOR

KEY FILL 1
KEY FILL 2
KEY FILL 3
KEY FILL 4
KEY FILL 5
SPEC
PST
BGD

RY 3410

PGM
PVW
CLEAN
UTIL A
UTIL B
UTIL C
UTIL D
UTIL E
KEY

19
36
RY 3403

OUTPUT MODULE RY 3404
BUFFER PGM
BUFFER PGM
BUFFER PVW ME1
BUFFER CLEAN
BUFFER PGM
BUFFER PGM
BUFFER PVW ME PP
BUFFER CLEAN

37
54
RY 3403

WIPE PROCESSOR **ME PP**
KEY PROCESSOR
M/E PROCESSOR

KEY 1
KEY 2
KEY 3
KEY 4
KEY 5

KEY FILL 1
KEY FILL 2
KEY FILL 3
KEY FILL 4
KEY FILL 5
SPEC
PST
BGD

RY 3410

PGM
PVW
CLEAN
UTIL A
UTIL B
UTIL C
UTIL D
UTIL E
KEY

AUX PROCESSOR RY 3430
SER/PAR AUTO PHASE PAR/SER
AUX1 AUX1
AUX5 AUX5
5 CHANNELS
SER/PAR AUTO PHASE PAR/SER
AUX6
AUX10
RY 3436

AUX1
AUX2
AUX3
AUX36
AUX37
AUX38

AUX6 AUX10 5 CHANNELS RY 3436
AUX11 AUX15 5 CHANNELS RY 3436
AUX16 AUX20 5 CHANNELS RY 3436
AUX21 AUX26 6 CHANNELS RY 3435
AUX27 AUX32 6 CHANNELS RY 3435
AUX33 AUX38 6 CHANNELS RY 3435

BUFFER 1
BUFFER 5 AUX OUT
BUFFER 6
BUFFER 10

55
72
RY 3403

73
90
INPUT MODULE RY 3403

INPUT PROCESSOR RY 3441

WIPE PROCESSOR **ME 2**
KEY PROCESSOR
M/E PROCESSOR

KEY 1
KEY 2
KEY 3
KEY 4
KEY 5
KEY FILL 1
KEY FILL 2
KEY FILL 3
KEY FILL 4
KEY FILL 5
SPEC
PST
BGD

RY 3410

PGM
PVW
CLEAN
UTIL A
UTIL B
UTIL C
UTIL D
UTIL E
KEY

OUTPUT MODULE RY 3404
PGM BUFFER PGM
PGM BUFFER PGM ME2
PVW BUFFER PVW
CLEAN BUFFER CLEAN
PGM BUFFER PGM
PGM BUFFER PGM ME3
PVW BUFFER PVW
CLEAN BUFFER CLEAN

AUX11 BUFFER 11
AUX15 BUFFER 15 AUX OUT
AUX16 BUFFER 16
AUX20 BUFFER 20

KEY 1
KEY 2
KEY 3
KEY 4
KEY 5
KEY FILL 1
KEY FILL 2
KEY FILL 3
KEY FILL 4
KEY FILL 5
SPEC
PST
BGD

WIPE PROCESSOR **ME 3**
KEY PROCESSOR
M/E PROCESSOR

RY 3410

PGM
PVW
CLEAN
UTIL A
UTIL B
UTIL C
UTIL D
UTIL E
KEY

PGM PGM PVW CLEAN

SERIAL IN / OUT
REMOTE
GPI IN / OUT
TALLY

CONTR. MODULE RY 3455

REMOTE

CONTROLLER RY 3156

BLACK BURST

SER VIDEO

GENLOCK RY 3081

AC IN **POWER SUPPLY RY 3406**
AC IN **OPTION   REDUNDANT POWER SUPPLY RY 3406**

RAM DISK 1
RAM DISK 2
RAM DISK 3
RAM DISK 4

DVE 1
DVE 2
DVE 3
DVE 4

DVE PROCESSOR RY 3460

RAM DISK RET1
RAM DISK RET2
RAM DISK RET3
RAM DISK RET4
DVE RET1
DVE RET2
DVE RET3
DVE RET4
COL

OUTPUT MODULE RY 3404
AUX21 BUFFER 21
AUX22 BUFFER 22
AUX23 BUFFER 23
AUX24 BUFFER 24 AUX OUT
AUX25 BUFFER 25
AUX26 BUFFER 26
AUX27 BUFFER 27
AUX28 BUFFER 28

AUX29 BUFFER 29
AUX33 BUFFER 33 AUX OUT
AUX34 BUFFER 34
AUX38 BUFFER 38

2. TECHNICAL DATA

2.1 MAINFRAME

2.1.1 INPUTS

Number & format	Up to 90 inputs ITU - R 656, 270 Mbit/s Return loss 5 - 270 MHz > 15dB
Autophasing range:	approx. 22 ms
Asynchronous signals:	Can be switched
Reference signal	BNC, 0.3V sync, black - burst or CCVS
	1 BNC digital, serial ITU - R 656, 270 Mbit/s
Cable lenght	200m High Frequency Coax Cable, Green 0.6 / 2.8 AF - 75 - FRNC Order no. 005 136 101 020

2.1.2 OUTPUTS

M/E outputs	2 Programmes, 1 Preview, 1 Clean Feed, Utility A, B, C, D*, E*, F (* in preparation)
Auxiliary buses	Up to 20 Auxiliary buses
Format	Serial component ITU - 656 - R 656, 270 Mbit/s Return loss 5 - 270 MHz > 15 dB

2.1.3 VIDEO SYSTEM DATA

Standards	Interlaced 525/60 or 625/50. Determined by set - up function or controlled by GPI or by Auto - sensing
Data rate	270 Mbit/s
Aspect ratio	4:3 or 16:9 (270Mbit/s), switchable per setup or GPI per M/E
Signal Processing	4:2:2 in conformity with ITU - R 601
Overall delay	Input to M/E Output <1 line
Blanking horizontal	Transparent for background signal
Blanking vertical	Transparent for background signal, except for lines 6 and 319 (625/50 Hz)

2.1.4 POWER SUPPLY

Optional redundant power supply	
Line voltage	100V - 240V AC ± 10%
Line frequency	50Hz/60Hz ± 5%
Power consumption	Max. 700 W (mainframe)
Touch (leakage) currents	< 2.5 mA (for each power supply)

2.1.5 MECHANICAL DATA

Dimensions mainframe	19" rack frame, 7RU high 310(h) x 483 (w) x 508 (d) mm 12.2" (h) x 19" (w) x 20" (d)
Weight mainframe	< 35kg (including all options)

2.1.6 ENVIRONMENTAL DATA

Storage temperature:	-20°C to $+70^{\circ}$C (-4°F to 158°F)
Operating temperature:	$+5^{\circ}$C to $+40^{\circ}$C (41°F to 104°F)
Relative humidity:	≤ 80% non‑condensing
Electromagnetic enviroment:	E2 (according to EN 55103‑1, ‑2)

2.1.7 INTERFACE DATA

GPI/GPO	8 internal GPI, 8 intern GPO, max. 40mA
Serial ports	10 serial ports RS 485/422 at the mainframe, 4 serial ports RS 232
LAN	RJ45 or BNC connectors for internal (panel) and external LAN connections
Protocols	Amongst many others, editor protocols, Router protocols, esam 2, Peripheral Bus II, Odetics "Broadcast Video Server" protocol, Louth "Video Disk Communication" protocol, protocols for DVE (Accom, Questech, Pinnacle, Ampex, GVG, Sony) and Automation Protocol.

2.2 CONTROL PANELS

2.2.1 POWER SUPPLY

1 power module LPQ 250 standard or LPQ 350 (in RPS35-4/32)	
1 redundant power module LPQ 250 (LPQ 350) optional	
Line voltage	100 V to 240 V AC ±10 %, autosense
Line current	2.5 A max (RPS 35-2/3)
	3.5 A max (RPS 35-4)
Line frequency	50 Hz to 60 Hz
Active power factor connection PFC	
Output voltages	+5 V, +12 V, -12 V
Power connection	connector type IEC 320, VDE 0625 Part 1
Safety	UL 1950 /CSA 22.2 No. 950
Power consumption	
control panels	< 250 W (RPS 35-2/3)
	< 350 W (RPS35-4/32)

3. MOUNTING INSTRUCTIONS

3.1 GENERAL SAFETY INSTRUCTIONS

Caution!

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

Attention!
Electrostatic sensitive devices on the p. c. boards. Observe the following precaution for handling:

- Handling or mounting the **Xten DD** mainframe call for special attention to personal safety. Personnel should be connected to ground potential via a wristlet (e.g. 3M Wristlet Serial 2200).

- Do not touch the p. c. boards during mounting.

- Repair the p. c. boards only at static-safe work stations.

- Use antistatical protective bags when carrying the p.c. boards.

Attention!

Danger of explosion when the battery is not correctly inserted. Replace the battery only by a battery from the same manufacturer or by an equivalent type recommended by the manufacturer.
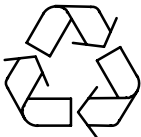
Protect the environment!

Dead batteries do not belong in the garbage. Hand the used batteries over to a local disposal place or observe the respective instructions of the manufacturer!

3.2 MOUNTING THE MAINFRAME

3.2.1 UNPACKING

Your equipment may be shipped in several different boxes, depending upon order size and configuration.

Check the contents of each box against the packing list to ensure your order is complete. If equipment is missing or damaged, contact the shipping company immediately.
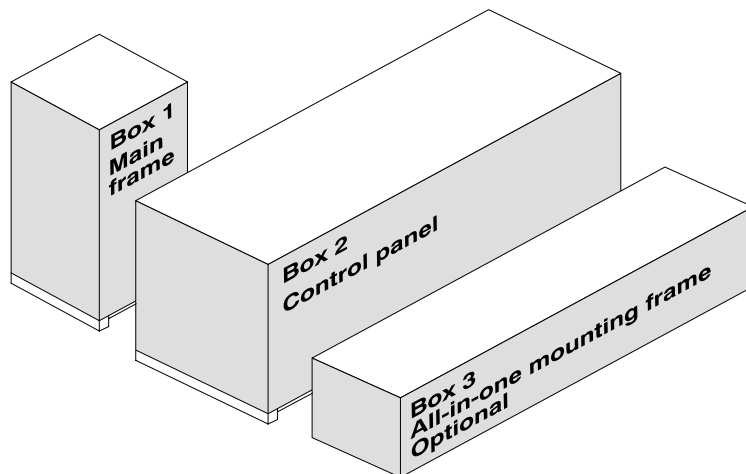
Box 1 - Mainframe

Box 1 contents the following parts:

- Mainframe (equipped with ordered option boards)

- Power cord (standard)

- Power cord (redundant power supply, if ordered)

- Accessory pack with Mounting Set, BNC connectors, Fuses and Earth wire

WARNING

With the standard modules installed, the mainframe weights 35 kg (77 lbs). During installation and until secured in the rack, use an appropriate lifting device to lift and support the mainframe. Failure to follow this precaution can result in injury to personnel and damage to equipment.

3.2.2   MECHANICAL DIMENSIONS

The **X^{ten} DD** mainframe of the switcher is located in a closed 19-inch frame which houses the individual plug-in cards of the video and control electronics as well as the power supply units.

17.6" = 447 mm

7RU
12.2"
310.3 mm

19" = 483 mm

20" = 508 mm

21,3" = 540 mm
(incl. connectors)
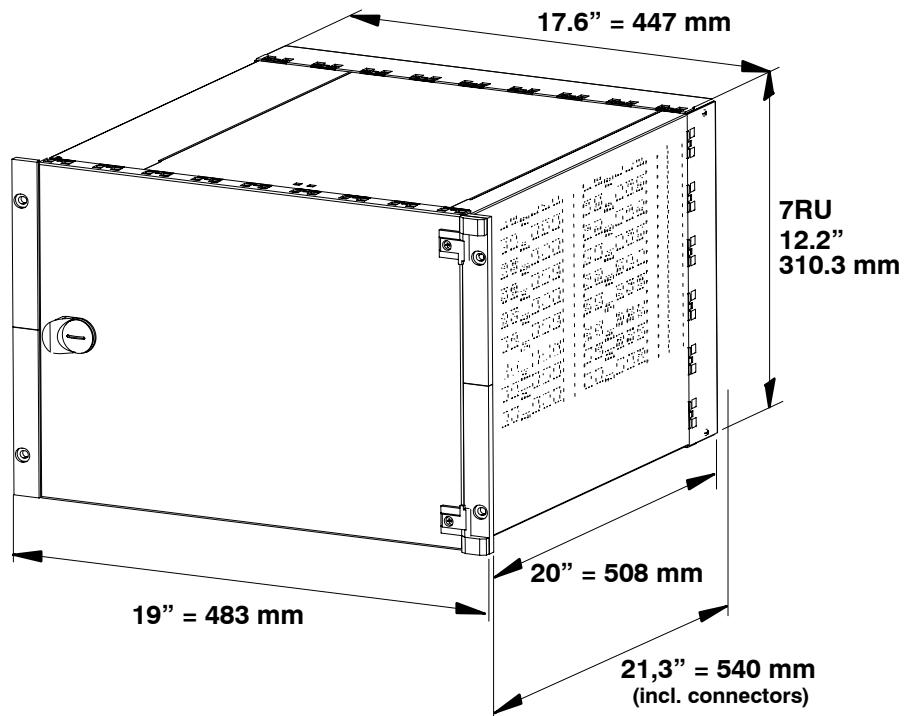
3.2.3   MOUNTING INTO A CABINET

General rack mounting instructions

- The maximum ambient temperature for this unit is 40°C.

- Installing the unit in a closed or multi-unit rack assembly, together with other units could increase the maximum ambient for this unit.

- If the unit is installed in a rack, no ventilation openings should be blocked or otherwise covered. Ensure a sufficient amount of airflow.

- Mounting of the unit in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.

- When connecting the unit to the supply circuit be sure that the supply circuit of the rack is not overloaded. For ratings see chapter Technical Data.

- The unit must be grounded to a good earth ground using a wire as specified by the local electrical code. This wire is attached to the protective earth connector on the rear. For details refer to chapter General Grounding Requirements.

- When connecting the unit in a closed or multi-unit rack assembly together with other units be sure that the summation of the touch (leakage) currents for each power supply circuit is not higher than 3.5 mA . In this case the rack must be permanently connected with an earth terminal. Earth connection is essential before connecting supply voltage! For details see chapter Technical Data.

For installation, Thomson optionally provides a 19-inch cabinet with recommended mounting accessories. When using cabinets of other manufacturers, observe the respective mounting instructions.

Note: ***For installation into a DIN cabinet, adapter pieces of the respective cabinet manufacturer have to be mounted on both sides of the lateral fastening flanges.***

For relieving the front mounting brackets, the mainframe has also to be supported in the rear part of the frame. The corresponding mounting parts can be obtained as accessories from the manufacturer of the cabinet-type rack.

3.3   VENTILATION MAINFRAME

The ambient temperature during operation must not fall below + 5 °C or exceed + 40 °C (41 °F to 104 °F). Optimum operation is ensured at an ambient temperature of 20 °C.

The mainframe is ventilated by the fan unit (8 fans) being mounted at the left side in the mainframe. The air is sucked in at the left side of the mainframe and is exhausted at the right side through the louvers. These fans serve to support air circulation in the unit and to lead the heated air into the room. The power supplies in the lower part of the carrier are cooled by two internal fans. The air is sucked in at the front and is let out through the louvers at the rear.

⚠ **In order to ensure continuous air circulation, make sure that the air slots on the left and right side and on the rear side of the unit are not covered when mounting the mainframe.**

Air intake
from the left side

Exhaust air exits from
the right of the unit
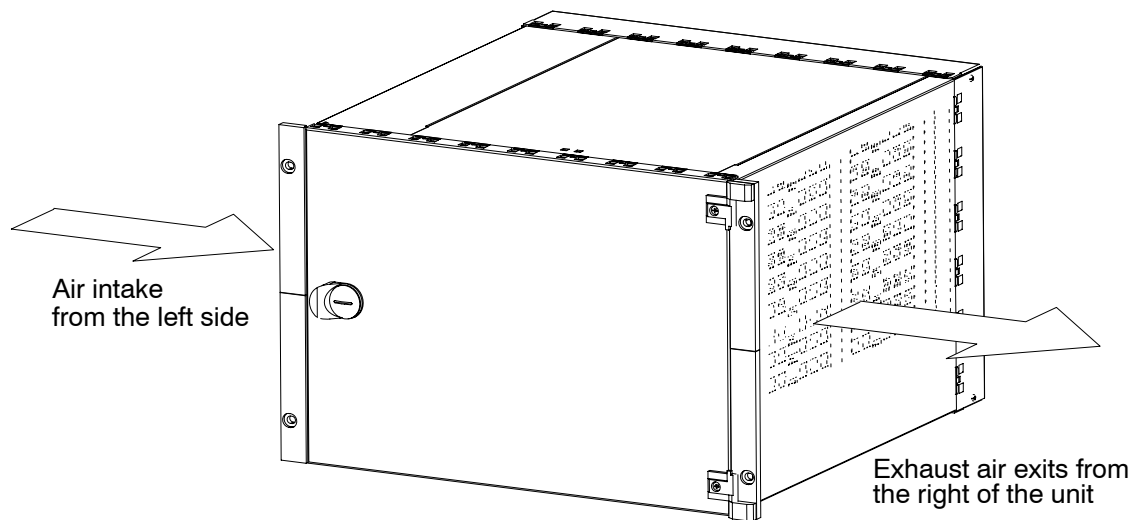
Note: *The door is an integral part of the cooling airflow design. For proper cooling keep the door closed during normal operation.*

3.4   MOUNTING THE CONTROL PANELS

3.4.1   UNPACKING

Your equipment may be shipped in several different boxes, depending upon order size and configuration.

Check the contents of each box against the packing list to ensure your order is complete. If equipment is missing or damaged, contact the shipping company immediately.
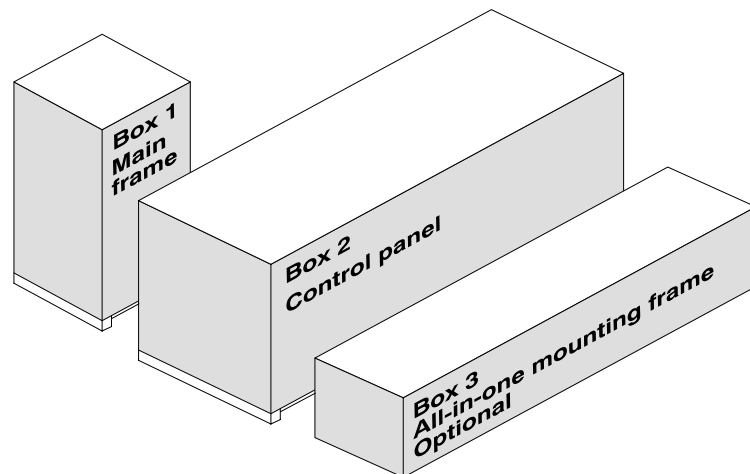
Box 2 - Control panel

Box 2 contents the following parts:

- Basic control panel

- Aux control panel module

- Display panel module

- Wipe control panel

- Power cord (standard)

- Power cord (redundant power supply, if ordered)

- 7 control cable 1.2 m or 2.5 m (if ordered)

- Cheapernet cable 20 m

- Cheapernet cable 1 m

- Customer's manual

- Final test report with Quality certification

- Software package:
  Mouse
  CD-ROM   XtenDD software
  CD-ROM   Intel PII Bus Master Device Drivers
  CD-ROMs   Microsoft Windows 95 package
  3.5" Diskette Microsoft Setup Boot Disk
  3.5" Diskette Philips Ethernet Link Driver
  3.5" Diskettes Philips WGE10 Utilities (2 disks)
  Motherboard documentation

- Accessory pack 002 351 740 051:
  Locking tool for sub-panels
  Panel keys
  BNC T-type connector, 50 ohms
  BNC terminator, 50 ohms
  Pushbutton inlay sets
  2 Fuses ATC-7 1/2
  2 Fuses ATC-5
  12 caps for sub-panels locking holes

Box 3 - All-in-one mounting frame (optional)

Box 3 contents the following parts:

- All-in-one mounting frame

- Fastening screws

3.4.2 MECHANICAL DIMENSIONS

The figures on the next pages shows all mechanical dimensions of the control panels which are relevant for installation in a master control desk.
The size of the desk cutout is also indicated.

3.4.3   REMOTE CONTROL PANEL RSAT1
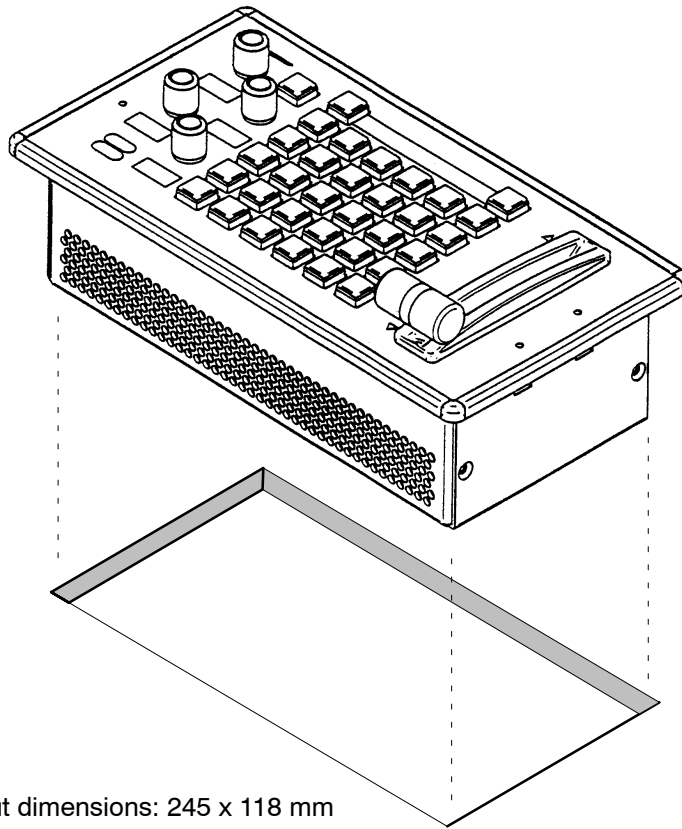
Cut-out dimensions: 245 x 118 mm

3.4.4   REMOTE CONTROL PANEL RSAT2
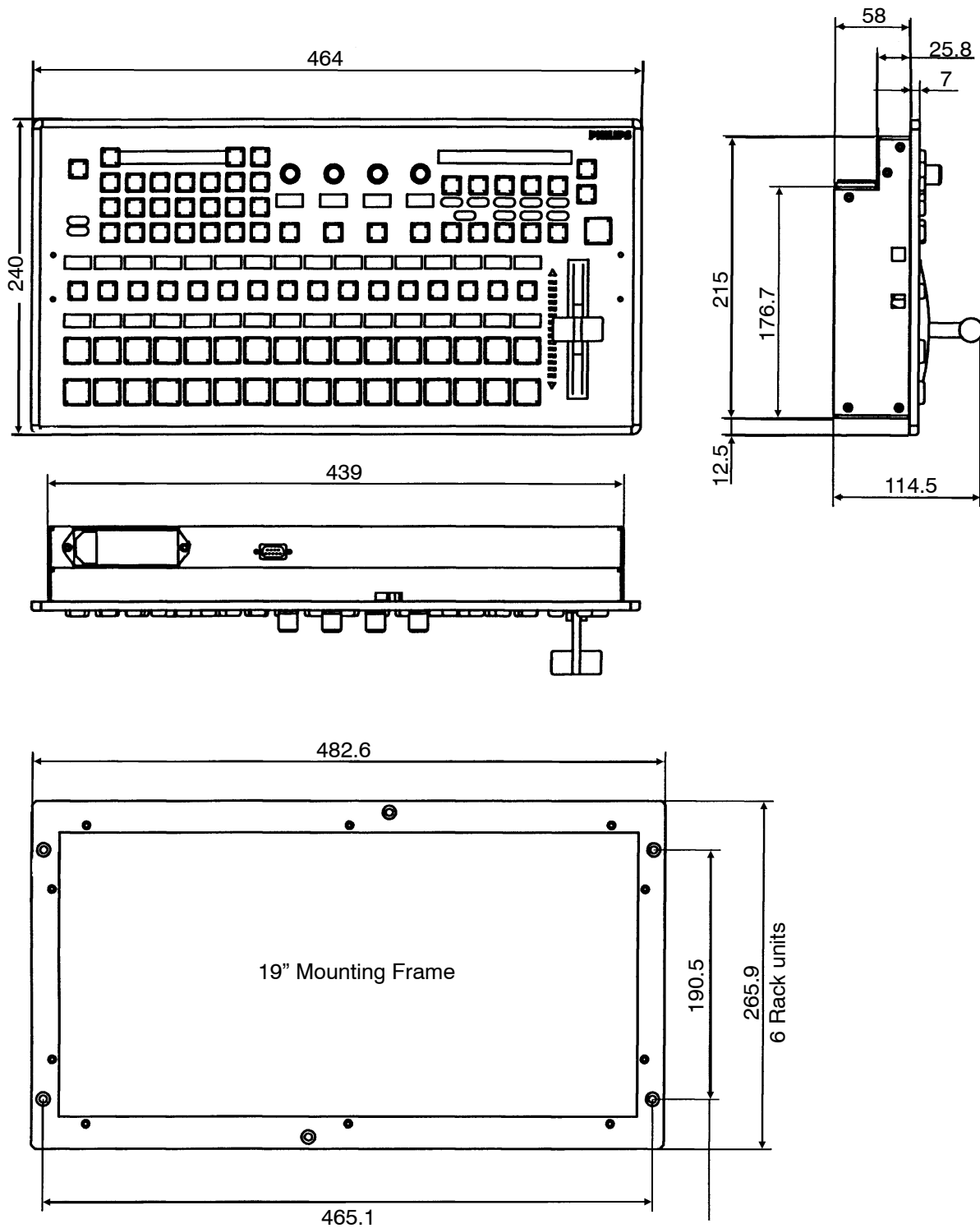
All dimensions are [mm]

Desk Cut-out for Remote Panel RSAT2:
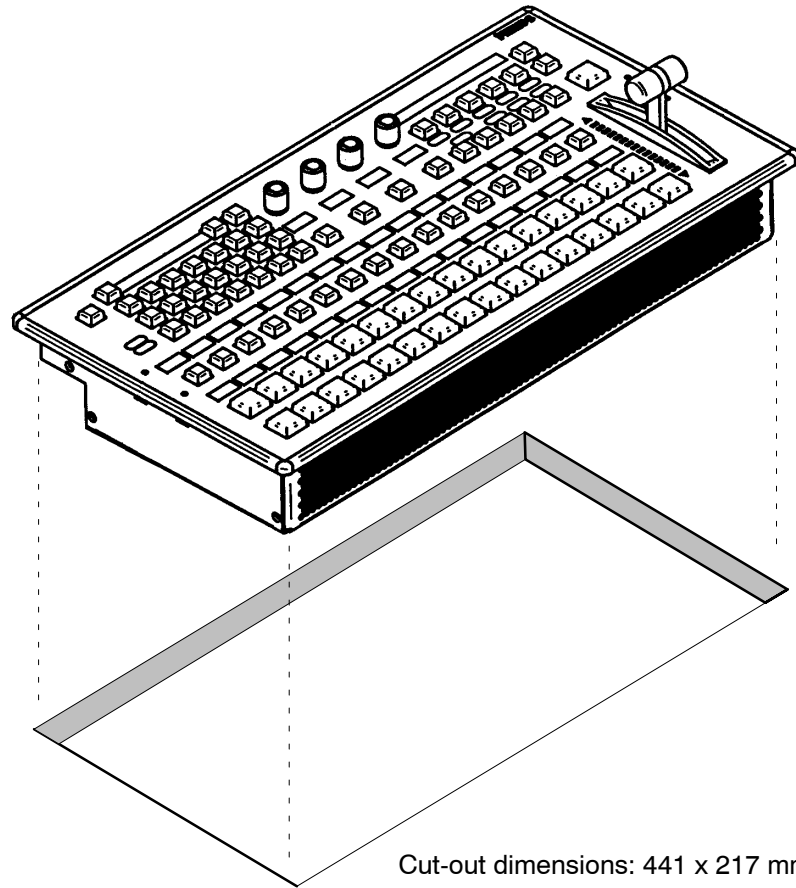
Cut-out dimensions: 441 x 217 mm

3.4.5   RPS35-2/S CONTROL PANEL

FRONT

LEFT

Please keep free for service working!

Keep free for cabling!
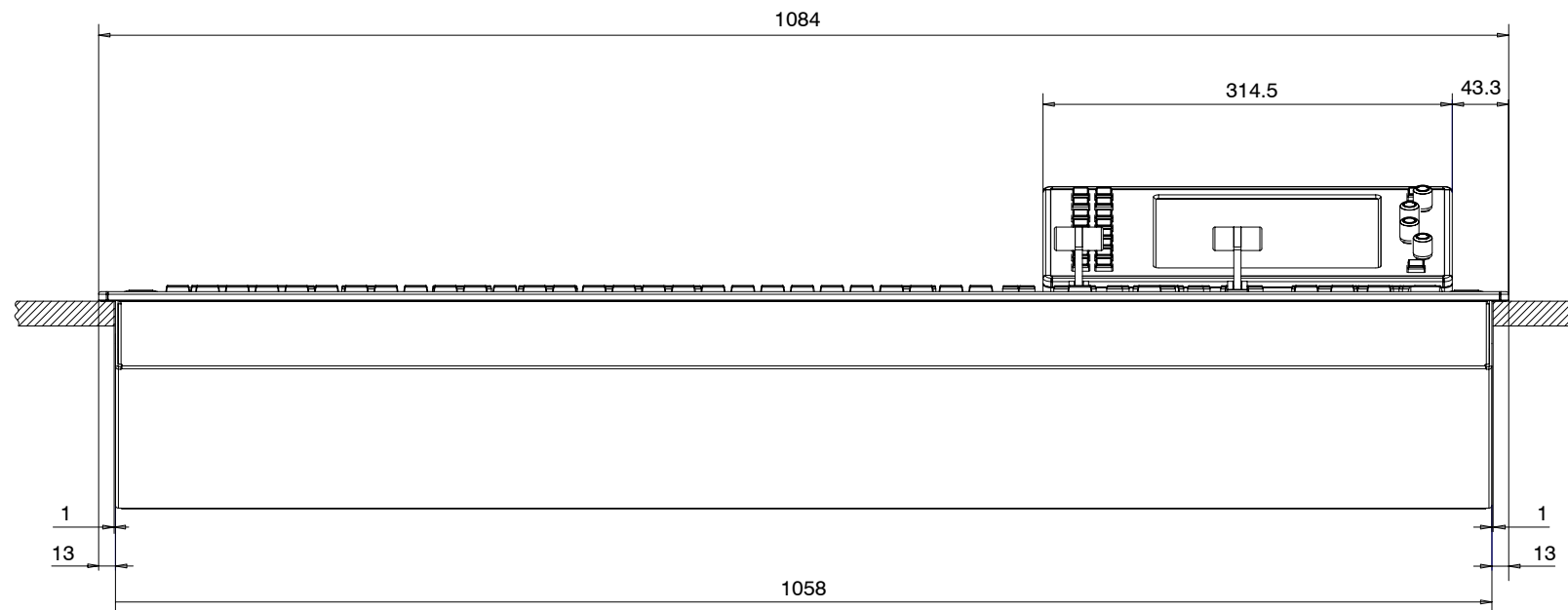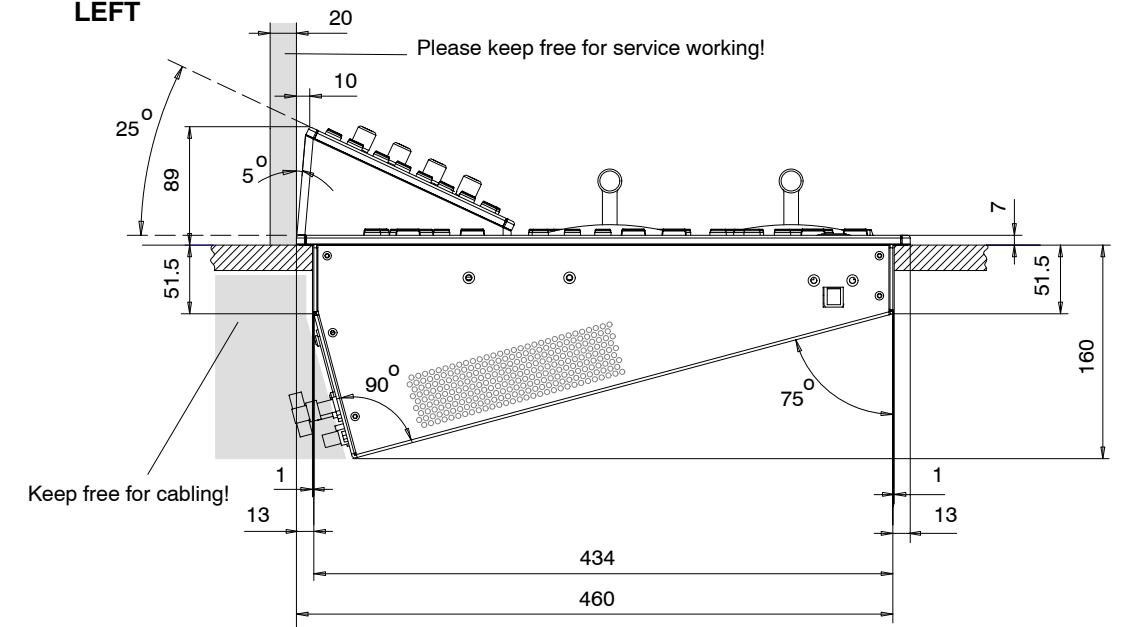
TOP

ISO
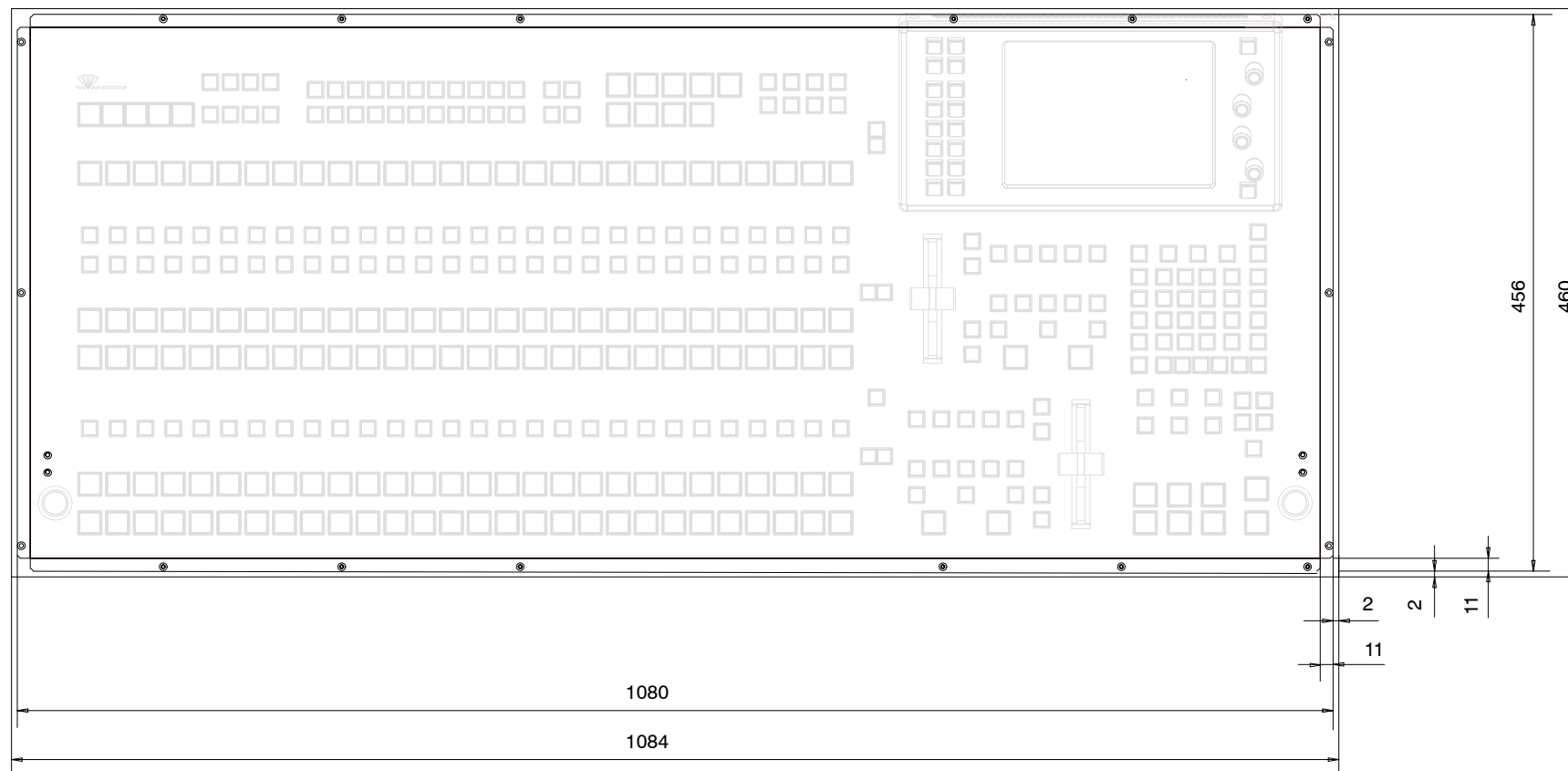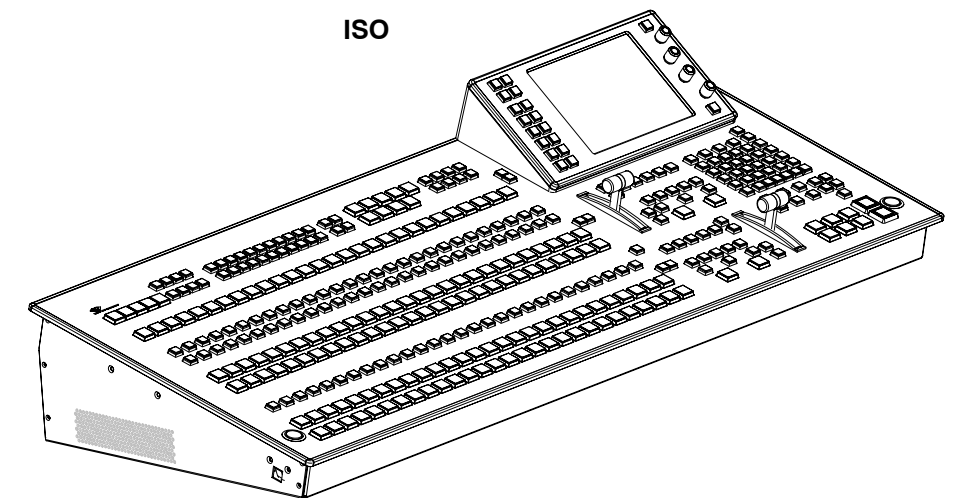
Note!
All measurements are [mm].
Tolerance +/- 0,2

TOUCHSCREEN DISPLAY OF THE RPS35-2S PANEL
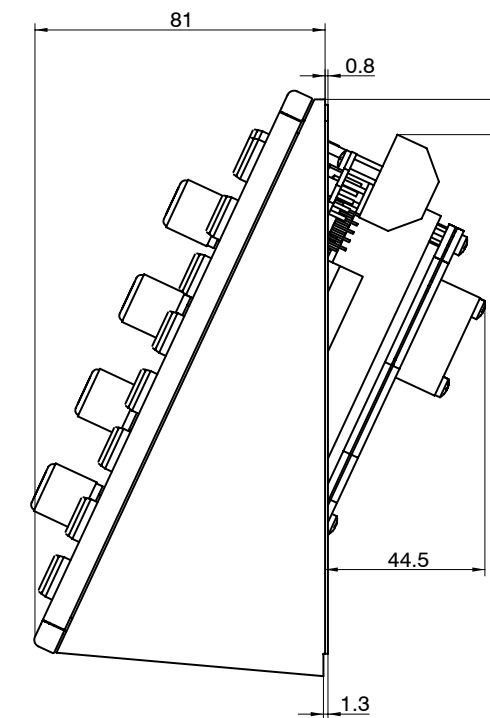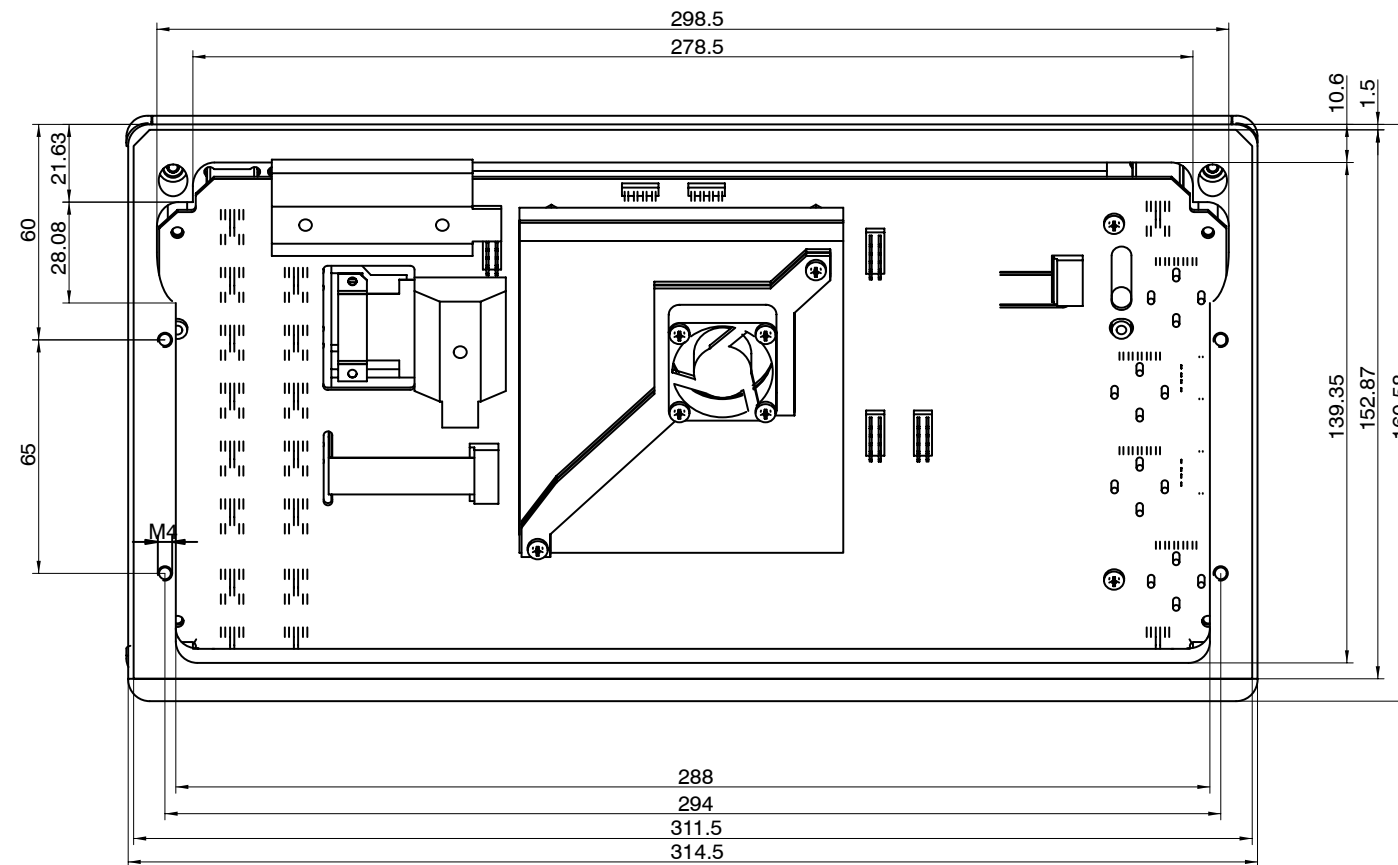
Attention!
When separating the display from the control panel,

- the EMV protection is not ensured any longer (radiation is also possible via the cables)

- the ESD protection is not ensured any longer (damage to electronic components is possible)

- the UL and other permissions are not applicable any longer

- warrenty is not ensured any longer

Note!
All measurements are [mm].

3.4.6   RPS35-2 CONTROL PANEL SET

FRONT

Mechanical dimensions see next page.

1364

TOP

460

2
11

2

11

1386

1390

LEFT

51.5

105°

160

Keep free for cabling!

15°

11

434
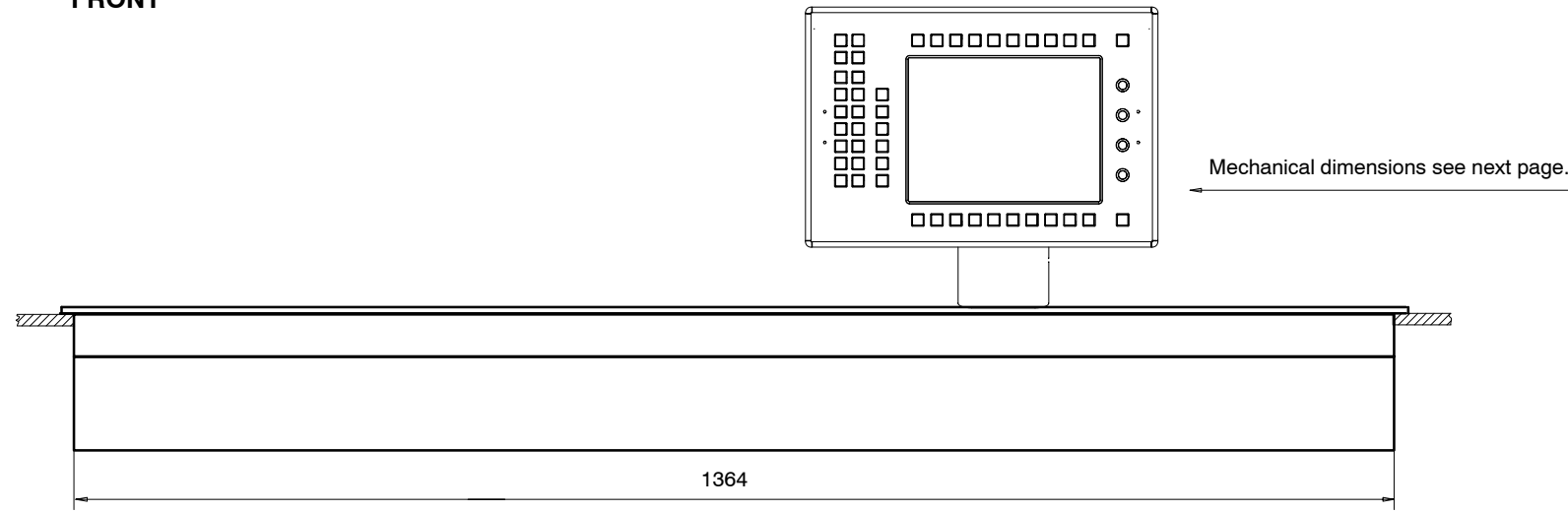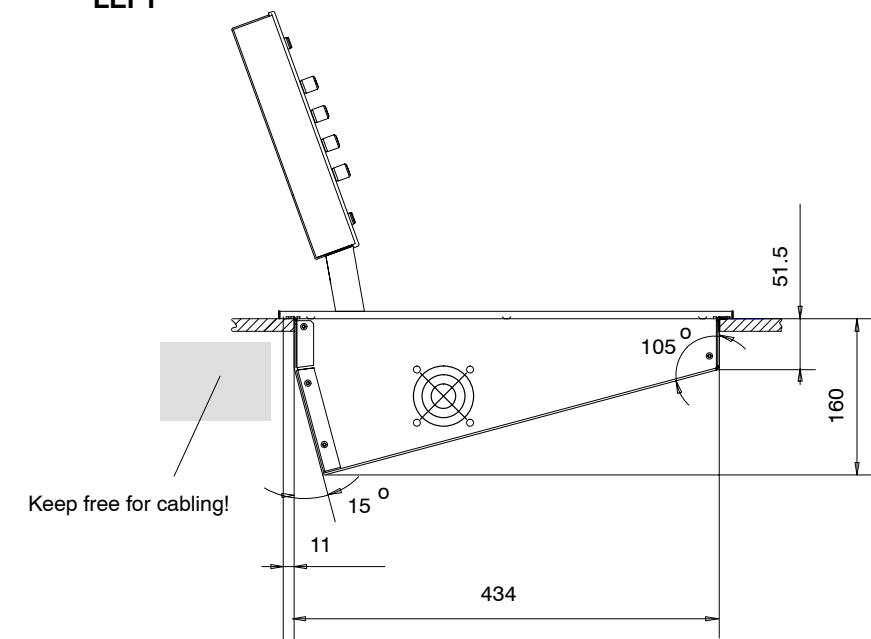
Note:

There are two possibilities of mounting Display Module RPV35-2.

3. **Mounting the display module with the mounting frame outside the switcher into the control desk or wall. See section 4.3.1 Single Module Mounting.**

4. **Stand-alone display with rigid stand.**
    The stand has to be mounted on the control panel in the place provided for this purpose, between Aux and Wipe panel.
    For mounting the stand, see the mounting drawing on the next page.
    The associated mounting material will be delivered with the stand-alone display.

ISO
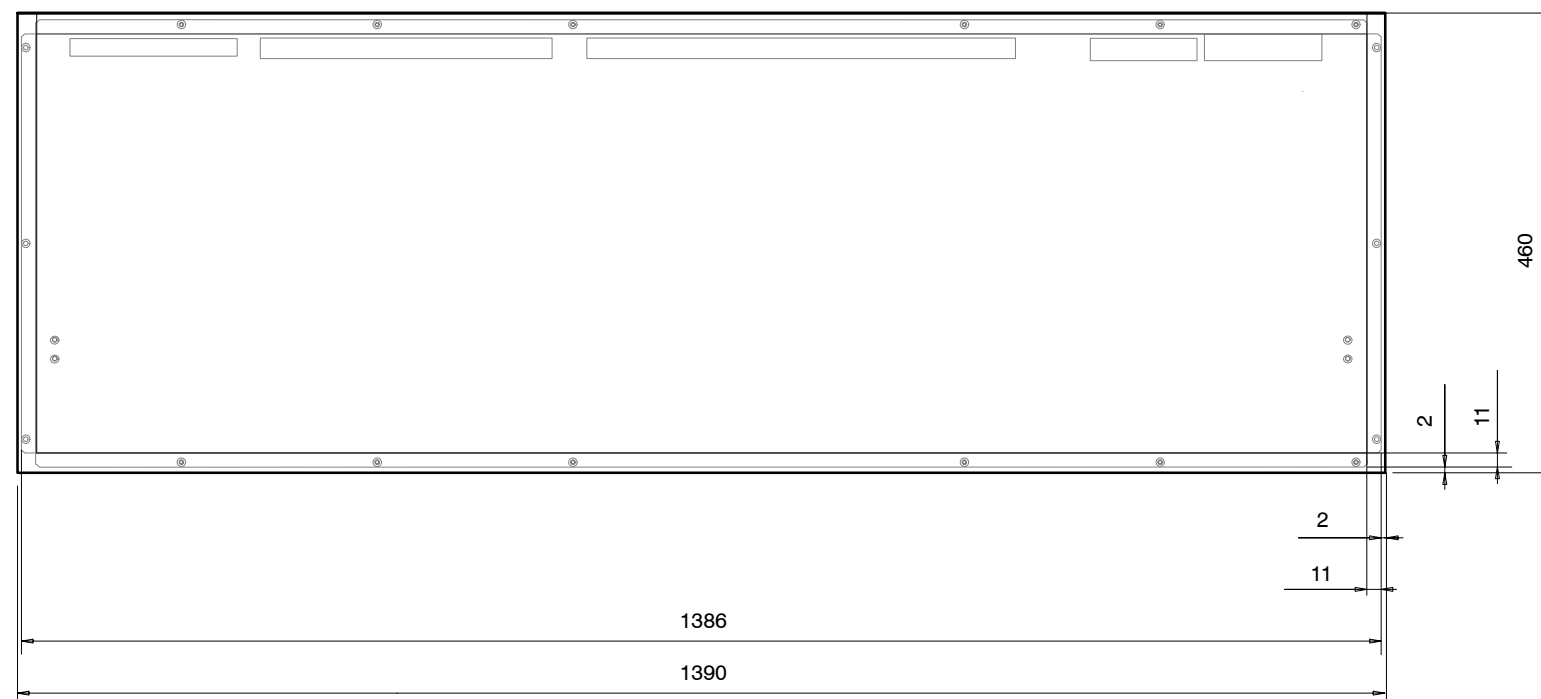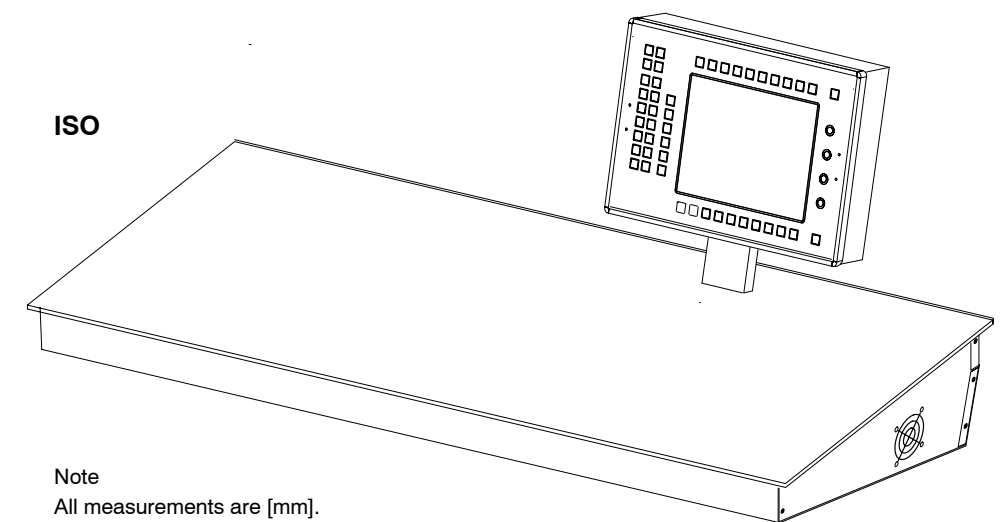
Note
All measurements are [mm].
Tolerance +/- 0,2

RPV35-2 STAND-ALONE DISPLAY PANEL

3.4.7   RPS35-3 CONTROL PANEL SET

FRONT

LEFT

TOP

ISO

Keep free for cabling!
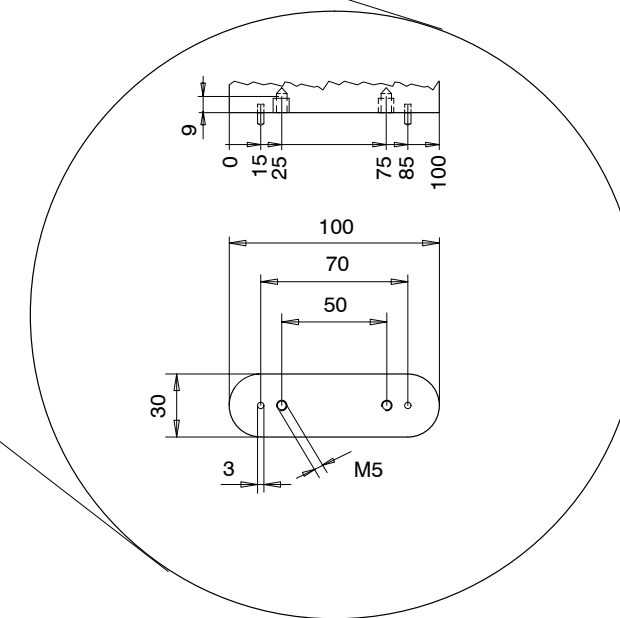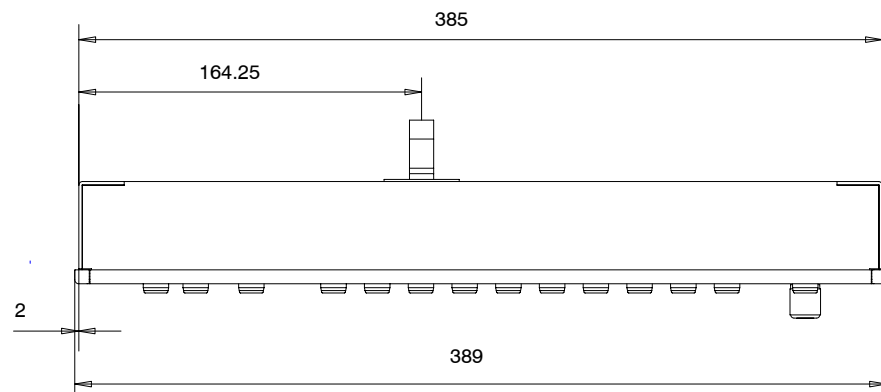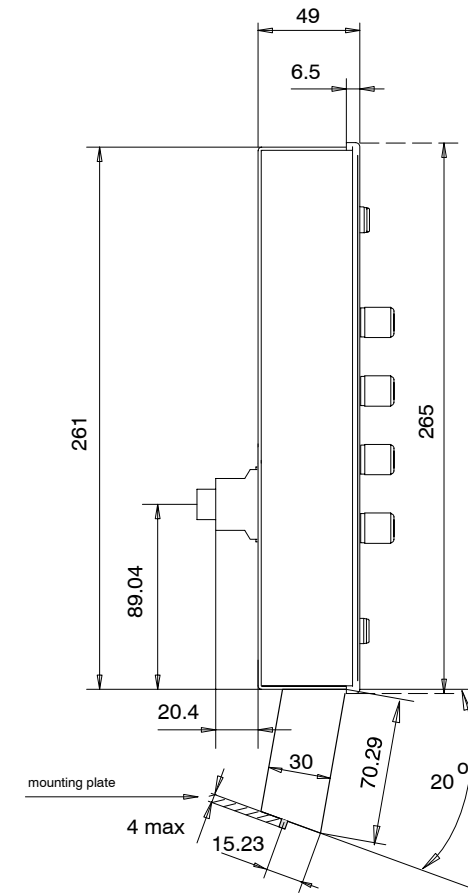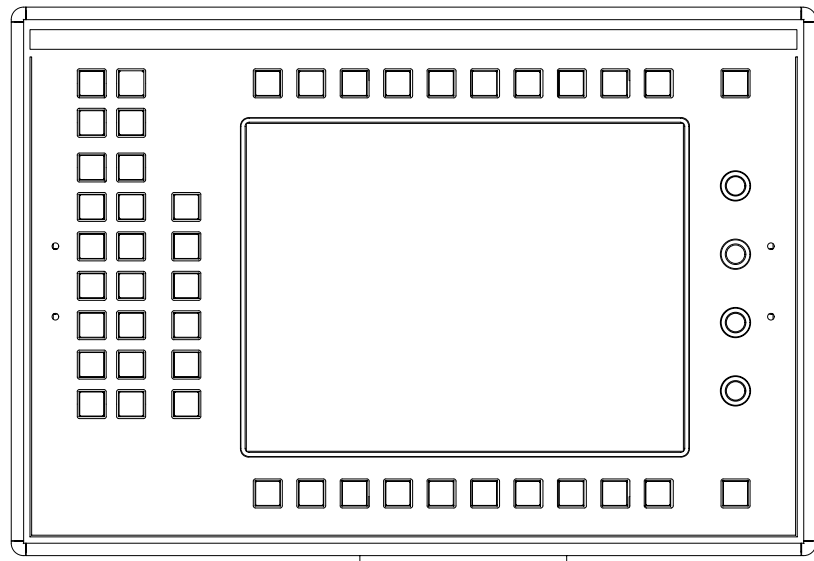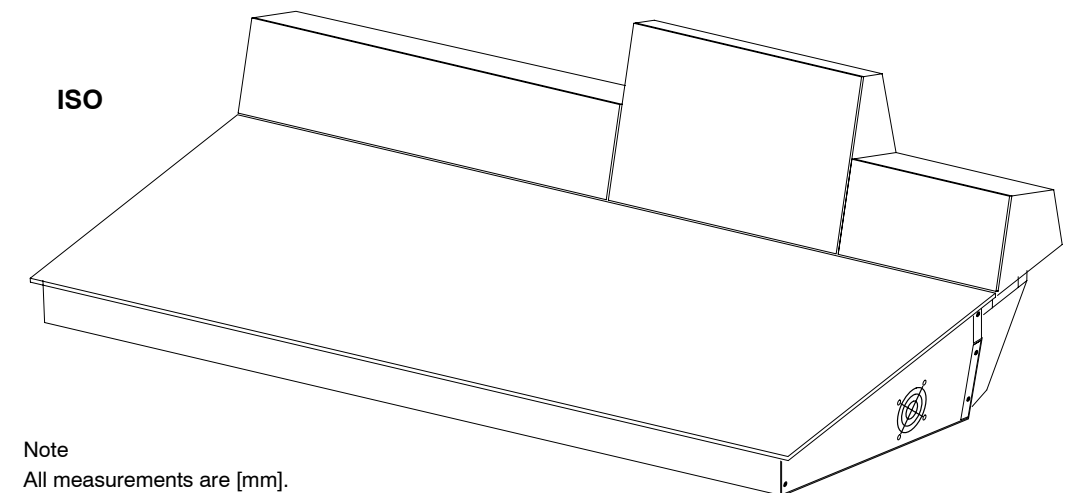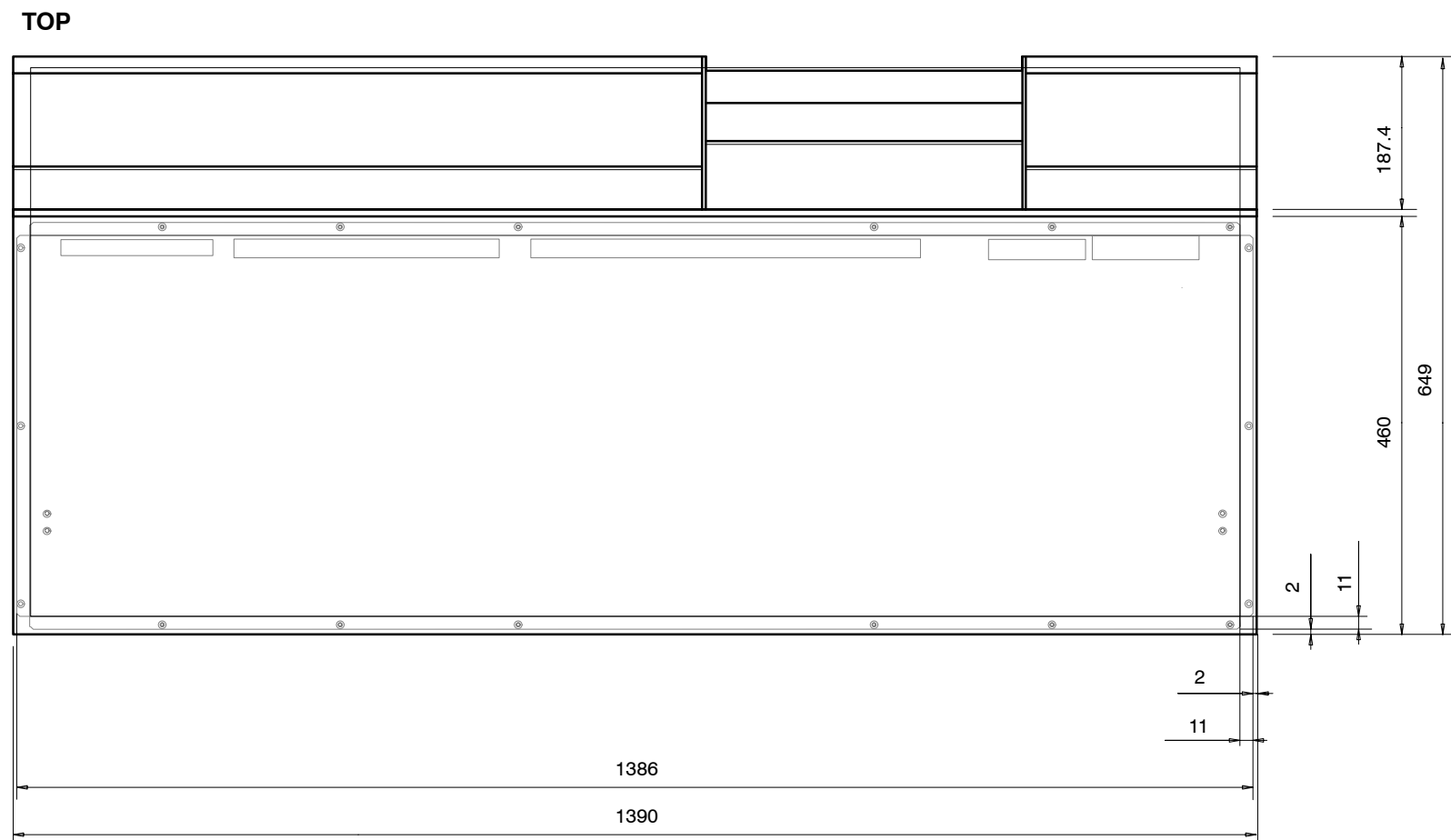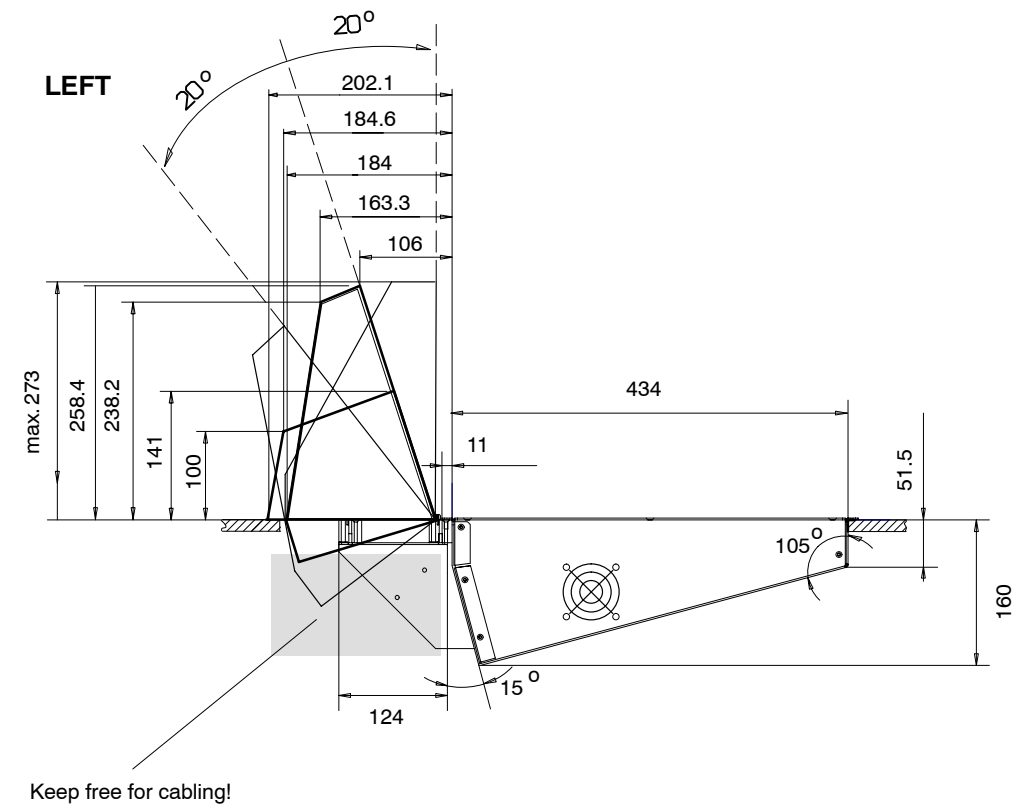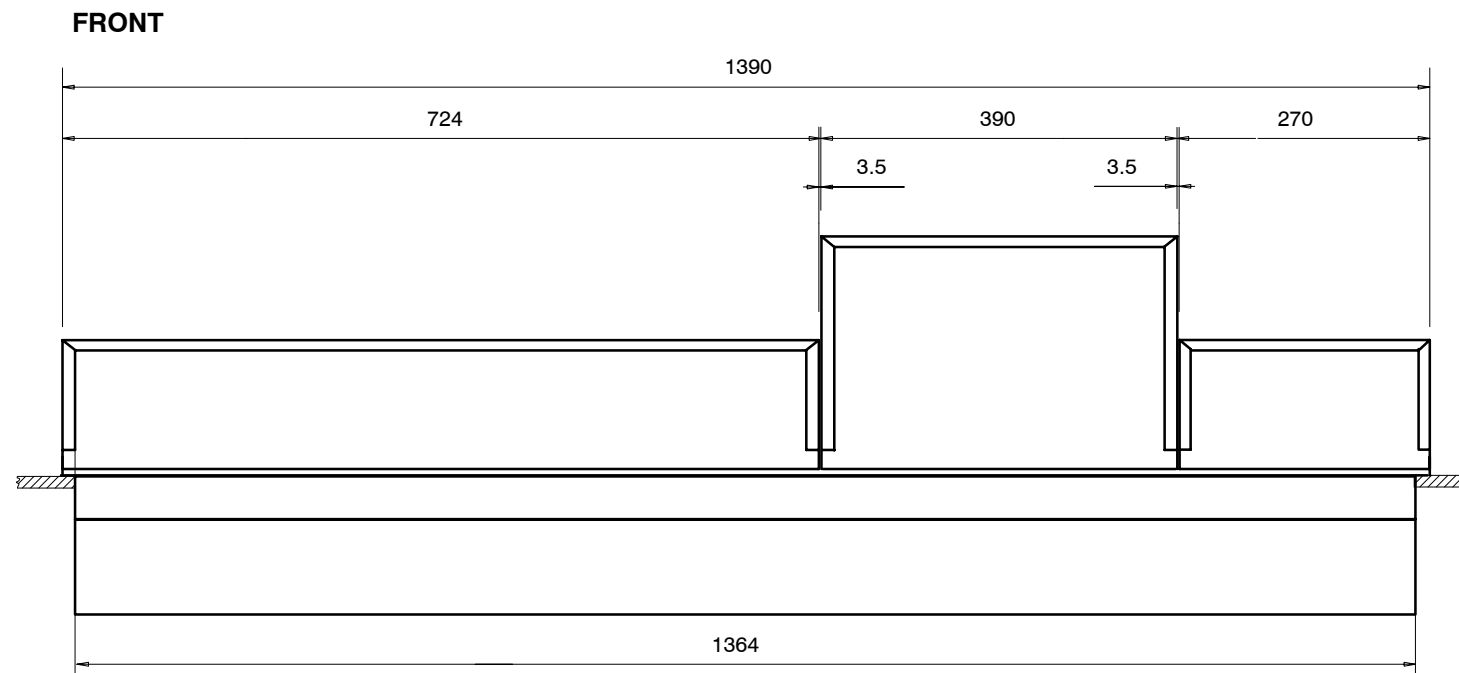
Note
All measurements are [mm].
Tolerance +/- 0,2

3.4.8   RPS35-4/32 CONTROL PANEL SET

FRONT

TOP

LEFT

Keep free for cabling!

ISO
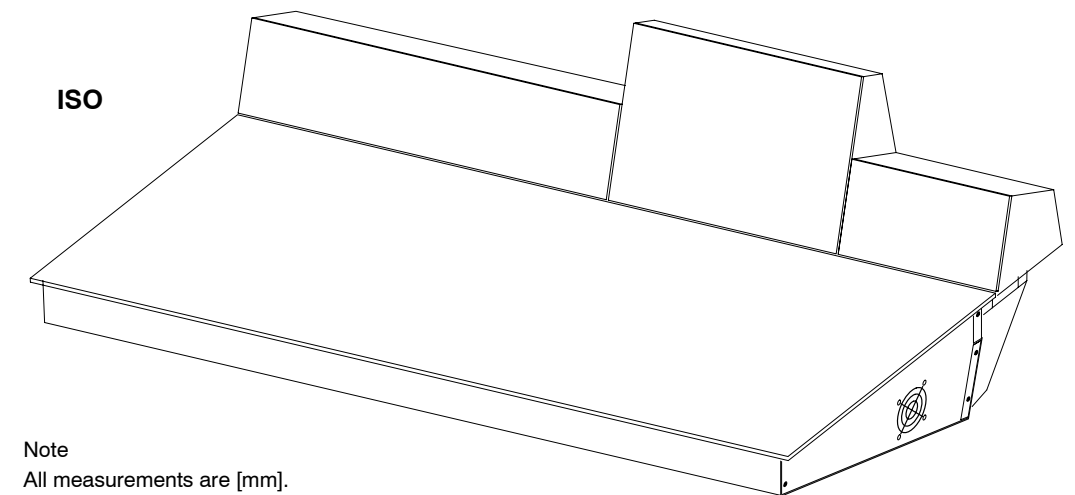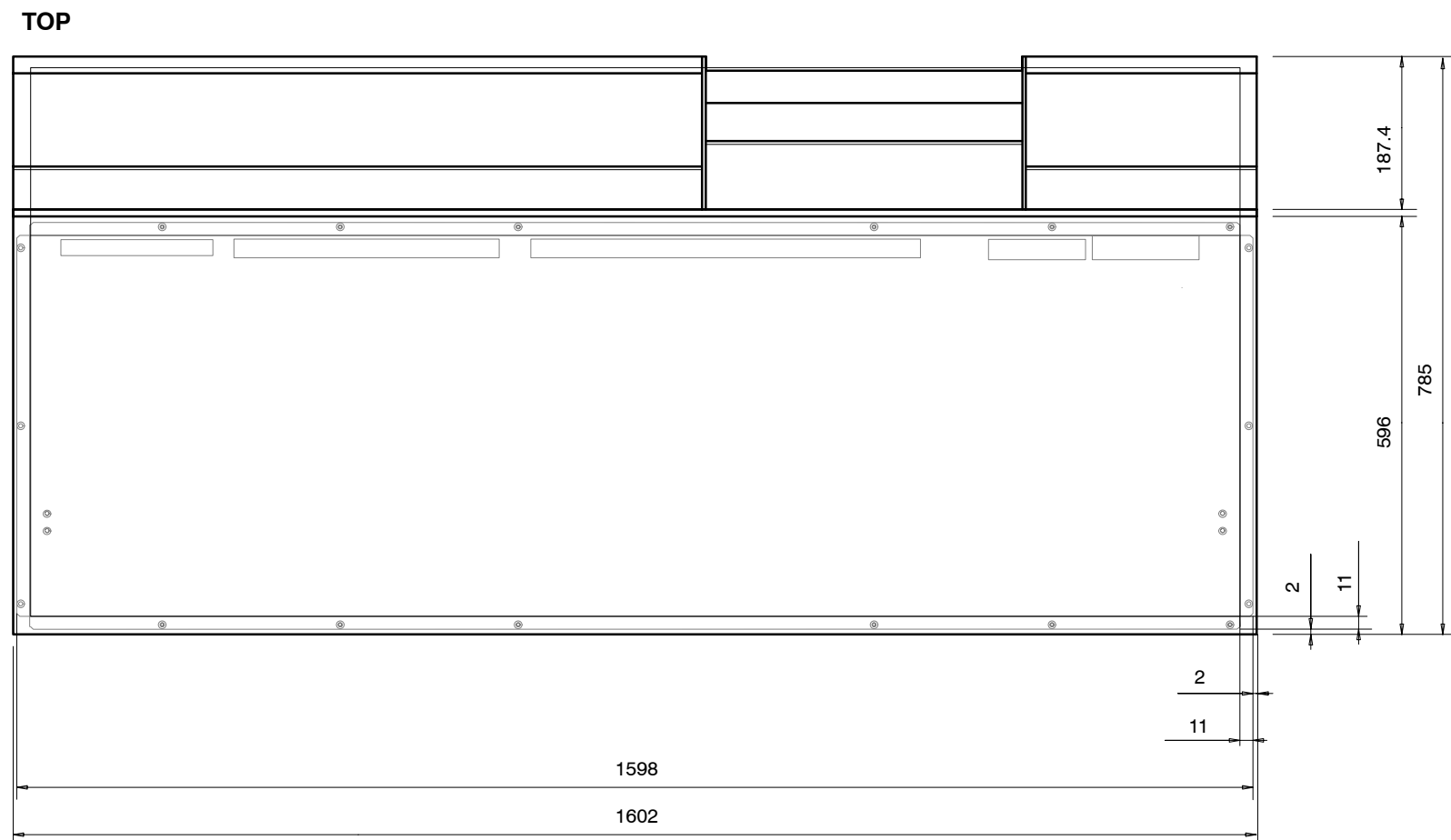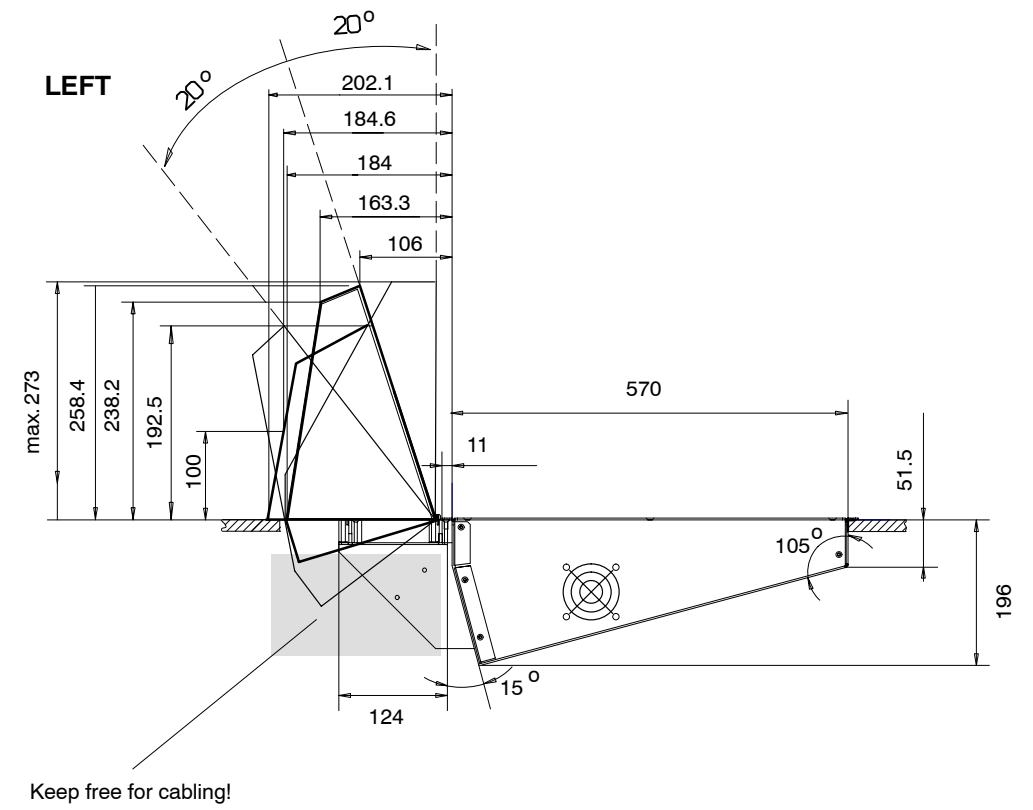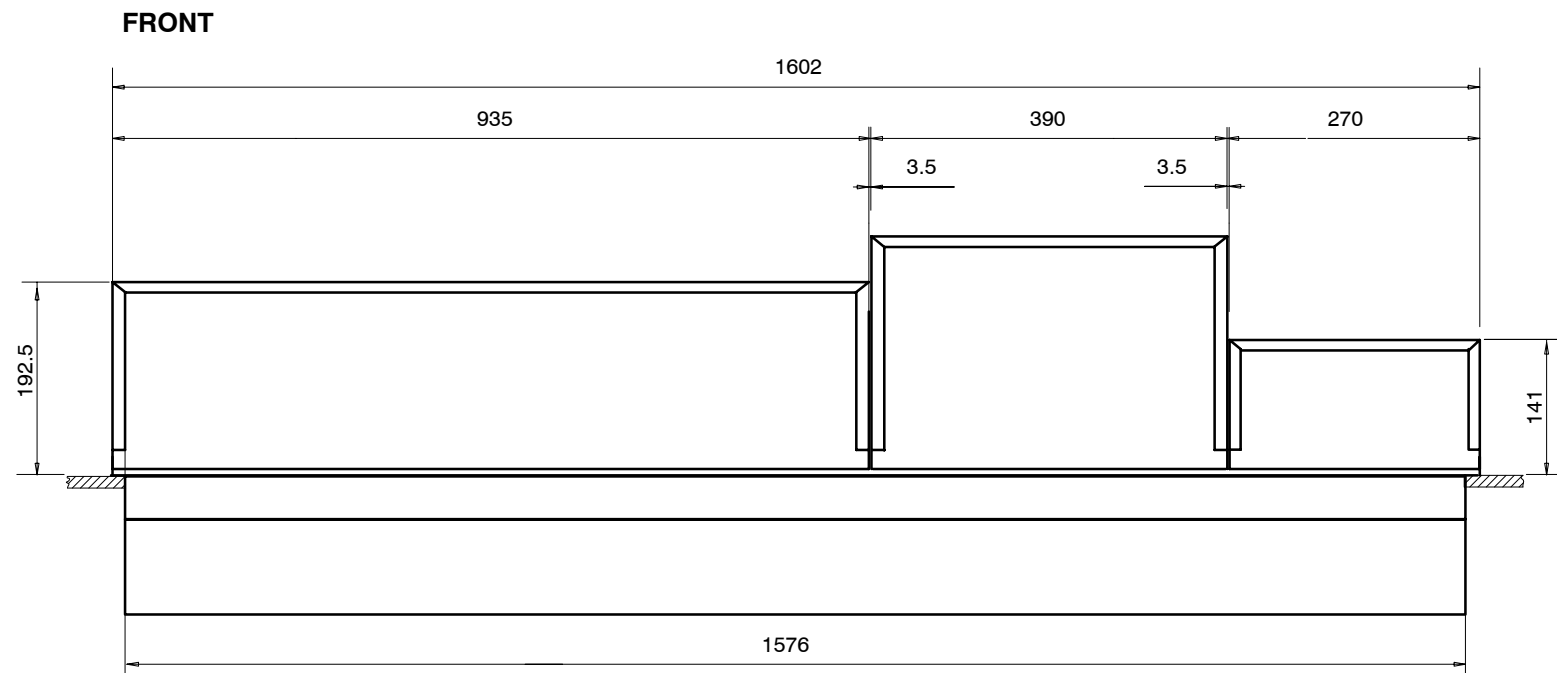
Note
All measurements are [mm].
Tolerance +/- 0.2

3.4.9   DESK CUT OUT FOR RPD35-2S

Cut-out measurements
Note
All measurements are [mm].

legend

_____ Cut-out

___ . ___   module edge

3.4.10   DESK CUT OUT FOR RPS35-2
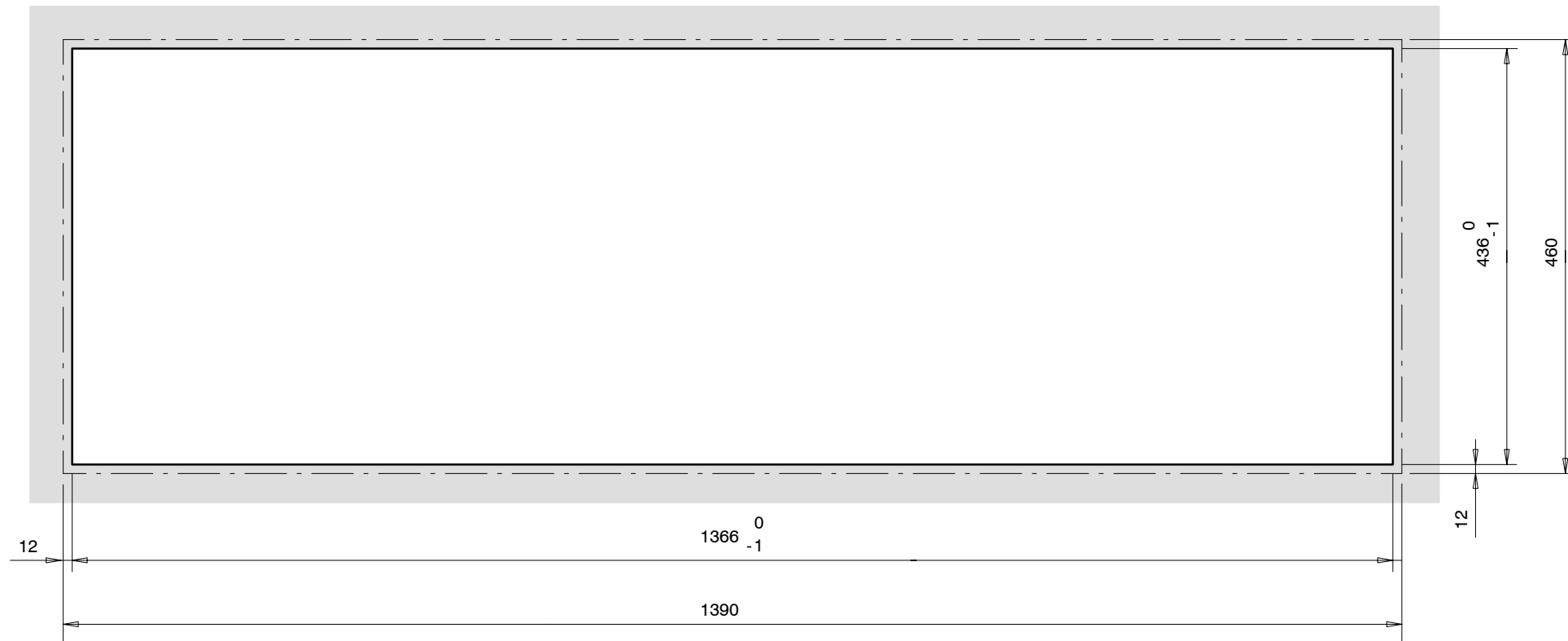
Cut-out measurements
Note
All measurements are [mm].

legend
———————   Cut-out
— . —   module edge

3.4.11   DESK CUT-OUTS FOR RPS35-3
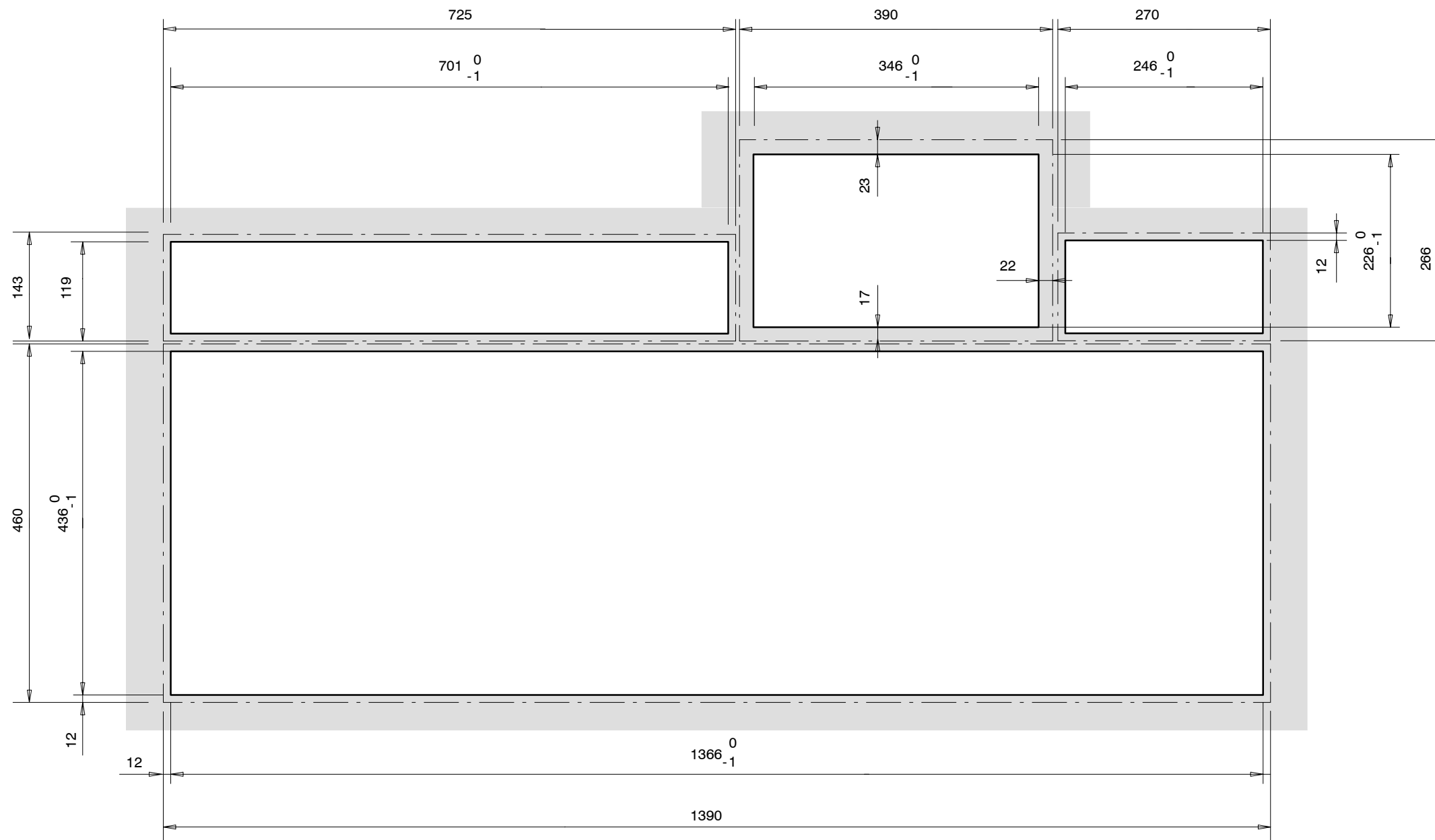
Cut-out measurements for single module mounting
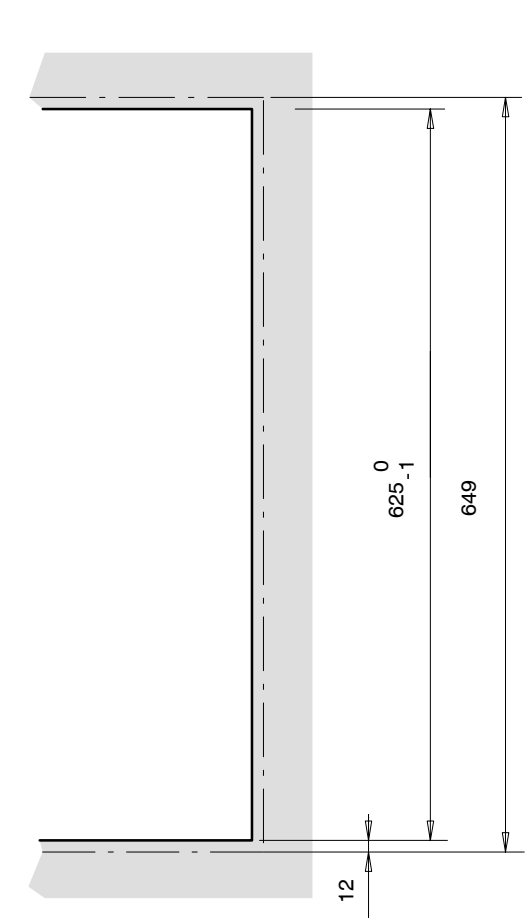
Cut-out measurements for panels with
"All-in-One" Mounting Frame RC 2360

Note
All measurements are [mm].

legend
——————   Cut-out
— · — · —   module edge

3.4.12   DESK CUT-OUTS FOR RPS35-4/32
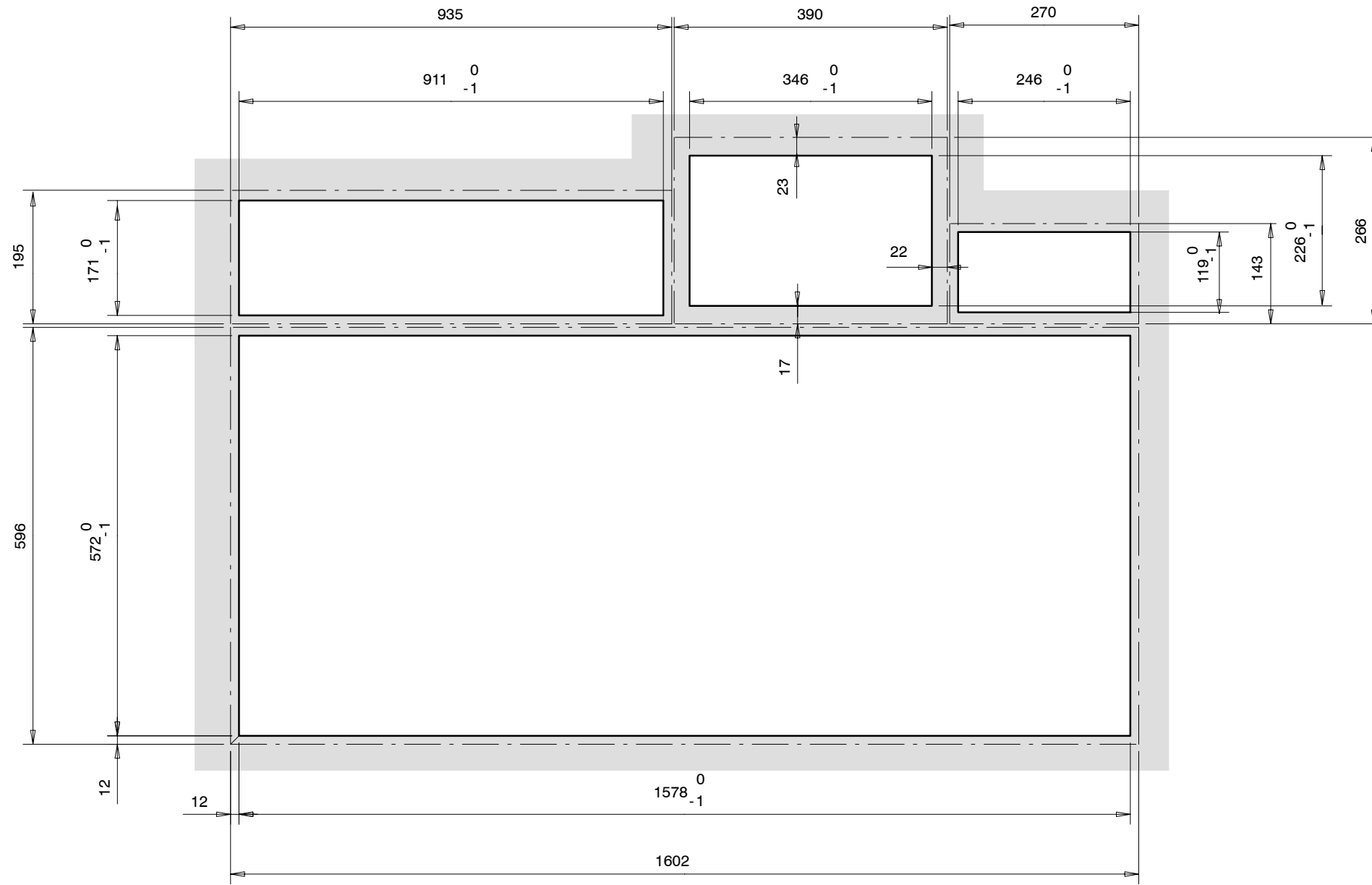
Cut-out measurements for single module mounting
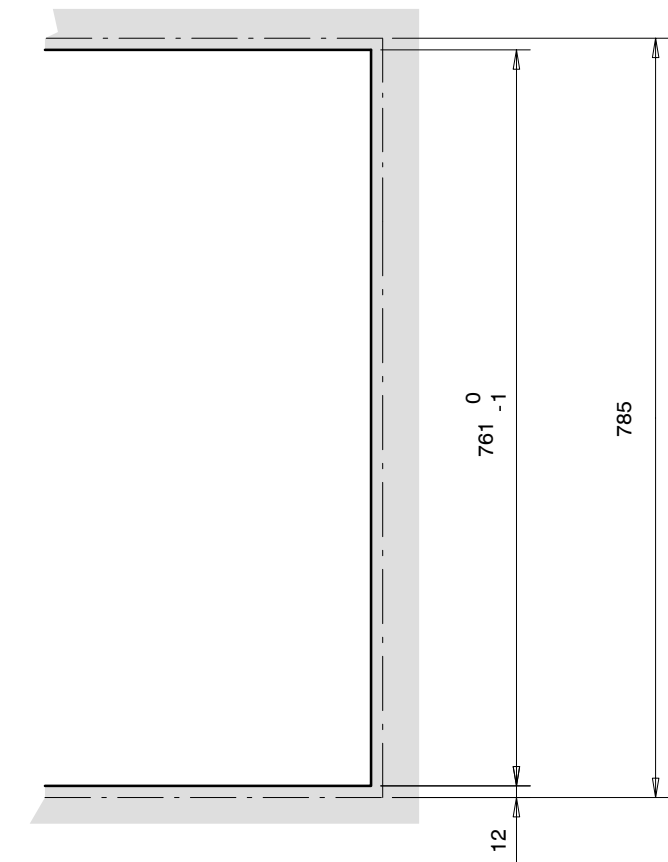
Cut-out measurements for panels with
"All-in-One" Mounting Frame RC 2840

legend

———   Cut-out

— · —   module edge

Note
All measurements are [mm].

3.5   INSTALLING PANELS

WARNING!

With the standard modules installed, the **X**ᵗᵉⁿ **DD** *main panel weights 50 kg (110 lbs). During installation and until secured in the desk, use an appropriate lifting device to lift and support the main panel. Failure to follow this precaution can result in injury to personnel and damage to equipment.*

WARNING!

The control panels do not contain any control elements or switches required for operation of the switcher. For this reason, the control panel should not be opened by unauthorized persons and should always be locked.
The panel must be opened by authorized service personnel only!
Prior to opening the panel make sure that there are no objects on the panel, such as pens, screwdrivers or other tools. When opening the panel, they might fall into the device and cause disturbances.

Please close the control panel slowly. Do not let it drop!

CAUTION!

Control Panel hinges may not be adequate to hold panel in the open position if mounted at more than 15 degrees.

ATTENTION!

RPD 35-2 display with rigid stand:
Please open the panel only to such an extend that the display will not be damaged at the slanted part of the desk!

RPD 35-2 Display with tiltable stand:
Prior to opening the panel, tilt the display as a precaution to the front!

3.5.1   SINGLE MODULE MOUNTING

Note:

There are two possibilities of mounting Display Module RPV35-2.

1. *Mounting the display module with the mounting frame outside the switcher into the control desk or wall. See below.*

2. *Stand-alone display with rigid stand.*
    The stand has to be mounted on the control panel in the place provided for this purpose, between Aux and Wipe panel.
    For mounting the stand, see the mounting drawing in chapter 3.4.6 RPS25-2 Control Panel.
    The associated mounting material will be delivered with the stand-alone display.

● Trace careful the positions of each panel on the desk. The exact dimensions of the main panel and the side panels you can find in section *"Desk cut-outs".*

● Cut-out the openings in the desk.

● Unpack each individual piece.
    Attention!
    Electrostatic sensitive devices. Observe the precautions for handling!

● Put in the mounting frame of the side panels. For fastening, bores are provided in the frame of each mounting frame. The respective frame can be fastened with countersunk wood screws with a diameter of 4 mm. The length of the screw depends on the plate thickness of the desk. A set with mounting parts is included in the delivery of the switcher.

● Connect the flat cables into the corresponding plugs of the modules.

● Put in the side panel modules in the mounting frames. By pressing, the modules engages independently. The locking mechanism can be removed by the two release tools (in panel accessory pack). Therefore the module can be removed very simply from the mounting frame. After mounting the panels please close all locking holes witch the plastic caps delivered in the accessory pack.

● Put in the main panel in the cutout. For fastening, bores are provided in the frame. The frame can be fastened with countersunk wood screws with a diameter of 4 mm. The length of the screw depends on the plate thickness of the desk. A set with mounting parts is included in the delivery of the switcher.

    Depending upon cable routing and clearances, you may want to attach control panel cabling before you lower the panel into the cutout.

3.5.2   MOUNTING WITH "ALL-IN-ONE" MOUNTING FRAME

- Trace careful the position of panel on the desk. The exact dimensions of the main panel and the side panels you can find in section *"Desk cut-outs"*.

- Cut-out the opening in the desk.

- Unpack each individual piece.
  Attention!
  Electrostatic sensitive devices. Observe the precautions for handling!

- Mount the "All-in-one" mounting frame with the screws on the rear side of the panel.
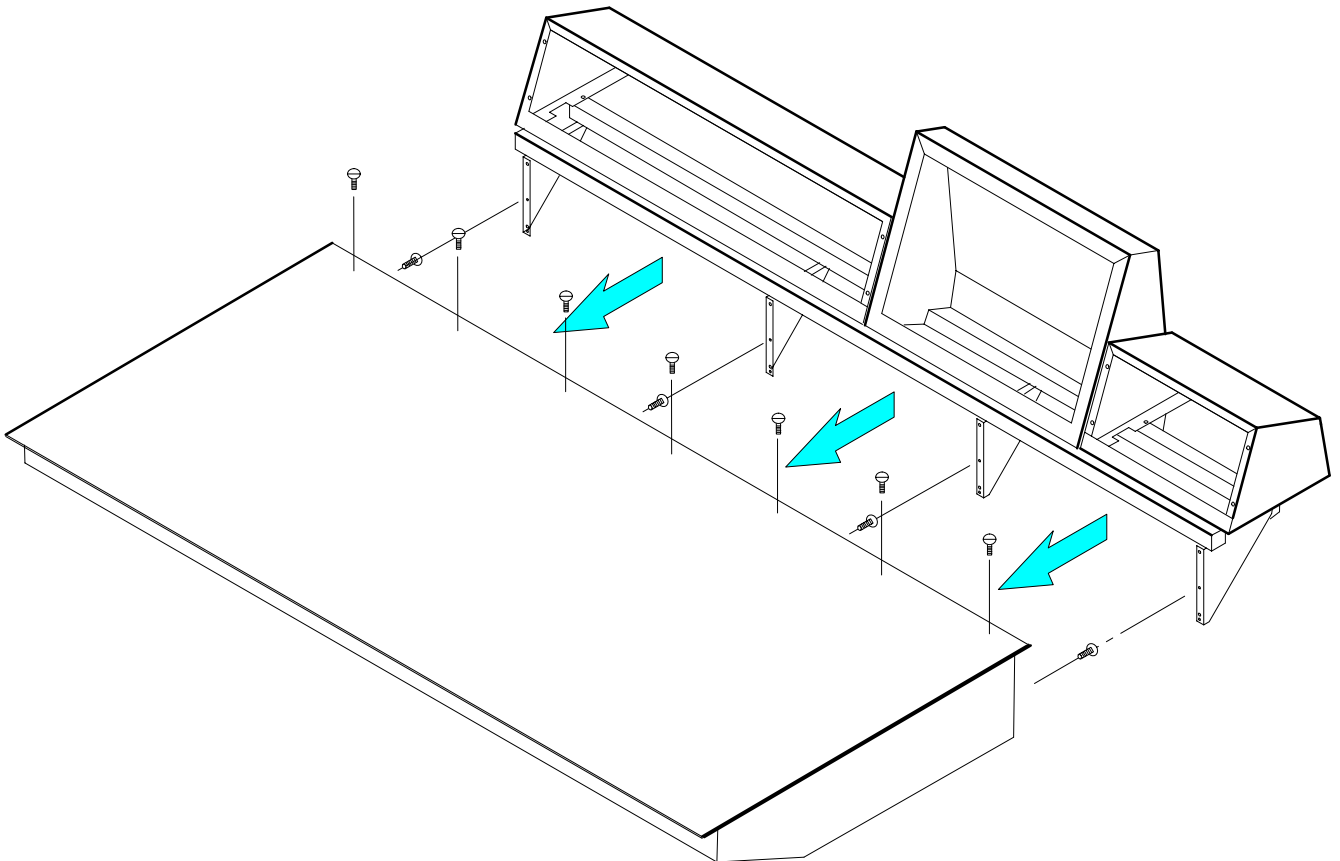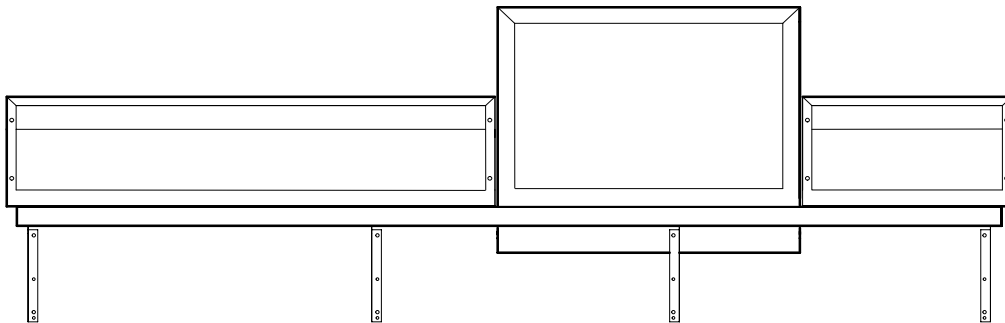
● Put in the extended main panel in the cutout. For fastening, bores are provided in the frame. The frame can be fastened with countersunk wood screws with a diameter of 4 mm. The length of the screw depends on the plate thickness of the desk. A set with mounting parts is included in the delivery of the switcher.

● *Note for mounting the display side panel:*
  Connect the three cables first on the rear panel of the display side panel before put in the display mounting frame in the the "All-in-one" mounting frame!

● Put in the mounting frame of the side panels. For fastening , bores are provided in the frame of each mounting frame. The respective frame can be fastened with countersunk screws with a diameter of 4 mm. A set with mounting parts is included in the delivery of the switcher.

● Connect the flat cables into the corresponding plugs of the modules.

● Put in the side panel modules in in the mounting frames. By pressing, the modules engages independently. The locking mechanism can be removed by the two release tools (in panel accessory pack). Therefore the module can be removed very simply from the mounting frame. After mounting the panels please close all locking holes witch the plastic caps delivered in the accessory pack.

release tools
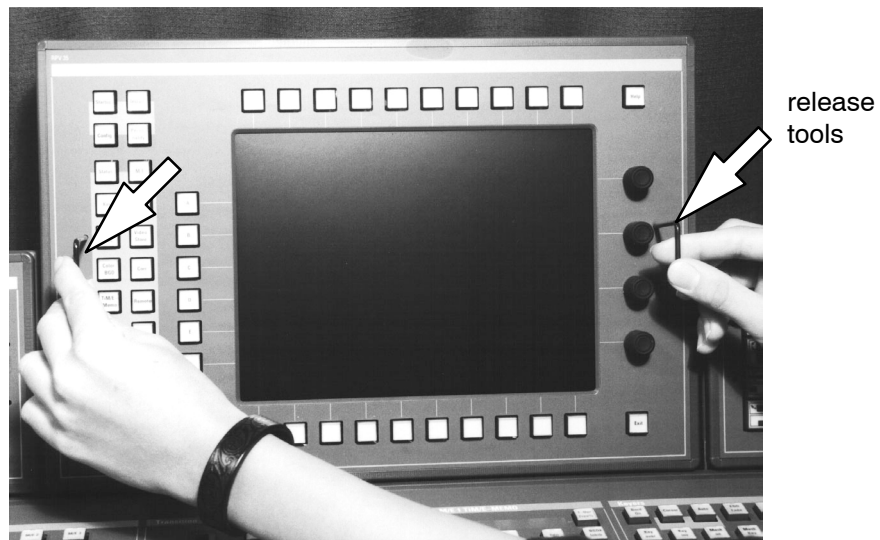
● Depending upon cable routing and clearances, you may want to attach control panel cabling before you lower the panel into the cutout.

3.6   VENTILATION PANELS

⚠

During operation, the ambient temperature in the desk must not fall below 5 °C and not exceed 35 °C.

For supply air and exhaust air, ventilation slots are provided in the lower control panel part. In order to ensure continuous air circulation, make sure that the ventilation slots are not covered when mounting the control panel!

Note: ***The control panel must not be mounted into closed desks!***

Air intake

Exhaust air exits
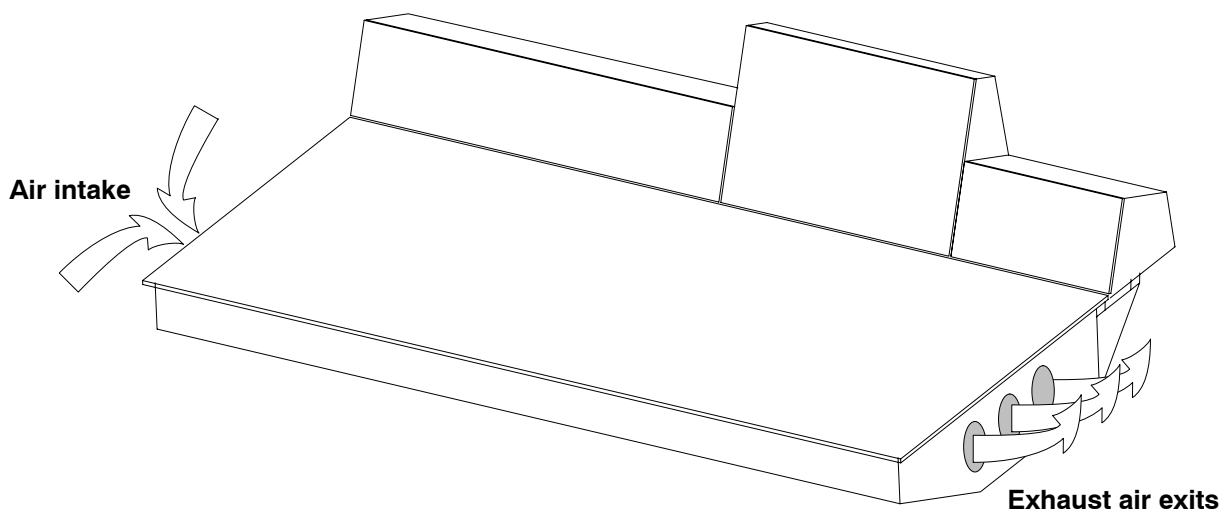
Fig. 405: Example for RPD35-4

Note: ***In RPS35-2S the fan is temperature controlled and works at a temperature higher than 40 °C.***

4. CONNECTION AND STARTUP

4.1 GROUNDING REQUIREMENTS

Protective grounding

Grounding of the device serves the product safety and meets the requirements of Class I equipment.

The device is connected with the protective earth of the power supply circuit (e.g. the studio) by means of the mains cable which also contains the earthed protective conductor **PE**.

Requirement is an earthed and checked mains socket!

In the device, the AC mains input is provided with a leading protective contact. This protective contact is internally connected with the parts to be earthed, e.g. the case. The effect of the protective earth connection must not be neutralized through the use of an extension cord without protective earth conductor, through an excessively long cable, nor must its function be disabled in any other way!

Additional earth conductor

At the rear the device provides separate screw terminals for protective earth.

The grounding terminal is internally connected with the **AC IN** power socket and the metal case parts.

CAUTION!
Any break of the protective earth conductor inside or outside the device or disconnection of the protective conductor connector may entail that, in the event of a failure, the operational safety of the device will no longer be ensured! All mains sockets of the devices being interconnected with signal cables have to be checked. The protective earth conductors must not be live!

4.2   CONNECTING POWER AND EARTH LINES

The units of the **X**ᵗᵉⁿ **DD** Production Switcher have been completely checked in the factory and are in conformity with the safety regulation EN60950 / VDE0805 / UL 1419 (Class 1 equipment) when leaving the factory.

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

CAUTION!
This mainframe has more than one power supply cord. To reduce the risk of electric shock disconnect both power supply cords before servicing.

Prior to connecting the switcher mainframe and control panel to the line voltage make sure that the internal power supply units are adjusted to the corresponding mains voltage of the facility. The factory-adjusted voltage is indicated on the respective connector panel (mainframe, control panel) were also the type label is fastened.

Make the earth connections always **before** applying mains power!

Line voltage:

- Mainframe: 100 V to 240 V ± 10 % AC
                                        wide range input

- Control panel: 100 V to 240 V ± 10 % AC,
                                        wide range input

Notes for Connecting the AC Power Cable:

The AC Power cable of the mainframe must be secured with fixing clips. The clips are delivered with the cable. Please insert the clips before connecting the cable!

4.3   CONTROL PANEL CONNECTORS

4.3.1   RPS35-2S CONTROL PANEL

Caution: See installation manual before connecting to the supply.

Attention: Lisez le manuel avant l'installation d'alimentation.

Vorsicht: Vor Anschluß an das Netz Installationsanleitung beachten.

Caution: This unit has two power cords. To prevent electric shock disconnect both power cords before servicing.

Attention: Cet appareil comporte deux cordons d'alimentation. Rafin de prevenir les choc électriques, débrancher les deux cordons d'alimentation avant de faire le depannage.

Vorsicht: Dieses Gerät hat zwei Netzkabel. Vor Servicearbeiten beide Netzkabel entfernen. Gefahr des elektrischen Schlags.

Caution: Do not remove any cover. Risk of electrical shock. High current level. No user serviceable parts inside. Refer servicing to qualified service personnel. Available energy >240VA.

Attention: Ne pas enlever cette plaque. Tension dangereuse. Prière de s'adressera au personnal qualifié. Alimentation >240VA.

Achtung: Abdeckung nicht entfernen. Gefährliche Spannungen. Hohe Stromstärken. Öffnen nur durch ausgebildetes Servicepersonal. Verfügbare Energie >240VA.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

AC Power in 1
100-240V; 2,5Amax; 50/60Hz   J11

Auxiliary DC out
12V
2A   +
J12

PE

DC Power out
WIPE PANEL   **AUX PANEL**
J13   J14

AC Power in 2
100-240V; 2,5Amax; 50/60Hz   J15

Connection Panel 1, RC 2375 Power Supply

① ② ③ ④ ⑤ ⑥

Connection Panel 2, RC 2374 Controller

LAN	RS 485 / RS 422	RS 232	Interface	Control panel
J17 J18	Port 1 J19 a / Port 2 J19 b / Port 3 J20 a / Port 4 J20 b	Port 5 J21 a / Port 6 J21 b	GPI/GPO J22 a / Modem J22 b	Aux selection J23 a / Wipe selection J23 b

⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭

Part of delivery:
50 Ω Terminator
BNC T-type connector

Using the USB mouse.
The following USB mice have been tested and released for being used with the RPS35-2S panel:
• USB mouse no. 18.01.1062 from Roline (included in the delivery)
• Logitech, Model M-BA 47

Connections IPC RC 2360

IPC-LAN
J10   22

VGA
J3

COM 2
J4

USB 3
J5

USB 4
J6

⑮

⑱ ⑲ ⑳ ㉑

Part of delivery:
50 Ω Terminator
BNC T-type connector

IPC
RC 2360

PC Keyboard

USB 1
J1   **USB 2**
J2

⑯ ⑰

Mouse

4.3.1.1 Connection of a PS2 keyboard to the RPS35-2S control panel

IInstead of an USB keyboard a PS2 keyboard can be also attached.The PS2 keyboard should be connected a short time for configuration purposes only. In normal operation mode the panel must be closed.

red coding

The PS2 keyboard can be connected by using the provided adapter. The adapter is part of the delivery and can be located inside the control panel at the front of the power supply unit.
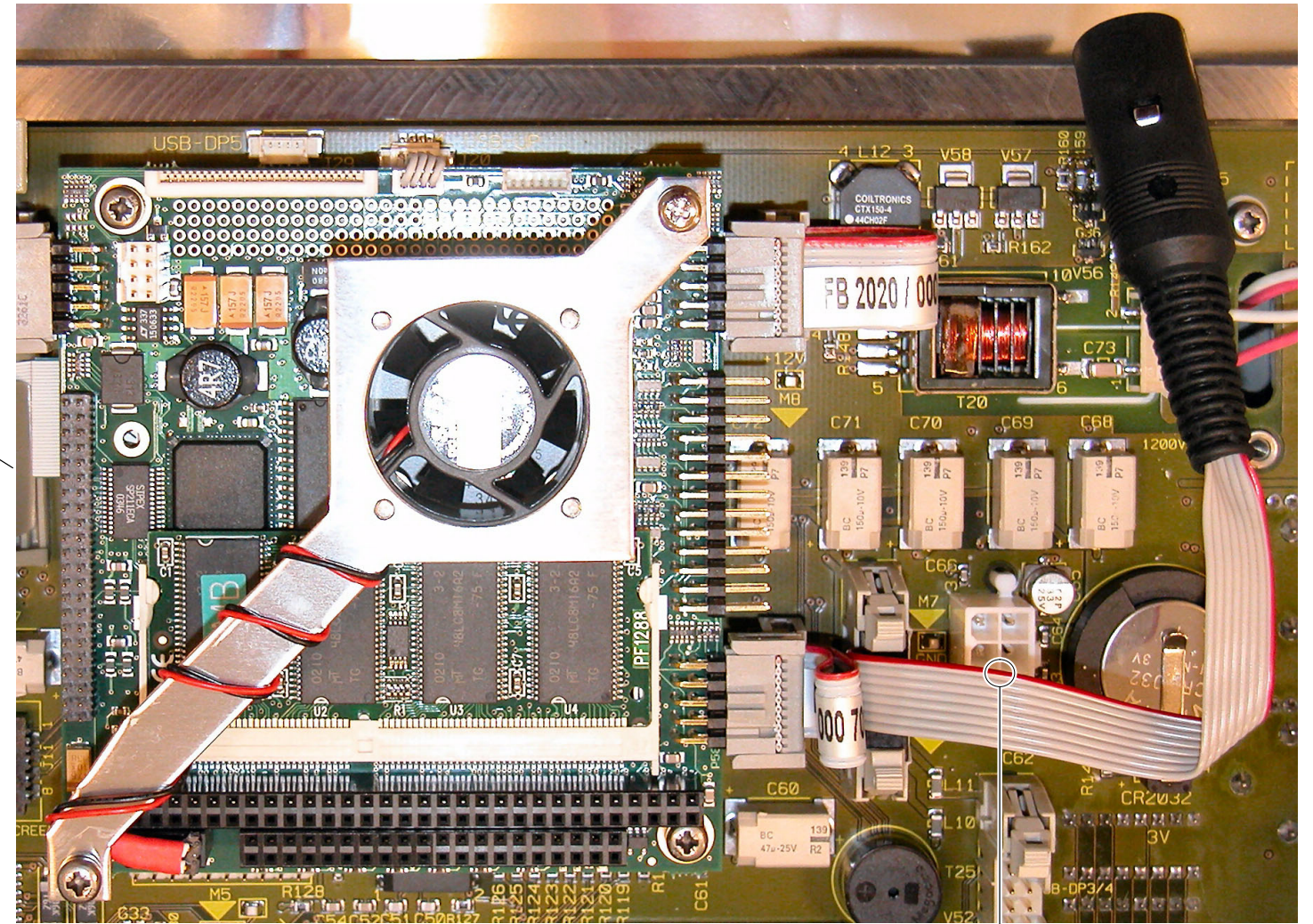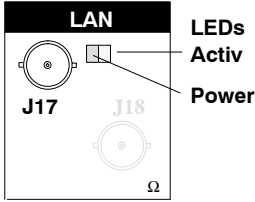
The adapter must be connected to port J31, as in the illustration above is represented.Please note the red coding of the flat cable must be on the top like you see at the picture.

4.3.1.2 Power Supply Connectors

Item No:	Socket / Connector Description	Socket type Connector type	Function
1	AC Power in 1	IEC-320, CEE-22	Convenience outlet for power supply to the control panel.
2	J12 Auxiliary DC out	Molex MiniFit junior 2 pin	DC 12V / 2A max for power connector Aux-panel.
3	PE		Protective earth
4	J13 DC POWER OUT WIPE PANEL	3-pin D-type female	DC output (+5V) for Wipe panel. Internal connection with cable set RC 2144 (RC 2214 option).
5	J14 DC POWER OUT AUX PANEL	3-pin D-type female	DC output (+5V) for Aux panel. Internal connection with cable set RC 2144 (RC 2214 option).
6	AC Power in 2	IEC-320, CEE-22	Convenience outlet for redundant power supply (option) to the control panel.

4.3.1.3 Controller Connectors

Item No:	Socket / Connector Description	Socket type Connector type	Function
7	J17 LAN **LAN** **LEDs** **Activ** **Power** J17 J18 Ω	BNC / 50-ohms	Alternately to J18 Cheapernet LAN connector for connection to panel PC and mainframe controller or further LAN devices. For further information see the section "LAN Specifications". Note: For interconnection the signals a BNC T-type connector is included.
8	J18 LAN	BNC / 50-ohms	Cheapernet LAN connector for connection to panel PC and mainframe controller or further LAN devices. For further information see the section "LAN Specifications". Note: For interconnection the signals a BNC T-type connector is included.
9	J19 a, J19 b, J20 a, J20 b RS422 SERIAL PORT 1 ... 4	9-pin D-type female	RS422/RS485 interface for connecting an external devices. The software control automatically switches over the interface to master or slave (bus control/tributary), depending on which unit driver has been selected in the menu.
10	J21 a, J21 b RS232 PORT 1 ... 2	9-pin D-type female	RS232 interface for connecting a diagnosis computer or other external devices.
11	J22 a GPI/GPO	25-pin D-type female	General-purpose interface connector with 6 optically-isolated (physically separated) input channels and 6 output channels.
12	J22 b MODEM	25-pin D-type female	Modem interface for future use.
13	J23 a WIPE SELECTION	50-pin D-type female	Internal connection to Wipe panel RPW. Cable set
14	J23 b AUX SELECTION	50-pin D-type female	Internal connection to Aux panel RPA.

Note: Detailed information regarding the connector and socket assignment can be found in the section "Pin Assignments".

4.3.1.4   IPC Connectors

Item No.:	Socket / Connector Description	Socket type Connector type	Function
15			Connection for an external fresh air supply, diameter 50 mm
16	J1 USB 1	USB	Down stream port Connection for external PC devices e.g. keyboard, mouse, CD ROM ...
17	J2 USB 2	USB	Down stream port Connection for external PC devices e.g. keyboard, mouse, CD ROM ...
18	J3 VGA	15-pin D-type female	CRT-connector
19	J4 COM 2	9-pin D-type female	Serial RS232 interface to the internal Pentium PC.
20	J5 USB 3	USB	Down stream port Connection for external PC devices e.g. keyboard, mouse, CD ROM ...
21	J6 USB 4	USB	Down stream port Connection for external PC devices e.g. keyboard, mouse, CD ROM ...
22	J10 IPC LAN	BNC / 50-ohms	Cheapernet LAN connector for connection to mainframe and panel controller or further LAN devices. For further information see the section "LAN Specifications". Note: For interconnection the signals a BNC T-type connector is included.

Using the USB mouse:

The following USB mice have been tested and released for being used with the RPS35-2S panel:

- USB mouse no. 1801.1062 from Roline (included in the delivery)
  It can be ordered from the THOMSON multimedia in Weiterstadt/Germany under the order no. 003 119 100 322.
- Logitech, Model M-BA 47
  It can be purchased on the special market.

Note: ***The RPS35-2S panel enables to connect an external USB floppy disk drive. Usable USB floppy disk drive types refer to the chapter 2.18 "Floppy Disk Drives" in the operating instructions.***

4.3.2   RPS35-2 / RPS35-3 AND RPS35-4/32 CONTROL PANELS

Connection Panel 1,   RC 2375 Power Supply for Control Panels RPS35-2 and RPS35-3
RC 2810 Power Supply for Control Panel RPS35-4/32

Caution: See installation manual before connecting to the supply.

Attention: Lisez le manuel avant l'installation d'alimentation.

Vorsicht: Vor Anschluß an das Netz Installationsanleitung beachten.

Caution: This unit has two power cords. To prevent electric shock disconnect both power cords before servicing.

Attention: Cet appareil comporte deux cordons d'alimentation. Rafin de prevenir les choc électriques, débrancher les deux cordons d'alimentation avant de faire le depannage.

Vorsicht: Dieses Gerät hat zwei Netzkabel. Vor Servicearbeiten beide Netzkabel entfernen. Gefahr des elektrischen Schlags.

Caution: Do not remove any cover. Risk of electrical shock. High current level. No user serviceable parts inside. Refer servicing to qualified service personnel. Available energy >240VA.

Attention: Ne pas enlever cette plaque. Tension dangereuse. Prière de s'adressera au personnal qualifié. Alimentation >240VA.

Achtung: Abdeckung nicht entfernen. Gefährliche Spannungen. Hohe Stromstärken. Öffnen nur durch ausgebildetes Servicepersonal. Verfügbare Energie >240VA.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

AC Power in 1

100-240V; 2,5Amax; 50/60Hz   J11

Auxiliary DC out

12V 2A   +   J12

PE

DC Power out

WIPE PANEL   AUX PANEL

J13   J14

AC Power in 2

100-240V; 2,5Amax; 50/60Hz   J15

RPS35-4: 3.5A max

RPS35-4: 3.5A max

1   2   3   4   5   6

Connection Panel 2, RC 2374 Controller

LAN

J17   J18   Ω

RS 485 / RS 422

Port 1   J19 a
Port 2   J19 b

Port 3   J20 a
Port 4   J20 b

RS 232

Port 5   J21 a
Port 6   J21 b

Interface

GPI/GPO   J22 a
Modem   J22 b

Control panel

Aux selection   J23 a
Wipe selection   J23 b

Part of delivery:

50 Ω Terminator

BNC T-type connector

7   8   9   10   11   12   13   14

Connection Panel 3, RC 2371 PC

Panel link output
J1

COM 2
J2

PS/2 Mouse
J3

15
16
17
18
19
20

IPC-LAN   24
J10

Keyboard   **LAN**   **VGA**   **COM 1**
J5   J6   J7   J8

SCSI
J9

21
22
23

Using the PS/2 mouse.
The following PS/2 mice have been tested and released for being used with the RPD35-2/-3 panels:
• PS/2 mouse no. 18.01.1060 from Roline (included in the delivery)
• PS/2 mouse no. 18.01.1026 from Microsoft

Note:
The RPD35-2/-3 panels are provided with a 3.5" floppy disk drive. Suitable 3.5" disk types and adapters, see chapter 2.18 "Floppy Disk Drives" in the operating instructions.
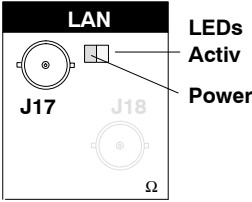
Note:
In compliance with the EMC regulations, the housing of the RPS35-4/32 panel must be connected with functional earth!

Part of delivery:

50 Ω Terminator

BNC T-type connector

4.3.2.1 Power Supply Connectors

Item No:	Socket / Connector Description	Socket type Connector type	Function
1	AC Power in 1	IEC-320, CEE-22	Convenience outlet for power supply to the control panel. RPS35-4 (3.5A max) RPS35-3/2 (2.5A max)
2	J12 Auxiliary DC out	Molex MiniFit junior 2 pin	DC 12V / 2A max for power connector Aux-panel.
3	PE		Earth terminal ***Note:*** ***In compliance with the EMC regulations, the housing of the RPS35-4/32 panel must be connected with functional earth!***
4	J13 DC POWER OUT WIPE PANEL	3-pin D-type female	DC output (+5V) for Wipe panel. Internal connection with cable set RC 2144 (RC 2214 option).
5	J14 DC POWER OUT AUX PANEL	3-pin D-type female	DC output (+5V) for Aux panel. Internal connection with cable set RC 2144 (RC 2214 option).
6	AC Power in 2	IEC-320, CEE-22	Convenience outlet for redundant power supply (option) to the control panel. RPS35-4 (3.5A max) RPS35-3/2 (2.5A max)

4.3.2.2 Controller Connectors

Item No:	Socket / Connector Description	Socket type Connector type	Function
7	J17 LAN LAN LEDs Activ Power J17 J18 Ω	BNC / 50-ohms	Alternately to J18 Cheapernet LAN connector for connection to panel PC and mainframe controller or further LAN devices. For further information see the section "LAN Specifications". ***Note:*** ***For interconnection the signals a BNC T-type connector is included.***
8	J18 LAN	BNC / 50-ohms	Cheapernet LAN connector for connection to panel PC and mainframe controller or further LAN devices. For further information see the section "LAN Specifications". ***Note:*** ***For interconnection the signals a BNC T-type connector is included.***
9	J19 a, J19 b, J20 a, J20 b RS422 SERIAL PORT 1 ... 4	9-pin D-type female	RS422/RS485 interface for connecting an external devices. The software control automatically switches over the interface to master or slave (bus control/tributary), depending on which unit driver has been selected in the menu.
10	J21 a, J21 b RS232 PORT 1 ... 2	9-pin D-type female	RS232 interface for connecting a diagnosis computer or other external devices.
11	J22 a GPI/GPO	25-pin D-type female	General-purpose interface connector with 6 optically-isolated (physically separated) input channels and 6 output channels.
12	J22 b MODEM	25-pin D-type female	Modem interface for future use.
13	J23 a WIPE SELECTION	50-pin D-type female	Internal connection to Wipe panel RPW. Cable set
14	J23 b AUX SELECTION	50-pin D-type female	Internal connection to Aux panel RPA.

4.3.2.3 PC Connectors

Item No.:	Socket / Connector Description	Socket type Connector type	Function
15	J3 PS2 Mouse	5-pin Mini DIN round connector female	Possibility to connect a PS2 Mouse to the internal Pentium PC.
16	J2 COM 2	9-pin subminiature D-connector male	Serial RS232 interface for internal connection to the touchscreen display.
17	J1 Panel Link Output	26-pin Mini Ribbon D-type female	Serial data from COM 1, panel link data from TFT display. DC 12V power connector
18	USB	USB	Connector for external PC devices e.g. USB modem for remote service.
19	J5 KEYBOARD	5-pin round connector female	Possibility to connect a PC keyboard for the internal Pentium PC.
20	J6 LAN	8-pin RJ 45 female	Ethernet connector with twisted transmitter and receiver pairs.
21	J8 COM1	9-pin subminiature D-connector male	Serial RS232 interface to the internal Pentium PC.
22	J7 VGA	15-pin D-type female	CRT-connector
23	J9 SCSI	68-pin high density female	Wide ultra SCSI interface-connector.
24	J10 IPC LAN	BNC / 50-ohms	Cheapernet LAN connector for connection to mainframe and panel controller or further LAN devices. For further information see the section "LAN Specifications". **Note: For interconnection the signals a BNC T-type connector is included.**

Note: Detailed information regarding the connector and socket assignment can be found in the section "Pin Assignments".
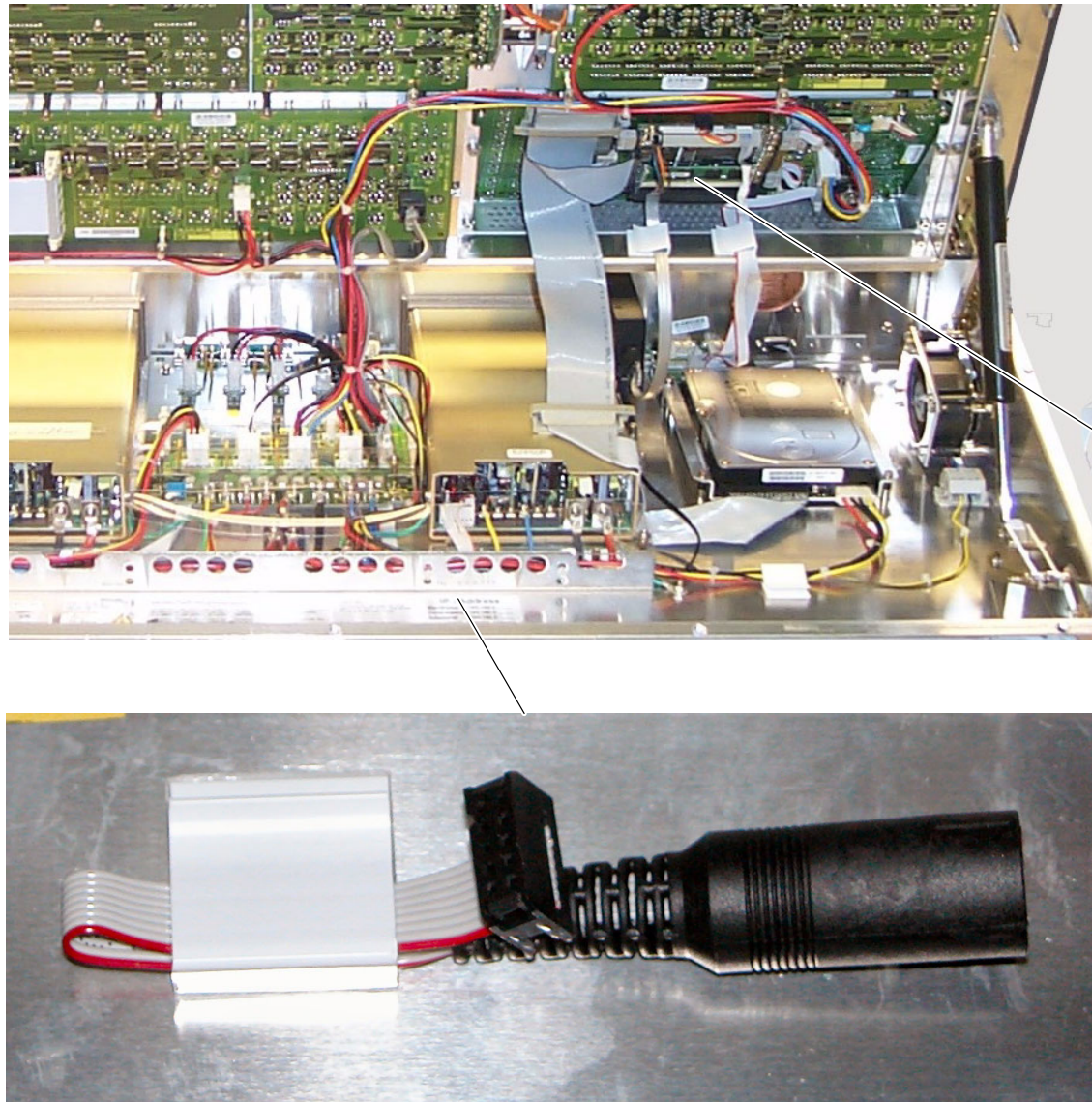
Using the PS/2 mouse:

The following PS/2 mice have been tested and released for being used with the RPS35‑2/‑3 and ‑4/32 panels:

- PS/2 mouse no. 18.01.1060 from Roline (included in the delivery)
  It can be ordered from the Technical Support in Weiterstadt/Germany under the order no. 003119100.
- PS/2 mouse no. 18.01.1026 from Microsoft
  It can be purchased on the special market.

4.3.2.4   Wipe Panel Connectors
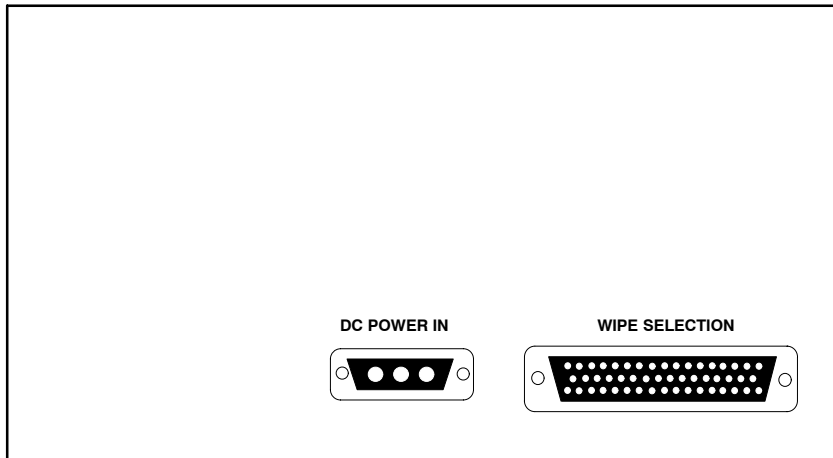
DC POWER IN   **WIPE SELECTION**

Item No:	Socket / Connector Description	Socket type Connector type	Function
1	DC POWER IN	3-pin D-type female	DC output (+5V) for Wipe side panel. Connected with DC POWER OUT on the Main panel.
2	WIPE SELECTION	37-pin D-type female	Internal connection to Main panel.

Note: Detailed information regarding the panel-internal connection can be found in the following diagram.

4.3.2.5   Display Panel Connector RPV35-4TS for (RPS35-4/32 HL, RPS35-3 and RPS35-2)

Panel Link Input

Touch screen control
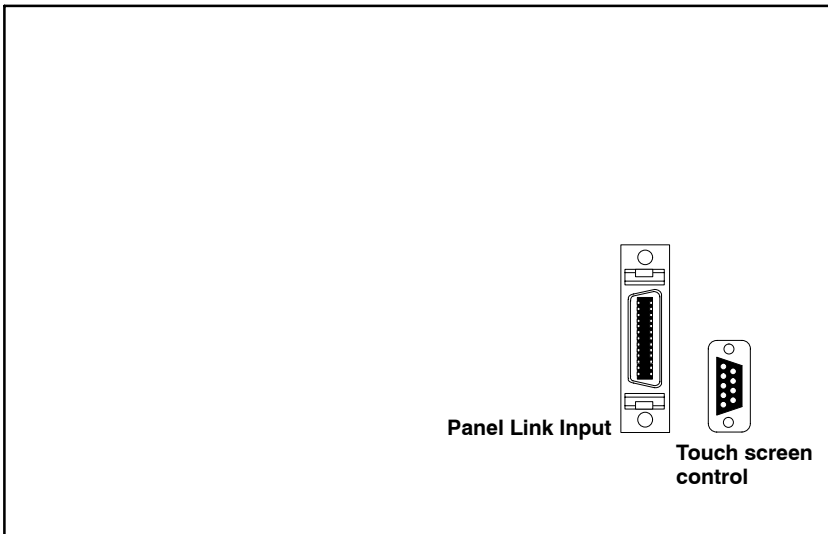
Item No:	Socket / Connector Description	Socket type Connector type	Function
1	Panel Link Input	26-pin D-type female	Serial data from COM1, panel link data for TFT-Display. DC 12V power connector.
2	Touch screen control	9-pin D-type female	Serial data from touch screen controller

Note: Detailed information regarding the panel-internal connection can be found in the following diagram.

4.3.2.6   Aux Panel Connectors
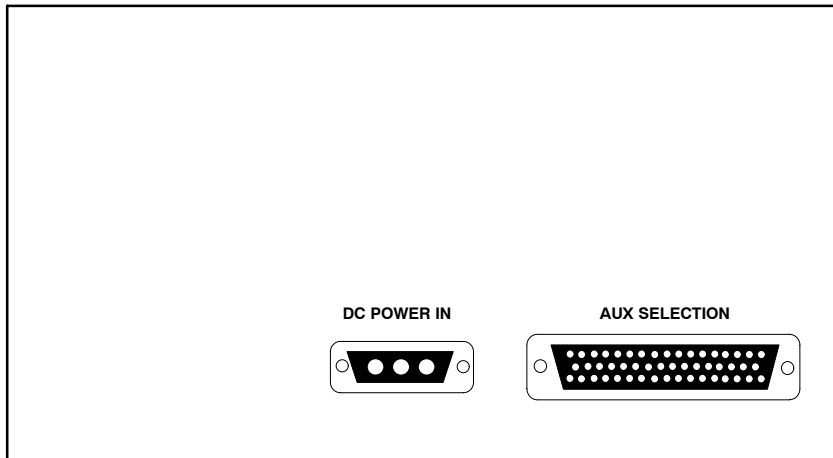
Item No:	Socket / Connector Description	Socket type Connector type	Function
1	DC POWER IN	3-pin D-type female	DC input (+5V) for Aux panel. Connected with DC POWER OUT on the Main panel.
2	AUX SELECTION	37-pin D-type female	Internal connection to Main panel.

Note: Detailed information regarding the panel-internal connection can be found in the following diagram.

XtenDD

4.4 PANEL INTER-UNIT CABLING

4.4.1 PANEL SET RPS35-2

Display Panel Connector

PANEL LINK INPUT

TOUCH SCREEN CONTROL

* Panel link cables for
standard version display:
Cable RC 2146 1m, order no. 0 351 744 800
Cable RC 2216 5m, order no. 0 351 747 200

Touch screen control cables:
Cable 1.8m, order no. 5 136 391 008
Cable 6.0m, order no. 3 119 100 304

* Panel link cable for stand-alone display:
- with rigid stand, cable RC 2271 0.3m,
order no. 0 351 752 700
- with tiltable stand, cable RC 2216 5m,
order no. 0 351 0 351 747 200

* Note:
The panel link cable has to be mounted with
angle brackets, see the section 4.3.2
mounting the panel link cable.

Control Panel Connectors

Panel link output J1   COM 2 PS/2 Mouse J2 J3

IPC-LAN J10

Keyboard J5   LAN J6   VGA J7   COM 1 J8

SCSI J9

Caution: See installation manual before connecting to the supply.

AC Power in 1

Auxiliary DC out   12V 2A   J12

PE

DC Power out   WIPE PANEL J13   AUX PANEL J14

AC Power in 2

100-240V; 2,5Amax; 50/60Hz J11

100-240V; 2,5Amax; 50/60Hz J15

Since hardware index 14 of panel controller
a RJ45 connector is equiped

LAN J17   J18

RS 422 / RS 485   Port 1 J19 a   Port 2 J19 b   Port 3J20 a   Port 4J20 b

RS 232   Port 5J21 a   Port 6J21 b

Interface   GPI/GPO J22 a   Modem J22 b

Control panel   Aux selection J23 a   Wipe selection J23 b

BNC cabling

XtenDD network alternative

BNC T-type connector

BNC T-type connector

50 Ω Terminator

RS-422 Cable (Option)

Cat 5 cabling (RJ45)

Mini Switch part of delivery

PC Keyboard

PS2 Mouse

Not part of delivery

4.4.2   PANEL SET RPS35-3 / RPS35-4/32

Display Panel Connector

Wipe Panel Connectors

AUX Panel Connectors

PANEL LINK INPUT

TOUCH SCREEN
CONTROL

DC POWER IN   WIPE SELECTION

DC POWER IN   AUX SELECTION

Cable set RC 2144 (1.2m)
Cable set RC 2214 (2.5m)

* Panel link cable RC 2146 1m,
order no. 3 119 100 313

Touch screen control cables:
Cable 1.8m, order no. 5 136 391 008
Cable 6.0m, order no. 3 119 100 304

Cable set RC 2144 (1.2m)
Cable set RC 2214 (2.5m)

**Control Panel
Connectors**

Since hardware index 14 of panel controller
a RJ45 connector is equiped

Panel link output   COM 2 PS/2 Mouse
J1   J2   J3

IPC-LAN
J10

Keyboard LAN VGA COM 1
J5   J6   J7   J8

SCSI
J9

AC Power in 1

Auxiliary DC out
12V   2A
J12

DC Power out
WIPE PANEL AUX PANEL
J13   J14

AC Power in 2
100-240V; 2,5Amax;
50/60Hz   J15

LAN
J17 J18

RS 422 / RS 485
Port 1 J19 a Port 3 J20 a
Port 2 J19 b Port 4 J20 b

RS 232
Port 5 J21 a
Port 6 J21 b

Interface
GPI/GPO J22 a
Modem   J22 b

Control panel
Aux selection J23 a
Wipe selection J23 b

100-240V; 2,5Amax;
50/60Hz   J11

BNC cabling

XtenDD network
alternative

Cat 5 cabling (RJ45)

BNC T-type
connector

BNC T-type
connector

50 Ω Terminator

Mini Switch
part of delivery

PC Keyboard

PS2 Mouse

Not part of delivery

*   Note:
The panel link cable has to be mounted with angle
brackets, see the section 4.3.2 mounting the panel link
cable.

4.4.3   NEW IPC WITH MODIFIED CONNECTION UNIT

With the control panel serial numbers listed below, the connection unit of the side panel PC (IPC) will be modified:

- Control Panel RPS35-2   Serial No xxx and higher

- Control Panel RPS35-3   Serial No xxx and higher

- Control Panel RPS35-4/32   Serial No xxx and higher

USB Interface

Keyboard   LAN   VGA   Com 1
J 5   J 6   J 7   J 8

PanelLink output
J 1

Connector for Keyboard and Mouse. Please use the delivered Adapter (figure below) to connect two both devices.

COM1 Serial Interface connected with Display Panel.
Note:
The sidepanel software DS 0203 has to be installed to COM2!

LAN Interface RJ45 with two LEDs:
Yellow: LAN Link
Green: Power

Panel Link Output connected with Display Panel.

Display Level Adjust for Jitter Elimination.

VGA Output for external Monitor.

Cable adapter for Mouse and Keyboard connection.

4.4.4 MOUNTING THE PANEL LINK CABLE

Angle bracket for
Panel Link Output J1

Angle bracket for
Panel Link Input
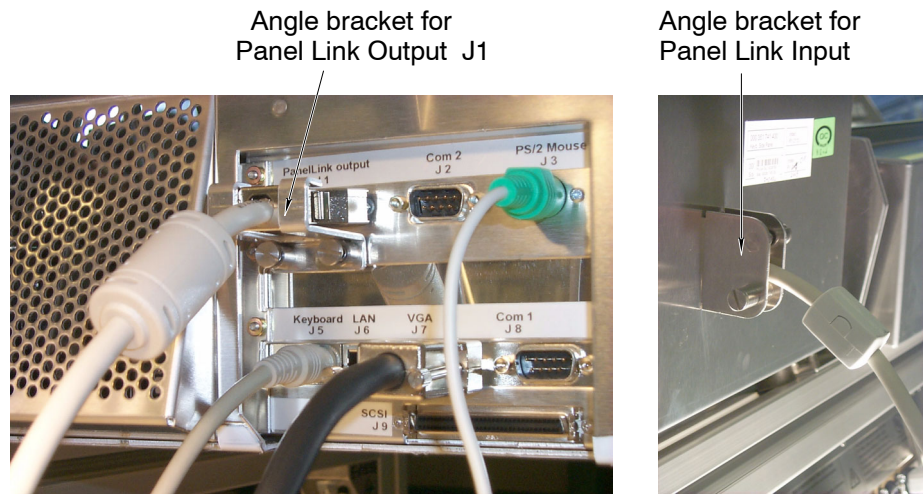
For stabilizing the plug connections of the panel link cable, the connectors have to be fixed by corresponding angle brackets. The angle brackets are supplied together with the panel link cable and have to be mounted and screwed as shown above.

4.5   MAINFRAME CONNECTORS

4.5.1   OVERVIEW

The Basic Mainframes are equipped with the following modules:

Board/Module	Basic Mainframe		
	XMD-2-BM	XMD-3-BM	XMD-4-BM
RC 3304 Fan Unit	●	●	●
RY 3470 Power Supply Unit	●	●	●
RY 3156 Controller*	●	●	●
RY 3081 Genlock*	●	●	●
RY 3441 Input Processor	●	●	●
RY 3410 M/E Processor	●●	●●●	●●●●
RC 3407 LAN Interface BNC	●	●	●
RC 3420 Serial Input 1	●	●	●
RC 3421 Serial Input 2	Option Input 19-36	Option Input 19-36	Option Input 19-36
RC 3422 Serial Input 3	Option Input 37-54	Option Input 37-54	Option Input 37-54
RC 3423 Serial Input 4	Option Input 55-72	Option Input 55-72	Option Input 55-72
RC 3424 Serial Input 5	Option Input 73-90	Option Input 73-90	Option Input 73-90
RC 3450 Serial Output 1	●	●	●
RC 3451 Serial Output 2	Option Aux 11-20	●	●
RC 3452 Serial Output 3	Option Aux 21-38	Option Aux 21-38	Option Aux 21-38
RC 3455 Control Module	●	●	●
RY 3430 Aux Processor (with up to 7 Aux Modules)	Option	Option	Option
RY 3435 Aux Module (each 5Aux)	Option	Option	Option
RY 3460 FX Processor	Option	Option	Option
RY 3465 RAM Recorder	Option	Option	Option

* Note:
From mainframe serial number #1126 slot 8/9 is equipped with the new Controller
RY 3490. This controller contains the functionality of the Genlock board RY 3081
and Controller board RY 3156.
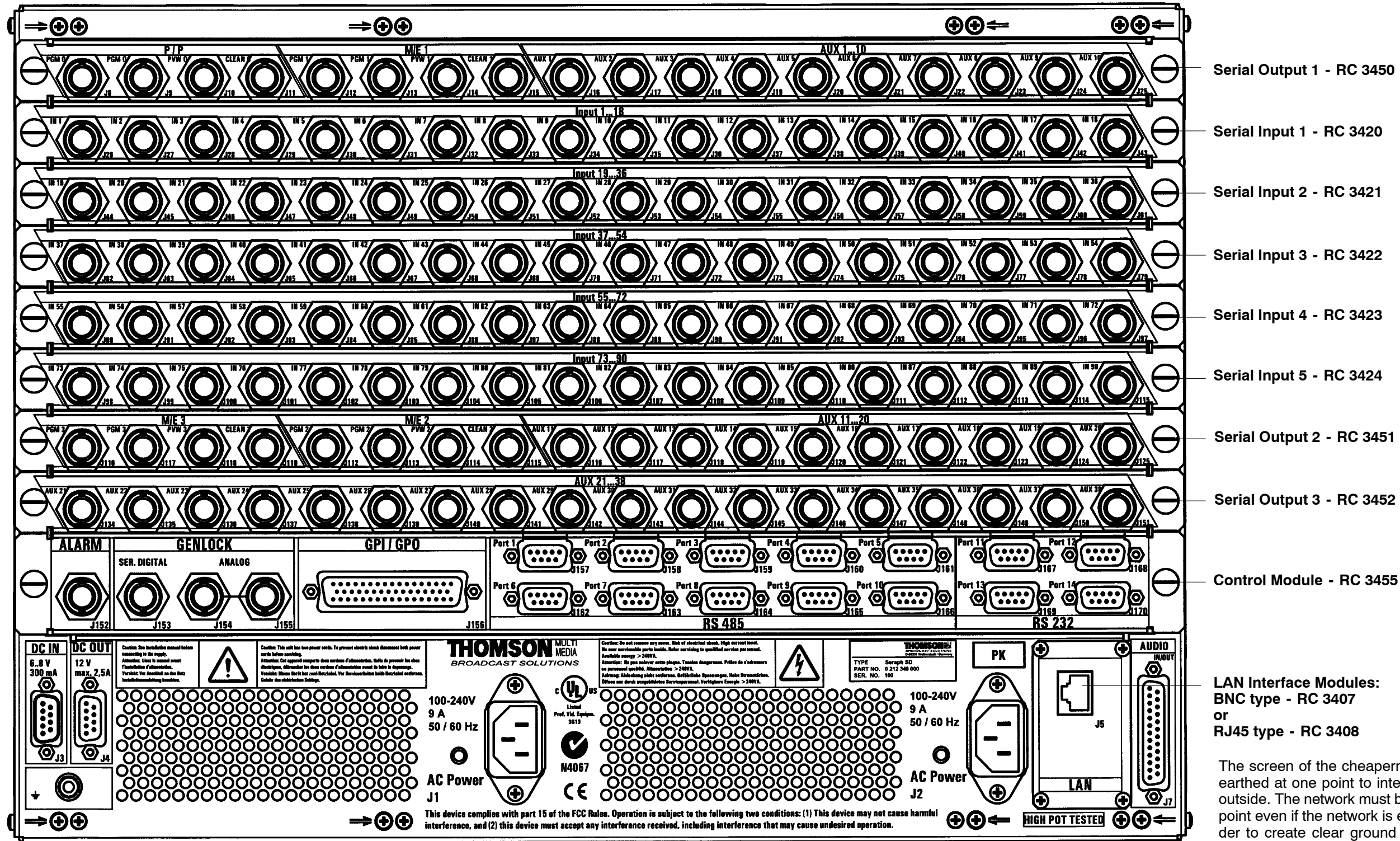
Serial Output 1 - RC 3450

Serial Input 1 - RC 3420

Serial Input 2 - RC 3421

Serial Input 3 - RC 3422

Serial Input 4 - RC 3423

Serial Input 5 - RC 3424

Serial Output 2 - RC 3451

Serial Output 3 - RC 3452

Control Module - RC 3455

LAN Interface Modules:
BNC type - RC 3407
or
RJ45 type - RC 3408

The screen of the cheapernet network has to be earthed at one point to intercept influences from outside. The network must be earthed only at **one** point even if the network is extended further in order to create clear ground potential. Earthing is made always at the mainframe. Instead of an usual 50Ω BNC terminator, a terminator with earth screw is enclosed. The terminator has to be connected with the enclosed earth wire to the grunding terminal of the mainframe.

Parts of delivery:

50 Ω Terminator
with Ground Screw
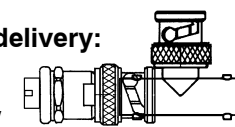
BNC T-type connector

4.5.2   CONNECTOR DESCRIPTIONS

4.5.2.1   AC Power, Grounding

Item No.:	Socket / Connector Designation	Socket type Connector type	Description
1	PE	M4 threaded pins	Terminal screw for additional unit earthing
2 3	AC POWER IN 1 + 2	IEC-320, CEE-22	Convenience outlet for power supply to the mainframe. Left Socket: Redundant power supply (optional) Right Socket: Standard power supply In order to prevent power disturbances, with option redundant power supply the mains cords should be connected to separate electricity supply. *Caution!* *Double-pole or neutral fusing.* *After operation of the protective device, parts of the equipment that remain under voltage might represent a hazard during servicing.*

4.5.2.2   Video Inputs
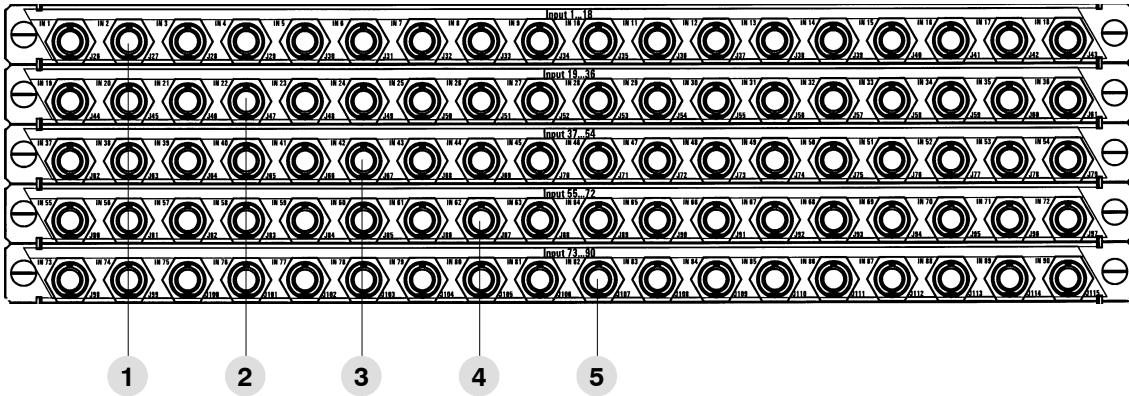
Item No.:	Socket / Connector Designation	Socket type Connector type	Description
1	Input 1 ... 18	BNC / Serial Comp ITU-R 656	Maximum of 90 switcher main inputs .
2	Input 19 ... 36		In the basic version, the upper module (Inputs 1 ... 18) is equipped. All other slots are covered with blind panels.
3	Input 37 ... 54		
4	Input 55 ... 72		
5	Input 73 ... 90		

Note: ***For cabling only 75-ohm connectors should be used, its mechanical characteristics must reliably interface with the nominal 50-ohm BNC type defined by IEC 60169-8.***

4.5.2.3   Video Outputs

Item No.:	Socket / Connector Designation	Socket type Connector type	Description

1	P/P PGM 0
	        PGM 0
	        PVW 0
	        CLEAN 0
	M/E1 PGM 1
	        PGM 1
	        PVW 1
	        CLEAN 1
	AUX 1 ... 10
		BNC / Serial Comp ITU-R 656	Output Module 1
			
			Outputs for M/E1 and P/P stage.
			
			10 additional switcher outputs via which external and internal video signals can be supplied.
			
			Output examples:
			AUX PVW, DVE feeds

2	M/E2 PGM 2
	        PGM 2
	        PVW 2/
	        CLEAN 2
	M/E3 PGM 3
	        PGM 3
	        PVW 3
	        CLEAN 3
	AUX 11 ... 20
		BNC / Serial Comp ITU-R 656	Output Module 2
			
			Outputs for M/E2 and M/E3 stage.
			
			10 additional switcher outputs via which external and internal video signals can be supplied.
			
			Output examples:
			AUX PVW, DVE feeds

2	AUX 21 ... 38	BNC / Serial Comp ITU-R 656	Output Module 3 (in preparation) 18 additional switcher outputs via which external and internal video signals can be supplied. Output examples: AUX PVW, DVE feeds

4.5.2.4   Control Connectors
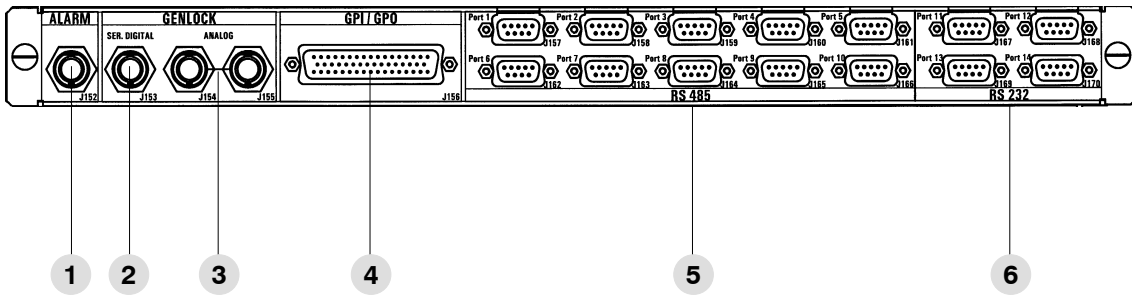
Item No.:	Socket / Connector Designation	Socket type Connector type	Description
1	J 152 ALARM	BNC / 75 ohms	Alarm connector. Specification SMPTE 269M Pin assignment: Center +ALARM Shield -ALARM For details refer to section 4.7 below.
2	J153 GENLOCK SERIAL DIGITAL	BNC / Serial Comp SMPTE 292 ITU-R 656	SD serial composes reference video input signal
3	J154/J155 GENLOCK ANALOG	BNC / 75 ohms Loop through	Loop through sync input for analog Blackburst signal.
4	J156 GPI/GPO	50-pin D-type female	General-purpose interface connector with 8 input channels and 8 output channels.
5	J157 ... J166 PORT 1 ... 10	9-pin D-type female	RS485 serial ports for environmental devices such as DVEs, Editors, Routers and for Machine Control (Disks, VTR).
6	J167 ... J170 PORT 11 ... 14	9-pin D-type female	RS-232 interfaces for connecting a diagnosis computer.

4.5.2.5 LAN Interface, Audio Interface

Parts of delivery:

50 Ω
Terminator

BNC T-type connector
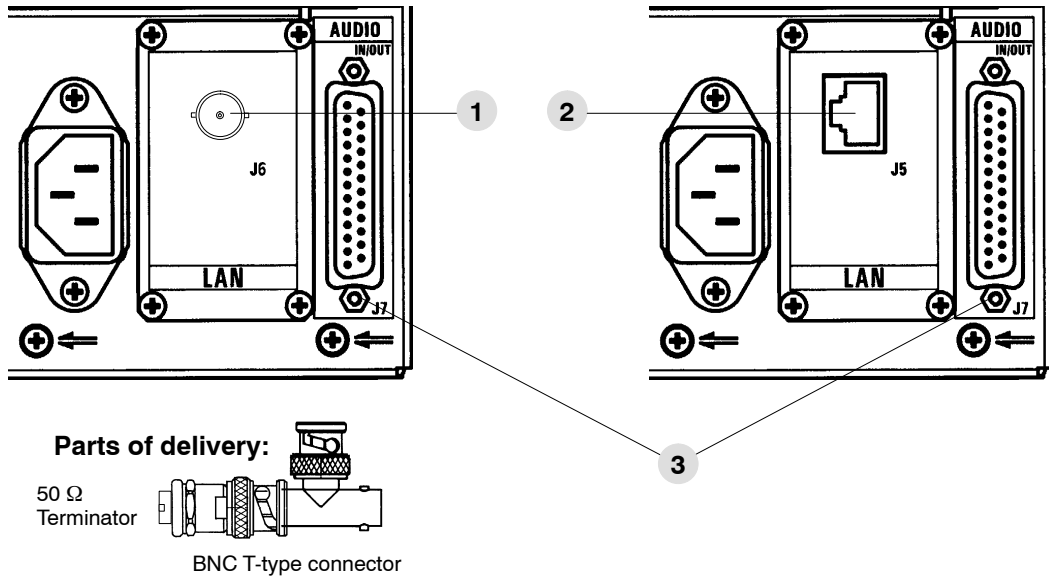
Item No.:	Socket / Connector Designation	Socket type Connector type	Description
1	J 6 LAN	BNC / 75 ohms	Cheapernet connector for connection to control panel and panel PC or further LAN devices. For further information see the section "Cheapernet Specifications". *Note: For interconnection the signals a BNC-T-plug is included.*
2	J 5 LAN	RJ45 connector	Twisted pair LAN Interface (in preparation)
2	J 7 AUDIO IN/OUT	25-pin D-type female	For future use.

Note:
The screen of the cheapernet network has to be earthed at one point to intercept influences from outside. The network must be earthed only at one point even if the network is extended further in order to create clear ground potential. Earthing is made always at the mainframe. Instead of an usual 50Ω BNC terminator, a terminator with earth screw is enclosed. The terminator has to be connected with the enclosed earth wire to the PE terminal of the mainframe.

4.5.2.6   DC In /DC Out
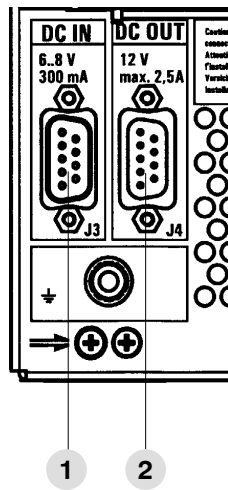
Item No.:	Socket / Connector Designation	Socket type Connector type	Description
1	J 3 DC IN 6...8V / 300mA	9-pin D-type female	External supply to back up the internal stores if power failed.
2	J 3 DC OUT max 2.5A	9-pin D-type male	For future use

4.6   PIN ASSIGNMENTS
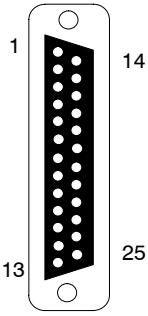
Panel link output	Pin	Signal
26-pin D-type female	1	not used
	2	not used
	3	T x 0 (+) TFT display data serial
	4	T x 0 (-)
	5	T x 1 (+)
	6	T x 1 (-)
	7	T x 2 (+)
	8	T x 2 (-)
	9	T x C (+) TFT display data clock
	10	T x C (-)
	11	Signal Ground
	12	Signal Ground
	13	+12V DC
	14	+12V DC
	15	+12V DC
	16	+12V DC
	17	not used
	18	not used
	19	Signal Ground
	20	Signal Ground
	21	Signal Ground
	22	Receive Data COM1
	23	not used
	24	Transmit Data COM1
	25	not used
	26	not used
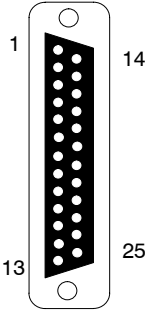
Com 2 Touch Screen control	Pin	Signal
9-pin subminiature D-connector male	1	CD Carrier Detect
	2	RxD Receive Data
	3	TxD Transmit Data
	4	DTR Data Terminal Ready
	5	GND Ground
	6	DSR Data Set Ready
	7	RTS Request to Send
	8	CTS Clear to Send
	9	RI Ring Indicator

PORT RS-232	**Pin**	**Signal**
 1 ○ □ 6 5 ○ 9 9-pin D-type female	1 2 3 4 5 6 7 8 9	Chassis Ground Transmit Data Receive Data not used Signal Ground not used Clear to Send Request to Send not used

A standard RS232 cable 1:1 is required for connection to a PC.
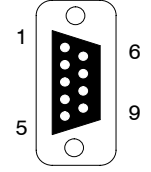
PORT RS-422/485	**Pin**	**Signal** Bus Contr Tributary
 1 ○ □ 6 5 ○ 9 9-pin D-type female	1 2 3 4 5 6 7 8 9	Chassis Ground RxA (-) TxA (-) TxB (+) RxB (+) Signal Ground not used Signal Ground RxB (+) TxB (+) TxA (-) RxA (-) Chassis Ground

AUDIO IN/OUT	Pin	Signal
25-pin D-type male	1	Signal Ground
	2	Audio In 1 (-)
	3	Audio In 2 (+)
	4	Signal Ground
	5	Audio In 3 (-)
	6	Audio In 4 (+)
	7	Signal Ground
	8	Audio Out 1 (-)
	9	Audio Out 2 (+)
	10	Signal Ground
	11	Audio Out 3 (-)
	12	Audio Out 4 (+)
	13	Signal Ground
	14	Audio In 1 (+)
	15	Signal Ground
	16	Audio In 2 (-)
	17	Audio In 3 (+)
	18	Signal Ground
	19	Audio In 4 (-)
	20	Audio Out 1 (+)
	21	Signal Ground
	22	Audio Out 2 (-)
	23	Audio Out 3 (+)
	24	Signal Ground
	25	Audio Out 4 (-)

GPI/GPO Panel	Pin	Signal
25-pin D-type female	1	GPI In 6+
	2	GPI In 5+
	3	GPI In 4+
	4	GPI In 3+
	5	GPI In 2+
	6	GPI In 1+
	7	GPI Out 6
	8	GPI Out 5
	9	GPI Out 4
	10	GPI Out 3
	11	GPI Out 2
	12	GPI Out 1
	13	Chassis Ground
	14	GPI In 6-
	15	GPI In 5-
	16	GPI In 4-
	17	GPI In 3-
	18	GPI In 2-
	19	GPI In 1-
	20	GPI Out 6~
	21	GPI Out 5~
	22	GPI Out 4~
	23	GPI Out 3~
	24	GPI Out 2~
	25	GPI Out 1~

For details refer to the mainframe connector on the next page.

DC IN 6..8V 300mA	Pin	Signal
9-pin D-type female	1	Chassis Ground
	2	Ext. Reserved 1
	3	Ext. Reserved 2
	4	DC_ Ground
	5	DC_IN
	6	DC_Ground
	7	Ext. Reserved 3
	8	Ext.Reserved 4
	9	Chassis Ground

DC OUT 12V max 2.5A	Pin	Signal
9-pin D-type male	1 2 3 4 5 6 7 8 9	Chassis Ground 12V_GND 12V_GND 12V_GND 12V_GND 12V 12V 12V 12V

GPI / GPO Mainframe	Pin	Signal
	1	Chassis Ground
	2	GPI Out 2
	3	GPI Out 3~
	4	Chassis Ground
	5	GPI Out 6
	6	GPI Out 7~
	7	Chassis Ground
	8	GPI In 1 -
	9	GPI In 3 +
	10	GPI In 4 -
	11	GPI In 5 -
	12	GPI In 7 +
	13	GPI In 8 -
	14 - 17	not used
	18	GPI Out 1~
	19	GPI Out 3
	20	GPI Out 4~
50-pin D-type female	21	GPI Out 5~
	22	GPI Out 7
	23	GPI Out 8~
	24	GPI In 1 +
	25	GPI In 2 -
	26	GPI In 4 +
	27	GPI In 5 +
	28	GPI In 6 -
	29	GPI In 8 +
	30 - 33	not used
	34	GPI Out 1
	35	GPI Out 2~
	36	GPI Out 4
	37	GPI Out 5
	38	GPI Out 6~
	39	GPI Out 8
	40	Chassis Ground
	41	GPI In 2 +
	42	GPI In 3 -
	43	Chassis Ground
	44	GPI In 6 +
	45	GPI In 7 -
	46	Chassis Ground
	47 - 50	not used

For the outputs opto-isolated solid-state relays are used. The two pins are depicted as "**GPI Out x**" and "**GPI Out x** ~" respectively. The maximum current is: 0.3 A. For the Inputs opto-isolators with anti-parallel LEDs are used. The two pins are depicted as "**GPI In x +** " and " **GPI In x -**". Plus and minus show the recommended polarity. The inputs have an internal resistor of 1.0 kOhm. The maximum current is: 40 mA.

4.7   ALARM SPECIFICATIONS

Specification according to SMPTE 269M:

The standard describes a simple interface over which television equipment can be report the occurrence of internal failures and faults in incoming signals. It is intended for use in all television equipment, from the simple active devices to the most complex.

Electrical characteristics:

Optoisolated output
Maximum voltage: 24V
Maximum output current: 150 mA max.
                              However, according to SMPTE 269M proposal
                              the sensing device shall not supply more than
                              20 mA of current to the reporting device
                              (i.e. the switcher).

Output Interface (simplified):
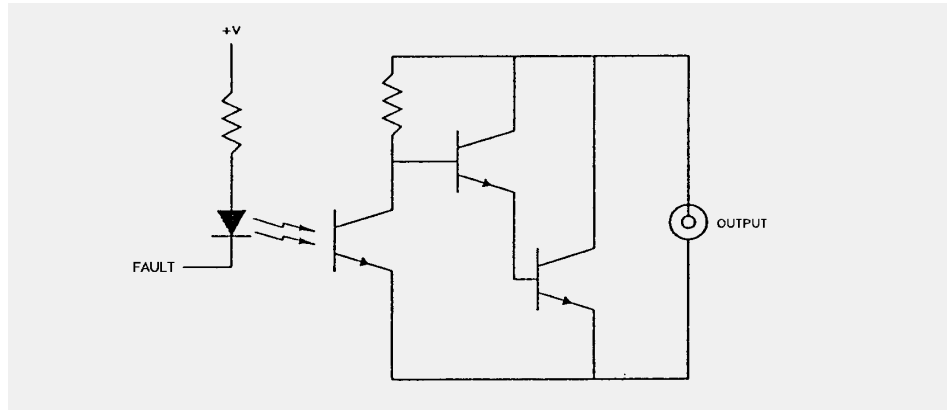
External reporting scheme (Example):
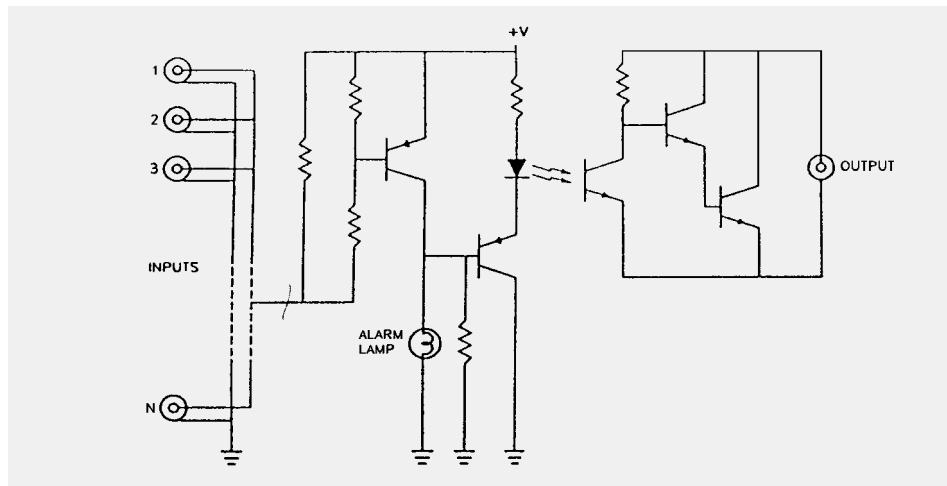
EBox Fault Messages: - EBox Power off
                                - RSE / Host controller booting
                                - Controller battery error (low batt)
                                - Fan error
                                - DC power error

4.8   LAN SPECIFICATIONS

For operation of the **Xten DD** production Switcher, multiple mainframes and panels designed for different applications can be connected and operated via a Local Area Network (LAN).

Caution: ***The switchers are real-time devices. Other devices connected to the same LAN cabling will cause degradation in communications and reduce the reliability of the Switcher.***

Caution: ***For the system to operate, the LAN cable MUST be 50 ohms and the cable MUST be terminated with a 50 ohm termination on EACH end.***

4.8.1   CHEAPERNET CHARACTERISTICS

The applied LAN (Cheapernet) connection features the following characteristics:

Cheapernet
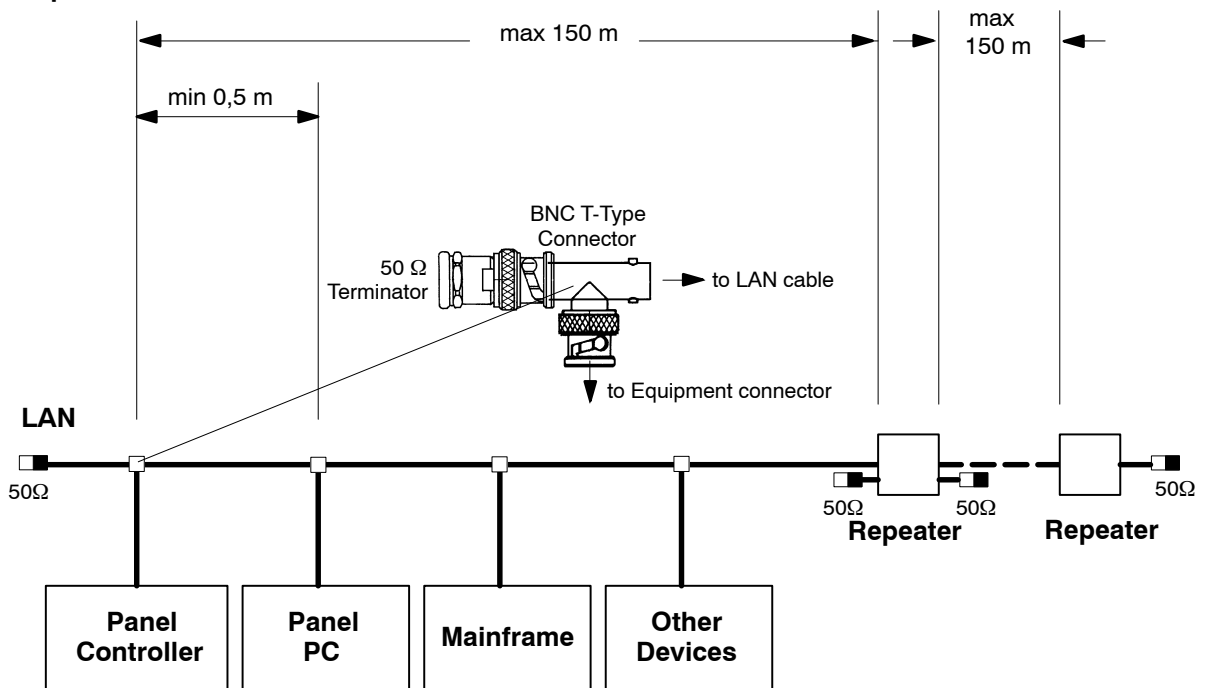
- Cheapernet connection cable Kv 770 (50-ohms coax)

- Maximum length per segment = 150 m,

- Minimum length per segment = 0.5 m

- Longer distances are possible with a repeater, i.e. each repeater provides a further segment with an extension of up to 150 m

- 10 units per segment at maximum.

- End units **must** be terminated with a 50-ohms terminating plug.

Interconnection cables

HF coax cable, length	Part number
1 m	0 782 740 100
2 m	0 782 740 600
5 m	0 782 740 300
10 m	0 782 740 200
20 m	0 782 740 400
30 m	0 782 740 700
80 m	0 782 740 500
Terminator 50 ohms	3 130 602 005
T-type connector 50 ohms	3 130 602 063

4.8.2 NETWORK CONFIGURATION

Mainframe, main panel and panel PC are network devices using TCP-IP protocol. The devices are shipped with default cheapernet IP addresses; however, as more resources are attached to the network, addresses must be changed.

Default address ranges for the XtenDD devices:

IP Address (class C network)   **192.168.0.1**

                                 up to

                                 192.168.14.255

Attention:

The IP addresses of the individual devices working on the network must be different. For mainframe and control panel, the setting can be undertaken directly on the controller board. The lowest address byte can be set in the range from 1 to 254 with a Hex switch (0 and 255 are not allowed).
Control panel controller and sidepanel PC needs one address only. The mainframe is using the selected address and the following two.

The IP address of the panel PC can be set with the Windows 95 tool "System Control/Network" directly.
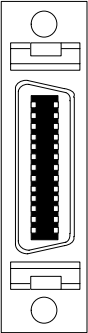
4.8.3 NETWORK EARTHING

The screen of the cheapernet network has to be earthed at one point to intercept influences from outside. The network must be earthed only at one point even if the network is extended further in order to create clear ground potential. Earthing is made always at the mainframe. Instead of an usual 50Ω BNC terminator, a terminator with earth screw is enclosed. The terminator has to be connected with the enclosed earth wire to the PE terminal of the mainframe.
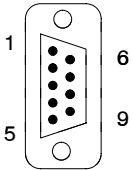
5. INITIAL INSTALLATION

WARNING!

The control panels and mainframe do not contain any control elements or switches required for operation of the switcher. For this reason, the control panel should not be opened by unauthorized persons and should always be locked.
The panel must be opened by authorized service personnel only!
Prior to opening the panel make sure that there are no objects on the panel, such as pens, screwdrivers or other tools. When opening the panel, they might fall into the device and cause disturbances.

5.1 INSTALLATION CHECKLIST

Note:

The installation checklist comprises the procedures for installation and initial installation described in this manual. It is recommended to install the devices with the aid of the instructions below.
Please note that the line voltage is only applied when you are expressively requested in the checklist to do so.
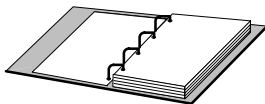
- After having thoroughly unpacked the equipment and checked the packings for mains cables and other small parts, check the delivery with regard to damages caused by transport. If you note a damage, immediately inform the forwarding agent.
  Using the packing slip make sure that the delivery is complete.

- Before starting installation, read the enclosed installation instructions and become familiar with the safety instructions.

- Mount the control panel into a desk.

- Mount the mainframe into an equipment cabinet.

- Check the plug-in cards in the mainframe with regard to correct position in the support frame and make sure that the plug-in cards are locked.

- Check and set the switches and jumpers to the required operating position.

- Establish the earth connection.

- Make sure that the line voltage is conform with the voltage adjusted in the delivered equipment. If required, change it over to the corresponding line voltage.

  | **Mainframe:** | **100 - 240 V AC** |
  | **Panel:** | **90 - 264 V AC** |

- Set the service power switch on control panel and mainframe to position **ON.**

- Establish cheapernet cabling between control panel and mainframe. Connect the video input and output cables as well as the other control cables.

  ATTENTION!
  Cheapernet has to be terminated with a 50-Ω resistor at each end!

- Connect the mains cable to the central mains distribution of the studio and switch on power.

- Check the operational functions of the switcher.

- Adjust timing.

5.2   POWER-UP OF THE SWITCHER DEVICES

Note:
The switchers are not provided with a central power switch. Switching on and off is made via the central mains distribution of the studio or the equipment cabinet!

For service works plug out the power cables of the mainframe and the control panel.

Switching on

After having switched on the line voltage, a self-test is carried out in the **mainframe controller** and **panel controller**.
The correct functioning of controller **RY 3156** is indicated by a running light in the two LED rows.

Functioning of the power supply is indicated by the "green" LEDs. For each main line of the voltage distribution in the support frame, a separate LED is available.
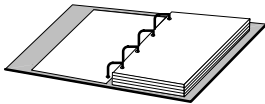
If the LED rows of the controller indicate a defined error code, please refer to the section "Diagnosis" in the service manual.

In the **control panel**, all button lamps are lit temporarily. Subsequently, the control panel returns to the operational state achieved before switching off.

No Reference

If the LED "No Reference" on the plug-in card RY 3030 is lit red, make sure that the switcher receives an external reference signal and press the **RESET** key.

The status LEDs are switched off when switching on or performing a RESET. After run of a diagnosis, the LEDs are lit to indicate correctly operating p.c. boards.

5.3   MAINFRAME OVERVIEW
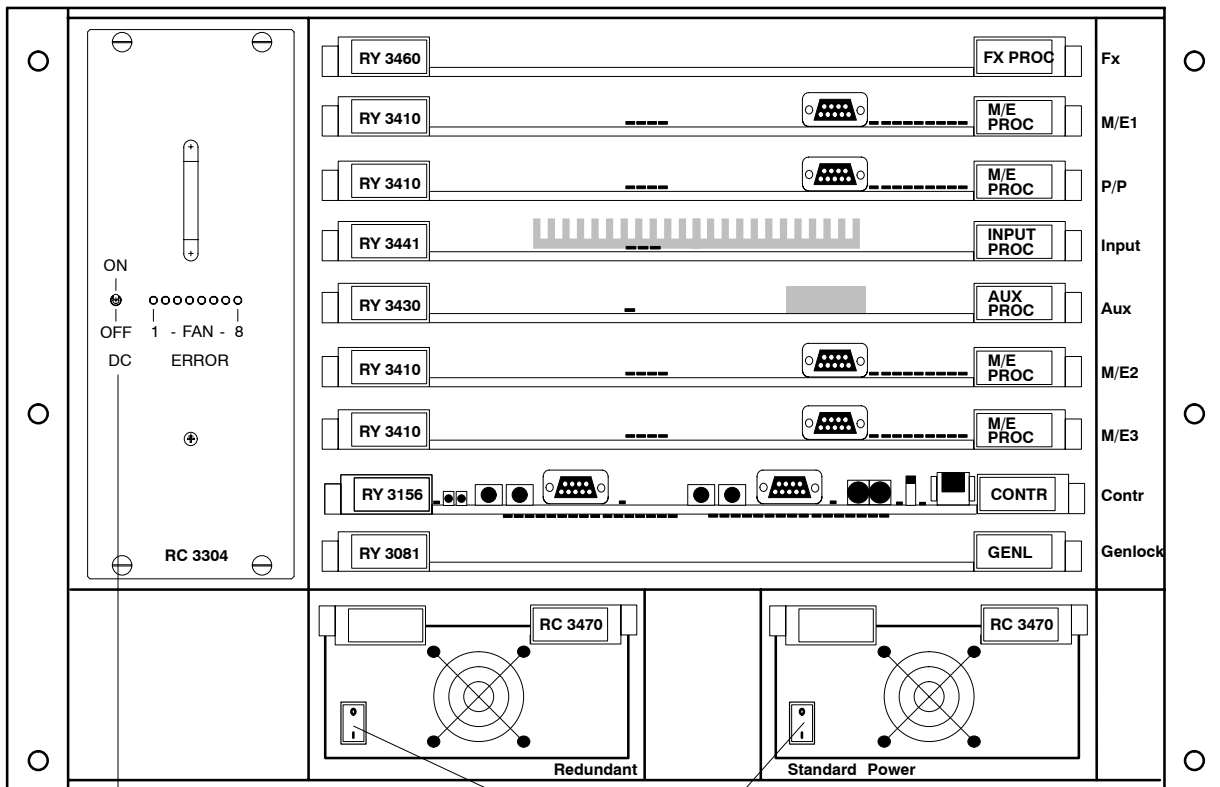
DC Power On/Off

It simultaneously switches off the DC voltage for both power supplies.

AC Switches

The two power supplies are protected by a thermal protective switch which is activated at 10A and switches off the power supply.

The mainframe may contain from top to bottom the following modules in the front:

Slot 1:	Fx Processor	RY 3460
Slot 2:	M/E Processor (M/E1)	RY 3410
Slot 3:	M/E Processor (P/P)	RY 3410
Slot 4:	Input Processor	RY 3441
Slot 5:	Aux Processor	RY 3430
Slot 6:	M/E Processor (M/E3)	RY 3410
Slot 7:	M/E Processor (M/E2)	RY 3410
Slot 8:	Controller	RY 3156*
Slot 9:	Genlock	RY 3081*
Power Slot 1:	Redundant Power Supply (Option)	RC 3470
Power Slot 2:	Power Supply	RC 3470
Fan Slot:	Fan Unit cpl.	RC 3304

* Note:

From mainframe serial number #1126 slot 8/9 is equipped with the new Controller RY 3490. This controller contains the functionality of the former Genlock board. See figure on next page.
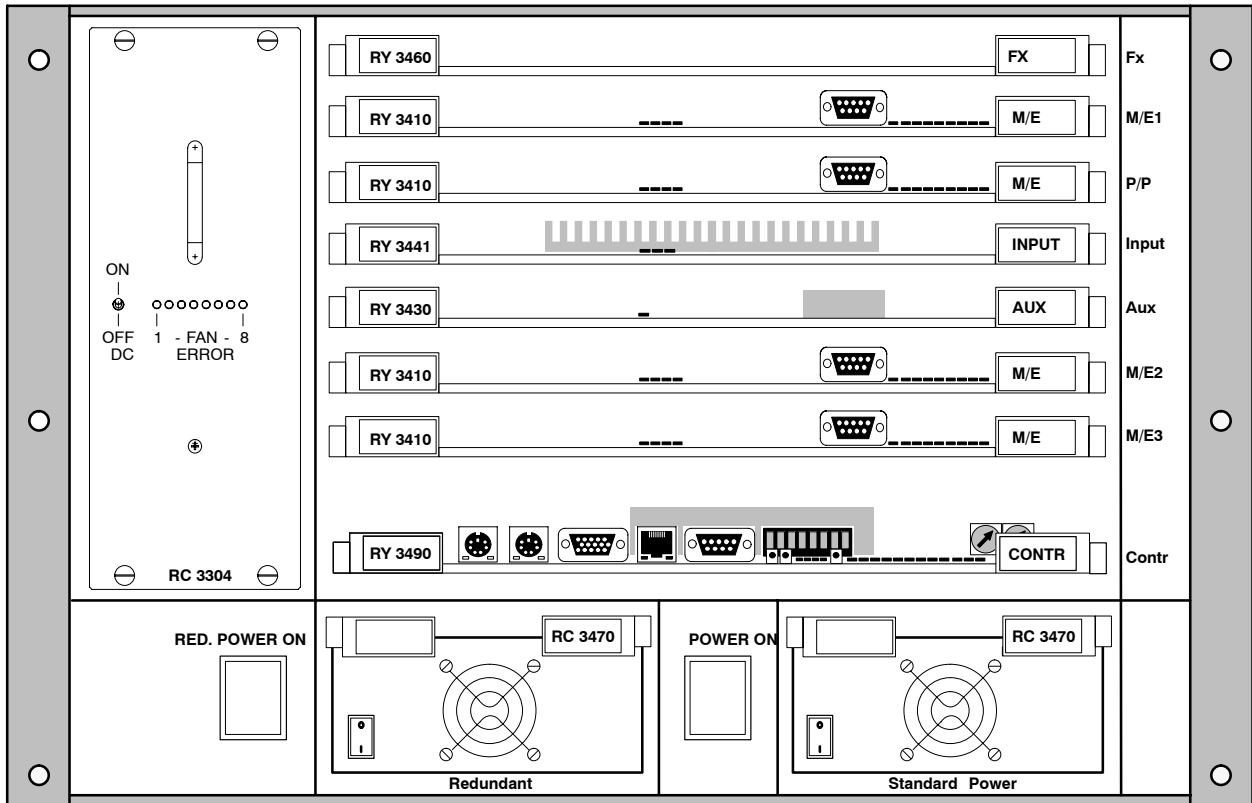
The following modules are installed in the rear and bottom of the mainframe:

- Connection Unit   RC 3401
  incl. Midplane   RC 3402
  incl. Backplane   RX 3405

- Serial Input Modules 1 to 5   RC 3420
                                          RC 3421
                                          RC 3422
                                          RC 3423
                                          RC 3424

- Serial Output Modules 1 to 3   RC 3450
                                          RC 3451
                                          RC 3452

- Control Module   RC 3455

5.3.1   CONTROLLER   RY 3156

5.3.1.1   Front View with LED's and Control Elements
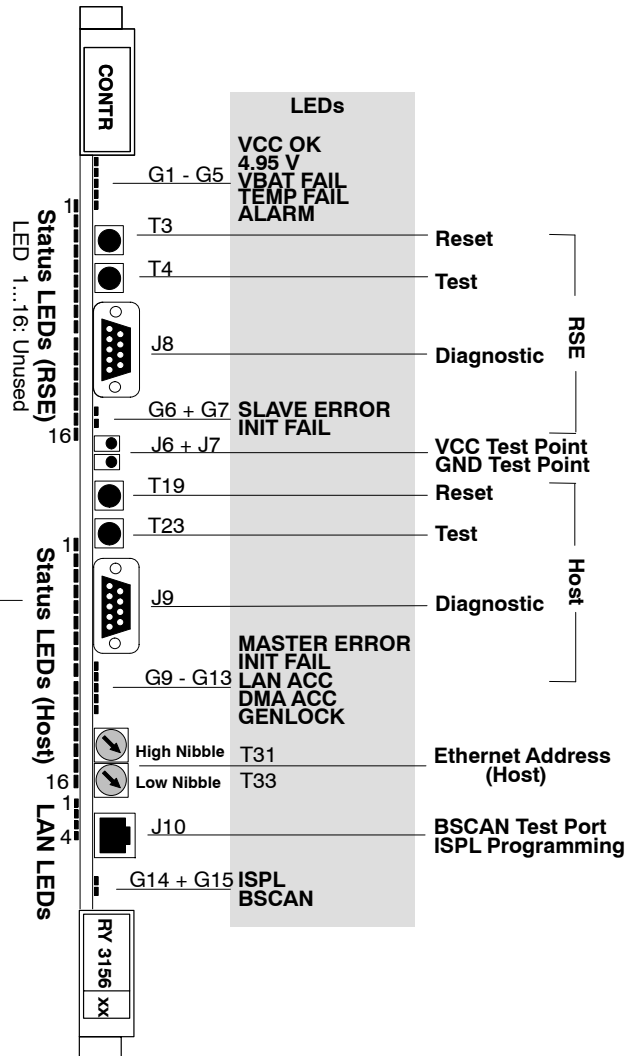
Status LEDs (Host)

Status during startup:

LED 5: Objects not created
LED 4: Tasks not created
LED 3: Application not started

Status during operation:

LED 1: Reserved for internal purpose
LED 2: Reserved for internal purpose
LED 3: Reserved for internal purpose
LED 4: Reserved for internal purpose
LED 5: Reserved for internal purpose
LED 6: I/O shift
LED 7: Field pulse (dyn)
LED 8: Hardware refresh
LED 9: Asset occured
LED 10: Unused
LED 11: Unused
LED 12: Unused
LED 13: Unused
LED 14: Unused
LED 15: LAN - Address conflict
LED 16: No communication

LAN LEDs
LED 1: XMT
LED 2: RCV
LED 3: CLS
LED 4: LPT

Diagram labels:

CONTR

LEDs

G1 - G5 — VCC OK / 4.95 V / VBAT FAIL / TEMP FAIL / ALARM

T3 — Reset
T4 — Test
J8 — Diagnostic   } RSE

G6 + G7 — SLAVE ERROR / INIT FAIL
J6 + J7 — VCC Test Point / GND Test Point
T19 — Reset
T23 — Test
J9 — Diagnostic   } Host

G9 - G13 — MASTER ERROR / INIT FAIL / LAN ACC / DMA ACC / GENLOCK

High Nibble T31
Low Nibble T33 — Ethernet Address (Host)

J10 — BSCAN Test Port / ISPL Programming

G14 + G15 — ISPL / BSCAN

Status LEDs (RSE) LED 1...16: Unused
Status LEDs (Host) LAN LEDs

RY 3156 xx

5.3.1.2   P.C. Board with Control Elements
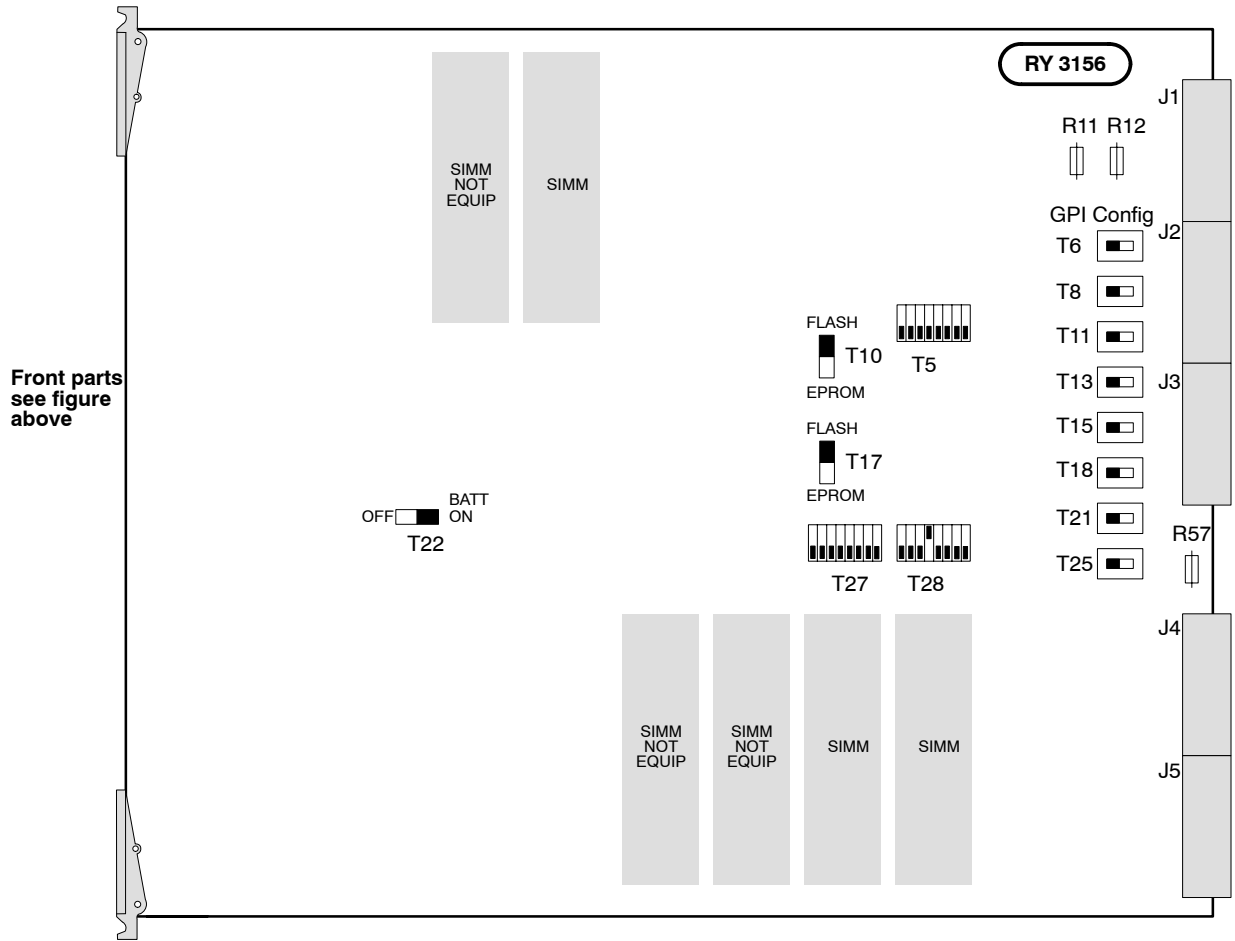
Pos.	Function	Factory adjust.
G1	LED green VCC OK, norm=on	
G2	LED red <4.95V, norm=off	
G3	LED red VBAT FAILure (Battery defective)	
G4	LED red TEMP FAILure (temp to high)	
G5	LED red ALARM, norm=off	
T3	Reset RSE processor	
T4	Test program RSE processor	
G6	LED red SLAVE ERROR, norm=off (lit during Reset an HW test)	
G7	LED red INIT FAILure RSE, norm=off	
T19	Reset Host processor	
T23	Test program host processor	
G9	LED red Master ERROR, norm=off (lit during Reset an HW test)	
G10	LED red INIT FAILure Host, norm=off	
G11	LED yellow LAN ACCess, blinking	
G12	LED yellow DMA ACCess (not in use)	
G13	LED yellow GENLOCK locked, norm=on	
T31 T33	The two thumbwheel switches on the front select the last byte of the Ethernet (hardware) address of the device on the LAN. Per factory preset this also forms the last byte of the IP address.	
G14	LED yellow ISPL (factory: PLD programming OK)	
G15	LED yellow BSCAN (factory: BSCAN OK)	
R56	Threshold for 4.95V	
T10	FLASH/**EPROM**	EPROM
T17	FLASH/**EPROM**	EPROM
T22	BATT **ON**/OFF	ON
T6 ... T25	see GPI Configuration	
T28	DIL switches (low byte): Sw1-3 not used Sw4 1 = internal use (not used from software V2.1.1) Sw 5-8 not used	1

Pos.	Function	Factory adjust.
T5/T27	DIL switches (high byte) (T5 = RSE, T27 = Host): Sw1 0 = execute startup script 1 = do not execute startup script Sw2 0 = start normal 1 = start verbose Sw3 0 = normal boot 1 = boot via LAN Sw4 not used Sw5 not used Sw6 not used Sw7 not used Sw8 not used	0 0 0

GPI Configuration

The sliding switches T6, T8, T11, T13, T15, T18, T21 and T25 on the controller board RY 3156 are assigned to the GPI inputs 1...8 (general-purpose inputs). These inputs are provided with optocouplers. The switches enable to match the inputs to different control concepts:

Switch in position"1" (position "left")

A simple connection between the two connectors activates the corresponding input. This kind of control is suitable for a connection to a relay contact or to an open-collector output.

Attention: *When connecting to an open-collector output, there is no ground potential isolation between the switcher electronics and controlling devices.*

Non-shielded cables may cause EMC and/or ESD problems!

Switch in position "2" (position "right")

The optocoupler-internal LED is made available at the two connectors (including 1kOhm drop resistor). For this kind of control, a ground potential isolation is provided; the controlling device, however, has to supply a current upon the LED, i.e. a simple contact is not sortable in this case.
Due to the ground potential isolation, the cabling is less critical for this kind of control.

5.3.2   GENLOCK RY 3081

MP1⊓ VCC
MP2⊓ P3V3
MP3⊓ VEE
MP5⊓ GND

(RY 3081)

G4 ▍ LCA_DONE
G7 ▍ -5V missing
G8 ▍ SYNC ERR
G9 ▍ SER SD
G11▍ SER HD
G12▍ ANALOG REF

MP9 ⊓ FCTRL
MP10⊓ V
MP11⊓ F
MP12⊓ /BLD

MP13⊓ TPD
MP14⊓ TPC
MP16⊓ TPB
MP17⊓ TPA

DOWNLOAD
J7
PROGRAMMER
INTERFACE
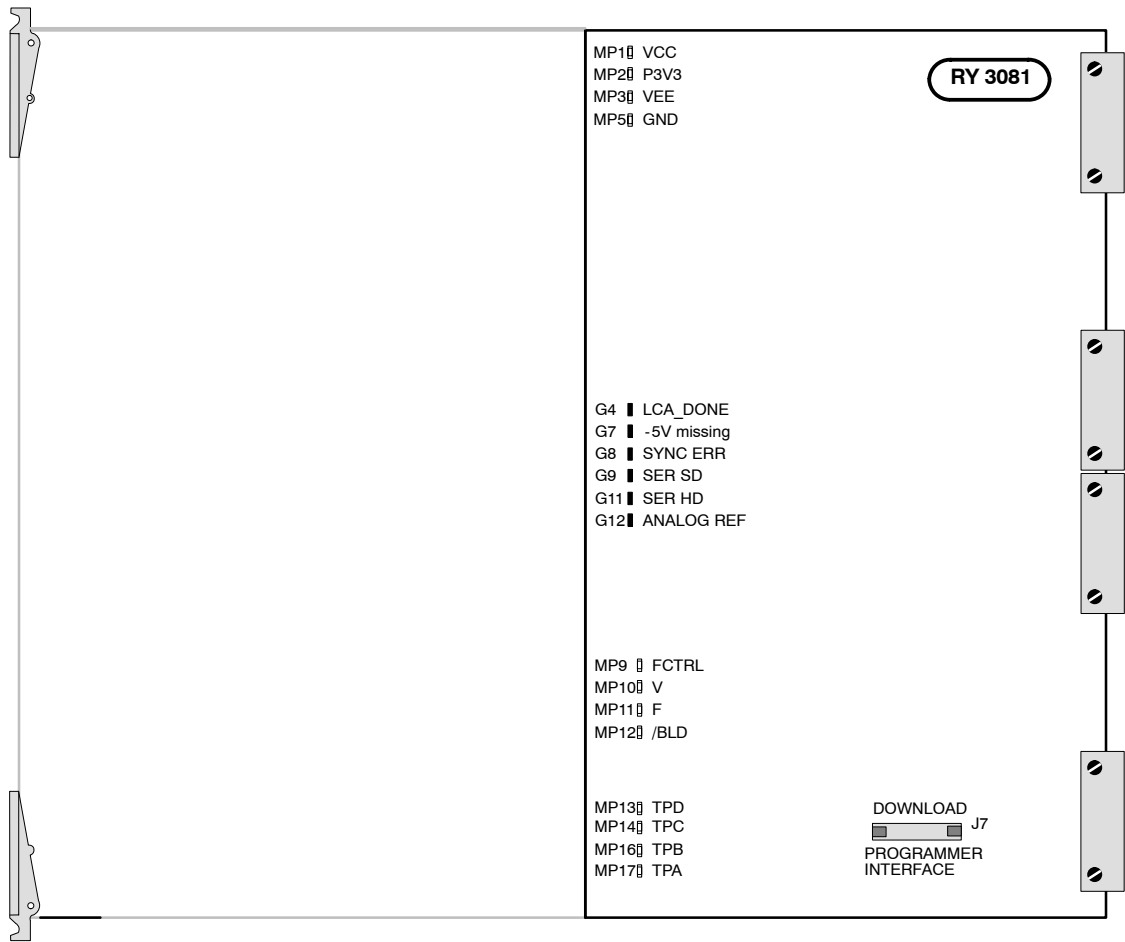
Pos.	Function		Factory adjustment
G4	LED green:	LCA configuration o.k.	
G7	LED yellow:	-5V supply (VEE or VEE1) down (on board DC/DC converter)	
G8	LED yellow:	synchonization error display - should be off.	
G9	LED green:	serial SDTV serial digital input detected. If flashing, valid input detected but not selected.	
G11	LED green:	serial HDTV serial digital input detected. If flashing, valid input detected but not selected.	
G12	LED green:	Analog reference input detected (for example black burst).	
MP9	FCTRL:	Frame pulse for Controller Board	
MP10	V:	Vertical pulse (low: active video lines)	
MP11	F:	Frame pulse to video boards (low: field 1)	
MP12	/BLD:	Bank load, Controller sync for parameter update (active low)	
MP13 MP14 MP16 MP17	TPC: TPB: TPA: TBD: Genlock internal signals:	Frame signal Vertical signal Horizontal signal Clock signal depend on TV standard depend on signal connected to sync on input	

5.3.3   Fx Processor RY 3460
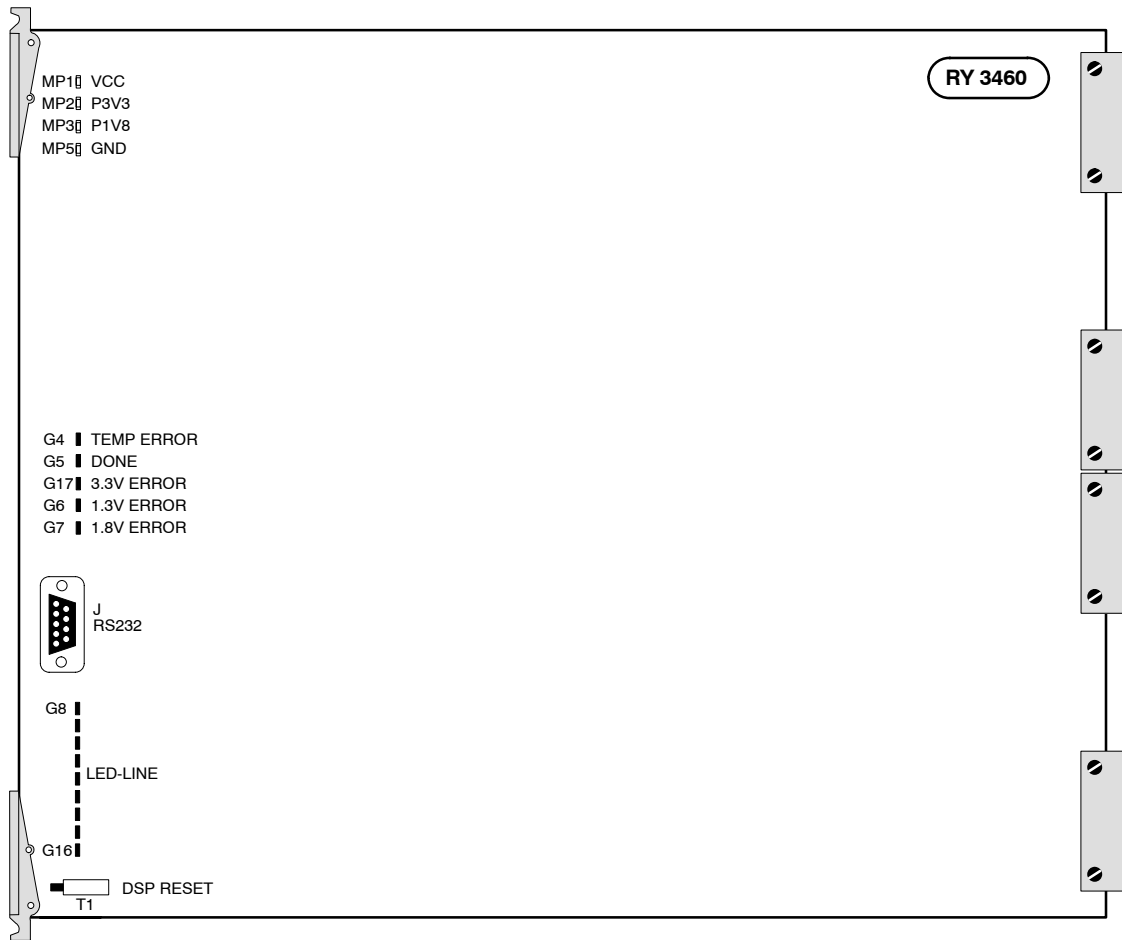
Pos.	Function	Factory adjustment
G4	Temperatur eError: LED on: Over temperature	
G5	LED green on: LCA_DONE When lit this LED shows the successfull locking of all FPGAs LCA firmware is loaded correctly.	
G6	1.3V Error: LED on: Undervoltage	
G7	1.8V Error: LED on: Undervoltage	
G17	3.3V Error: LED on: Undervoltage	
T1	Reset of DSP	
J10	RS232 interface to DSP	
G8 - G16	LED-LINE Monitoring of DSP Functions Flushing LEDs show working DSP	

5.3.4 M/E PROCESSOR RY 3410
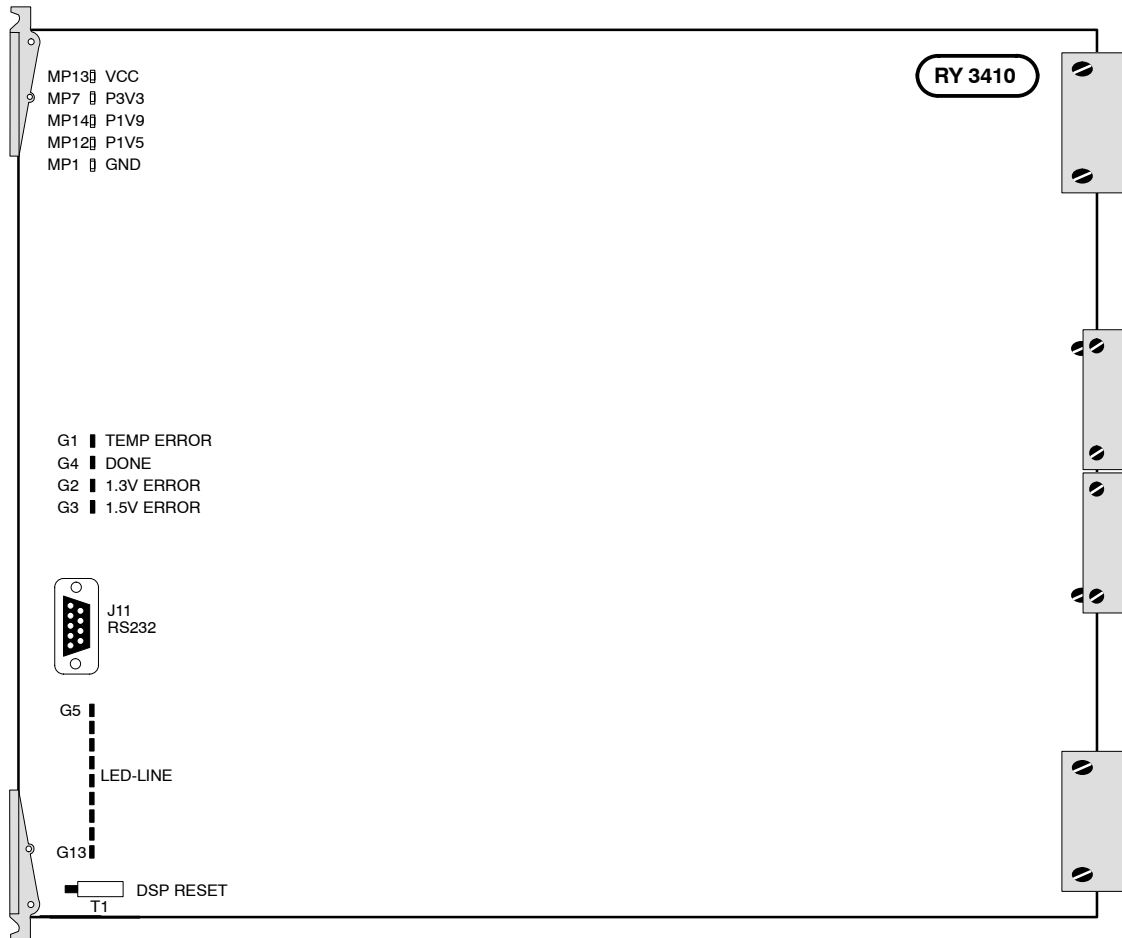
Pos.	Function		Factory adjustment
G1	Temperatur eError:	LED on: Over temperature	
G2	1.3V Error:	LED on: Undervoltage	
G3	1.5V Error:	LED on: Undervoltage	
G4	LED green on:	LCA_DONE When lit this LED shows the successfull locking of all FPGAs LCA firmware is loaded correctly.	
T1	Reset of DSP		
J10	RS232 interface to DSP		
G5 - G13	LED-LINE Monitoring of DSP Functions Flushing LEDs show working DSP		

5.3.5   INPUT PROCESSOR RY 3441
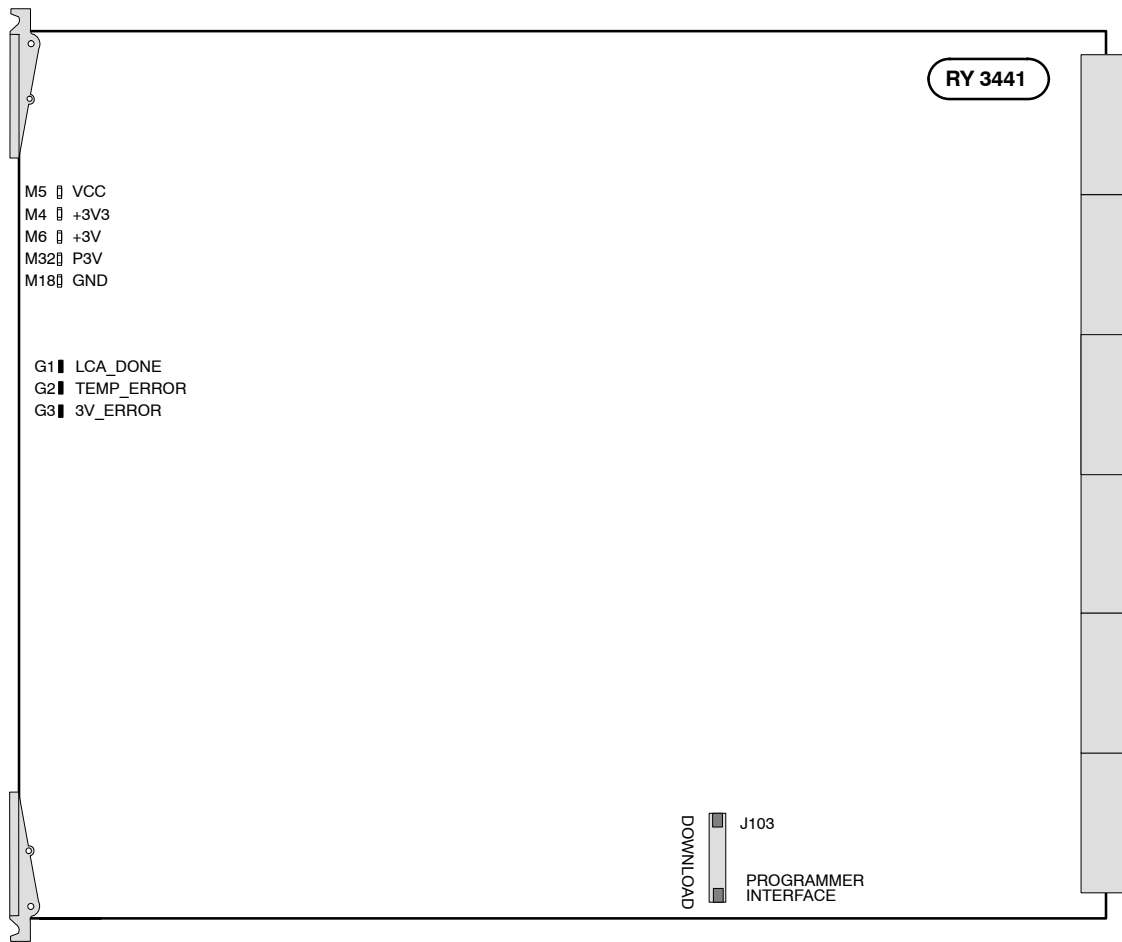
Pos.	Function	Factory adjustment
G1	LED green on: LCA_DONE LCA firmware is loaded correctly.	
G2	LED yellow on: TEMP_ERROR temperature exceeds maximum level.	
G3	LED yellow on: 3V_ERROR 3.0V power supply is out of order.	
J103	Programmer interface for CPLD-firmware loading.	

Attention:

High density connectors. For insertion mounting tool required!
See mounting instructions below.

5.3.5.1 Mounting the Input Processor Board RY 3441

The special design of the plug contacts on the Input Processor Board RY 3441 requires additional force of power when mounting. By means of the PCB Assembly/Insertion Tool, board RY 3441 can be easily and safely installed into the mainframe. For this purpose, put the two insertion tools over the locking levers of the board, insert the hooks at the left and right guide rail of the chassis (see below) and press the levers in until the board has completely locked.
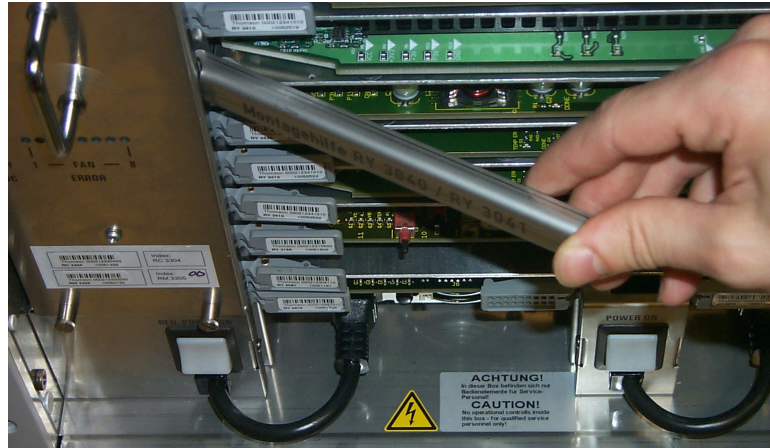
Inserting the PCB Assembly/Insertion Tool
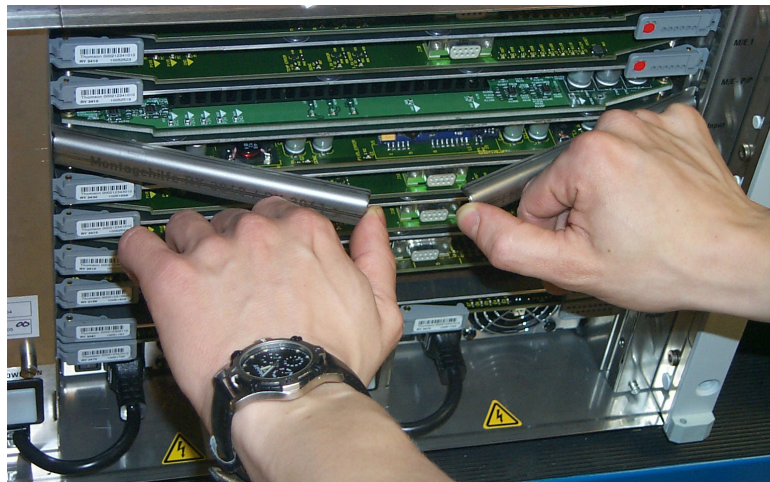
Inserting the Input Processor Board RY 3441

5.3.6   AUX PROCESSOR RY 3430
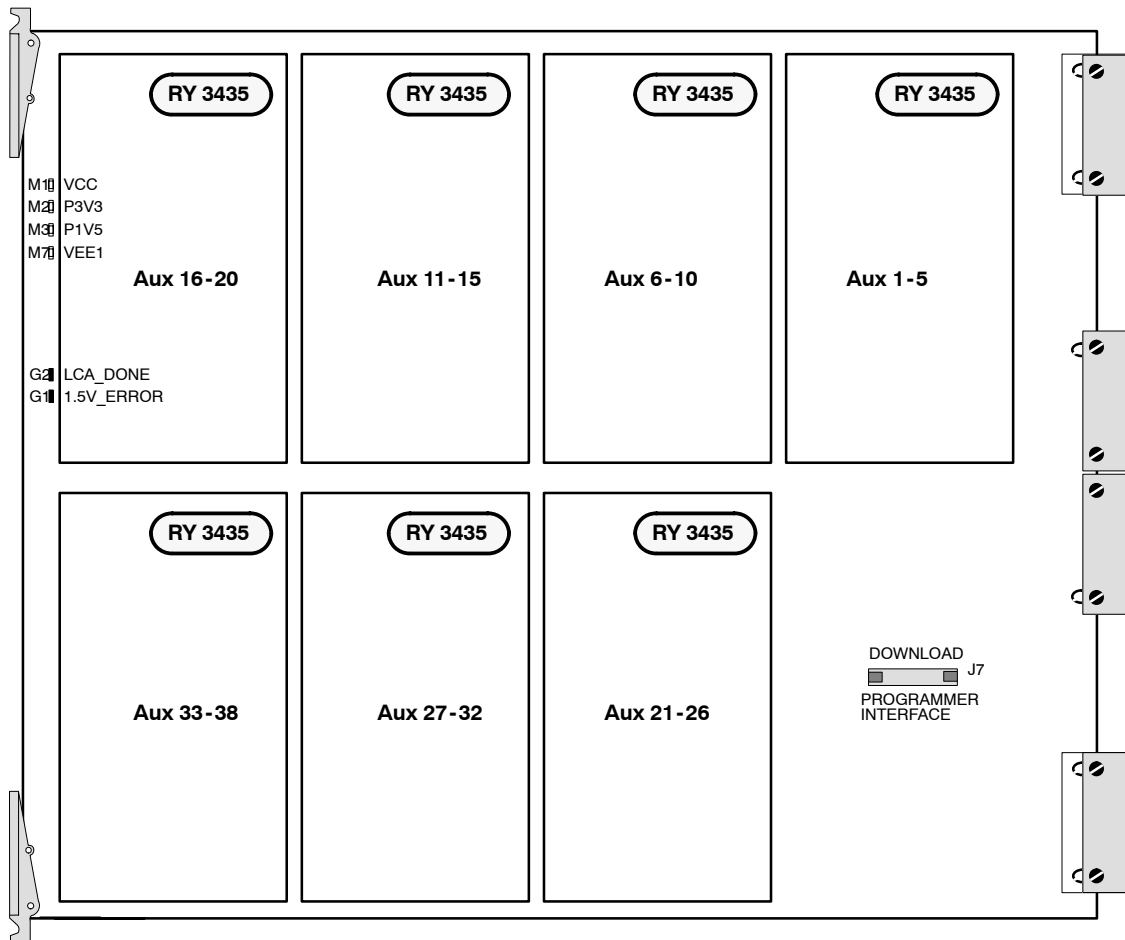
Pos.	Function		Factory adjustment
G1	LED yellow on:	1.5V_ERROR 1.5V power supply is out of order.	
G2	LED green on:	LCA_DONE LCA firmware is loaded correctly.	
J7	Programmer interface for CPLD-Firmware loading.		

5.3.7   CONTROLLER RY 3490

5.3.7.1   General

The new mainframe controller board is designed to fit into the XtenDD series production switchers (SD) in a backwards‑compatible fashion.

NOTE!   This controller is not usable in the DD35 mainframe!

The new mainframe controller board also incorporates the Genlock processor, which was a separate board in the XtenDD mainframe. The new combined controller/genlock board will thus also replace the currently available genlock processor PCBs (RY 3080 or RY 3081).

GPI Configuration

Genlock
Firmware

Single Board Computer

Backup Battery
for RAMDisk (S‑RAM)

DIP Switch   S‑RAM   Exchangale Flash E‑PROM

CPLD Firmware

5.3.7.2 Front View with LED's and Control Elements

CONTR

PS2 Interface (Keyboard)

PS2 Interface (Mouse)

VGA Interface

LAN LEDs — **LAN (RJ45) Interface**

COM1 (RS-232)

Show Error Info
For future use
Genlock LEDs — **8 digit Status Display**
Reset

Status LEDs

IP Address

RY 3490 xx
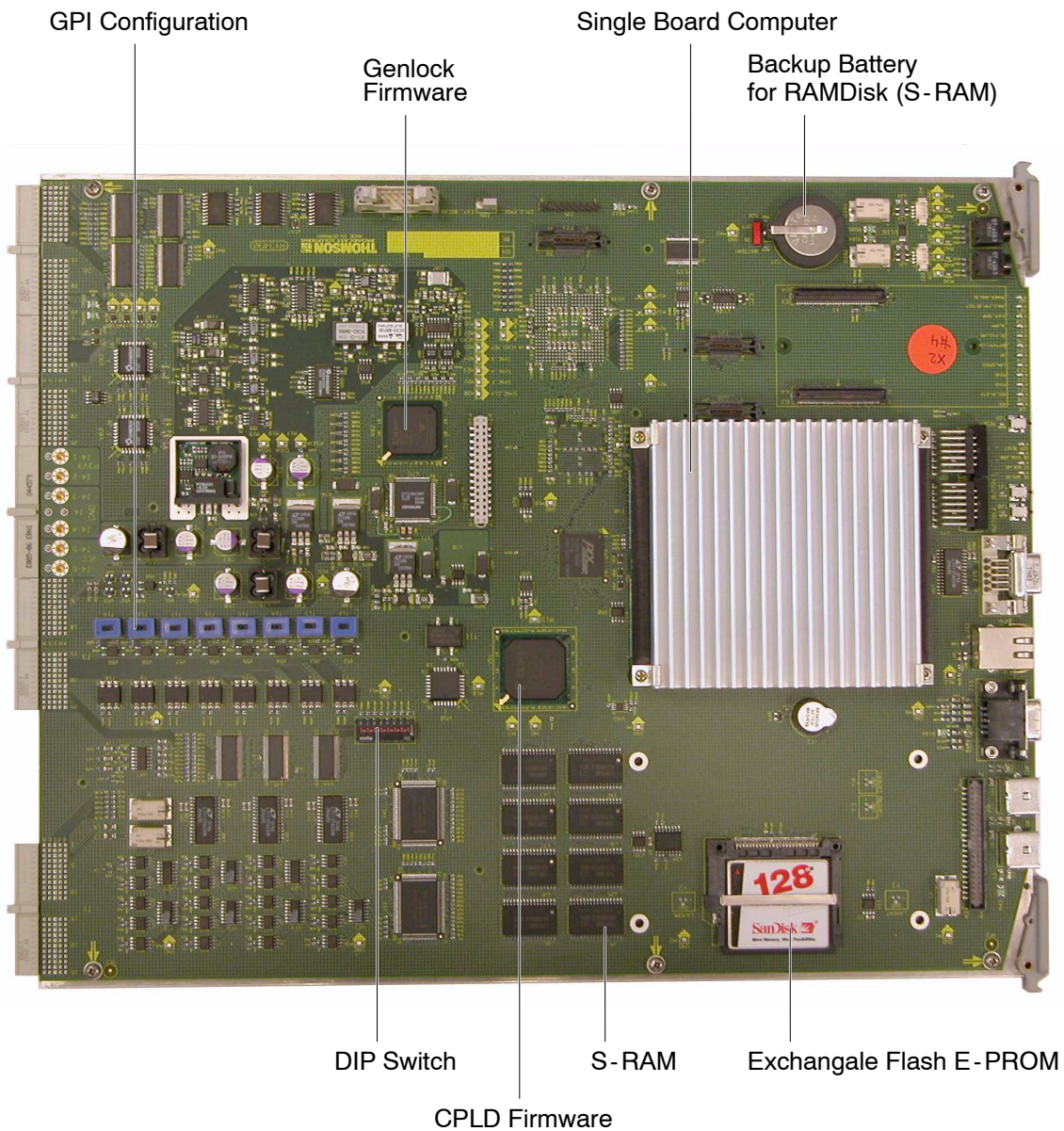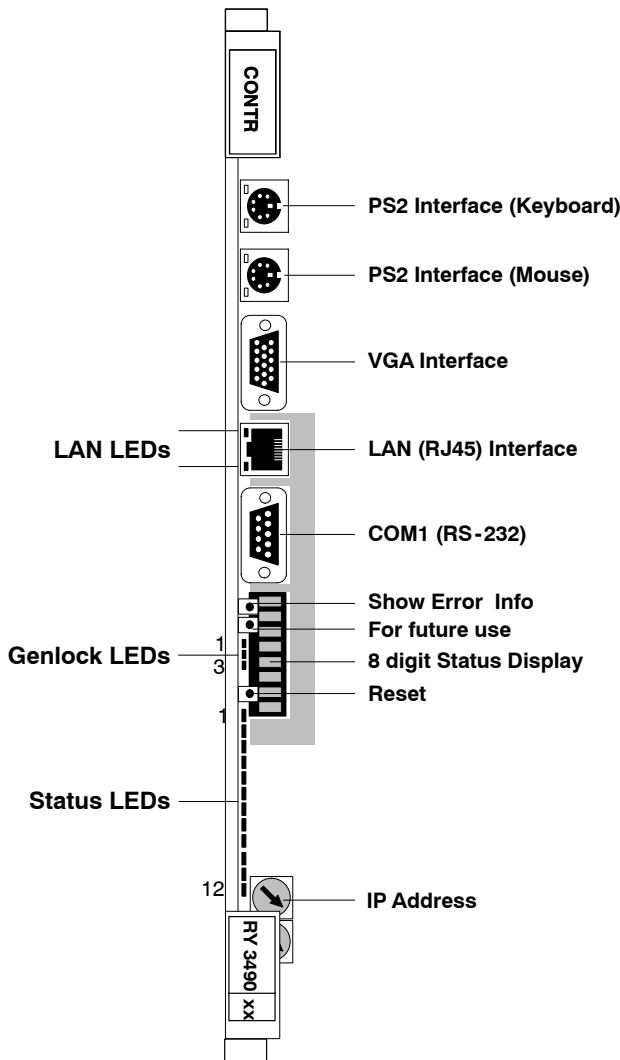
LAN LEDs
Green LED: Link
Yellow LED: Activity

Genlock LEDs
LED 1: Serial SD
LED 2: Serial HD
LED 3: Sync_Error

Status LEDs
LED 1: VCC
LED 2: VCC_3V_ETX
LED 3: P3V3
LED 4: P2V5
LED 5: LAN Speed (100MBit)
LED 6: HD
LED 7: Battery Low
LED 8: DC_Failure
LED 9: Alarm
LED 10: Over_Temp
LED 11: Analog_Input_Detect
LED 12: Power_Analog

8digit Status Display

Boot process: Boot state messages

Operation: Turning Slash
cw turning: Clock from internal timer
ccw turning: Clock from genlock

Error message code in case of asserts.
Press ShowErrorInfo button for detailed information.
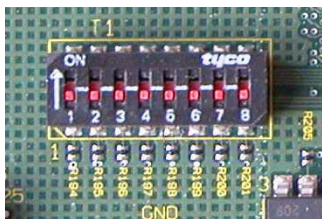
Function of DIL Switch T1		Factory default
Switch 1	OFF = Execute startup script	OFF
	ON = Do not execute startup script	
Switch 2	OFF = Start normal	OFF
	ON = Start verbose	
Switch 3	OFF = Normal boot	OFF
	ON = Boot via LAN	
Switch 4	not used	
Switch 5	not used	
Switch 6	not used	
Switch 7	OFF = Output to COM1 port	OFF
	ON = Output to VGA port	
Switch 8	OFF = IP address from hex swich	OFF
	ON = IP address from file /flash0/bootline.dat	

5.3.7.3 GPI Configuration
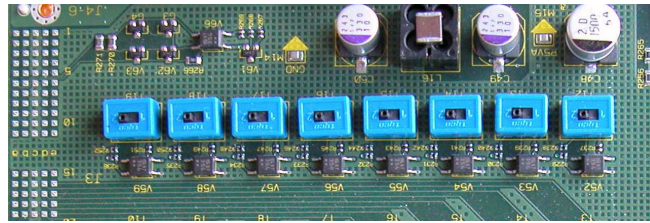
The sliding switches T12 ... T19 on the controller board RY 3490 are assigned to the GPI inputs 1...8 (general-purpose inputs). These inputs are provided with opto-couplers. The switches enable to match the inputs to different control concepts:

Switch in position"1" (position "left")

A simple connection between the two connectors activates the corresponding input. This kind of control is suitable for a connection to a relay contact or to an open-collector output.

ATTENTION!
When connecting to an open-collector output, there is no ground potential isolation between the switcher electronics and controlling devices.

Since the circuit ground is led out of the device, the cabling has to be shielded for this kind of control. Non-shielded cables may cause EMC and/or ESD problems!

Switch in position "2" (position "right")

The optocoupler-internal LED is made available at the two connectors (including 1kOhm drop resistor). For this kind of control, a ground potential isolation is provided; the controlling device, however, has to impress a current upon the LED, i.e. a simple contact is not suited in this case.
Due to the ground potential isolation, the cabling is less critical for this kind of control.

5.3.7.4 Genlock Relevant Control LEDS at Front Side of Board

G6	SER_SD_REF_DETECT	on, if serial digital reference SDTV is detected, green
G7	SER_HD_REF_DETECT	on, if serial digital reference HDTV is detected, green
G8	SYNC_ERROR	on , if selected sync input, digital or analog, is unlocked or not present
G21	Analog input detect	not used / for internal test only!

5.4   CONTROL PANEL OVERVIEW

5.4.1   FADER CONNECTOR PANEL RC 1855

The faders in the control panels are each provided with connector panel RC 1855 which establishes the connection to controller RY 1821. A 4-step DIP switch (T1) on the connector panel determines the input channel of the 12-bit A/D converter.

On each of these connector panels, exactly one switch has to be set to ON, the other switches have to be switched OFF!

Assignment is as follows:

Fader:	M/E1	Switch:	1 = On
	M/E2		2 = On
	M/E3		1 = On
	P/P		2 = On
	Motion Contr.		3 = On

5.4.2   PANEL CONTROLLER   RY 2370

Status LEDs

During operation:	During startup:
LED 1: Unused	
LED 2: Unused	
LED 3: Unused	LED 3: Application not started
LED 4: Unused	LED 4: Tasks not created
LED 5: Unused	LED 5: Objects not created
LED 6: Unused	
LED 7: Unused	
LED 8: Unused	
LED 9: Asset occured	
LED 10: Unused	
LED 11: Unused	
LED 12: Unused	
LED 13: No side panel	
LED 14: No mainframe	
LED 15: LAN - Address conflict	
LED 16: No communication	

Pos.	Function	Factory adjust.
G31...46 G16 G17 G18 G19 G20 G21 G22 G13 G14 G15 G49	Status LEDs LED red 4.95V LED green VCC OK LED red VBATT LOW LED red INIT FAIL LED red BOOT ERROR LED red DRAM ERROR LED red LAN ACC LED yellow BSC PROG LED yellow BSC TEST LED yellow ISPL PROG LED yellow ISPL BSC	
R130	4.95V threshold adjust	
C54	Real Time Clock adjust	
T8 - T13	GPI configuration, see description below	
T14	LAN configuration	INT (COAX)
T16	FLASH/EPROM	EPROM
T22	BATT ON/OFF	ON
T21	Internal use	BSC Test
T29	Internal use	BUSY
T25 High T26 Low	Ethernet Address setup (least significant byte). This is also the LSB of the IP address (default).	see final test report
T27	DIL switches (high byte): Sw1 0 = execute startup script 1 = do not execute startup script Sw2 0 = start normal 1 = start verbose Sw3 0 = normal boot 1 = boot via LAN Sw4 1 = internal use (not used from software V2.1.1) Sw5 not used Sw6 not used Sw7 not used Sw8 not used	 0 0 0 1 (0)
T28	DIL switches (low byte): Sw1 not used Sw2 not used Sw3 not used Sw4 Button lamp 0 = PCB's Rev. 2 1 = PCB's Rev. 1 Sw5-8 Panel type 0000 = RPD 35/32 (LX) 0001 = RPD 35/24 (L) 010x = RPD 35/3 011x = RPD 35/2 0100 = RPD 35/2S "x" don't care	 0

5.4.3 PANEL CONTROLLER RY 2100

J1   J2   J3   J4   J5   J6   **RY 2100**

T2   T3   T4   T5   T6   T7
GPI6 GPI5 GPI4 GPI3 GPI2 GPI1

T14   T15

T18   EPROM
      FLASH

BATT
T19   ON
      OFF

R12

SIMM 1   G31
                                            PC RESET

                                            G30
SIMM 2   PC POWER FAIL

GND

VCC Test Socket 5V

J24 J25 J26 J27

M16 M17
VCC GND

J35

T25   LAN ADDRESS   J36   T28   T29   VCC 4.95V
DC   HIGH LOW   TEST   RESET   VCC OK
ON/OFF T26   T27   OPER VBATT FAIL
                                           T30 MASTER ERROR
J38 J37   FLASH LAN ACC
                                           PROGR TEMP FAIL

                              G3   G18
                              1   16
                                         G19   G25

DIAGNOSE

G26 G27 G28

BSC PROG
BSC TEST
ISPL

Status LEDs

During operation: During startup:

LED 1: Unused
LED 2: Unused
LED 3: Unused   LED 3: Application not started
LED 4: Unused   LED 4: Tasks not created
LED 5: Unused   LED 5: Objects not created
LED 6: Unused
LED 7: Unused
LED 8: Unused
LED 9: Asset occured
LED 10: Unused
LED 11: Unused
LED 12: Unused
LED 13: No side panel
LED 14: No mainframe
LED 15: LAN - Address conflict
LED 16: No communication

Pos.	Function	Factory adjust.
G3...18	Status LEDs	
G19	LED red 4.95V not OK, norm=off	
G20	LED green VCC OK, norm=on	
G21	LED red VBAT FAILure (Battery defective)	
G22	LED red INIT FAILure, norm=off	
G23	LED red HOST ERROR, norm=off	
G24	LED yellow LAN ACCess, blinking	
G25	LED red TEMP FAILure (temp too high)	
G26	LED yellow BSCAN (factory: BSCAN OK)	
G27	LED yellow BSC TEST (factory: BSCAN OK)	
G28	LED yellow ISPL (factory: PLD programming OK)	
G30	LED red PC POWER FAILure OK, norm=off	
G31	LED red PC RESET, norm=off	
R12	Threshold for 4.95V	
T2-T7	GPI configuration, see description below	
T18	FLASH/EPROM	EPROM
T19	BATT ON/OFF	ON
T30	FLASH PROGR/OPERATION	OPERATION
T26 T27	The two thumbwheel switches on the front select the last byte of the Ethernet (Hardware) Address of the device on the LAN. Per factory preset this also forms the last byte of the IP address.	see final test report
T28	Test program processor	
T29	Reset processor	

T14	DIL switches (high byte):
	Sw1 0 = execute startup script
	            1 = do not execute startup script
	Sw2 0 = start normal
	            1 = start verbose
	Sw3 0 = normal boot
	            1 = boot via LAN
	Sw4 1 = internal use (not used from software V2.1.1)
	Sw5 not used
	Sw6 not used
	Sw7 not used
	Sw8 not used
		0
		
		0
		
		0
		
		1 (0)

T15	DIL switches (low byte):
	Sw1 not used
	Sw2 not used
	Sw3 not used
	Sw4 Button lamp 0 = PCB's Rev. 2
	                        1 = PCB's Rev. 1
	Sw5-8 Panel type 0000 = RPD 35/32 (LX)
	                        0001 = RPD 35/24 (L)
		
		0

GPI Configuration   The sliding switches T2 ... T7 on the controller board RY 2100 (T8 ... T13 on controller board RY 2370) are assigned to the GPI inputs 6 ... 1 (general-purpose inputs). These inputs are provided with optocouplers. The switches enable to match the inputs to different control concepts:

Switch in position"1" (position "left")

A simple connection between the two connectors activates the corresponding input. This kind of control is suitable for a connection to a relay contact or to an open-collector output.

Attention: *When connecting to an open-collector output, there is no ground potential isolation between the switcher electronics and controlling devices.*

Since the circuit ground is led out of the device, the cabling has to be shielded for this kind of control. Non-shielded cables may cause EMC and/or ESD problems!

Switch in position "2" (position "right")

The optocoupler-internal LED is made available at the two connectors (including 1kOhm drop resistor). For this kind of control, a ground potential isolation is provided; the controlling device, however, has to impress a current upon the LED, i.e. a simple contact is not suited in this case.
Due to the ground potential isolation, the cabling is less critical for this kind of control.

5.5   TIMING / GENLOCK ALIGNMENT (IN PREPARATION)

When source signals are fed into the switcher, it must be ensured that the time difference between the sources is not outside the operating range of the internal switcher autophasers (XtenDD = 22 µs). The output signals of the sources must correspond to the timing customary in operation. For instance, no EE picture in a VTR, PB-Ref on CCVS etc.

The switcher's Genlock Phase can be adjusted to the fed reference signal in the range of - 15 line to + 15 lines.

Timing reference diagram XtenDD (-2)

Min delay
approx 41 us

approx 0.8 us

Autophasing range input
approx 22 us

Aux outputs

ME2
approx 10 us

ME4
approx 10 us

ME1
approx 10 us

ME1 outputs, PVW

PP
approx 10 us

PP / ME3 outputs, PVW

Total timing position of XtenDD in respect to the reference input

approx minus 15 lines   approx plus 15 lines

Timing reference diagram XtenDD (-3)

Min delay
approx 41 us

approx 0.8 us

Autophasing
range input

Aux outputs

approx 22 us

ME4

approx 10 us

ME1

ME1 outputs, PVW

approx 10 us

ME2

ME2 output, PVW

approx 10 us

PP

PP / ME3 outputs, PVW

approx 10 us

Total timing position of XtenDD in respect to the reference input

approx minus 15 lines   approx plus 15 lines

Timing reference diagram XtenDD (-4)

Min delay
approx 41 us

approx 0.8 us

Autophasing
range input

Aux outputs

approx 22 us

ME1

ME1 outputs, PVW

approx 10 us

ME2

ME2 output, PVW

approx 10 us

ME3

ME3 output, PVW

approx 10 us

PP

Main outputs, PVW

approx 10 us

Total timing position of XtenDD in respect to the reference input

approx minus 15 lines   approx plus 15 lines

5.5.1   GENLOCK ADJUSTMENT

The mixers include the possibility to perform the genlock adjustment of the individual input sources in **Install E-Box** menu**.**

When adjusting the genlock phase, **all** sources have to be successively checked for their timing by switching up on the bus **Aux1**.

To adjust the genlock phase, select the softkey in the **Install E-Box** menu and select the index card **Timing**. The following display is represented:

Tally	Aux CP	ExtAux	UMD	ME	Machine	Editor	P-Bus
Timing	Input	GPI	GPO	DVE	Router	Ext. DSK	Aux Bus

Aux1: BLCK	Vert: 0 Lines Hor: -0.5 μs

External Reference   625Lines/50Hz

DD35-4   DD35-3   DD35-2

Parameter	Setting
Genlock Phase	-149
Video Standard	AutoDetect
M/E 1 Wipe 1 inst. in	M/E 1
M/E 1 Wipe 2 inst. in	M/E 1
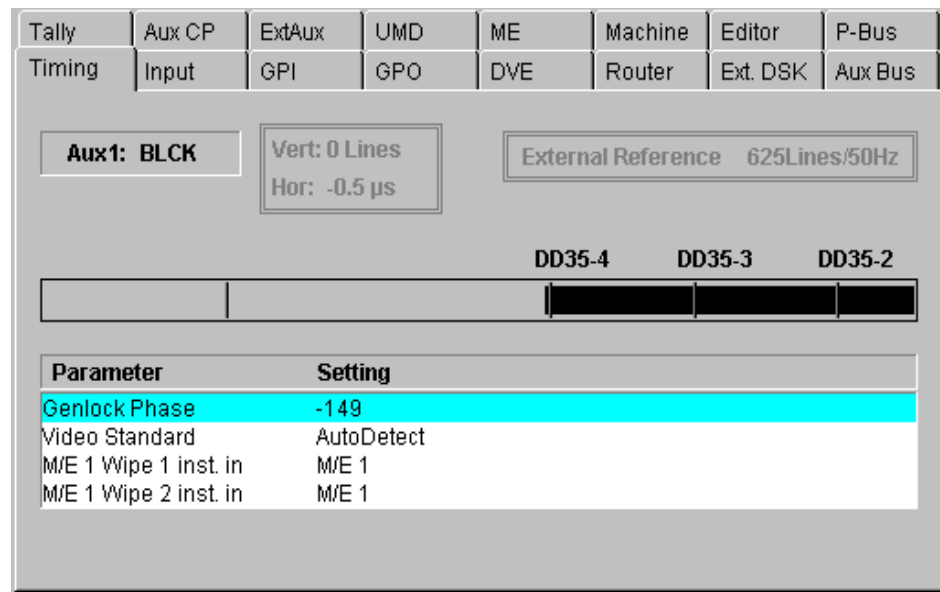
With **Genlock Phase**, the phase relation of the mixer can be shifted +15/-15 lines in comparison with the genlock reference signal.
The display **TIMING** serves for checking the timing of the sources.
The bar diagram displays the timing of the source to the mixer that is selected on bus **Aux1**.

The display can give the following informations:

Aux1:   Shows the selected source on the Aux1 Bus witch is used
                   for timing measurement.

Vert: Shows how many lines the source is off in comparison
                   to the switcher timing.

Hor: Shows how many us the source is off in comparison
                   to the switcher timing (only if Vert=0).

External Reference:
                   Shows the standard of the Black or Blackburst signal
                   at the genlock input.

The bar diagram shows the timing of the input source relatively to the autophasing range. All sources should be timed between the two marker lines in the middle area of the bar. The right line (with the respective switcher type name) marks the earliest mixer input (latest timing of the sources). The left line marks the earliest timing of the sources. The bar is displayed black, if the timing is in the phasing range or yellow, if the timing is outside the phasing range.

How to adjust the Genlock Phase:

- Make sure that the switcher is set to the same standard as the external reference and the sources.

- The video standard of the switcher can be modified by selecting the parameter **Video Standard** in the **Install E-Box** menu. Then push **Modify** to open an overlay with the selection modes **Auto Detect** (default), **625Lines/50Hz**, **525Lines/60Hz**. Confirm the selected mode with **OK**.

- Select a video source on Aux1. To adjust the genlock phase select **Genlock Phase**. Pressing **Modify** opens an overlay and delegates the digipots to adjust the phase.
  At first make a coarse adjustment that the display shows **Vert: 0 Lines** (For a quick adjustment the bar in the overlay can be dragged with the mouse.)
  If **Vert: 0 Lines** the display shows the horizontal offset. This offset should be for all inputs in the range of 0 ... -22 us. This phasing range is also displayed in the horizontal bar. For a correct adjustment the bar should be black.

- Select all inputs on Aux1 and correct the timing if necessary.

- Finally all inputs should be in the range of 0 ... -22 us

Note: *The sources on **Aux1** (Timing index card) can also be selected by clicking with the mouse on Aux1 and selecting a source from the overlay.*

Adjusting the genlock phase may cause disturbances on the monitor especially during coarse adjustment.

6. INSTALLING SYSTEM ACCESSORIES

6.1 TALLY SIGNALLING

6.1.1 INTRODUCTION

The tally signalling for the X**ten DD** works via serial communication line with the option to hook a hardware device onto that (those) serial line(s) to provide tally for those cases where it is not connected to a control system, e.g. **Jupiter** from THOMSON. For that optional hardware device the already existing Tally Distributor MI-3040 was chosen. This device is driven via the serial MPK protocol and has 40 opto-isolated inputs and 40 relay outputs. Because the maximum needed amount of inputs and outputs is greater than 40 more then one MI-3040s are needed.

6.1.2 OPERATION MODES

Terms

Red Tally   Normal On-Air Tally.
It simply signals that one or more outputs and all sources that compose that output images are used somehow.

Yellow Tally   Signal selected to be OnAir with CUT or AUTO.
Depends on Red Tally and switcher state.

Green Tally   Secondary independent tally path that works like Red-Tally.

DD-Application   A set of allocated resources that form a 'switcher'
for a specific task.

Tally Modes

The X**ten DD** System has five Tally Systems:

1. **Tally Overall** (not alloctable)
2. **Tally 1**
3. **Tally 2**
4. **Tally 3**
5. **Tally 4**

Each Tally System has two modes to operate with. One mode for controlling up to nine MI-3040 Tally boxes, and the other one to emulate up to nine MI-3040 Tally boxes. The second mode is used to connect the DD system direct to a **Jupiter** facility control system without external MI-3040 devices.

For each 'Tally color' three (two) boxes are possible - and needed if the switcher is fully equipped with 90 inputs. When the standard 18 inputs are equipped and Monitor Tally for the Aux buses is not needed only one box per color is needed.

The Tally Inputs of the Tally Boxes for Yellow Tally are NOT scanned, because Yellow Tally is a function of Red Tally and the switchers state (Next Transition, PST Source etc.).
A Tally Box is installed in the menu **Install Mainframe / Tally**. For each box its 4-Byte MPK address must be given.

Each box will be assigned by it's 4 byte MPK address.

Interoperability of the Tally Systems

The Tally Outputs of Tally System "Overall" are calculated from the Tally Input "Overall" and logically or-ed with the Tally result of all Application tally systems.The Tally Input to an Application specific Tally system is only its own Tally Boxes. Tally Inputs for M/Es or Aux buses not allocated by the application are ignored.

MACHINE INTERFACE **MI-3040**
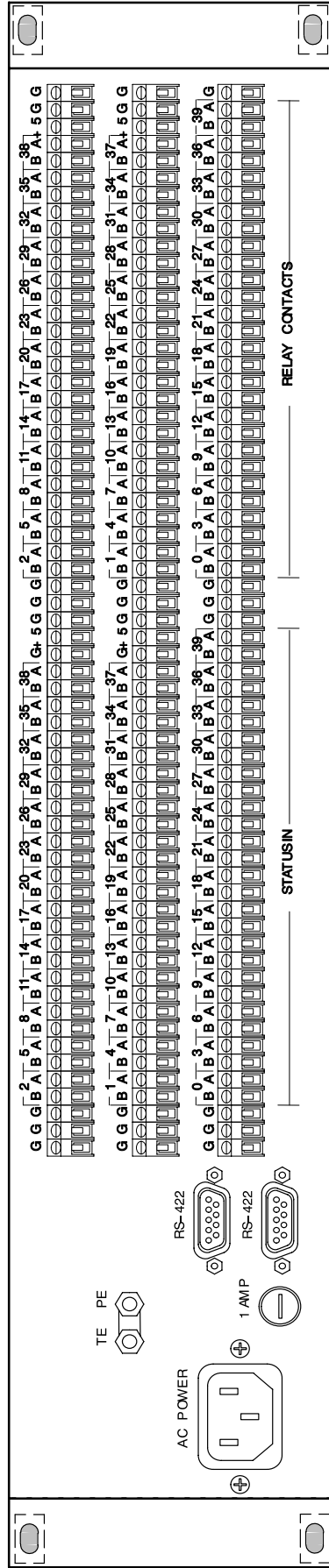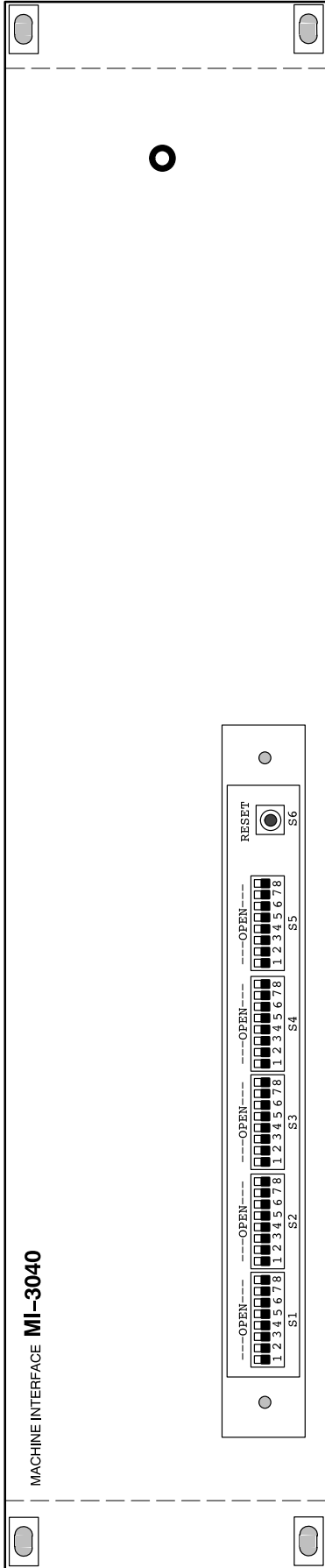
6.1.3 TALLY INSTALLATION MENU
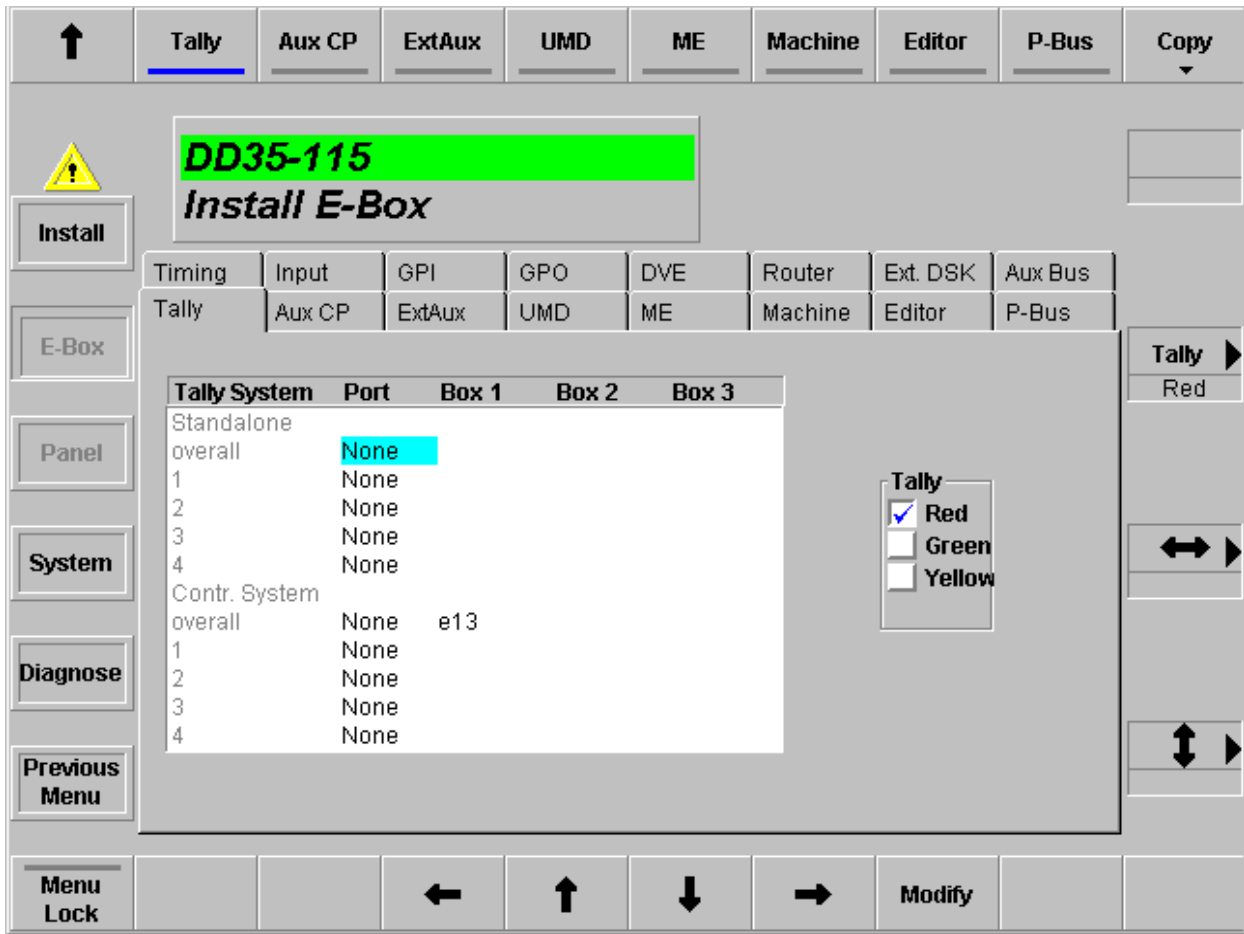
Index card for selecting Tally ports (e.g. port 5) and setting the MI-3040 box addresses (e.g. 30001e5).

6.1.4 PIN ASSIGNMENT

Each Pin # - as printed on the rear side of the MI-3040 - has three screwing clamps (A, B and G). Clamps A and B are the signal connections while G (Ground) can be used to connect the external cable shield.

6.1.4.1 Tally Outputs

	Function First MI-3040
0	Tally Out Input 01
1	Tally Out Input 02
2	Tally Out Input 03
3	Tally Out Input 04
4	Tally Out Input 05
5	Tally Out Input 06

6	Tally Out Input 07
7	Tally Out Input 08
8	Tally Out Input 09
9	Tally Out Input 10
10	Tally Out Input 11
11	Tally Out Input 12
12	Tally Out Input 13
13	Tally Out Input 14
14	Tally Out Input 15
15	Tally Out Input 16
16	Tally Out Input 17
17	Tally Out Input 18
18	Tally Out Input 19
19	Tally Out Input 20
20	Tally Out Input 21
21	Tally Out Input 22
22	Tally Out Input 23
23	Tally Out Input 24
24	Tally Out Input 25
25	Tally Out Input 26
26	Tally Out Input 27
27	Tally Out Input 28
28	Tally Out Input 29
29	Tally Out Input 30
30	Tally Out Input 31
31	Tally Out Input 32
32	Mon Tally Main
33	Mon Tally M/E 1
34	Mon Tally M/E 2
35	Mon Tally M/E 3
36	Mon Tally Clean
37	Mon DSK1
38	Mon DSK2
39	Mon DSK3

	Function Second MI-3040
0	Tally Out Input 33
1	Tally Out Input 34
2	Tally Out Input 35
3	Tally Out Input 36
4	Tally Out Input 37
5	Tally Out Input 38
6	Tally Out Input 39
7	Tally Out Input 40
8	Tally Out Input 41
9	Tally Out Input 42
10	Tally Out Input 43
11	Tally Out Input 44
12	Tally Out Input 45
13	Tally Out Input 46
14	Tally Out Input 47
15	Tally Out Input 48
16	Mon Tally Aux 1
17	Mon Tally Aux 2
18	Mon Tally Aux 3
19	Mon Tally Aux 4
20	Mon Tally Aux 5
21	Mon Tally Aux 6
22	Mon Tally Aux 7
23	Mon Tally Aux 8
24	Mon Tally Aux 9
25	Mon Tally Aux 10
26	Mon Tally Aux 11
27	Mon Tally Aux 12
28	Mon Tally Aux 13
29	Mon Tally Aux 14
30	Mon Tally Aux 15
31	Mon Tally M/E 1 cleanfeed
32	Ext DSK1 Fill
33	Ext DSK1 Key
34	Mon Tally M/E 2 cleanfeed
35	Ext DSK2 Fill
36	Ext DSK2 Key
37	Mon Tally M/E 3 cleanfeed
38	Ext DSK3 Fill
39	Ext DSK3 Key

	Function **Third MI-3040**
0	Tally Out Input 49
1	Tally Out Input 50
2	Tally Out Input 51
3	Tally Out Input 52
4	Tally Out Input 53
5	Tally Out Input 54
6	Tally Out Input 55
7	Tally Out Input 56
8	Tally Out Input 57
9	Tally Out Input 58
10	Tally Out Input 59
11	Tally Out Input 60
12	Tally Out Input 61
13	Tally Out Input 62
14	Tally Out Input 63
15	Tally Out Input 64
16	Tally Out Input 65
17	Tally Out Input 66
18	Tally Out Input 67
19	Tally Out Input 68
20	Tally Out Input 69
21	Tally Out Input 70
22	Tally Out Input 71
23	Tally Out Input 72
24	Tally Out Input 73
25	Tally Out Input 74
26	Tally Out Input 75
27	Tally Out Input 76
28	Tally Out Input 77
29	Tally Out Input 78
30	Tally Out Input 79
31	Tally Out Input 80
32	Tally Out Input 81
33	Tally Out Input 82
34	Tally Out Input 83
35	Mon Tally Aux 16
36	Mon Tally Aux 17
37	Mon Tally Aux 18
38	Mon Tally Aux 19
39	Mon Tally Aux 20

6.1.4.2 Tally Inputs

		Function
	0	Tally In Main
	1	Tally In M/E 1
	2	Tally In M/E 2
	3	Tally In M/E 3
	4	Tally In Clean
	5	Tally In Clean M/E 1
	6	Tally In Clean M/E 2
	7	Tally Ready
	8	Tally In Aux 1
	9	Tally In Aux 2
	10	Tally In Aux 3
	11	Tally In Aux 4
	12	Tally In Aux 5
	13	Tally In Aux 6
	14	Tally In Aux 7
	15	Tally In Aux 8
	16	Tally In Aux 9
	17	Tally In Aux 10
	18	Tally In Aux 11
	19	Tally In Aux 12
	20	Tally In Aux 13
	21	Tally In Aux 14
	22	Tally In Aux 15
	23	Tally In Clean M/E 3
	24	Tally In Ext DSK1
	25	Tally In Ext DSK2
	26	Tally In Ext DSK3
	27	Tally In Aux 16
	28	Tally In Aux 17
	29	Tally In Aux 18
	30	Tally In Aux 19
	31	Tally In Aux 20
	32	-
	33	-
	34	-
	35	-
	36	-
	37	-
	38	-
	39	-

6.1.5   MONITOR TALLY OPERATION

6.1.5.1   Monitor Tally Main / M/E1-3 / Clean

The monitoring tally outputs 'MonTallyMain', 'MonTallyM/E1..3' and 'MonTally-Clean' are returning the tally state of the corresponding stage.

Example:

The M/E2 has got OnAir at 'Tally In M/E2'. Thus M/E2 is on Air and returns 'OnAir at MonTally M/E2'. As M/E2 sources the video of M/E1, the M/E1 is OnAir too. As a result, this M/E returns OnAir at its 'MonTally M/E1'.
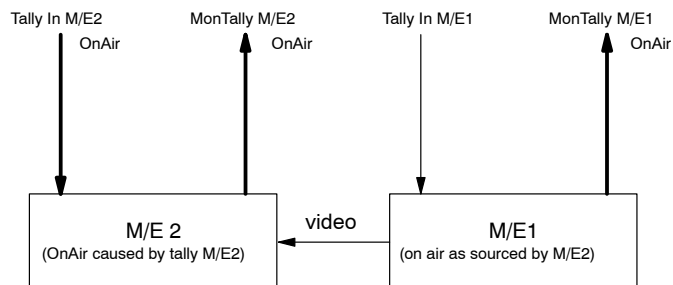
6.1.5.2   Monitor Tally Aux1-15

The monitoring tally outputs 'MonTallyAux1...15' are returning the tally state of the stage that is sourced by the aux bus.

Example:

The M/E2 has got OnAir at 'Tally In M/E2'. Thus M/E2 is on Air and returns 'OnAir at MonTally M/E2'. As M/E2 sources the video 'Input7', the 'Input7' is OnAir too. As AUX4 sources Input7 too, the AUX4 returns OnAir at its 'MonTally AUX4'.
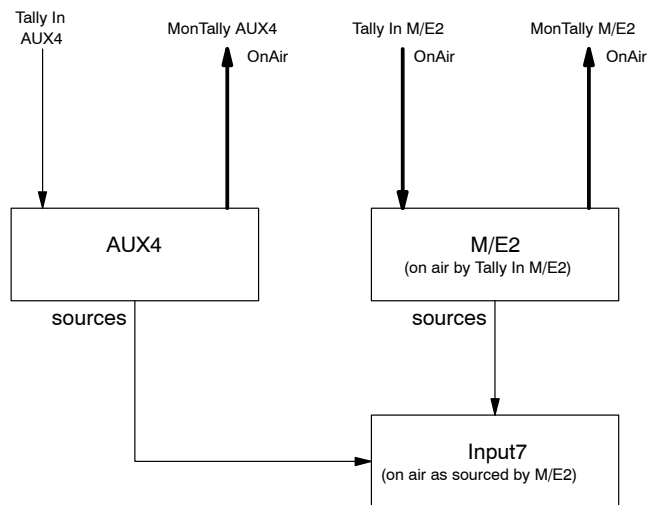
6.1.6 TALLY READY INPUT

The Tally ready function is used to generate an internal OnAir signalization without using external tally wiring. Two cases are imaginable:

● **No tally protocol is installed within the environment settings**:
In this case, the TallyOverAll itself assumes PP/PGM-RED is OnAir and it generates only this default tally for its panels.

● **One or more tally protocols are installed within the environment settings:**
Now the Tally Ready is given individually from the MI-3040 (also for TallyOver-All).
- If the MI-3040 is not connected, the corresponding tally is not calculated.
- If the MI-3040 is connected, the corresponding tally is calculated according to Tally Ready input bit.

      ON = Tally inputs according to input wiring,
      OFF = PP/PGM-RED is assumed as OnAir

6.1.6.1 Description MI-3040 Tally Box

Block Diagram
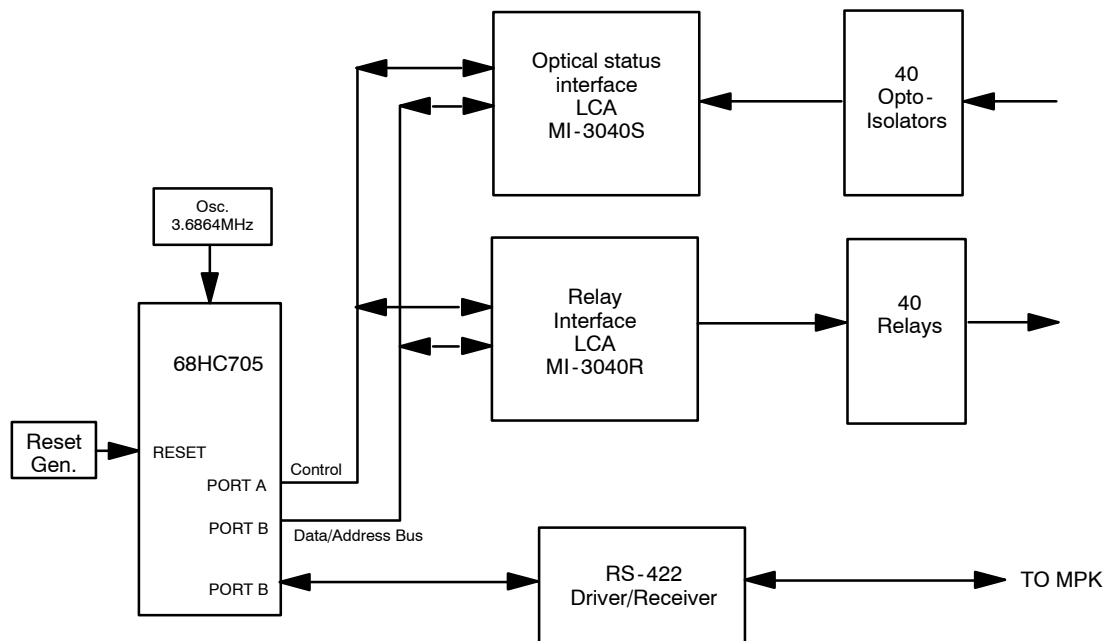
The MI-3040 interface performs two functions. It provides 40 switch closures and monitors 40 isolated status inputs. It interfaces with a **X**ten**DD** using MPK protocol.

Optoelectronic relays

The relay selected for this design is an optically-coupled solid-state relay (PVD1352 by International Rectifier) capable of switching from 0 to 100 volts (AC or DC) at up to 300 mA. Each relay may be configured by slide switch for normally-open or normally-closed operation.

Relay Control

Each relay drive signal passes through a two-input exclusive-OR gate. The second input to each gate is tied to a DIP switch to ground and pull-up. When a switch is in the OPEN or OFF position, the corresponding relay is considered normally open; a high level on the relay drive line (inverted to a low level) will consequently close the relay. Conversely, when a switch is in the CLOSED or ON position, the corresponding relay is considered normally closed; a high level on the relay control line will cause this relay to open.

Opto-couplers

The opto-coupler inputs respond to a differential voltage between the two input pins. The opto-couplers selected for this design are a bipolar type (PC314 by Sharp, for example) to eliminate the need for external steering diodes. The signal leg contains a series current-limiting resistor selected to provide between 1.75 and 13.6 milliamps of LED drive current at voltages of 5 to 28 volts (AC or DC).

Utility connections

+5V and ground utility connections are provided on the back panel. There are two +5V connectors, each of which is equipped with a PCB-mounted 1.1 amp fuse. The fuse is designed to reset itself automatically.

Output Circuit
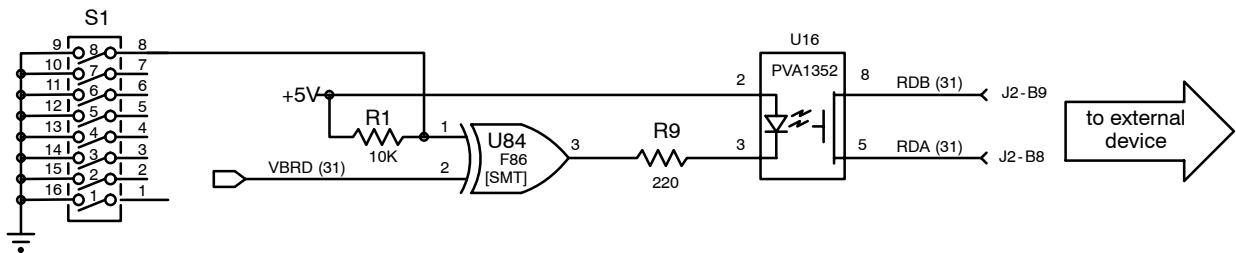
Input Circuit
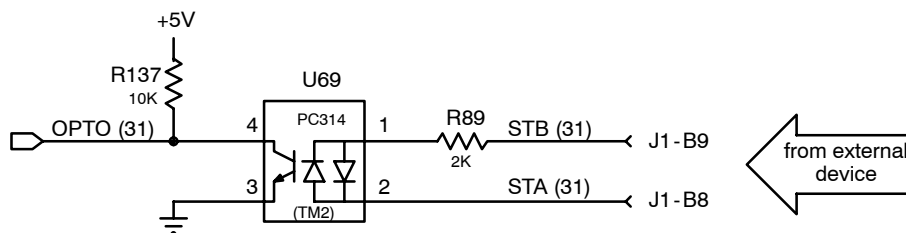
DIP Switch Assignment

Switch	Relay
S1-1	24
S1-2	25
S1-3	26
S1-4	27
S1-5	28
S1-6	29
S1-7	30
S1-8	31

Switch	Relay
S2-1	32
S2-2	33
S2-3	34
S2-4	35
S2-5	36
S2-6	37
S2-7	38
S2-8	39

Switch	Relay
S3-1	8
S3-2	9
S3-3	10
S3-4	11
S3-5	12
S3-6	13
S3-7	14
S3-8	15

Switch	Relay
S4-1	16
S4-2	17
S4-3	18
S4-4	19
S4-5	20
S4-6	21
S4-7	22
S4-8	23

Switch	Relay
S5-1	0
S5-2	1
S5-3	2
S5-4	3
S5-5	4
S5-6	5
S5-7	6
S5-8	7

UP = this relay normally open

0 -----OPEN-----
1 1 2 3 4 5 6 7 8

DOWN = this relay normally closed

6.2 AUX CONTROL PANELS

6.2.1 GENERAL

In the **Xten DD** production switcher system small auxiliary control panels can be used for crosspoint selection and other purposes. As abbreviation, the auxiliary control panels are called AUX CP.

The router and facility control system **Jupiter** has a lot of panels available.

Some of these fit into the requirements for use as **Xten DD** Aux Control Panel.

CP-300
24-source selection button panel with 6 delegation buttons. Mechanical dimensions: 19", 1RU, small buttons.
The CP-300 and CP-330 control panel modules are basic single bus controllers. 24 inputs are provided with the CP-300 and 48 inputs are provided with the CP-330 panel. Delegation buttons provide access to 6 different busses.

CP-330
48-source selection button panel with 6 delegation buttons. Mechanical dimensions: 19", 1RU, small buttons.
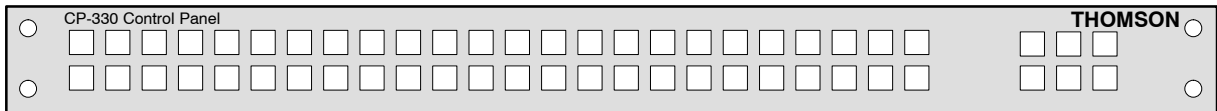
CP-3020
20-source selection button panel with 2 delegation buttons. Mechanical dimensions: 19", 1RU, large buttons.
The CP-3020 control panel module is a basic 20-input controller with two bus delegation buttons. This panel can be expanded with the CP-3021 expansion panel module to add access to 20 additional inputs. Up to 4 CP-3021 panels can be connected to the main CP-3020 panel to extend access to 100 total inputs.

CP-3021
20 source selection buttons for CP-3020 extension (19", 1HE, large buttons)

Panel Communications	All Aux control panels are "MPK Bus" devices. The panels sit on our message-per-keystroke "MPK Bus" for control panel communication. This serial data bus can support up to sixteen 300-series panels daisy-chained on a single serial port of the switcher mainframe or control panel. Looping connectors are provided to simplify daisy chaining connections.
Panel Connectors	The rear panels of each CP-300 and CP-330 control panels are identical. Each one has a power receptacle on the left side for input from the +5V DC supply. Two MPK bus connectors are adjacent for looping the common control panel cable from unit to unit and to the switcher mainframe or main panel.

Rear View CP-300, CP-330

The rear panel of the CP-3020 control panel has a power receptacle on the left side for input from the AC power supply. Two MPK bus connectors **DATA A** are adjacent for looping the common control panel cable from unit to unit and to the switcher mainframe or main panel. The remote connector is used for connecting the CP-3021 expansion module.
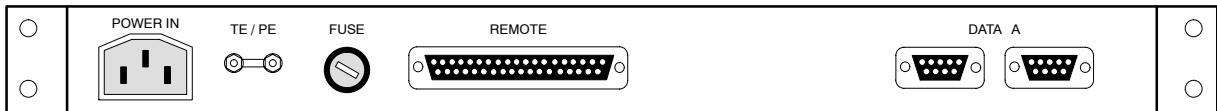
Rear View CP-3020

The CP-3021 expansion panels are connected directly to the CP-3020 main control panel module on a proprietary parallel bus. Two connectors are provided to easily daisy-chain multiple expansion modules (max. 4) to the main panel. The CP-3021 expansion panels need no separate power supply.
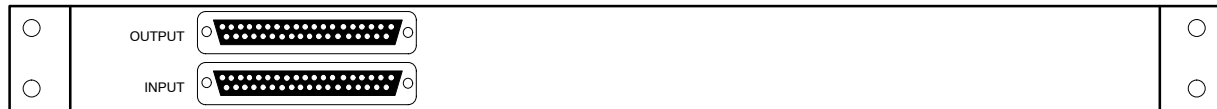
Rear View CP-3021

***Connection
Examples***
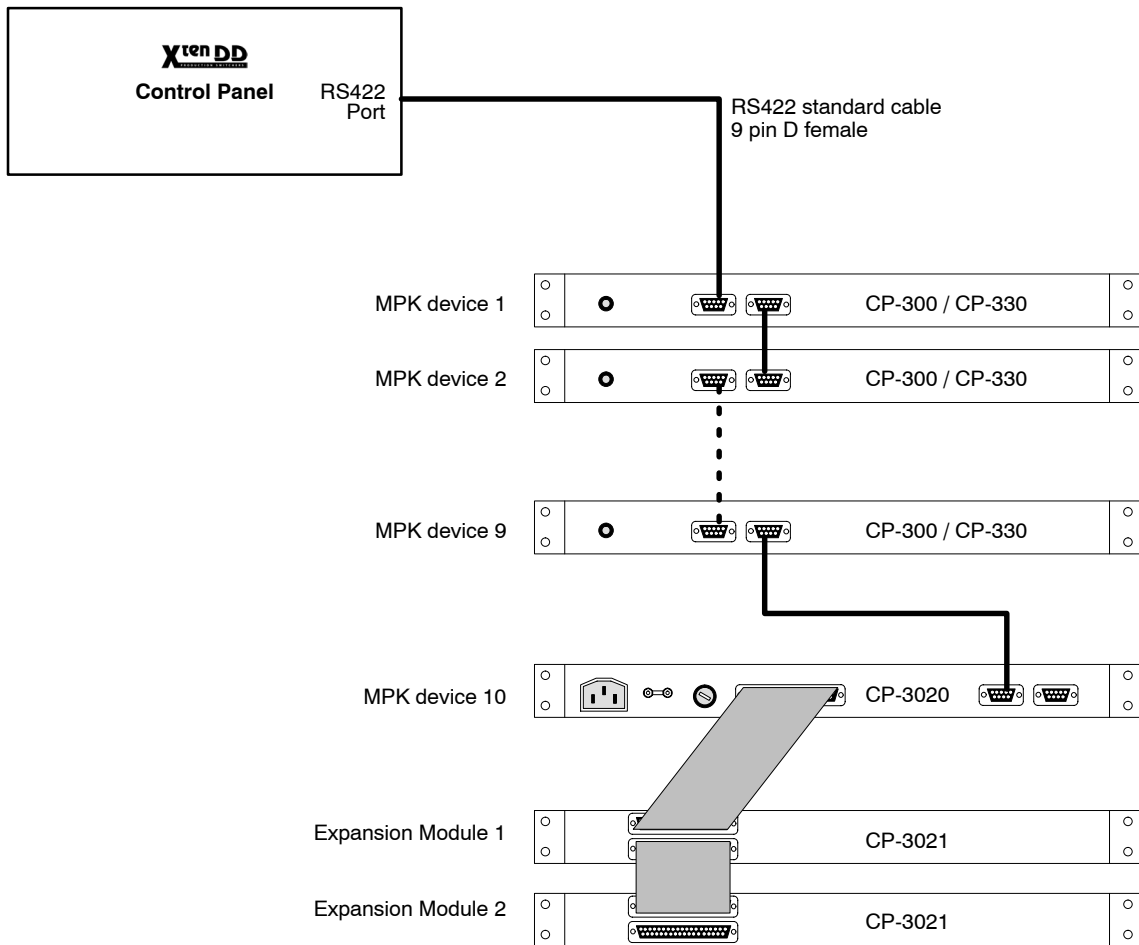
6.2.2   INSTALLATION

> In the installation procedure, the **X^{ten}DD** system is told about the installed panels. This is a hardware setup.

6.2.2.1   Installation E-Box

> To install up to four AUX-CPs on the E-Box, the following setup menu is used:
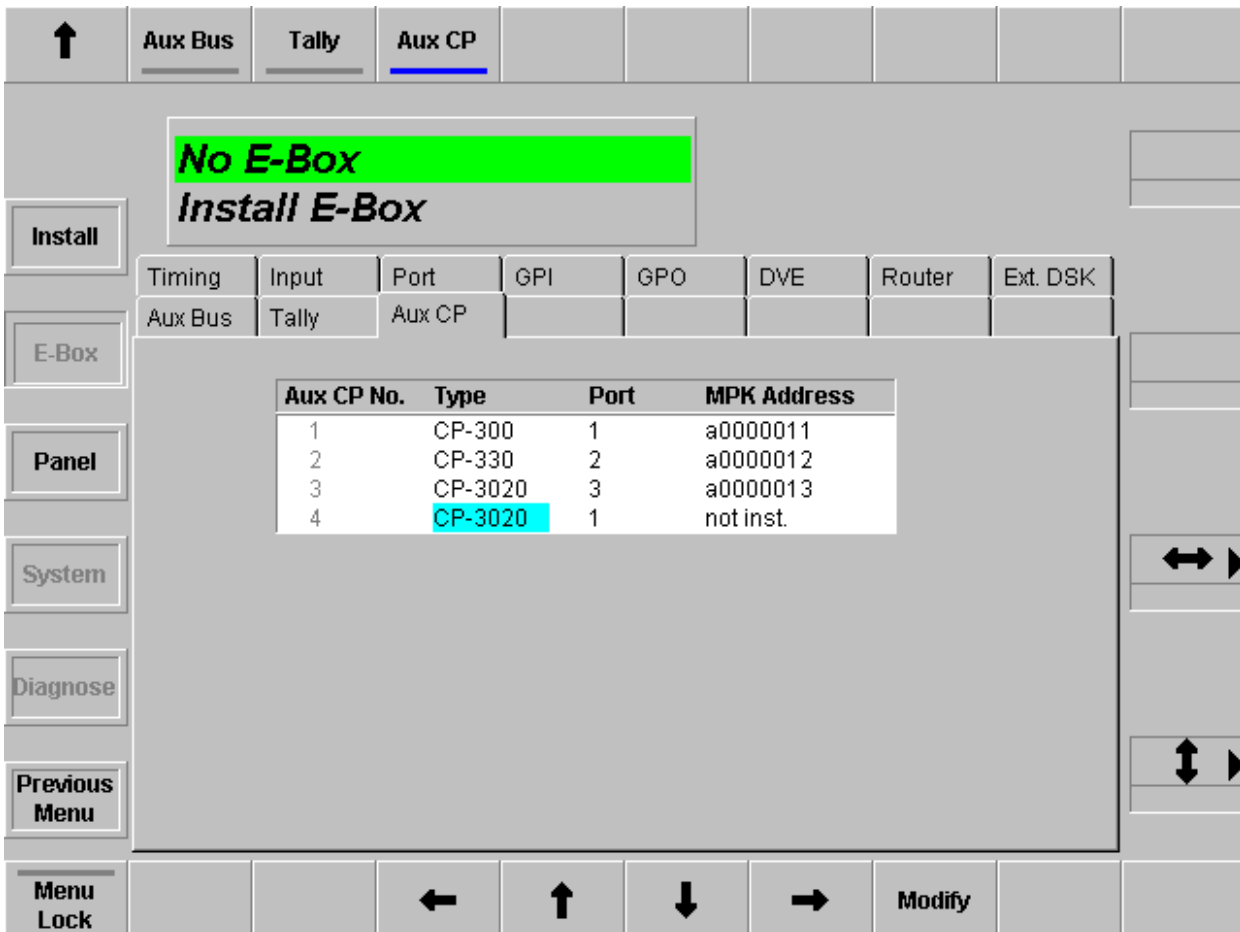
Cursor → ← ↑ ↓   Movement of the marker.

Digipot   Movement of the marker.

Modify   Modify the marked entry.

> **Type**   opens a pop-up window with all selectable types:
> CP-300
> CP-330
> CP-3020
> CP- CtrlSys

Port   opens a pop-up window with all ports plus "**None**" like in all other menus where a port must be configured.

> *Note:*   *The port must be different to the ports used for DVEs, Editors, ext. DSKs, etc.*

MPK Address opens the typewriter pop-up window.
"MPK -Address:" The physical MPK address of the AUX-CP must be entered. Refer to to label at the rear side of the panel modules (e.g. CP-3020: **e0002d43**).

6.2.2.2 Installation Panel

To install up to 10 AUX-CPs on the control panel, the following setup menu is used:
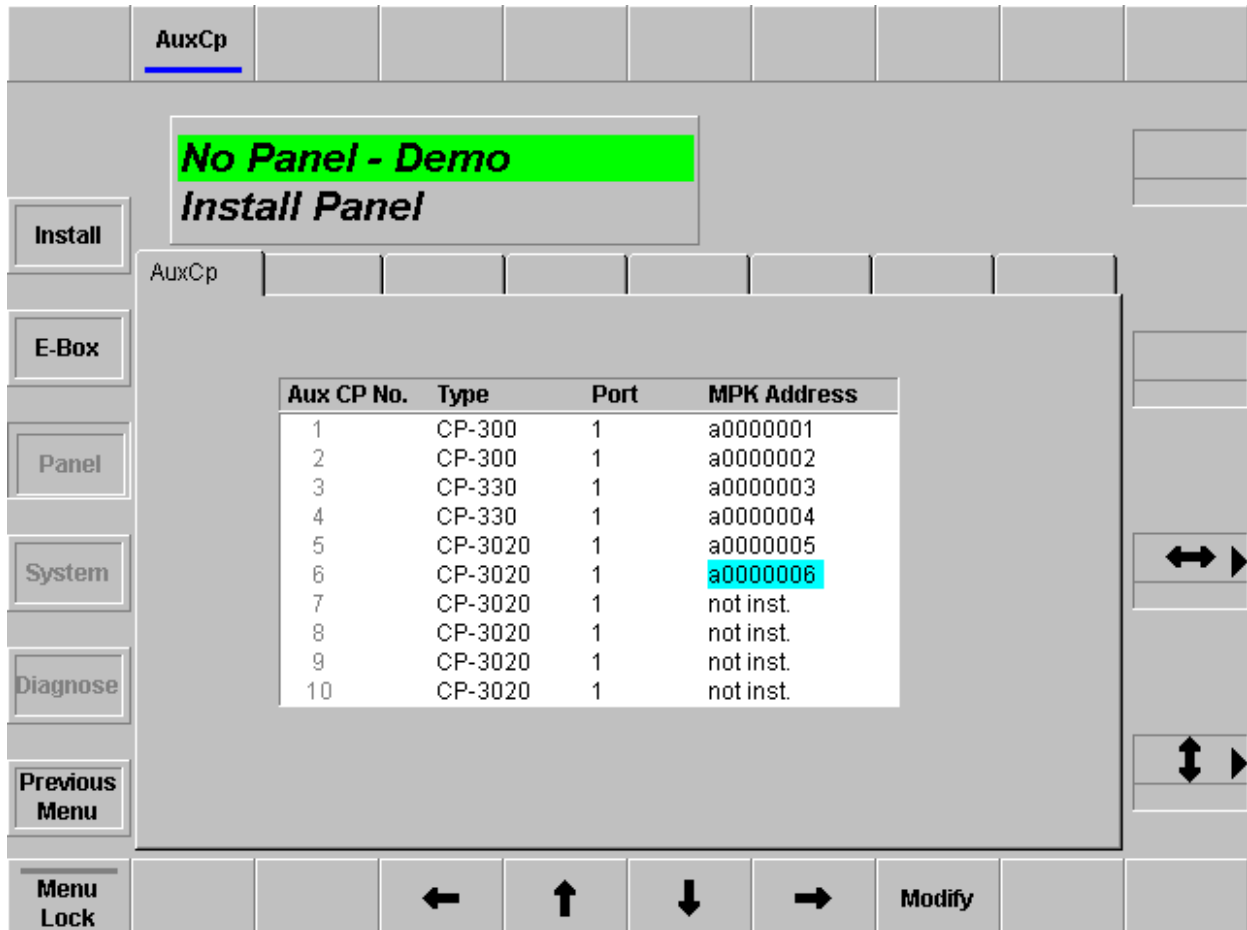
For details refer section "Installation E-Box". The setup procedure is the same.

6.2.3 CONFIGURATION

In the configuration procedure, the **X**ten**DD** system is told about the specific function an AUX-CP should perform. This may vary between production types e.g. in one production, the AUX-CP #1 controls AUX Bus 1 in another it controls external AUX bus #10.

This functional configuration is saved and loaded together with other production settings as "Application".

6.2.3.1 Config E-Box

For details refer to the section below. The configuration procedure is the same.

6.2.3.2   Config Panel

	MaKe Memo	Assign	AUX CP						

Online

default
Config Panel

Ma Ke	Assign	AUX CP				

Aux Cp	Deleg 1	Deleg 2	Deleg 3	Deleg 4	Deleg 5	Deleg 6
1 CP-330	None	None	None	None	None	None
2 CP-330	None	None	None	None	None	None
3 CP-330	None	None	None	None	None	None
4 CP-330	None	None	None	None	None	None
5 CP-3020	None	None	None	None	None	None
6 CP-3020	None	None	None	None	None	None
7 CP-3020	None	None	None	None	None	None

Config, E-Box, Panel, Allocate Resource, Allocate Panel, Previous Menu

Menu Lock	Assign		←	↑	↓	→	Modify	

Cursor → ← ↑ ↓   Movement of the marker.

Digipot   Movement of the marker.

Modify   Opens a pop-up window with the functions that can be programmed.

- - -	no function
2nd	this button is used as 2nd button i.e. shifts the source selection buttons
3rd	this button is used as 3rd button i.e. shifts the source selection buttons
AUX n, P/P Bus, M/E Bus	these buttons delegate the AUX-CP to crosspoint selection for the given bus.
Ext. AUX n	this button delegates the AUX-CP to crosspoint selection for the given external aux bus.

TiM/E Memo n this button delegates the AUX-CP to register recall for the given TiM/E Memo system.

Make Memo this button delegates the AUX-CP to Make Memo macro recall.

> ***Note:***
> ***This function is not available for AUX-CPs installed at the E-Box***

At least one function other than **- - -, 2nd** or **3rd** must be programmed. Otherwise the AUX-CP performs no action at all.

Since the CP-3020 Aux control panel module has only two delegation buttons, **Deleg 1** and **Deleg 2** may be programmed with **2nd** and **3rd**. In this case, **Deleg 3** defines the function of the AUX-CP. **Deleg 4..6** can be ignored.

Assign There are three modes:

- when the AUX-CP is used for crosspoint selection of internal busses, the sources can be assigned freely to the source selection buttons of the AUX-CP. To do this, **Assign** changes the contents of the index card. See below.

- using for crosspoint selection of external AUX busses

- does not apply to the **TiME Memo n** and **Make Memo** functions. I.e. the leftmost source button selects register 0. Make Memo macro of Make Memo button 1 and so on.

6.2.3.3 Input Assign (Internal Sources)

The procedure for input assignment is very similar to the input assignment for the control panel.

| | MaKe Memo | Assign | AUX CP | | | | | |

Online

default
Config Panel

Config

| Ma Ke | Assign | AUX CP | | | | | |

E-Box

Input Assign

Input			Button		Assigned	
NONE			01	c0	BLCK	
1	IN01	IN01	02	c0	BLCK	
2	IN02	IN02	03	c0	BLCK	
3	IN03	IN03	04	c0	BLCK	
4	IN04	IN04	05	c0	BLCK	
5	IN05	IN05	06	c0	BLCK	
6	IN06	IN06	07	c0	BLCK	
7	IN07	IN07	08	c0	BLCK	
8	IN08	IN08	09	c0	BLCK	
9	IN09	IN09	10	c0	BLCK	
10	IN10	IN10	11	c0	BLCK	
11	IN11	IN11	12	c0	BLCK	
12	IN12	IN12	13	c0	BLCK	
13	IN13	IN13	14	c0	BLCK	

Panel

AUX CP

No.1
CP-330

Allocate Resource

Allocate Panel

Previous Menu

Input

↕ ▶ **Input**

↕ ▶ **Button**

| Menu Lock | Assign | | ↑ | ↓ | None | | Reset Assign | | Assign |

Reset Assign	**None**	all buttons are assigned to no input.
	Default	sets the factory default input assign (see table below)
	Like ALL	sets the input assign like the input assign for bus row ALL (*control panel only*)
	Like AUX ALL	sets the input assign like the input assign for bus row AUX ALL (*control panel only*)

***Factory Default
Assign***

Button	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9
0	- -	Blck	in01	in02	in03	in04	in05	in06	in07	in08
10	in09	in10	in11	in12	in13	in14	in15	in16	in17	in18
20	in19	in20	in21	in22	in23	in24	in25	in26	in27	in28
30	in29	in30	in31	in32	in33	in34	in35	in36	in37	in38
40	in39	in40	in41	in42	in43	in44	in45	in46	in47	in48
50	Vids	MPR1	MPR2	COL1	COL2	COL3	WHIT	Main	CLNF	ME1
60	ME2	ME3	Pvw0	Pvw1	Pvw2	Pvw3	Lay1	Lay2	Lay3	- - -
70	VR00	VR01	VR02	VR03	VR04	VR05	VR06	VR07	VR08	VR09
80	VR10	VR11	VR12	VR13	VR14	VR15	- -	- -	- -	- -
90	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -

6.2.4   OPERATION

Delegation   Pressing a delegation button delegates the AUX-CP to that function. The delegation button is lit to indicate that status. If possible, the source buttons show the current status of the delegated function. In most cases, this will be the selected crosspoint on the delegated bus. If the function is TiME Memo recall or Make Memo recall, no state is indicated because such recalls are events.

2ⁿᵈ, 3ʳᵈ   Pressing a delegation button that is programmed to be **2ⁿᵈ** or **3ʳᵈ** toggles the shift level of the source buttons.

2nd	3rd	Source buttons CP-300	Source buttons CP-330	Source buttons CP-3020
off	off	1 .. 24	1 .. 48	1 .. 20 (+ 20 per CP 3021)
on	off	25 .. 48	25 .. 62	21 .. 40 (+ 20 per CP 3021)
off	on	49 .. 72	49 .. 96	41 .. 60 (+ 20 per CP 3021)
on	on	not allowed		

Source Buttons   Pressing a source button performs the function according to the delegation. I.e., selects the crosspoint or recalls the register or macro.
The response to a recall is a short flash of the source button.
The response to a crosspoint selection is the indication of the new crosspoint.

AUX-CP Enable   In menu **Remote**, the AUX-CPs can be enabled or disabled. In disabled state, the AUX-CP performs no function. Local delegation is still possible.

6.3 UNDER MONITOR DISPLAYS

6.3.1 GENERAL

Thomson offers a wide range of programmable 8-character Under Monitor Displays, especially designed for use in **XtenDD** Production Switcher applications and in Jupiter Control Systems for indication of source names and Tally. Single, double and triple displays are available.

The standard modules offer green 8-character displays with red tally lights an both sides of the display, able to be switched individually on and off for yellow Tally. The latest versions comprise dual-color-8-character displays which will switch the source name characters from green to an intensive red for Tally indication.
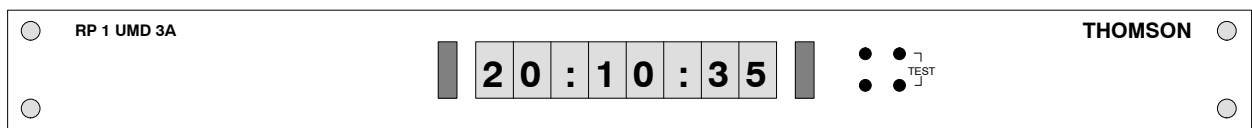
Single display module type

Double display module type
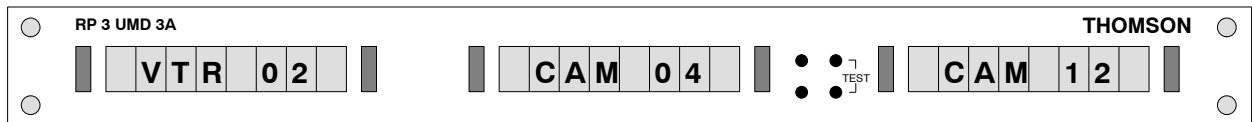
Trible display module type
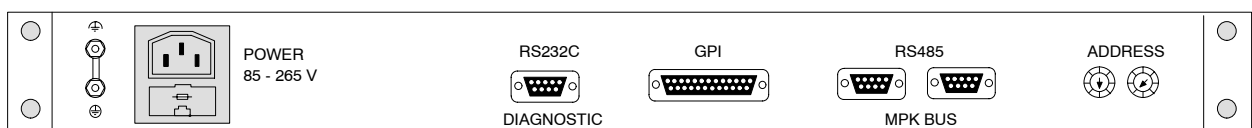
Rear panel connectors

UMD Driver

The UMD protocol driver file **DS0126.xxx** (RSE) supports the devices RP1 UMD (1 display), RP2 UMD (2 displays) and RP3 UMD (3 displays). The system supports up to 32 UMDs devices with up to 96 displays (if the RP3 UMD is used).

UMD Communications

All UMDs are "MPK Bus" devices. The UMDs sit on our message-per-keystroke "MPK Bus" for control communication. This serial data bus can support up to 32 UMD-series displays daisy-chained on a single serial port of the switcher mainframe or control panel. Looping connectors are provided to simplify daisy chaining connections.

6.3.2   INSTALLATION

Attention: *The EMV regulations are only applicable when correctly shielded cables are used for the installation. This also applies to video cables as well as control cables.*

Appropriate cables can be obtained from THOMSON.

UMD Connection

XtenDD
PRODUCTION SWITCHERS

RS422 Cable

	UMD		**Mainframe**
	9-pin male		**RS422 (Port1 - Port10)**
	D subminiature		**9-pin male**
			D-subminiature

Pin 1 - Ground ──── Shielding ──── Pin 1 - Ground
Pin 2 - TXret ──────────────── Pin 2 - RXret
Pin 3 - RX ──────────────── Pin 3 - TX
Pin 4 - Ground ──────────────── Pin 4 - Ground
Pin 5 - nc   Pin 5 - not connected
Pin 6 - Ground ──────────────── Pin 6 - Ground
Pin 7 - TX ──────────────── Pin 7 - RX
Pin 8 - RXret ──────────────── Pin 8 - TXret
Pin 9 - Ground ──────────────── Pin 9 - Ground

Cable length 30m max.

6.3.3　CONFIGURATION

Display Assignment　Each display can be configured by the user and assigned to the following input/output interfaces:

- INPUTS 1 ... 90

- MAIN OUTPUT ME1 ... PP

- PVW OUTPUT ME1 ... PP

- PGM BUS ME1 ... PP

- PST BUS ME1 ... PP

- KEY1 FILL ME1 ... PP

- KEY1 KEY ME1 ... PP

- KEY2 FILL ME1 ... PP

- KEY2 KEY ME1 ... PP

- KEY3 KEY PP

- KEY3 KEY PP

- AUX OUTPUT 1 ... 20

- CLEAN FEED

- DP OUT

- DVE1 ... 2 KEY

- DVE1 ... 2 VIDEO

- TIMECODE VTR1 ... 4

- EXTERNAL DSK

- CONSTANT STRING

Enter the Config data

The configuration can be done in the **Install E-Box** menu.
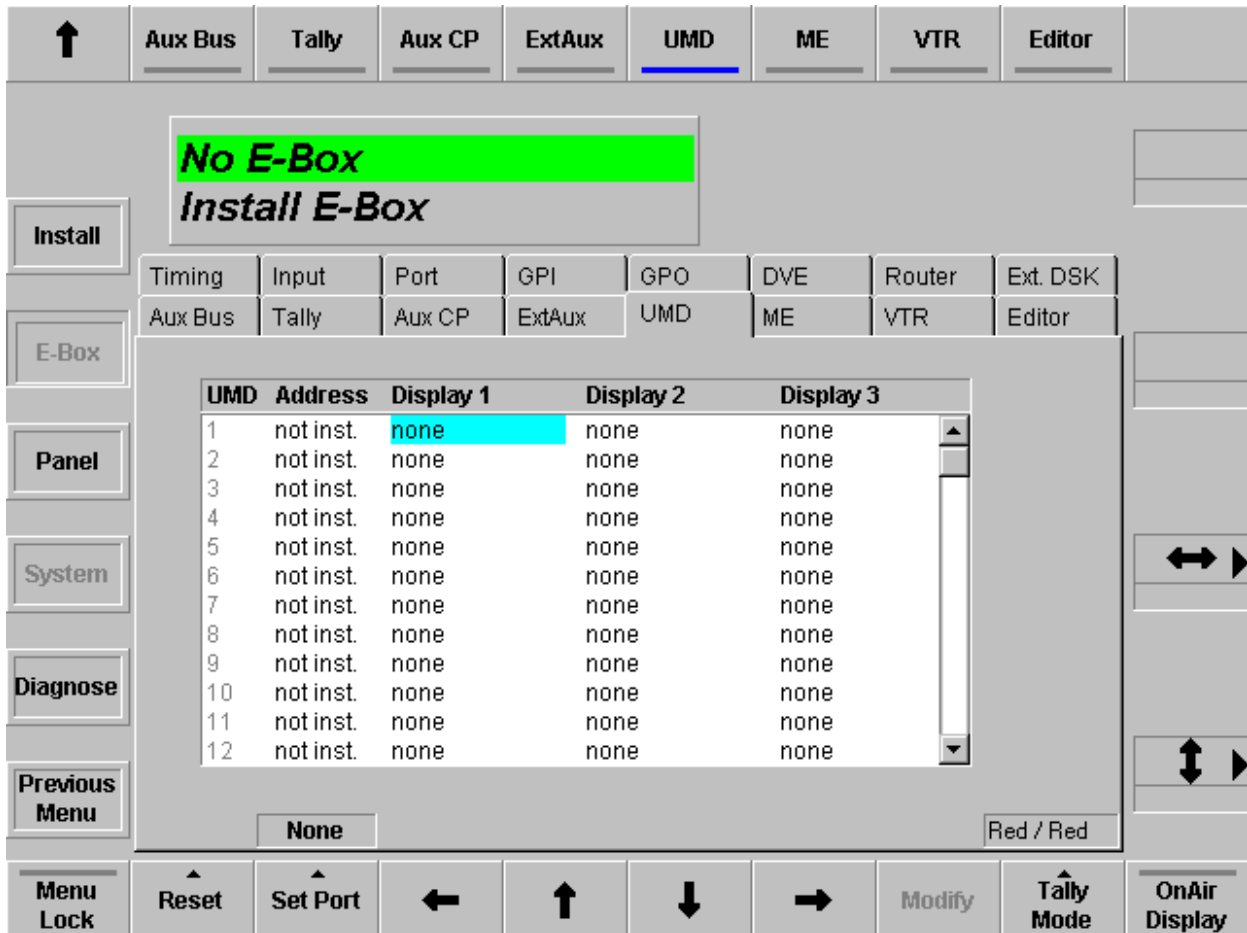
The following parameters are permissible:

Reset
Set the display assignment to default values.

Set Port
Select the serial port you like to use.

Valid values: **1...10** (RS422 ports 1..10) or
0 to disable UMD handling = **none**.

Address
Select the device address (see the HEX switches on the rear panel of the UMD devices). The UMD devices will use only the LSB of the physical MPK addresses (which is a 32 bit address)

Valid range: **00...BF**; with prefix "**0x**" for hex values
FF disables the device handling = **not inst**.

For details refer to your Under Monitor Display manual.

Display 1 / 2 / 3 Assign

The following table shows the relationship between the 32 devices and the 96 displays:

Display	Device	RP1 UMD	RP2 UMD	RP3 UMD
1	1	single	right display	right display
2	1	-	left display	middle display
3	1	-	-	left display
4	2	single	right display	right display
5	2	-	left display	middle display
6	2	-	-	left display
7	3	single	right display	right display
:	:	:	:	:
94	32	single	right display	right display
95	32	-	left display	middle display
96	32	-	-	left display

Tally Mode

Red/**Red**   Both LEDs of the UMD will signal a red tally**.**

Red/**Yellow**   The right LED will signal a red tally and the left LED will signal a yellow tally

Red/**Off**   The right LED will signal a red tally and the left LED is not used.

OnAir Display Button to switch the tally signalization on or off.

6.3.4   OPERATING HINTS

Please note the following display modes:

Inputs
INPUT 1 ... 48

8-digit source name preset in the respective menu. If "Name Transfer" is selected, the display shows the 4-digit source names.

I	N	P	U	T	1	0	

Main Output
MAIN OUT

The display will give all information about the video components on the output.

		F	T	B			

The output is in Fade To Black mode.

I	N	P	U	T	1	0	

If the output shows the transparent input 10:
The input name will be shown (see Inputs).

B	G	N	D	-	2		3

⇑
character is blinking

"BGND" will be shown in the first 4 digits of the display whenever the video background is in transition state. Keyers 1-3 will be represented by the characters '1','2' and '3' in the last three digits of the display. The position in the last three digits will indicate the priority of the keyers. A keyer component amount less than 100% will be shown by a blinking number.

With this display the background is in transition state, the keyer 2 (lowest priority) is in transition state, the keyer 1 is off and the keyer 3 (highest priority) is on.

B	_	_	_	2	_	A	_

⇑
character is blinking

The ME is switched to the layered mode. Layer B is ON (lowest priority), layer 2 is in transition state (2nd priority), layer A is ON (highest priority), layer 1 is OFF.

Preview Output
PVW OUT

The display will give all information about the video components on the output.

| I | N | P | U | T | 1 | 0 | |

If the output shows the transparent input 10:
The input name will be shown (see Inputs).

| B | G | N | D | - | 2 | | 3 |

⇑
character is blinking

"BGND" will be shown in the first 4 digits of the display whenever the video background is in transition state. Keyers 1 - 3 will be represented by the characters '1','2' and '3' in the last three digits of the display. The position in the last three digits will indicate the priority of the keyers. A keyer component amount less than 100% will be shown by a blinking number.

With this display the background is in transition state, the keyer 2 (lowest priority) is in transition state, the keyer 1 is off and the keyer 3 (highest priority) is on.

| B | _ | _ | _ | 2 | _ | A | _ |

⇑
character is blinking

The ME is switched to the layered mode.Layer B is ON (lowest priority), layer 2 is in transition state (2nd priority), layer A is ON (highest priority), layer 1 is OFF.

| | | A | K | A | 1 | | |

The cursor for Auto-Chroma-Key adjustment for keyer 1 is selected.

| | | K | E | Y | 1 | | |

Key Preview (fill signal) for keyer 1 is selected.

| | | M | S | K | 1 | | |

Mask Preview 1 is selected.

PGM Bus, PST Bus,
KEY fill, KEY key,
AUX outputs,
DVE key, DVE video

The input name of the selected input will be shown (see Inputs).

| I | N | P | U | T | 1 | 0 | |

VTR Timecode

The timecode of the connected VTR's will be displayed

| 0 | 1 | 2 | 0 | 0 | 5 | 2 | 3 |

The current timecode is 01:20:05:23.

External DSK

Displays the external DSK id's if there are in transition state or ON.

| | 1 | | 2 | | 3 | | |

Clean Feed

Displays a constant string.

| C | L | E | A | N | | F | D |

String

The preset string will be displayed.

| P | H | I | L | I | P | S | |

7. INSTALLING EXTERNAL DEVICES

7.1 DIGITAL VIDEO EFFECT SYSTEM INTREGRATION

7.1.1 SCITEX A-5100 DVEOUS

7.1.1.1 DVE Effect Loop Operation

For realization of special production effects such as "Flying Key", the **X**ten **DD** production Switcher can be connected together with the ***Effect System A-5100 DVEous*** from SCITEX.

7.1.1.2 A-5100 System Description

The A-5100 DVEous is a digital DVE system with the following features:

- multichannel ability for different input signals

- excellent picture quality with 10-bit resolution

- new DVE effects

- integratable into studio periphery via serial interfaces and software interface

The basic system offers

- fully functionable DVE system as "twin channel" with two DVE channels and additional background channel with frame store for processing two 4:2:2 video signals independent of each other. This enables processing 2x Video signals or 1x Video with 1x Key with separate Key Shadow in addition to a background signal.

- 4x digital serial video inputs. They can be selected as Video Key or background inputs. The inputs are provided with Freeze/Strobe function and Blur (via H & V) function and are located directly between video and internal matte generators. All inputs can be connected via the internal crossbar to the individual DVE channels and background.

The A-5100 can be equipped with a total of 6 input modules (12 channels) for the most different analog and digital video signals.

7.1.1.3   Interface A-5100 DVEous to **X**^{ten} **DD**

As interface for the **X**^{ten} **DD** , the A-5100 offers two interfaces:

- Editor/VTR interface for the Effect Loop operation

- Remote Aux interface for the control of up to four Aux buses of the connected mixer

7.1.1.4   Software Preconditions

A-5100 System Software V 5.0 and higher is the software precondition for the DVE. The mixer has to be equipped with **Software version V1.00** or higher.

7.1.1.5 Installation

The connection between the A-5100 and the **Xten DD** depends on the respective application and is made on the control side via 9-pin RS422/232 cables as well as on the video side via video cables for VIDEO and KEY.
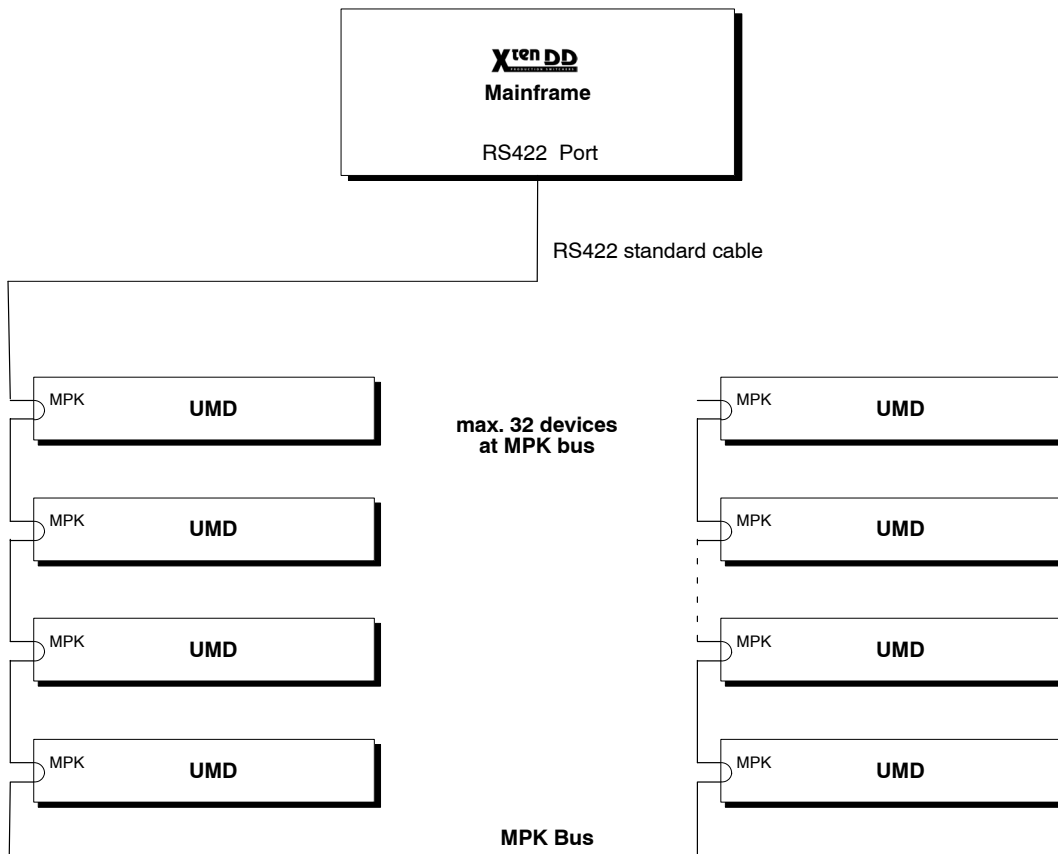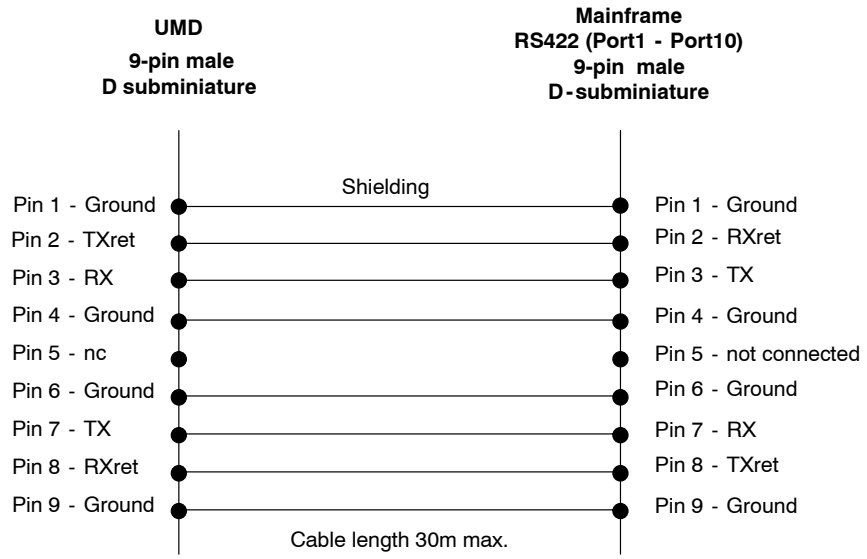
Attention: *The EMV regulations are only applicable when correctly shielded cables are used for the installation. This also applies to video cables as well as control cables.*

Appropriate cables can be obtained from THOMSON.

Video cable connection

Depending on the configuration**,** the following connections are required:

- Video cable connection for Video (DVE Video send) from the mixer (DVE Output, Video) to a DVE input of the A-5100.

- Video cable connection for Key (DVE Key send) from the mixer (DVE Output, Key) to a DVE input of the A-5100.

- Video cable connection for Video from the A-5100 (PGM Video out) to a freely definable video input of the mixer.

- Video cable connection for Key from the A-5100 (Key out) to a freely definable video input of the mixer.

- Tally cabling from DVEous GPI OUT to MI-3040 interface TALLY IN, corresponding to the specific application.

Control Cable DVE Control

Selecting the **A53D VTR** Protocol on the DVEous will automatically configure the associated port in RS232 mode. Thus, on the **X**ᵗᵉⁿ **DD** side one of the RS232 ports will have to be used (Mainframe Port11 - Port14, recommended Port11 or Port12).

Note: *Although the protocol DVEous may be selected on any of the 15 DD35 ports, only the RS232 ports can be used since the configuration of the DVEous is always RS232.*

The Effect Loop control requires a special cable (connector/connector). The cable is assigned as follows:

A-5100 Mainframe DVEous
Editor Port
9-pin male
D-subminiature

Xᵗᵉⁿ **DD** **Mainframe**
RS-232 Port
Port11, Port12
9-pin male
D-subminiature

Pin 4 - Ground ────────────────── Pin 5 - Ground
Pin 7 - Transmit ───────────────── Pin 3 - Receive
Pin 8 - Receive ────────────────── Pin 2 - Transmit

Cable length 30m max.
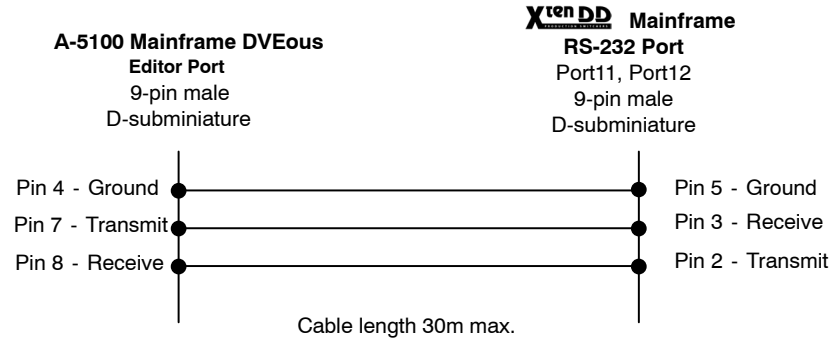
Note: *The control cable of the DD20, DD30 cannot be used for the* **X**ᵗᵉⁿ **DD***, because the pin assignment has been changed.*

***Control Cable
DVE AUX Bus
Control***

The Aux Bus control requires an RS422 cable (connector/connector) with standard assignment. The standard RS422 cable is assigned as follows:

A-5100 mainframe DVEous
AUX Port
9-pin male
D subminiature

Xten DD **Mainframe**
RS422 (Port1 - Port10)
9-pin male
D-subminiature

Pin 1 - Ground   Shield   Pin 1 - Ground

Pin 2 - TXret   Pin 2 - RXret

Pin 3 - RX   Pin 3 - TX

Pin 4 - Ground   Pin 4 - Ground

Pin 5 - nc   Pin 5 - not connected

Pin 6 - Ground   Pin 6 - Ground

Pin 7 - TX   Pin 7 - RX

Pin 8 - RXret   Pin 8 - TXret

Pin 9 - Ground   Pin 9 - Ground

Cable length 30m max.
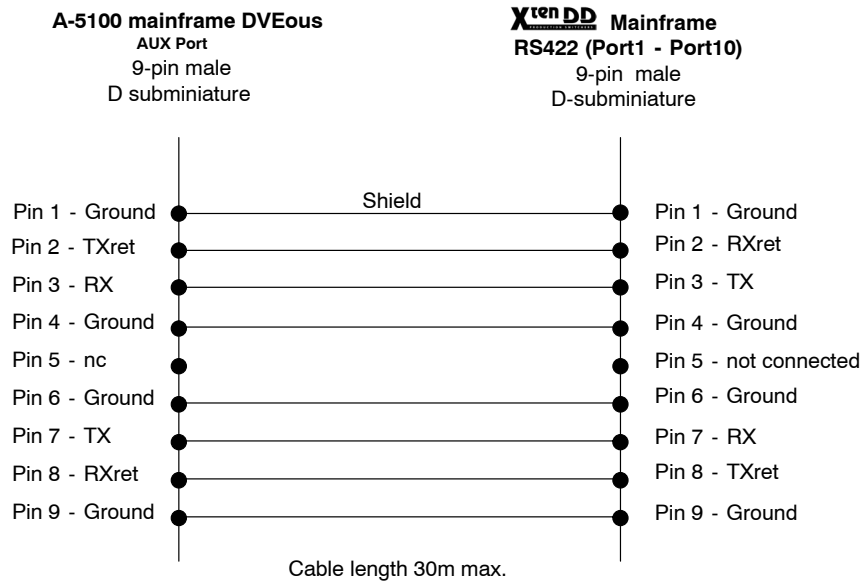
7.1.1.6   Setup and Port Configuration of A-5100 DVEous

The "DVE Effect Loop" operation requires in the A-5100 the following settings:

1. Press Remote Enable in the System menu.

2. Press Editor to highlight it (but do not switch Editor on) and adjust:

   - Protocol: A53D/VTR
   - BAUD: 9600
   - Parity: None

3. Press Editor to switch it on now.

The operation "AUX Bus control"...

1. Press Remote Enable in the System menu

2. Press AUX to highlight it (but do not switch AUX on) and adjust:

   - Protocol: AUX Bus
   - Function: Config: SWR Type : GVG 200
                       AUX Config: 1, 2, 3, 4
               Control: chnl Select: 1A*
                       AUX Select: 1*

* Note:

Selection of the Aux buses is made via the DVE channel selection:

- Selecting DVE **CHNL Select 1A** addresses
  A/B source selection to **Aux Select 1**

- Selecting DVE **CHNL Select 1B** addresses
  A/B source selection to **Aux Select 2**

- Selecting DVE **CHNL Select 2A** addresses
  A/B source selection to **Aux Select 3**

- Selecting DVE **CHNL Select 2B** addresses
  A/B source selection to **Aux Select 4**

Note: *Assignment of the Aux busses 5 ... 15 can be done in the switchers menu Config/E-Box-DVE through mapping the AUX channels*

Remote AUX Control of the switchers by the DVEous. Switching the input sources of the switcher onto the AUX ports of the switchers and onto the DVEous inputs 1A, 1B, 2A and 2B.

Press onto Input of the Channel Menus and select Type: AUX Bus:

Press to select onto a channel button(1A,1B,2A or 2B) of the Channel select menu and choose a crosspoint (XPNT). The crosspoint is the inputsource of the switcher which will be switched from remote onto the previous selected AUX Bus.

If required, the blanking has to be adapted in menu **INPUT SETUP**,
i.e. setting **BLANKING** = "**Normal**" and not "**A57**"

After having switched over the protocols in the DVEous, it is recommended to switch the DVEous off and on again (or to initiate RESET) in order to enable communication with the mixer again. Normally, switching-over of the communication parameters is made automatically after a waiting time of 10 - 15 seconds.

A scaling of the DVE sequence to a defined time for adjusting the movement of the mixer fader arm with the start and end of the DVE sequence is not required, unless the sequence of the DVEous effects should be smaller than **2 Fields**.

Note: *The DVEous has not the possibility to freely select the Aux sinks used for A/B buses, since they are fixed-assigned to the DVEous channels. Thus, different operation modes are obtained for the Aux channels:*

    CH1A $\Rightarrow$ Aux 1 (DVE)   *controls DD- Aux 1*
    CH1B $\Rightarrow$ Aux 2 (DVE)   *controls DD- Aux 2*
    CH2A $\Rightarrow$ Aux 3 (DVE)   *controls DD- Aux 3*
    CH2B $\Rightarrow$ Aux 4 (DVE)   *controls DD- Aux 4*

7.1.1.7   Setup and Port Configuration of the X^{ten} **DD**

The operation "DVE Effect Loop" and the "Aux Bus control" requires in the switcher the following settings (for each **DVE No**.):

Menu: **INSTALL** / **E-BOX** / **DVE**

Tally	Aux CP	ExtAux	UMD	ME	Machine	Editor	P-Bus
Timing	Input	GPI	GPO	DVE	Router	Ext. DSK	Aux Bus

Parameter	Setting		Type
Port	1		
Type	dveous		none
Video In	1		✓ dveous
Key In	1		charistx_v100
Delay	0		dvextreme_v100
Tally	intern		dvextreme_v200
Video Send	AUX 2		sony_dme_v311
Key Send	AUX 3		a57_v100
Control Port	2		dpm_v999
Control Type	gvg200/dd3x_dveous		
Control Delay	2		

In the DVE menu the following settings have to be carried out:

DVE No.:   **1** and/or **2**

Port (RS232):   **11** to **14** (recommended **11** or **12**)

Type: **dveous**

Video In / Key In: Enter Video and Key inputs on which the transformed signal of the DVE is available.

Delay: Adjust the delay of the switching point in field.

Tally: Int/Ext   Internal / external ("intelligent") tally control of the DVEous can be used for A/B switching. In position **Ext**, the DVEous determines also which input source will get the red tally in dependence on the effect.

Video Send / Key Send: Select the Aux Busses as source for Video and Key.

Control Port: RS 422 port (control cable)

Control Type: GVG 200/dd3x_dveous

Control Delay: Adjust the delay of the switching point between the AUX ports for the frontside and backside in field.

7.1.1.8 Tally Signaling

The DVEous offers a so-called "intelligent" tally. This means that it is signalled which of the input signals is part of the output signal. When the input signals of the DVEous come from a **X^{ten} DD** switcher's AUX bus an appropriate setup and cabling can be made to provide the correct on air tally signalization. The DVEous uses the GPI OUT port to feed this signals to the switcher. The appropriate outputs must be wired with the respective tally inputs of the MI-3040 interface.

Since the DVEous does not provide tally inputs (to receive the tally output of the switcher) the **X^{ten} DD** combine the internal tally information with the received information from the DVE. The video sources are signaled, if the DVE received tally **and** the DVE transmit tally.

Setup at the DVEous

REMOTE SETUP OF THE SYSTEM MENU:

Select GPI Outputs**:** Mode in position Tally or Mode 1

There are two modes for the GPI outputs that you can select in the remote setup menu. **Mode1** assigns functions to the 12 GPI outputs as follows:

- GPIs 1 to 4 - Programmable on a keyframe-by-keyframe basis in the Event menu. You can fire any combination of these four GPI outputs on any keyframe of the global timeline.

- GPIs 5,7,9 and 11 - These GPI outputs provide front/back switch tallies for each of the four DVE channels (5=Ch1A, 7=Ch1B, 9=Ch2A, 11=Ch2B). A high output indicates that the channels "Front" side is visible, while a low output indicates that the channels "Back" side is visible. These outputs are useful for connection to a switcher that accepts Front / Back toggles for switching Aux Bus outputs. By allowing the switcher to perform Front / Back switching, only two switcher Aux outputs are needed to feed each twin channel (1A/1B or 2A/2B).

- GPIs 6, 8 10 and 12 - These GPI outputs provide on-air tallies for each of the four DVE channels (6=Ch1A, 8=Ch1B, 10=Ch2A, 12=Ch2B). An on-air tally is low whenever that channel is visible on the DVEous main output, and high otherwise.

When set to **TALLY** mode, the 12 GPI outputs function as on-air tallies for the 12 inputs. An on-air tally is low whenever that input is visible in the DVEous main output, and high otherwise.

For details refer to your DVEous Technical Guide.

Setup at the **X^{ten} DD**

Menu **INSTALL** / **E-BOX** / **DVE:**

Tally   *Extern*

Cable example 1
Single channel
Video + Key
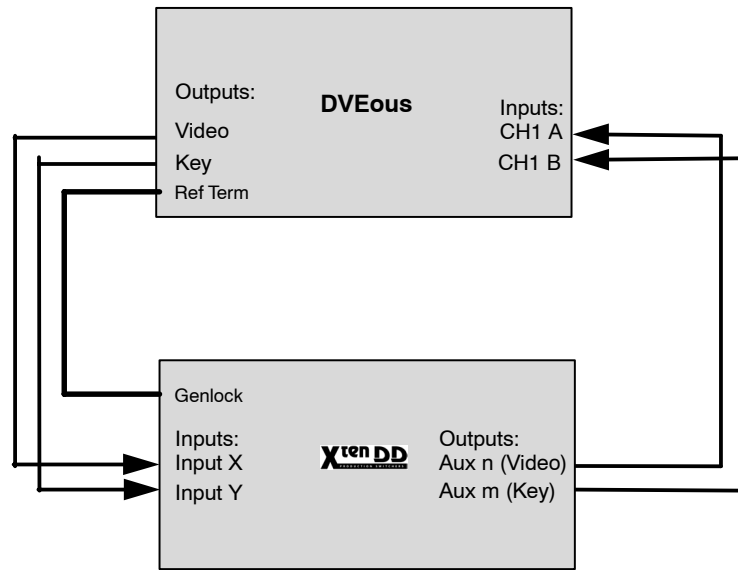
Video Cabling:
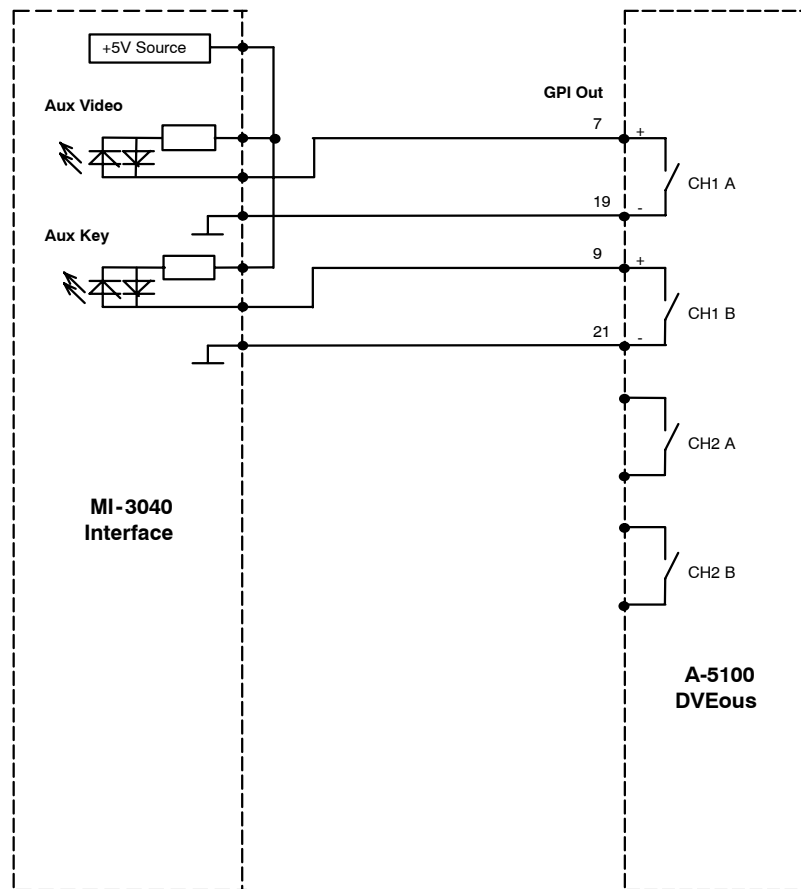
Tally Cabling:

Cable example 2
Two channel
Video + Key

Video Cabling:
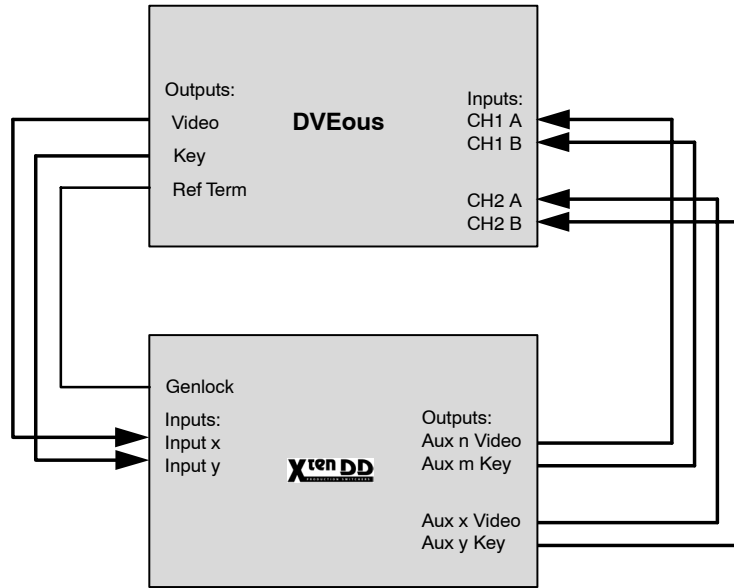
Tally Cabling:
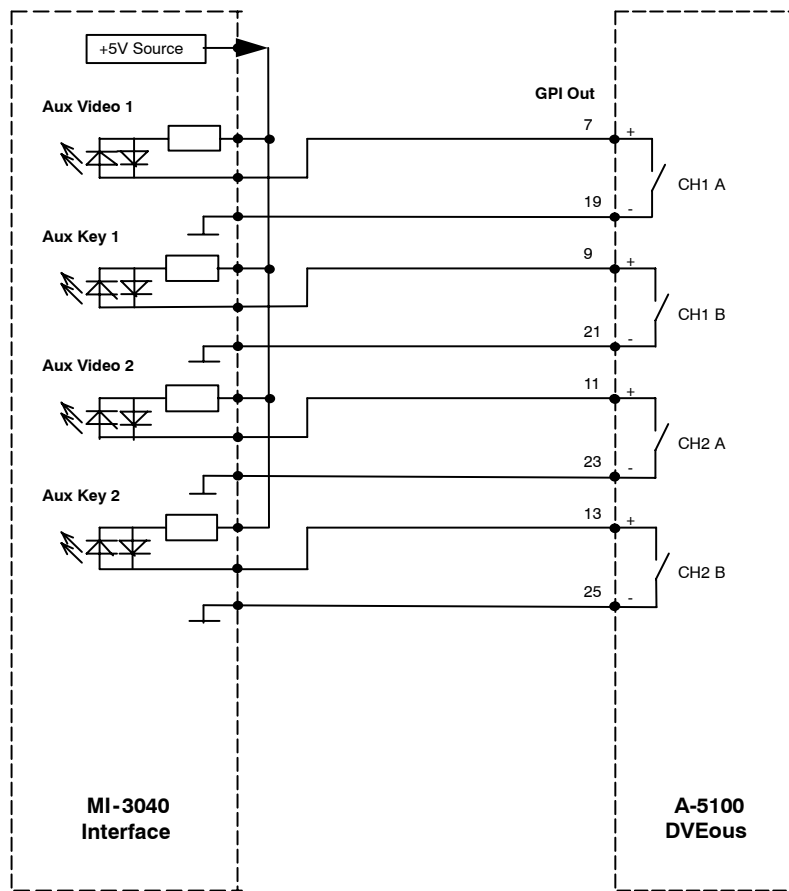
Cable example 3
Control cabling

```
                    ┌─────────────────────┐
                    │                     │
                    │      DVEous         │
                    │   Control Panel     │
                    │                     │
                    │         Port Chassis│
                    └──────────┬──────────┘
                               │
                               │  special
                               │  DVEous cable
                               │
                    ┌──────────┴──────────┐
                    │            Port CP  │
                    │                     │
                    │      DVEous         │
                    │     Mainframe       │
                    │                     │
                    │ Port Editor  Port Aux│
                    └────┬──────────┬─────┘
                         │          │
          Control Cable  │          │  Control Cable
          DVE Control    │          │  DVE Aux Bus Control
                         │          │
              ┌──────────┴──────────┴─────┐
              │ RS232        RS422         │
              │ Port 11, Port Port 1, Port 10│
              │ 12                         │
              │        X ten DD            │
              │        Mainframe           │
              │                            │
              └────────────────────────────┘
```
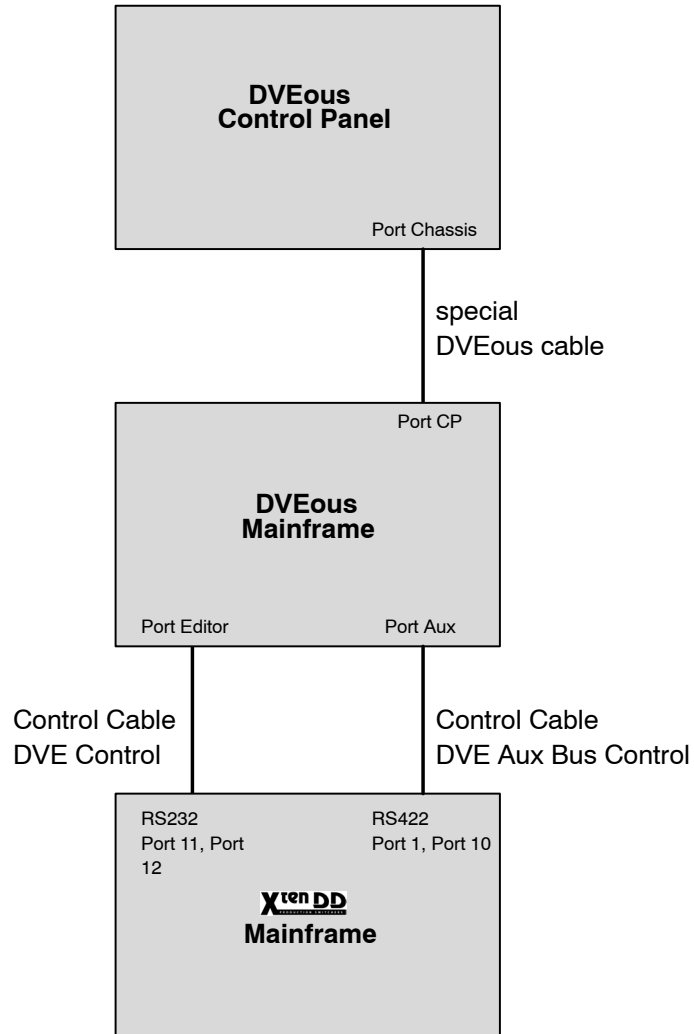
7.1.2   QUESTECH CHARISMA TEN-X

7.1.2.1   DVE Control

For the **QuesTech Charisma TEN-X,** the switcher provides two protocols for different purposes. The protocols are:

1.   Selection and control of DVE-effects: protocol **DVE CHARIS**

2.   Control of **Xten DD** AUX-busses by TEN-X: in preparation

Control Cable Connection

Software Requirements	TEN-X software version:	Mainframe	**Version 1.16 b**
		Control Panel	**Version 2.16 b**

Connection cable   RS-422 cable with male and female connector from a X^{ten}DD Port 1 ... 10 to TEN-X's Video Display Unit **Editor** port.
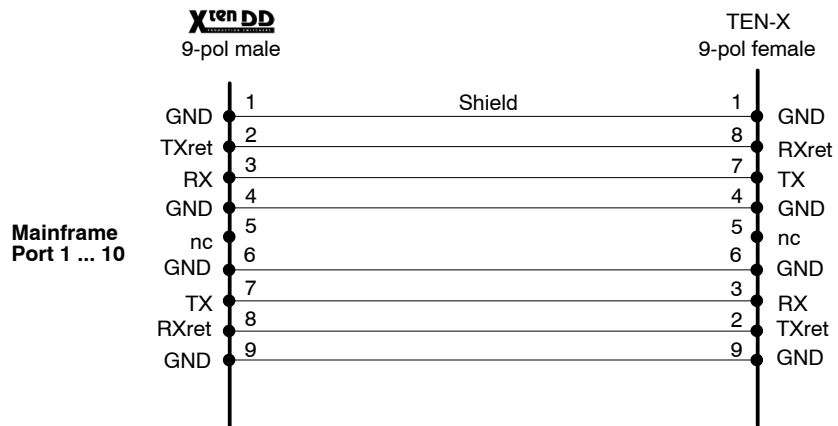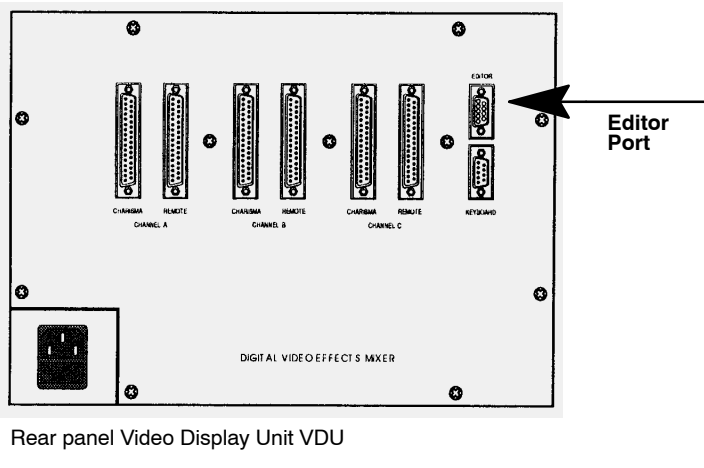
Rear panel Video Display Unit VDU

Setup and Port Configuration of the Xten DD

The operation requires in the mixer the following settings (for each **DVE No**.):

Menu: **INSTALL** / **E-BOX** / **DVE**

Tally	Aux CP	ExtAux	UMD	ME		Machine	Editor	P-Bus
Timing	Input	GPI	GPO	DVE		Router	Ext. DSK	Aux Bus

Parameter	Setting		Type
Port	1		
Type	dveous		**none**
Video In	1		✓ **dveous**
Key In	1		**charistx_v100**
Delay	0		**dvextreme_v100**
Tally	intern		**dvextreme_v200**
Video Send	AUX 2		**sony_dme_v311**
Key Send	AUX 3		**a57_v100**
Control Port	2		**dpm_v999**
Control Type	gvg200/dd3x_dveous		
Control Delay	2		
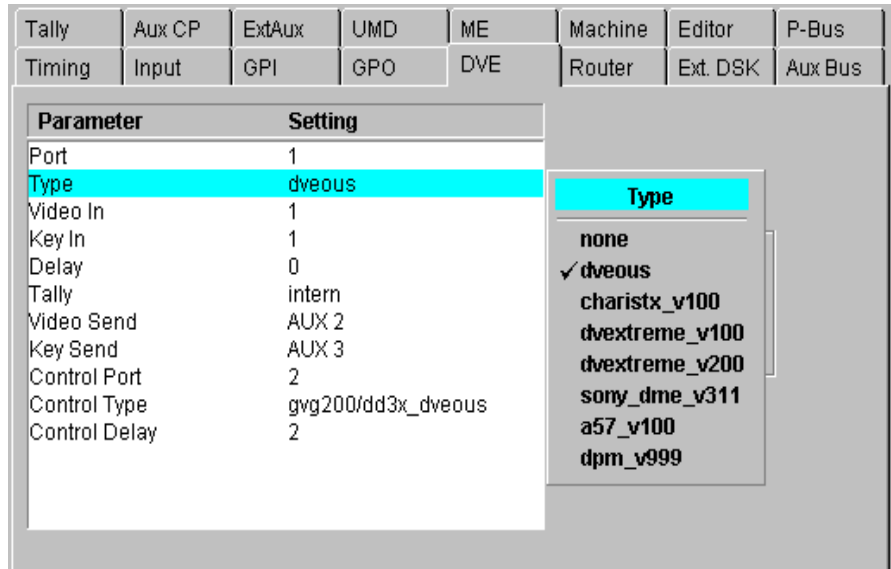
In menu the following settings have to be carried out:

DVE No.:	**1** and/or **2**
Port:	**1 to 10** (RS422)
Type:	**charistx_v100** Software option DS 0113, Order no. 000 038 051 300
Video In / Key In:	Enter Video and Key inputs on which the trans formed signal of the DVE is available
Delay:	14 (adjust the delay of the switching point)
Tally:	**Internal** **External** (required tally cabling)
Video Send / Key Send:	Select the Aux Busses as source for Video and Key

Setup and Configuration of the TEN-X

The operation requires in the Ten-X the following settings:

Port:	TEN-X VDU EXT CONTROLLER

Protocol: BVW75 (w/o ballistics)
- Press REMOTE button and toggle Softkey B until **"BVW75"** is displayed.
- Set TIMECODE hours=0 in GENERAL / ENGINEER menu.
- Select RUN TIME to 3000 Frs for 625 lines or 3600 for 525 lines standard (Softkey A). This will scale effects to two minutes! Select RUN. If "**No Connection**" is displayed then there is a break in the RS-422 line.

Operation Hints

For DVE effect generation please note:

● The effects have to be scaled to 2 minutes (3000 Frames with 625 Lines or 3600 Frames with 525 Lines Systems).

Possible functions:

● Effects sequence selection

● Sequence RUN with switcher fader.

● Tape motion control

7.1.3   QUESTECH CHARISMA X-VTL

The system integration is tested with the Charisma X-VTL software version V3.0.5.4 (July 1999). No scaling of the DVE effects required.

7.1.3.1   DVE Control

Controlling the QuesTech Charisma X-VTL unit from the **Xten DD** switcher requires the software component DS 0113 to be installed on the flash disk of the RSE computer (/**flash**/**appli**).
All tests have been done with Charisma X-VTL software version V5.4

Control Cable Connections

Software Requirements	Charisma X-VTL software version **V3.0.5.4**

Connection cable	Connect the **EDIT CONTROL IN** connector on the rear panel of the Charisma X-VTL mainframe to one of the RS422 ports of the **Xten DD** mainframe (ports 1...10).

Currently a cable with a wire swap is required (two male connectors).
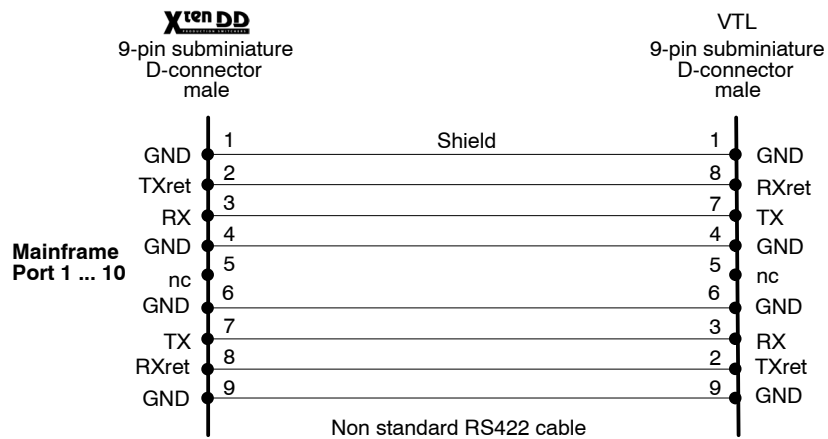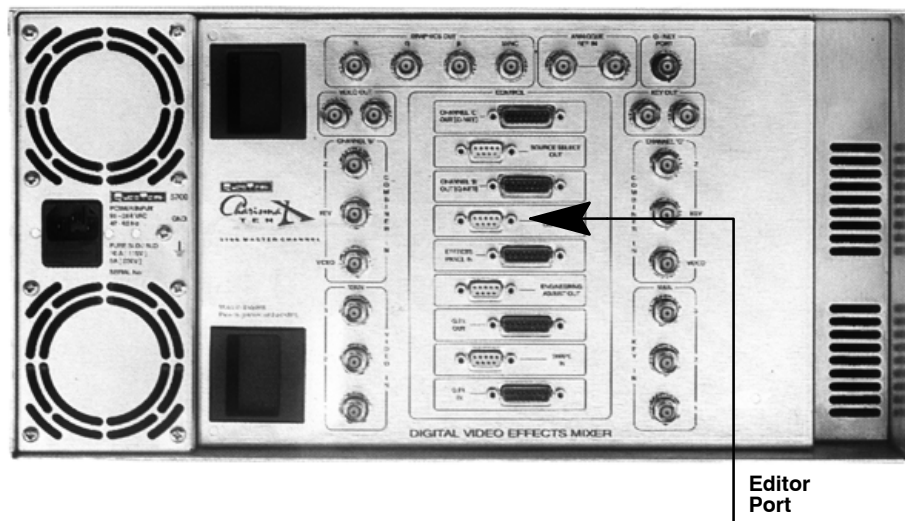
Editor Port

Xten DD
9-pin subminiature
D-connector
male

VTL
9-pin subminiature
D-connector
male

Mainframe Port 1 ... 10

Pin	Signal		Pin	Signal
1	GND	Shield	1	GND
2	TXret		8	RXret
3	RX		7	TX
4	GND		4	GND
5	nc		5	nc
6	GND		6	GND
7	TX		3	RX
8	RXret		2	TXret
9	GND		9	GND

Non standard RS422 cable

Setup and Port Configuration of the X^ten^ DD

The operation requires in the mixer the following settings (for each **DVE No**.):

Select the **DVE** index card in the menu **INSTALL** / **E-Box** and setup the following items:

- PORT: Setup the port number to which the Chrarisma mainframe is connected to (Port 1...10)

- TYPE: Select the '**charistx_vXXX**' protocol ('XXX' is the version designator)

- Setup VIDEO/KEY IN and VIDEO/KEY SEND according to the video cabling.

Menu: **INSTALL** / **E-BOX** / **DVE**
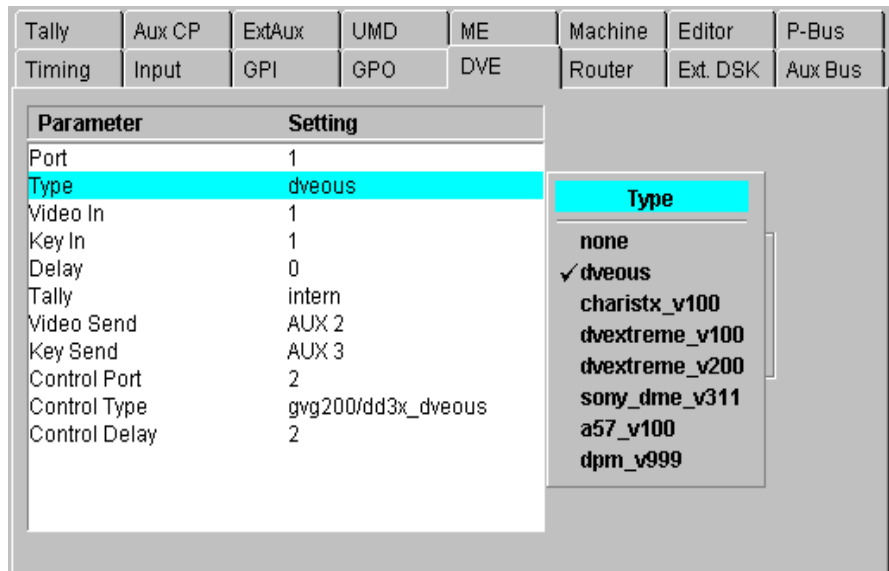
Tally	Aux CP	ExtAux	UMD	ME	Machine	Editor	P-Bus
Timing	Input	GPI	GPO	DVE	Router	Ext. DSK	Aux Bus

Parameter	Setting
Port	1
Type	dveous
Video In	1
Key In	1
Delay	0
Tally	intern
Video Send	AUX 2
Key Send	AUX 3
Control Port	2
Control Type	gvg200/dd3x_dveous
Control Delay	2

Type

- none
- ✓ dveous
- charistx_v100
- dvextreme_v100
- dvextreme_v200
- sony_dme_v311
- a57_v100
- dpm_v999

Setup and Configuration of the X-VTL

The operation requires in the X-VTL the following settings:

- Select the **System** menu

- Select the **Global** channel

- Select **Editor Setup** (Page 1/1)

- Setup **Philips1** protocol (digipot/softkey #1)

- Select the appropriate mainframe (digipot/softkey #3).
  This is the mainframe that the switcher interface cable is connected to.

Operation Hints

Sequence Recall:

DVE sequences may be recalled from the **X**^{ten} **DD** wipe selection panel when delegated to DVE1/2 or from the sidepanel DVE1/2 menus, respectively.

Tape Motion Controls:

The Charisma X-VTL sequence can be controlled by the motion control keys in the machine control section of the **X**^{ten} **DD** control panel (or from the DVE1/2 sidepanel menu, respectively).

Available controls are: **STOP** / **PLAY** / **REVERSE** / **REWIND** / **FAST FOREWIND**

DVE Transitions:

By selecting **DVE** as transition type it is possible to carry out wipe transitions using external DVE effects. These effects may also be controlled from the T-Bar in the machine control section.

Note:
From software version V5.4 on sequences on the Charisma X-VTL are not required to be scaled any longer in order to be used with a DVE effects transition (as opposed to earlier versions or the Charisma Ten-X which required the sequences to have a fixed duration).

Notes on building a DME effect for DVE transitions:

A DVE transition on the **X**^{ten} **DD** uses an effect built on the Charisma X-VTL as a transition. This effect is built from keyframes, in order to obtain the desired result it is important to note the following points:

- For the initial keyframe, set the image size to full screen size.

- For the final keyframe, move the image off the screen, or reduce size to zero, so that it cannot be seen on the screen.

7.1.3.2 Switcher Aux Bus control

The Charisma source select interface to **X**^{ten} **DD** switchers is based upon the GVG200 edit controller protocol in conjunction with DD30 switcher series native commands. This is for historical reasons. In order to utilize this protocol on a **X**^{ten} **DD** switcher the software component **DS 0111** is required. This is a special edit controller protocol which will translate DD30 style commands into **X**^{ten} **DD** native commands.

7.1.3.3 Control Cable Connections

Software Requirements

Charisma X-VTL software version **V3.0.5.4** (July 1999)

Connection cable

Connect the **SOURCE SELECT OUT** connector on the rear panel of the Charisma X-VTL mainframe to one of the RS422 ports of the **X ten DD** mainframe (ports 1...10).
A standard RS422 cable is required (1:1).

Source Select Port

X ten DD
9-pol male, D type

VTL
9-pol male, D type

X ten DD		VTL
GND	1 — Shield — 1	GND
TXret	2 ————————— 2	RXret
RX	3 ————————— 3	TX
GND	4 ————————— 4	GND
nc	5 ————————— 5	nc
GND	6 ————————— 6	GND
TX	7 ————————— 7	RX
RXret	8 ————————— 8	TXret
GND	9 ————————— 9	GND

Mainframe Port 1 ... 10

Standard RS422 cable
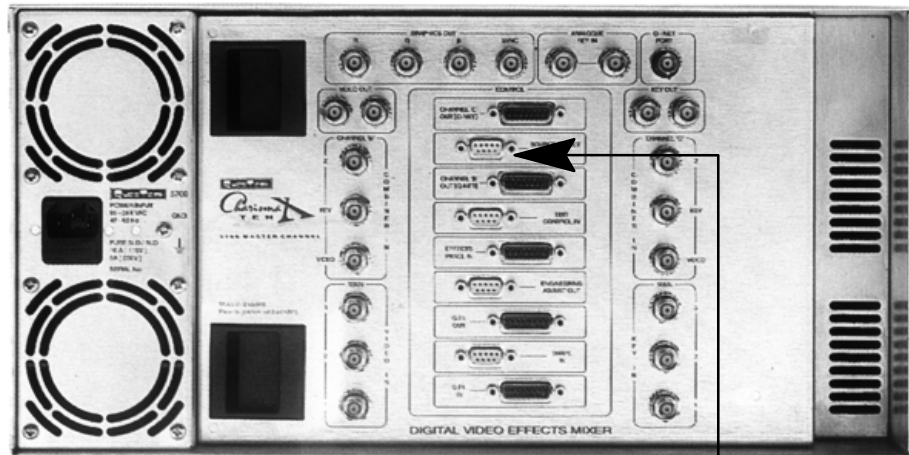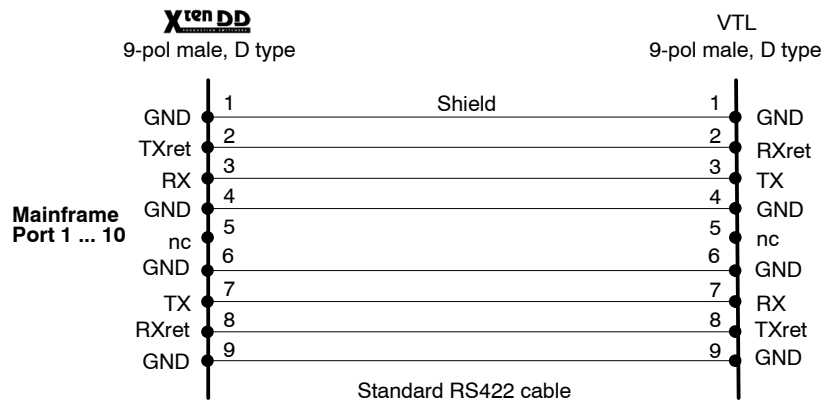
Setup and Port Configuration of the X^{ten}**DD**

Aux bus control protocols for external DVEs are usually being selected within the **DVE** filecard in the **INSTALL** / **E-Box** menu. The **Control Type** popup menu will show a list of all available protocols for this purpose. However, since the **DS 0111** is a dedicated editor protocol rather than a DVE source select protocol it will not show up the **DVE** context. Hence, this protocol has to be launched in the **Editor** index card of the **INSTALL** / **E-Box** menu:

● Select the **EDITOR** index card in the **INSTALL** / **E-Box** menu. Setup the following items:

● Port: Setup the port number (1...10) to which the Charisma VTL (**Source Select Out** port) is connected to.

● Type: Setup **bts**/**DD30** protocol

Menu: **INSTALL** / **E-BOX** / **Editor**

P-Bus	Timing	Input	GPI	GPO	DVE	Router	Ext. DSK
Aux Bus	Tally	Aux CP	ExtAux	UMD	ME	VTR	Editor

Parameter	Setting
Port	3
Type	none

Editor
☑ 1
☐ 2
☐ 3
☐ 4

Setup and Configuration of the X-VTL

The operation requires in the X-VTL the following settings:

● Select the **System** menu

● Select the appropriate channel **A**, **B** or **C** (the one to which the interface cable is connected).

● Select **Mixer Setup** (Page 2/3)

● Setup **Philips** protocol (digipot/softkey #1)

● Select Parity **Odd**

Operation Hints

Since this protocol is basically an editor protocol, the **Edit Enable** function on the **X^{ten}DD** must be active (i.e. enabled) in order to allow for aux bus switching.

In order to establish communication with the switcher the Charisma will periodically send a "wake-up sequence". When the interface is not working properly (i.e. no response from switcher) the performance of the Charisma may be affected. This happens for example when the switcher is turned off.

Therefore, when source selection is not being used it is strongly recommended to deactivate the protocol on the Charisma X-VTL.

7.1.4   PINNACLE DVEXTREME

7.1.4.1   General

For the **Pinnacle DVExtreme,** the switcher provides two protocols for different pur-
poses. The protocols are:

1. Selection and control of DVE-effects: protocol **DVExtreme**

2. Control of **Xten DD** AUX busses by DVExtreme: in preparation

7.1.4.2 Connection for Selection and Control of Effects

Software Requirements   DVExtreme   **Version 1.6** (or higher)

Connection cable   Standard RS-422-cable with male-male connector from a **X^{ten}DD** Port 1 ... 10 to DVExtrems remote control port **RS422-A**.
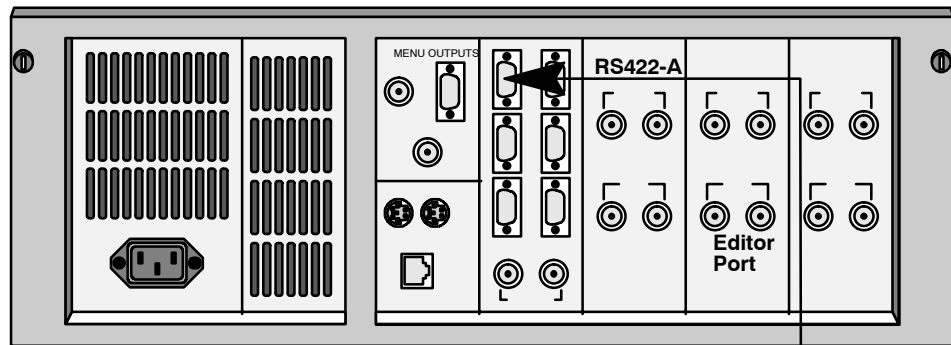
Rear panel
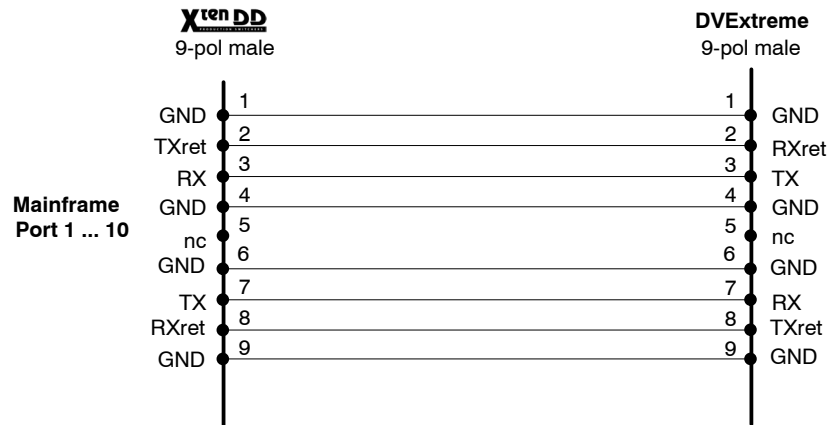
7.1.4.3   Tally Cabling

On-air tally outputs are not being supported by the **DVExtreme** software V1.6.
On-air tally outputs will be supported from DVExtreme software V2.0 on.

7.1.4.4   Setup and Port Configuration of the X^{ten}**DD**

As well as configuring the **DVEXtreme** correctly it is important to configure the X^{ten}**DD** correctly.

↑	Timing	Input	GPI	GPO	DVE	Router	Ext. DSK	Aux Bus	Copy ▼

DD35-50
Install E-Box

Install

Tally	Aux CP	ExtAux	UMD	ME	Machine	Editor	P-Bus
Timing	Input	GPI	GPO	DVE	Router	Ext. DSK	Aux Bus

E-Box

Parameter	Setting
Port	6
Type	dvextreme_v200
Video In	10
Key In	11
Delay	8
Tally	intern
Video Send	AUX 3
Key Send	AUX 4
Control Port	None
Control Type	gvg200/dd35
Control Delay	0

Panel

DVE
☑ 1
☐ 2

System   DVE ▶
                                1

Diagnose

**Previous
Menu**   ↕ ▶

| Menu
Lock | | | ↑ | ↓ | | Modify | | |

Install EBox Menu

To set-up the X^{ten}**DD** firstly select the INSTALL menu followed by the EBOX sub-menu and then the DVE tab.

The first item on in the menu is the PORT number this defines which RS422 port on the X^{ten}**DD** main frame will be connected to the DVE, here PORT 6 is shown. This must be connected to PORT A on the DVEXtreme.

The second line is where the protocol is selected notice here the **DVEXtreme**_V200 protocol has be selected. To choose this: press MODIFY, then pick the V200 protocol from the list using the arrow selector soft knob followed by OK.

Once the ports have been set-up the video and key inputs to the X^{ten}**DD** need to be defined, in this case input 10 and 11 are being used. Any input can be used for video or key. The DVE LOOP function needs this information.

Parameter	Setting
Port	6
Type	dvextreme_v200
Video In	10
Key In	11
Delay	8
Tally	intern
Video Send	AUX 3
Key Send	AUX 4
Control Port	None
Control Type	gvg200/dd35
Control Delay	0
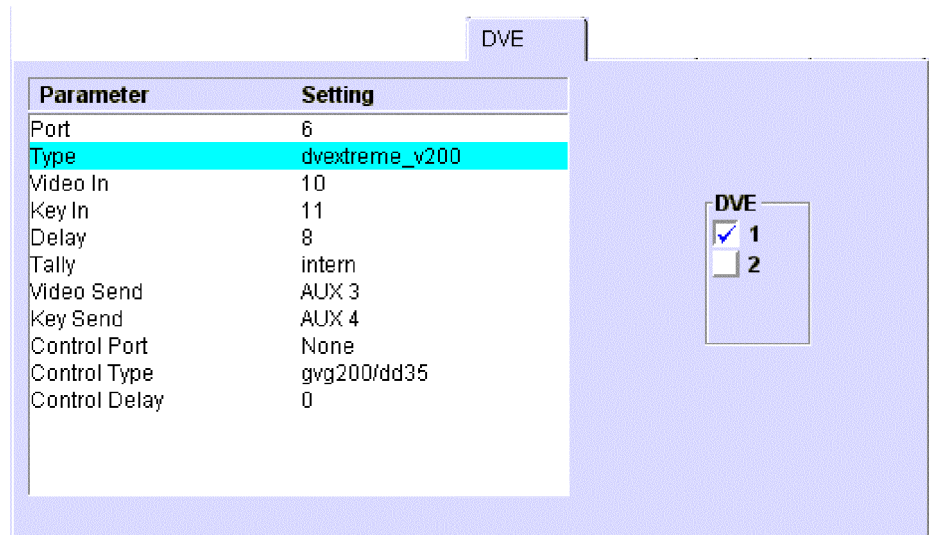
DVE Setup Menu

The DELAY setting is how many fields the X^{ten}DD waits after a DVE effect is finished before taking the DVE out of the loop.

The setting for this depends on the DVE model (the time spent to process serial control commands). In case of **DVEXtreme** it should be set to 8.

If the delay is too short there will be a jump in movement at the end. Or a flash frame at the begin (DVE winding to correct position while already being on air).

The TALLY INTERNAL means that every time the DVE (the inputs in INSTALL-EBOX-DVE) is On-Air, the Sources on the feeding AUX-Busses get an on-air on air tally too. No external wiring needed. EXTRNAL means that the DVE (the inputs in INSTALL-EBOX-DVE) AND the tally-in for the feeding AUX-Busses must be on-air to get the feeding sources on-air. This covers when the DVE is ON through a key but the image on the DVE is invisible.

The DVE however must supply an appropriate Tally signal.

EXTERNAL-ONLY means that the X^{ten}DD just propagates the Tally-In of the feeding AUX buses. Any logic must be wired externally. Or must be done inside the DVE.

The Video and Key sends define which AuxBuses the X^{ten}DD is using to feed the inputs of the **DVEXtreme**. These would normally be fed to inputs 1 and 2. In the example AUX 3 and AUX 4 are being used. Again, this information is needed for the DVE LOOP. More AuxBusses can be used to feed multiple channel DVEs.

The last three items are for the AuxBus option on the **DVEXtreme**. This allows the DVEX to control the sources on the X^{ten}DD AuxBuses. The PORT number once more defines the physical RS422 port on the X^{ten}DD mainframe. This needs to be connected to either PORT C or D on the DVEX. The CONTROL TYPE sets the protocol, this should be set to GVG200/dd35 as shown. The DVEX can then control any of the 15 AuxBuses on the X^{ten}DD.

The CONTROL DELAY sets a time offset in fields so any front/back switching switches in the correct place.

Recommended value is: zero (0).

7.1.4.5 Setup and Configuration of the DVExtreme
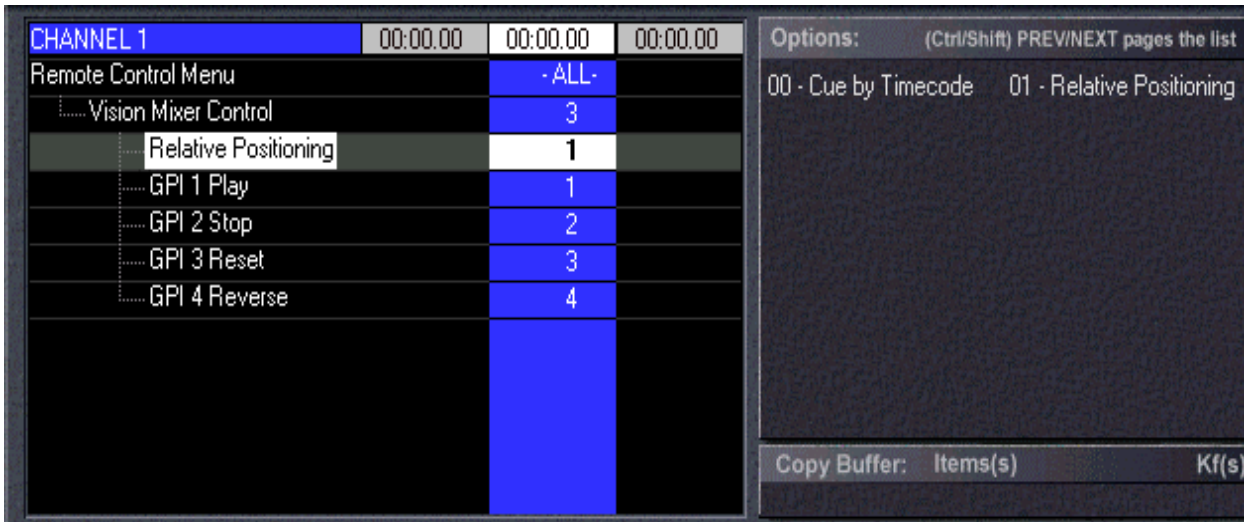
Remote Menu

This installation note will show the correct set-up of the **Pinnacle DVEXtreme** and the **Xten DD**. The configuration of the remote protocol is straightforward but requires some operational knowledge of both pieces of equipment.

On the **DVEXtreme** select the REMOTE menu by holding down SHIFT and pressing SET-UP, the menu is shown above. On the main protocol line, where the cursor will be when the menu is selected use option 3 VISION MIXER CONTROL. After this use the DOWN ARROW key to select the next menu item and set this to OPTION 1 RELATIVE POSITIONING.

In order for the **Xten DD** to control the DVEXtreme the SEQUENCE menu must be selected.
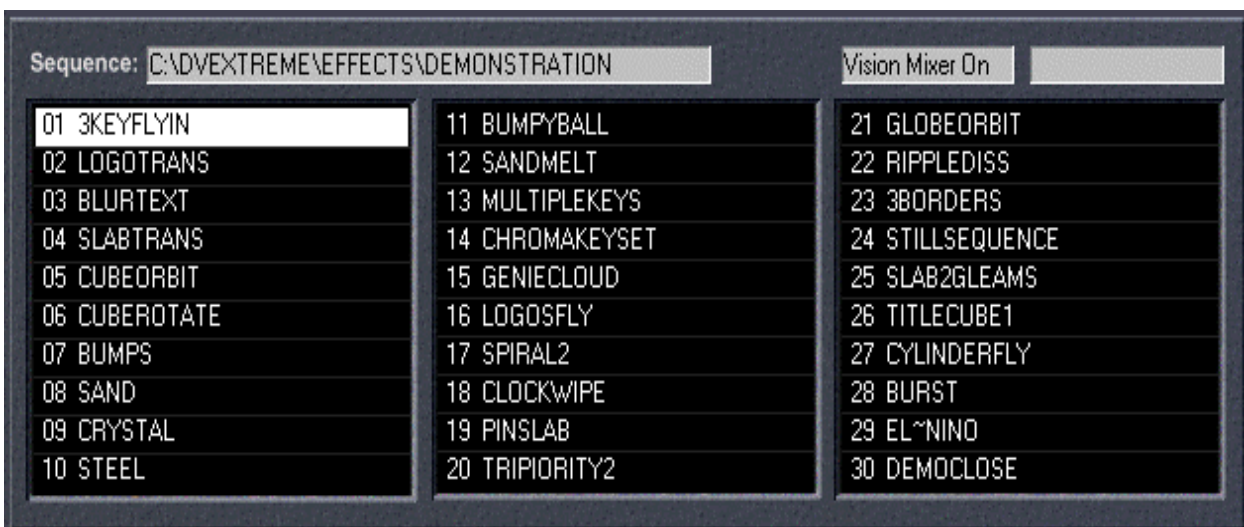
Sequence Menu

Operation Hints

For DVE effect generation with DVExtreme V1.6 and DS0114.100 software please note:

- The effects have to be scaled to 30 seconds (750 Frames with 625 Lines or 900 Frames with 525 Lines Systems).

Possible functions:

- Effects sequence selection

- Sequence RUN with Tbar

- Tape motion control

An improved version mixer interface will be available with DVExtreme software V2.0. Scaling of sequences is then no longer required. Sequences with arbitrary length may be used for DVE transitions. This requires the THOMSON software version DS0114.200 to be installed on the **X ten DD**.

Note:

DVExtreme software V2.0 is backwards compatible with V1.6 with regard to the switcher interface. This means that DS0114.100 can still be used with the new V2.0 (scaling still required). However, the new DS0114.200 is no longer compatible with the old DVExtreme software V1.6.

Control of Aux Busses

Currently not being supported by the DVExtreme.

7.1.5   SONY DIGITAL MULTI EFFECT DME 7000

7.1.5.1   general

For the **Sony Digital Multi Effect DME-7000,** the switcher provides two protocols for different purposes. The protocols are:

1. Selection and control of DVE-effects: protocol **SONY_DME**

2. Control of **Xten DD** AUX-busses by DME-7000:   in preparation

7.1.5.2   Connection for Selection and Control of Effects

Software Requirements

Controlling the DME-7000 unit from the **Xten DD** switcher requires the software component DS0115 to be installed on the flashdisk of the RSE computer ("/flash/appli"). The **DS0115.100** (or higher) device driver software requires **Xten DD** software release **V1.40** (or higher).The DME unit requires software version **V3.06** (or higher).

Connection cable

Connect the EDITOR connector on the rear panel of the DME-7000 processor to one of the RS422 ports of the **Xten DD** mainframe (ports 1...10).
A standard RS422 cable is required (1:1).

Rear panel

Editor   Port
DME-7000
9-pol male

Xten DD
9-pol male

**Mainframe
Port 1 ... 10**

Xten DD		DME-7000
GND	1 — 1	GND
TXret	2 — 2	RXret
RX	3 — 3	TX
GND	4 — 4	GND
nc	5 — 5	nc
GND	6 — 6	GND
TX	7 — 7	RX
RXret	8 — 8	TXret
GND	9 — 9	GND
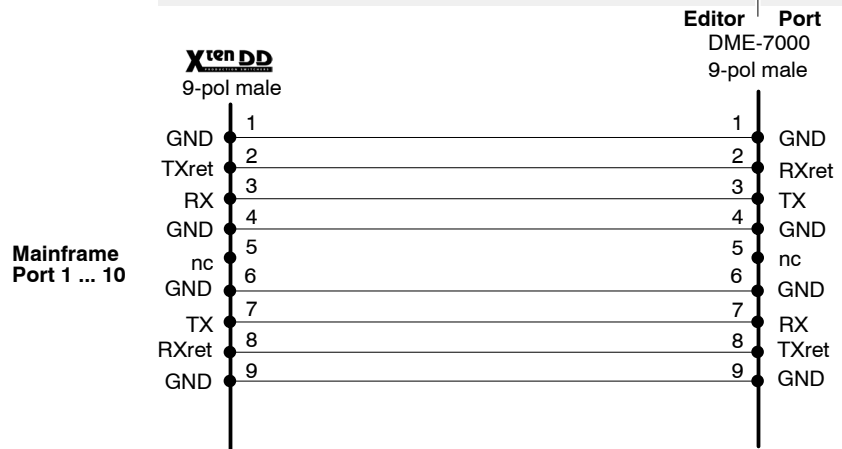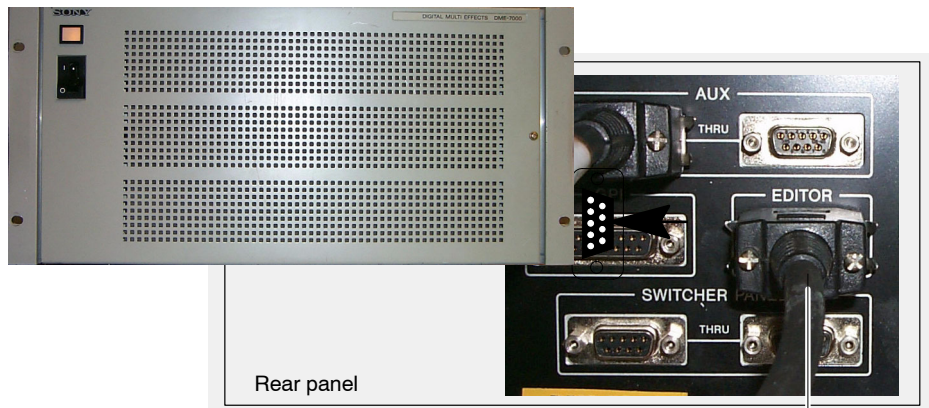
7.1.5.3   Tally Cabling (in preparation)

7.1.5.4   Setup and Port Configuration of the Xᵗᵉⁿ DD

The operation requires in the mixer the following settings (for each **DVE No**.):

Menu: **INSTALL** / **E-BOX** / **DVE**

Tally	Aux CP	ExtAux	UMD	ME	Machine	Editor	P-Bus
Timing	Input	GPI	GPO	DVE	Router	Ext. DSK	Aux Bus

Parameter	Setting
Port	1
Type	dveous
Video In	1
Key In	1
Delay	0
Tally	intern
Video Send	AUX 2
Key Send	AUX 3
Control Port	2
Control Type	gvg200/dd3x_dveous
Control Delay	2

Type

none
✓ dveous
charistx_v100
dvextreme_v100
dvextreme_v200
sony_dme_v311
a57_v100
dpm_v999

In menu the following settings have to be carried out:

DVE No.:	**1** and/or **2**
Port:	**1** to **10**
Type:	**sony_dme_v311** Software option DS 0115, Order no. 000 038 051 500
Video In / **Key In:**	Enter number of Video and Key inputs on which the transformed signal from the DVE is available
Delay:	**6** fields (adjust the delay of the switching point)
Tally:	**Internal** **External** (requires tally cabling)
Video Send / **Key Send:**	Select the Aux Busses as source for Video and Key

7.1.5.5 Setup and Configuration of the SONY DME-3000

- In the DME SETUP menu (page #700) press the required function key to select the OPERATION menu (page #702).

- Setup DME protocol for the EDITOR PORT

7.1.5.6 Operation Hints

Sequence Recall:

- DME sequences may be recalled from the **X^{ten}DD** wipe selection panel when delegated to DVE1/2 or from the sidepanel DVE1/2 menus, respectively.

Tape Motion Controls:

- The DME sequence can be controlled by the motion control keys in the machine control section of the **X^{ten}DD** control panel (or from the DVE1/2 sidepanel menu, respectively).

- Available controls are:
  STOP / PLAY / REVERSE / REWIND / FAST FOREWIND

Note:

When using the PLAY and REVERSE controls the timecode will not stop on effects boundaries. This means that the timecode will continue to run even when the playback range has already been exceeded. A problem arises when reverse-running a sequence which has been previously run by a PLAY command. Then the timecode has to reach the tail of the sequence again before anything happens in the output video. The same is true vice versa.
The REWIND and FOREWIND controls, however, will stop on effects boundaries.

7.1.5.7 Control of Aux busses

Switcher Aux Bus control from DME7000 requires the DME device driver software version V1.1.0 (file name 'DS0115.110') or higher. Please note that earlier versions (e.g. V1.0.0) do not support this feature. In order to run the DME device driver version V1.1.0 properly the switcher mainframe is required to run the operating software version V2.0.0 (or higher).

The DME can control the switcher aux buses which feed video- and key-inputs, respectively. Optionally another aux bus may be used for feeding the EXT Video input of the DME. This aux bus can be controlled also.

All tests have been done with a Sony DME7000 with software version V3.06 R04.05

7.1.5.8 Control Cable Connections

Connect the AUX connector on the rear panel of the DME-7000 processor to one of the RS422-ports of the **X^{ten} DD** mainframe (ports 1...10). A standard RS422 cable is required (1:1).

7.1.5.9 Setup and port configuration

DME-7000

- In the DME SETUP menu (page #700) press the required function key to select the OPERATION menu (page #702).

- Select **DME** protocol for the **SW'er Port**

X^{ten} DD

Select the DVE filecard in the INSTALL/E-BOX menu. Setup the following items:

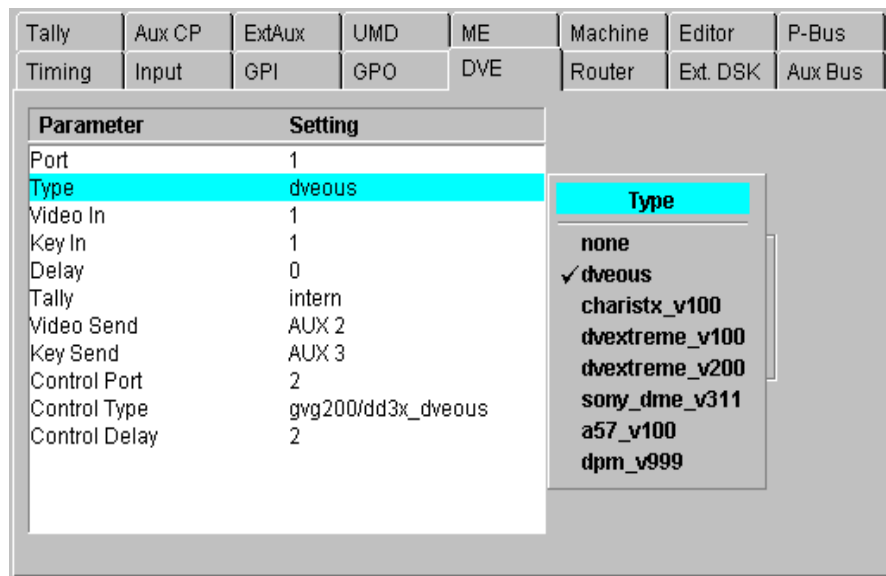- **Video Send:**   setup aux bus no. according to video cabling (aux bus # feeding the DME video input)

- **Key Send:**   setup aux bus no. according to video cabling (aux bus # feeding the DME key input)

- **Control Port:**   Setup the port number (1...10) to which the DME unit ('AUX' port) is connected to.

- **Control Type:**   Select the 'sony_dme_vXXX' protocol ('XXX' is the version designator)

- **Control Delay:**   0 (default)

7.1.6 OPERATION

Video/Key Bus Source selection:

Menu #51 - IN/OUT SELECTOR

- **Front Video**   Select the channel (0 ..63)

- **Front Key**   Select the channel (0 ..63)

- **Back Video**   Select the channel (0 ..63)

- **Back Key**   Select the channel (0 ..63)

Background Source selection:

Menu #711 - SOURCE SELECTOR

- Select **SWITCHER** as **Source Selector**

- Select **External Video** (1..16)

Menu #57 - EXT VIDEO IN/OUT

- EXT VIDEO INPUT FRONT No. Select the channel (0 ..63)

- EXT VIDEO INPUT BACK No.   Select the channel (0 ..63)

For more details please refer to the SONY manual.

Note:

*In order to enable Aux Bus control the '**Edit Enable**' function on the* X^ten **DD** *must be active (i.e. enabled).*

With the DME-7000 the switcher internal sources (M/E re-entries, Col. BGDs) are not selectable, because the DVE is limited to 63 inputs.

7.1.7 ABEKAS A-57 DIGITAL SPECIAL EFFECT SYSTEM

7.1.7.1 General

For the **Abekas A-57,** the switcher provides a protocol for the following mode of operation:

1. Sequence selection from **Xten DD** switcher

2. Sequence control with fader and auto transition

3. Sequence control with tape motion controls

Software Requirements	**Xten DD**	**Operating Software**	**Version 2.1.0**
		A-57 Driver	**DS 0016.V100**

7.1.7.2 Connection for Selection and Control of Effects

The connection between the Abekas A-57 and the **Xten DD** depends on the respective application and is made on the control side via 9-pin RS232 cable as well as on the video side via video cables for VIDEO and KEY.

⚠️

Attention: *The EMV regulations are only applicable when correctly shielded cables are used for the installation. This also applies to video cables as well as control cables.*

Appropriate cables can be obtained from THOMSON.

***Control Cable
DVE Control***

It is recommended to establish a RS232 connection. Thus, on the **Xten DD** side on the mainframe ports 11 ... 15 has to be used (recommended Port11 or Port12). On the A-57 side the port configuration (Aux B) accomplished by setting up two headers on the "address board".

The Effect Loop control requires a special cable (connector/connector). The cable is assigned as follows:

Abekas A-57
Aux B
9-pin male
D subminiature

Xten DD
RS-232 Port
Port 11 - 14
9-pin male
D subminiature

Pin 4 - Ground ●————————————————● Pin 5 - Ground
Pin 2 - Transmit ●————————————————● Pin 3 - Receive
Pin 8 - Receive ●————————————————● Pin 2 - Transmit

Cable length 30m max.

7.1.7.3   Setup and Port Configuration of the X^{ten} DD

The operation requires in the switcher the following settings (for each **DVE No**.):

Menu: **INSTALL** / **E-BOX** / **DVE**

Tally	Aux CP	ExtAux	UMD	ME		Machine	Editor	P-Bus
Timing	Input	GPI	GPO	DVE		Router	Ext. DSK	Aux Bus

Parameter	Setting	
Port	1	
Type	dveous	**Type**
Video In	1	
Key In	1	none
Delay	0	✓ dveous
Tally	intern	charistx_v100
Video Send	AUX 2	dvextreme_v100
Key Send	AUX 3	dvextreme_v200
Control Port	2	sony_dme_v311
Control Type	gvg200/dd3x_dveous	a57_v100
Control Delay	2	dpm_v999
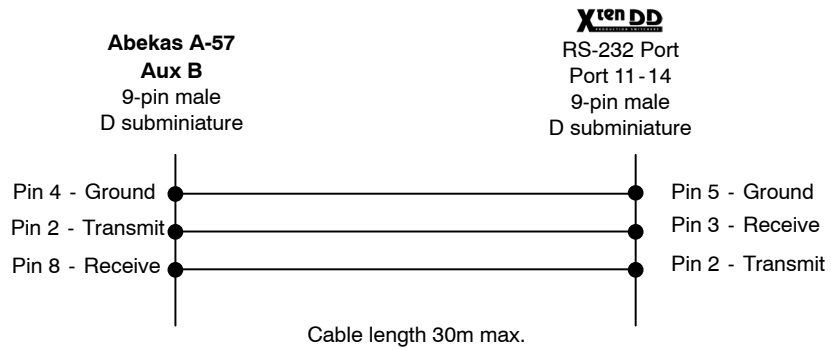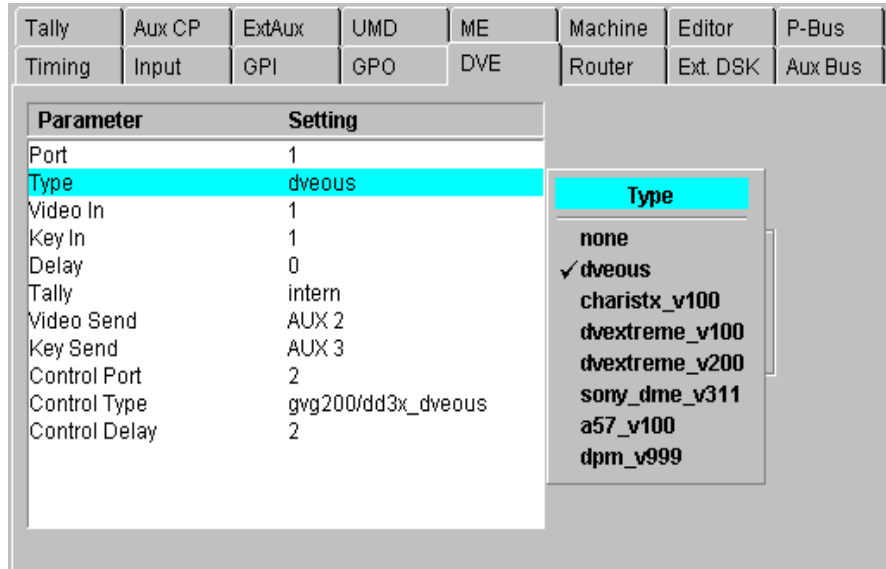
In menu the following settings have to be carried out:

DVE No.:	**1** and/or **2**
Port:	**11 to 15**
Type:	**a57_v100** Software option DS 0116, Order no. 000 038 051 600 must be installed in RSE "/flash/appli"
Video In / Key In:	Enter Video and Key inputs on which the transformed signal from the DVE are available
Delay:	8 (adjust the delay of the switching point)
Tally:	**Internal** **External** (requires tally cabling)
Video Send / Key Send:	Select the Aux Busses as source for Video and Key

7.1.7.4 Setup and Configuration of the ABEKAS A-57

The operation requires the following settings in the **Remote Control Menu**:

Port:	Aux B
Protocol:	Select RS232 protocol for Aux B
Settings:	Set "Header 2" on address board to RS232 (Techn. Guide Abekas A-57, Fig. 31) Set Header 1" to "Slave" control

7.1.7.5 Operation Hints

For DVE effect generation with Abekas A-57 and THOMSON DS0116.100 software please note:

● No scaling is required.

Possible functions:

● Effects sequence selection

● Sequence RUN with fader or auto transition

● Sequence control with tape motion controls

Note:

The communication is only possible with 9600 Baud.

7.2 VTR CONTROL

Machine Control section of the panel lets you control up to four Disk Recorders, Laser Disks or VTRs directly from the panel.

Machine Control

X X X X X X X X X X X X X X X X

| MP 1 | MP 2 | MP 3 | MP 4 |

| TiM/E Memo | Rec | DVE 1 | DVE 2 |

| << | < | ■ | > | >> |

| Mark In | Goto | Mark Out |
| Norm Rev Shtl | Rev Var | Stop Next Jog |

Master TiM/E Memo

F R E E   M E M O R Y :   8 7 %

T-Dur Free%

| Store | Bank | Edit | BGD# Inhib |

Key# Inhib

| 7 INS | 8 MOD | 9 DEL | Bank0 GPO |

| 4 H TM | 5 TRTM | 6 TRAJ | Bank1 SNAP | Undo |

| 1 ← | 2 VIEW | 3 → | Bank2 TIML | Cut |

| Clear FREE | 0 LOOP | Enter NEXT | Reloc +/- | Auto |

| M/E1 | M/E2 | M/E3 | P/P | Misc Int | Misc Ext |

Example:
RPD 35-4 panels

7.2.1 SONY BVW75 VTR PROTOCOL

7.2.1.1 General

The BVW75 (VTR) protocol **DS 0144.xxx is** a standard software record for controlling the tape deck functions and to transmit timecode values for Video Tape Recorders, DiskServer or similar products of various manufacturers.

In this basic version, the most important tape deck functions can be controlled.

The software version DS0144.152 (and higher) is extended with "Clip Selection" for the Philips Media Pool and Edifis

The BVW75 (VTR) Protocol **DS 0134.xxx is** a software version with play functions only!

For details refer to the ***Media Player*** menu in your operating instructions.

7.2.1.2 Installation and Cabling

Connect the corresponding device (e.g. VTR) with a RS422 port of the DD35 main frame.
The VTR control requires an RS422 cable (connector/connector) with standard assignment. The standard RS422 cable is assigned as follows:

VTR Device
9-pin subminiature
D-connector
male

X^{ten} DD Mainframe
RS422 (Port1 - Port10)
9-pin subminiature
D-connector
male

Shielding

Pin 1 - Ground	Pin 1 - Ground
Pin 2 - TXret	Pin 2 - RXret
Pin 3 - RX	Pin 3 - TX
Pin 4 - Ground	Pin 4 - Ground
Pin 5 - nc	Pin 5 - not connected
Pin 6 - Ground	Pin 6 - Ground
Pin 7 - TX	Pin 7 - RX
Pin 8 - RXret	Pin 8 - TXret
Pin 9 - Ground	Pin 9 - Ground

Cable length 30m max.
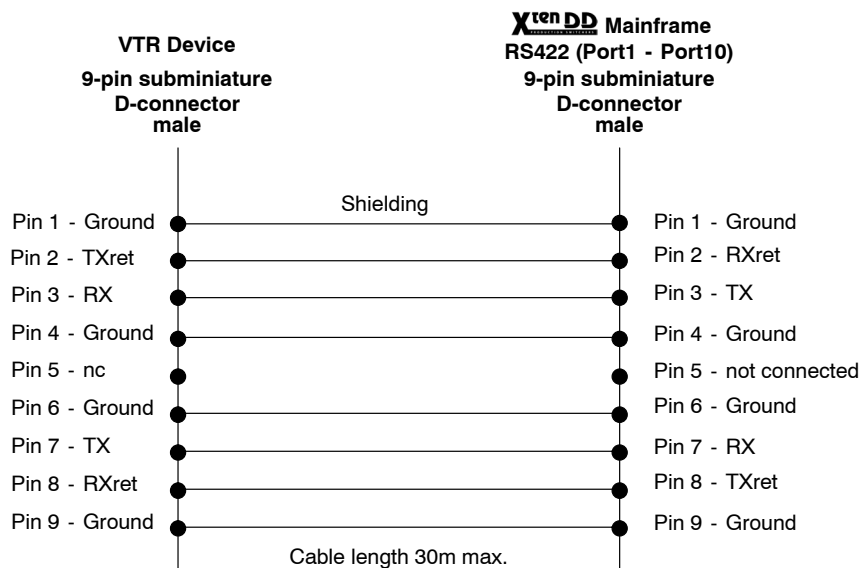
Setup in
Install Menu

In the **Install E-Box** menu the following settings are required:

Timing	Input	GPI	GPO	DVE	Router	Ext. DSK	Aux Bus
Tally	Aux CP	ExtAux	UMD	ME	Machine	Editor	P-Bus

Machine Control

Parameter	Setting
Machine 1	
Port	1
Type	mediapool_v153
Machine 2	
Port	2
Type	mediapool_v153
Machine 3	
Port	3
Type	mediapool_v152
Machine 4	
Port	4

VTR Emulation

Parameter	Setting
VTR Emulation 1	
Port	None
Type	None
Device	none
VTR Emulation 2	
Port	None
Type	None
Device	none
VTR Emulation 3	
Port	None
Type	None
Device	none

Port: **1** to **10**

(***Protocol) Type:***   **bvw75**

7.3 EXTERNAL DOWNSTREAM KEYER

7.3.1 GENERAL

The standard **X**ten **DD** production switcher includes four built-in downstream key-ers. These keying capabilities may be further expanded by connecting up to three external keyers to the **X**ten **DD** . These can all be controlled from the **X**ten **DD** control panel.

Basically, the external key module supports all functions which are supported in the internal keyers and which can be controlled at the external keyer via the remote interface. Since the functions cannot always be transmitted 1:1, certain behaviors have to be defined. These are keyer-specific and are controlled for this reason by the RSE controller in the mainframe. Detailed information is contained in the individual sections

According to the desired application, different operational modes are possible. the figures below show two typical applications:

DSK Application Cascaded
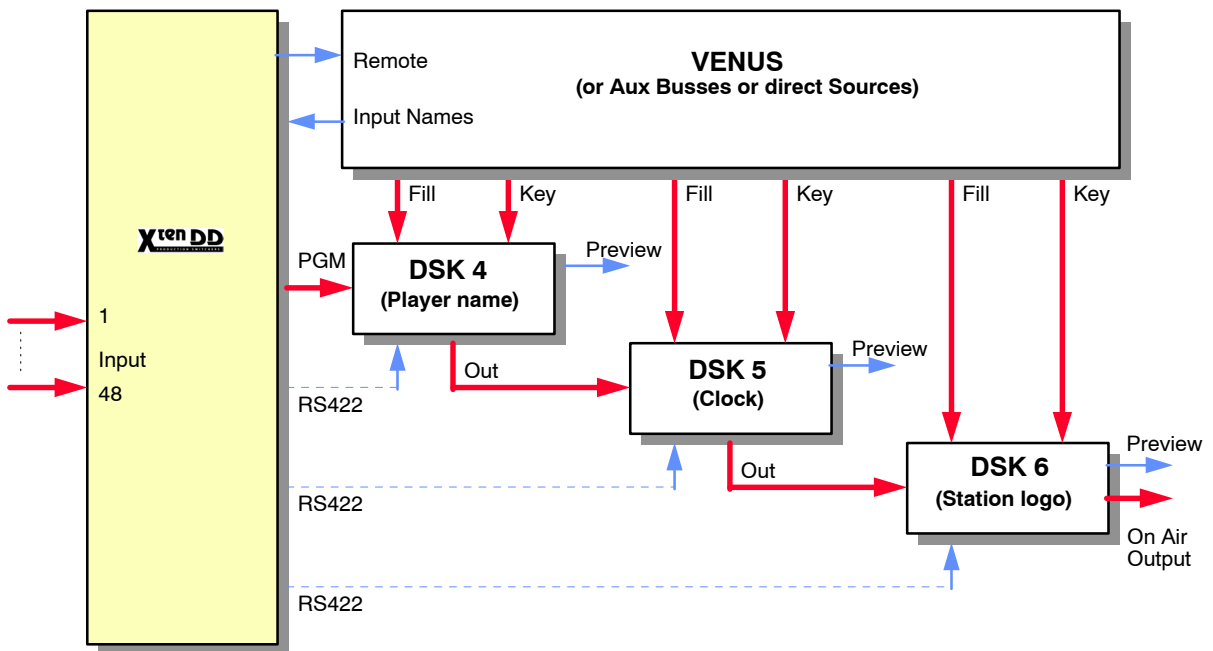
DSK Application Multi Lingual Text Insertion
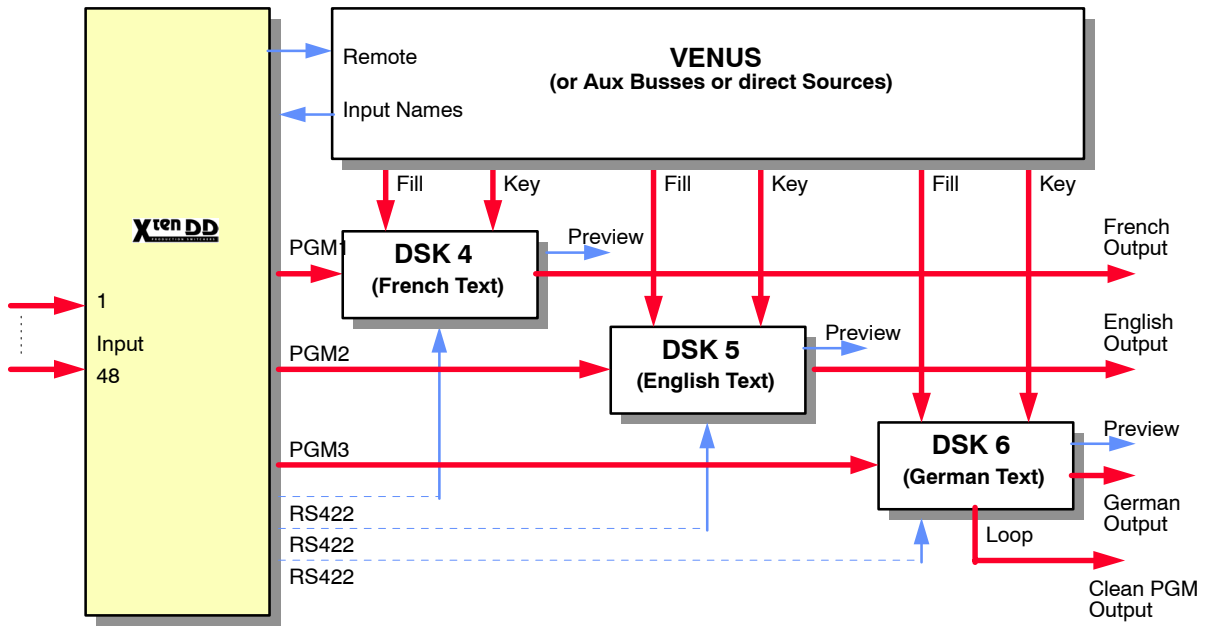
7.3.2 ROSS CDK104 COMPONENT KEYER

7.3.2.1 Preconditions

Controlling the **Ross CDK104** component digital keyer from the **X^{ten}DD** requires the **CDK104** to be equipped with a serial editor interface. This is an option with the **CDK104** and must be purchased separately.

The **CDK104** (frame processor) requires software version V4.03 or higher.

The DD35 requires software version DS 0119.xxx

7.3.2.2 Installation and Cabling

Rear panel of the Ross keyer **CDK104**:

Serial Interface J1

RS422 Port 1..10
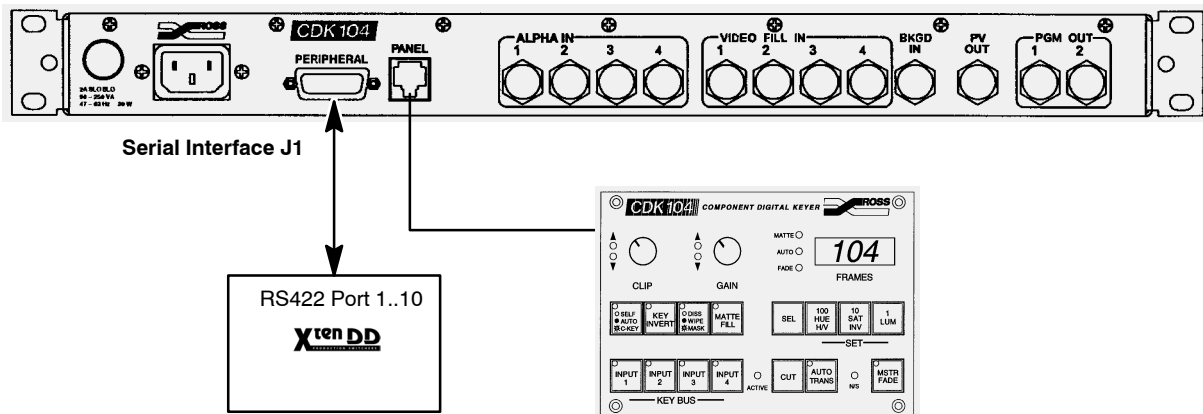
The Ross Control Panel is only needed for configuration. It is recommend to disconnect the panel after the configuration. Otherwise, operation on the local panel may interfere with operation from the mixer panel.

The external DSK control requires a special RS485 cable. The cable is assigned as follows:

Ross, J1 Peripheral
15-pin male
D subminiature

X^{ten}DD Mainframe
RS422 (Port1 - Port10)
9-pin male
D-subminiature

Pin 11 - TxD -   Pin 2 - RxD -
Pin 12 - TxD +   Pin 7 - RxD +
Pin 13 - RxD -   Pin 8 - TxD -
Pin 14 - RxD +   Pin 3 - TxD +
Pin 15 - Ground   Pin 6 - Ground
                   Pin 4 - Ground
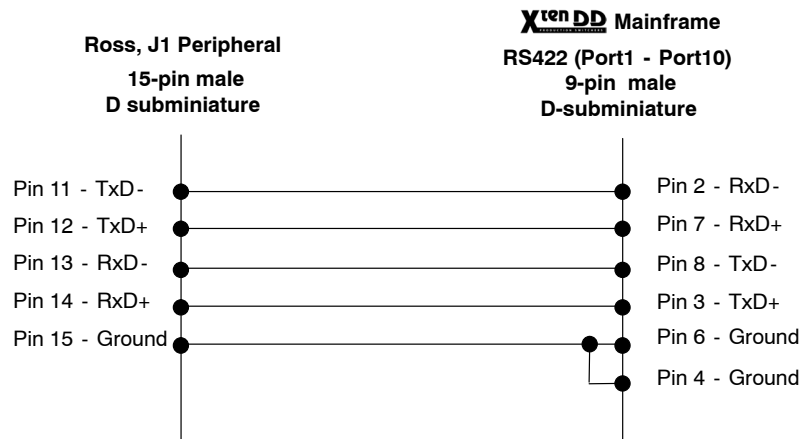
7.3.2.3   Setup and Port Configuration

After terminating the installation, the new application has to be entered in the installation menu of the switcher. Alternatively, the entry can also be manually made by editing the file **"Environ.ini"**. See the corresponding sections.

Xᵗᵉⁿ**DD** **Menu Settings**

The operation "External DSK with the Ross Keyer" requires in the menu the following settings (for each **DSK**):

● Select menu: **INSTALL** / **E-BOX** / **Ext DSK**

● Click on the respective **Ext DSK**

● Enter each setting parameter by pushing the **Modify** button.

Tally	Aux CP	ExtAux	UMD	ME	Machine	Editor	P-Bus
Timing	Input	GPI	GPO	DVE	Router	Ext. DSK	Aux Bus

Parameter	Setting
Port	None
Type	none
Tally	Intern
Key Send	none
Fill Send	none
BGD Source	none
Option Mask	No
Option Wipe	No
Option Fill Matte	No
Option Chroma Key	No
Option Key Opacity	No
Option FTB Auto	Yes
Option KEY Auto	No

Ext DSK
✓ DSK 5
☐ DSK 6
☐ DSK 7

Additional	**Port**	**6**	actual port number
Information	**Type**	**ross_cdk104_v01**	
	Key Send	**Aux1**	Key bus (1 - 15) 0 = none
	Fill Send	**Aux2**	Fill bus (1 - 15) 0 = none
	BGD Source	**ME1Out**	Background source

Option Mask   **Yes**
Key masking is an option on the CDK104.
The setting of this parameter (**Yes**/**No**) depends on whether the option is available or not.

Option Wipe   **No**
Wipes on the external DSKs are currently not supported by the **Xⁱᵉⁿ DD** control panel, therefore this option should be turned off.

Option FillMatte   **Yes**
The FillMatte feature is included in the standard CDH104 configuration (i.e. not an option)

Option ChromaKey   **No**
This is an option on the CDK104. The setting of this parameter depends on whether the option is available or not.

Option KeyOpacity   **No**
Since key opacity is not supported by the CDK104, always **No**

Option FTB Auto   **Yes**
Determines how the **Xⁱᵉⁿ DD** is going to control the external DSKs Fade-to-Black transition.
Yes tells the DD35 software to use *auto transition rate* commands rather than *fader* commands.
The latter ones are not supported by the CDK104.

CDK104 Inputs   **Dig**
This setting should match the CDK104 setup for the associated input (**Dig** / **Off** / **Add**).
Currently only **Dig** is supported.

Option KeyAuto

X^{ten} **DD** **Manual Setting in File "Environ.ini"**

The configuration can also be done by editing the file **"Environ.ini"** on the host "/flash" disk of the mainframe controller.

● Copy file **"Environ.ini"** from the host flash disk to the PC.

● Edit file **"Environ.ini"** with a text editor program.

Following adjustment has to be done:

Search for the section **[EXT_DSK1]** and check the parameters or enter this section and parameters if they do not exist.

```
[EXT_DSK1]
PortNumber=0                   ; Port number
Type=ross_cdk104_v010          ; Type of protocol
AuxBusKey=10                   ; Key bus (1 - 15) 0 = none
AuxBusFill=11                  ; Fill bus (1 - 15) 0 = none
BgdSource=0                    ; Background source (0=undefined,
                                 1 - 15 = Auxbus, 16 = ME1, 17 = ME2,
                                 18 = ME3, 19 = PP, 20 = PP clean feed)
                                  at the time don't care!
ReturnProgram=0                ; Input 1 - 48
ReturnPreset=0                 ; Input 1 - 48
OptionMask=Yes                 ; option mask (Yes/No)
OptionWipe=No                  ; (Yes/No)
OptionFillMatte=Yes            ; (Yes/No)
OptionChromaKey=No             ; (Yes/No)
OptionKeyOpacity=No            ; (Yes/No)
OptionFtbExtAutoOnly=Yes       ; (Yes/No)
Cdk104InpCfg=Dig               ; (Dig/Off/ Add) at the moment don't care!

[EXT_DSK2]
....
....
[EXT_DSK3]
....
....
```

● Save the old file on the host flash disk **"Environ.ini"** by **Rename** into **"Environ.sav"**. The extensions **".ini"**, **".old"** and **".new"** are reserved and must not be used for backup names.

● Copy the changed file **"Environ.ini"** from the PC to the host flash disk in directory **"/flash"**.

● After storing the file, a **RESET** has to be initiated at host and RSE to read in **"Environ.ini"** again.
Between storage and **RESET**, no changes have to be made at the installation setting of the switcher (e.g. menu settings) since, otherwise, the file being just stored will be overwritten with old values!

After restart of the switcher, installation is terminated.

Ross CDK104 Settings

The following adjustments have to be performed at the Ross keyer:

● Set the **CDK104** / **input1** to **"dig"**, **input 2 ... 4** to **"off"** by use of the CDK104 control panel.

    1. Hold the **SEL** button and push the corresponding input button.

    2. Push the **SEL** button until the entry **"dig"** is visible in the display.

    3. Push the **CUT** button persistently.

The installation settings permanently remain in the Ross keyer.

7.3.2.4 Operational Hints

Control of the Ross keyer is made by the control elements of the **X^{ten}DD** control panel. The installation of the application, however, requires a CDK104 control panel.
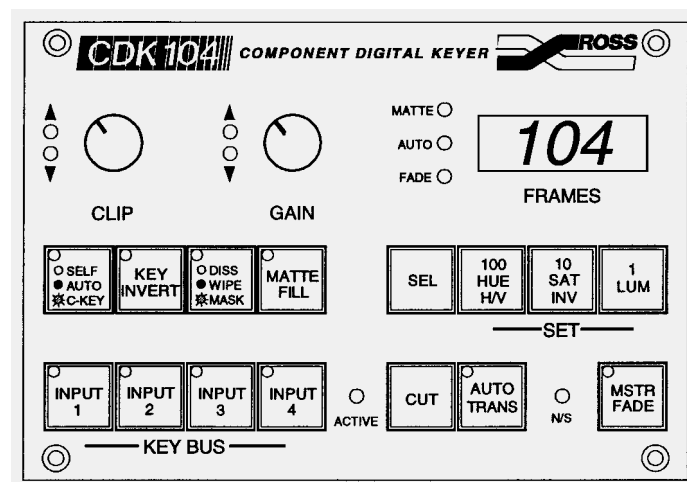
During normal operation, the CDK panel should be removed to avoid confusion. If, however, adjustments have to be simultaneously performed at the CDK panel during control, note the following items:

    1. In connection with the **X^{ten}DD**, only **Input 1** is used. The other channels are switched off.

    2. Since the control state of this application is managed and stored in the **X^{ten}DD**, a simultaneous control at the CDK panel can cause assignment problems, since a changed state is not fed back to the switcher.

       This applies e.g. to.   - flip-flop state at auto transition
                                          - increments at CLIP and GAIN

    3. The rotational speed of the gain control has been matched to the switcher logic. For this reason, the LED display on the CDK panel is inverted.

7.3.3 OXTEL EASYKEY DOWNSTREAM KEYER

7.3.3.1 Preconditions

Controlling the **Oxtel EasyKey Downstream Keyer** from the **XᵗᵉⁿDD** requires the software version V3.35 or higher.

The **XᵗᵉⁿDD** requires software version DS 0117.xxx and the system software version 1.3.0 or higher.

7.3.3.2 Installation and Cabling

Rear panel of the **Oxtel EasyKey**:

RS422/485
Serial Port for Remote Control

RS422 Port 1..10

XᵗᵉⁿDD
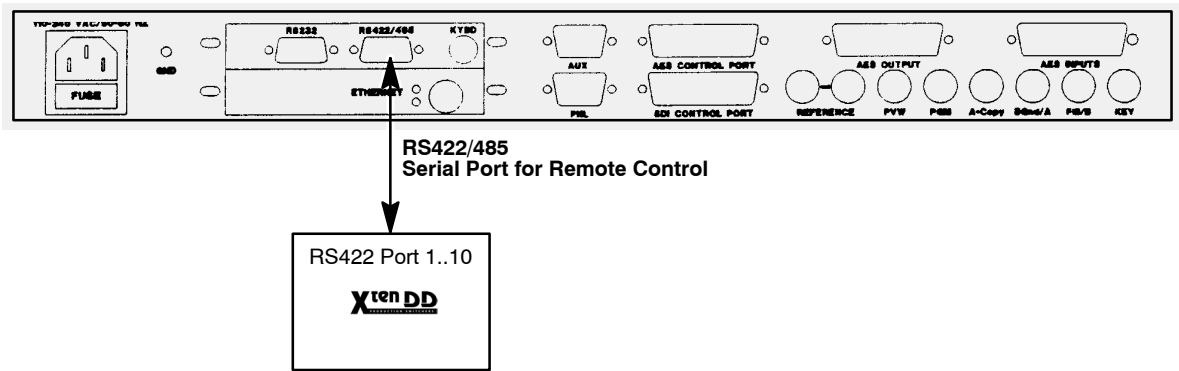
The external DSK control requires a special RS422/485 cable. The cable is assigned as follows:

XᵗᵉⁿDD Mainframe

Oxtel EasyKey, RS422/485

RS422 (Port1 - Port10)

9-pin female
D-subminiature

9-pin male
D-subminiature

Oxtel EasyKey		XᵗᵉⁿDD Mainframe
Pin 1 - TXD-	——————	Pin 2 - RxD-
Pin 2 - TxD+	——————	Pin 7 - RxD+
Pin 3 - RxD+	——————	Pin 3 - TxD+
Pin 4 - RxD-	——————	Pin 8 - TxD-
Pin 6 - Ground	——————	Pin 4 - Ground
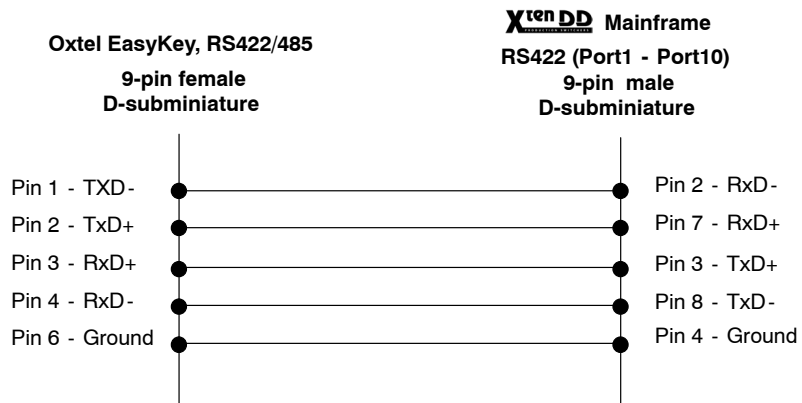
7.3.3.3   Setup and Port Configuration

After terminating the installation, the new application has to be entered in the installation menu of the switcher. Alternatively, the entry can also be manually made by editing the file **"Environ.ini"**. See the corresponding sections.

DD35 Menu Settings

The operation "External DSK with the **Oxtel EasyKey** requires in the menu the following settings (for each **DSK**):

● Select menu: **INSTALL** / **E-BOX** / **Ext DSK**

● Click on the respective **Ext DSK**

● Enter each setting parameter by pushing the **Modify** button.

Tally	Aux CP	ExtAux	UMD	ME	Machine	Editor	P-Bus
Timing	Input	GPI	GPO	DVE	Router	Ext. DSK	Aux Bus

Parameter	Setting
Port	None
Type	none
Tally	Intern
Key Send	none
Fill Send	none
BGD Source	none
Option Mask	No
Option Wipe	No
Option Fill Matte	No
Option Chroma Key	No
Option Key Opacity	No
Option FTB Auto	Yes
Option KEY Auto	No

Ext DSK
☑ **DSK 5**
☐ **DSK 6**
☐ **DSK 7**

X^{ten} **DD** **Manual Setting in File "Environ.ini"**

The configuration can also be done by editing the file **"Environ.ini"** on the host "/flash" disk of the mainframe controller.

- Copy file **"Environ.ini"** from the host flash disk to the PC.

- Edit file **"Environ.ini"** with a text editor program.

Following adjustment has to be done:

Search for the section **[EXT_DSK1]** and check the parameters or enter this section and parameters if they do not exist.

```
[EXT_DSK1]
PortNumber=2              Port 1...10
Type=oxtel_easyk_v100     Driver for Oxtel 'EasyKey'
AuxBusKey=6               Key bus (1-15) 0 = none
AuxBusFill=7              Fill bus (1-15) 0 = none
BgdSource=12              Background source (0=undefined,
                            1-15 = Auxbus, 16 = ME1, 17 = ME2,
                            18 = ME3, 19 = PP, 20 = PP clean feed)
ReturnProgram=0          Input 1-48
ReturnPreset=0           Input 1-48
Tally=Intern
OptionMask=No
OptionWipe=No
OptionFillMatte=Yes
OptionChromaKey=No
OptionKeyOpacity=Yes
OptionFtbExtAutoOnly=Yes
OptionKeyExtAutoOnly=Yes
Cdk104InpCfg=Off


[EXT_DSK2]
....
....
[EXT_DSK3]
....
....
```

- Save the old file on the host flash disk **"Environ.ini"** by **Rename** into **"Environ.sav"**. The extensions **".ini"**, **".old"** and **".new"** are reserved and must not be used for backup names.

- Copy the changed file **"Environ.ini"** from the PC to the host flash disk in directory **"/flash"**.

- After storing the file, a **RESET** has to be initiated at host and RSE to read in **"Environ.ini"** again.
  Between storage and **RESET**, no changes have to be made at the installation setting of the switcher (e.g. menu settings) since, otherwise, the file being just stored will be overwritten with old values!

After restart of the switcher, installation is terminated.

Oxtel EasyKey Settings

The following adjustments have to be performed at the Oxtel keyer. For details refer to the Oxtel EasyKey User Manual:

● During normal operation, the Oxtel faders should be locked to avoid confusion.

● <u>Setup parameters tree</u>   <u>Adjustment</u>

setup - faders enable - clip, gain & trans. - enable/disable	**disable**
setup - faders enable - image faders - enable/disable	**disable**
setup - faders enable - FTB - enable/disable	**disable**

● <u>System parameters tree</u>   <u>Adjustment</u>

system - yes - keyer/mixer mode	**keyer mode**
system - yes - serial protocol - RS232/RS422/RS485	**RS422**

● The following adjustments have to be performed in the **Keyer Operate** menu:

<u>Keyer Operate tree</u>   <u>Adjustment</u>

manual - operate - image editor - set key parameters	
- source - separate/self	**separate**
manual - set input signal - background	
- select SDI input/select colour field	**select SDI input**
manual - set input signal - key	
- select SDI input/select colour field	**select SDI input**

Select 'SDI video' for the 'A/BGnd' and 'Key' inputs. The selection of the input 'B/Fill' will be made automatically from the **X^{ten} DD**, depending of the 'Matte Fill/ Key Bus Fill' state.

7.3.3.4   Operational Hints

Note:

*The setting of the Key Fill Matte of the internal Keyer is controlled with the parameters **Hue** / **Chroma** / **Lum**. The Oxtel EasyKey uses the parameters **R** / **G** / **B** for this setting. In the current software (V1.0.0), no conversion of this this parameter is implemented.*

7.4   EDITOR CONTROL

7.4.1   GENERAL

The XtenDD production switcher can be controlled by an editing system via the RS422 interface of the switcher E-Box. Control is made by means of different protocols types which can be supported by the switcher:

● **GVG/MODEL 200** (protocol driver DS 0110)
   The XtenDD emulates a standard GVG200 switcher.
   The standard GVG200 interface command set can be used.

● **BTS/DD30** (protocol driver DS 0111)
   The XtenDD emulates a switcher of the Philips series DD30 (DD5, DD10, DD20, DD30). The interface protocol for the DD30 series can be used (including GVG200 command set).

● **DD35** (protocol driver DS0132)
   The XtenDD command set can be used by an editor (including the GVG200 command set).

7.4.2   INSTALLATION AND CABLING

Connection cable   Connect the EDITOR to one of the RS422 ports of the **X^{ten} DD** mainframe (ports 1...10). A standard RS422 cable is required (1:1).

X^{ten} DD		**Editor**

Mainframe Port 1 ... 10			Example: Editor Port
9-pol male			9-pol male

	Pin	Pin	
GND	1	1	GND
TXret	2	2	RXret
RX	3	3	TX
GND	4	4	GND
nc	5	5	nc
GND	6	6	GND
TX	7	7	RX
RXret	8	8	TXret
GND	9	9	GND

Setup in Install Menu   In the **Install E-Box** menu the following settings are required:

Timing	Input	Port	GPI	GPO	DVE	Router	Ext. DSK
Aux Bus	Tally	Aux CP	ExtAux	UMD	ME	VTR	Editor

Parameter	Setting
Port	None
Type	
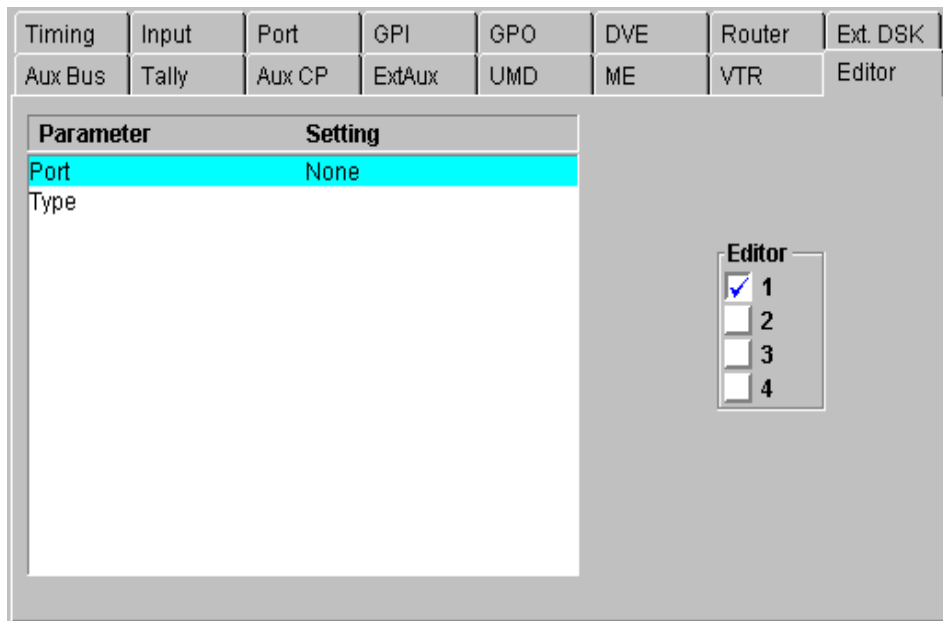
Editor
- ✓ 1
- ☐ 2
- ☐ 3
- ☐ 4

Port: **1** to **10**

(Protocol) Type: **gvg**/**model 200** (protocol driver DS 0110)
bts/**dd30** (protocol driver DS 0111)
dd35 (protocol driver DS 0132)

7.4.3   SETUP

*Setup in
Config Menu*

In the **Cofig E-Box** menu the following settings are selectable:

| Global | Input | GPI | GPO | AUX CP | ME | Editor | |

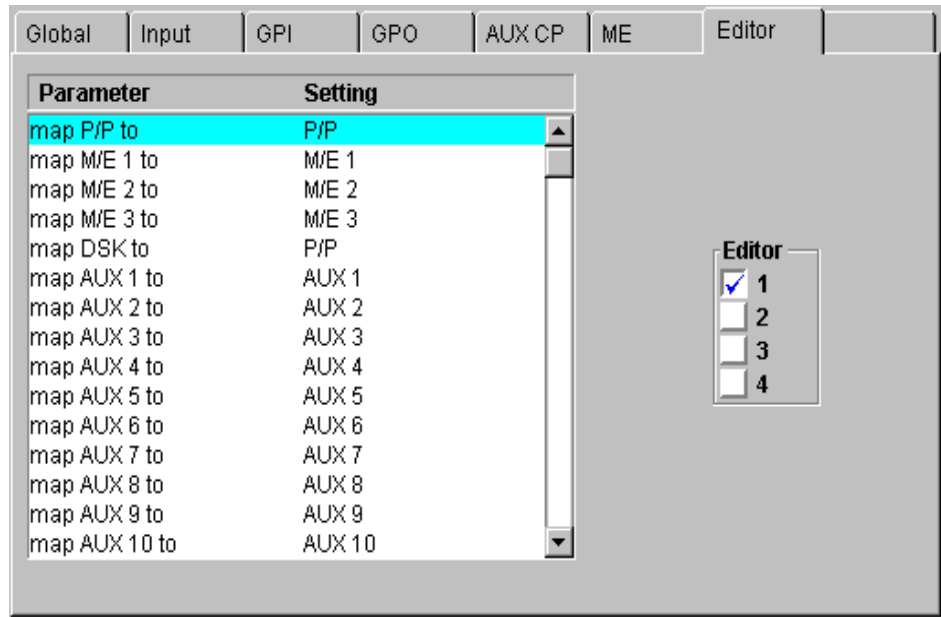| Parameter	Setting
map P/P to	P/P
map M/E 1 to	M/E 1
map M/E 2 to	M/E 2
map M/E 3 to	M/E 3
map DSK to	P/P
map AUX 1 to	AUX 1
map AUX 2 to	AUX 2
map AUX 3 to	AUX 3
map AUX 4 to	AUX 4
map AUX 5 to	AUX 5
map AUX 6 to	AUX 6
map AUX 7 to	AUX 7
map AUX 8 to	AUX 8
map AUX 9 to	AUX 9
map AUX 10 to	AUX 10

Editor
☑ 1
☐ 2
☐ 3
☐ 4

The Editor config menu allow to use all mixer stages and all AUX busses of the
Xten DD , if the used editor protocol command set supports only a limited number
of M/Es or AUX busses.

Example:

The standard GVG200 protocol command set supports only two M/Es and a spe-
cial DSK stage. Also only up to 4 AUX busses are supported by this protocol. The
mapping in the DD35 editor configuration card allow to control each ME stage and
each AUX bus with this limited GVG200 protocol. If an connected editor should
control the **Xten DD** M/E3 and PP stages instead of M/E1 and M/E2 the "**map M/E1
to**" has to be set to "**M/E3**" and the "**map M/E2 to**" has to be set to "**P/P**".
If the **Xten DD** AUX Bus 11 should be used as the editor AUX bus 1 the "**map AUX
1 to**" has to be set to "**AUX 11**".

7.4.4   SUPPORTED GVG COMMANDS

Command	Command Code	Note
TRANSITION MODE	CA	only Write
TRANSITION RATE	CC/CD	only Write
TRANSITION PUSHBUTTON SELECT	FB	
CROSSPOINT BUS	C1-C4 (C1-CF for aux) 41-44 (41-4F for aux)	Crosspoint interpretation: GVG code Interpretation 01H...0x14 INPUT 1...20 15H ME1 OUT 16H ME2 OUT 17H CLEAN FEED 18H MAIN OUT 21H ME3 OUT 25H...27H COLOR BGD 1...3 30H...4BH INPUT 21...48 Aux busses: The number of Aux Busses in not limited. If the effect address is 07H (= Aux Crosspoint) the lower nibble of the command code will be interpreted as the AUX bus number. So up to 15 Aux Busses can be controlled.
PUSHBUTTON	C6 (C7 for REV,KEY CUT keyer 1, KEY CUT keyer 2)	Only MIX ,WIPE, REV and KEY CUT are supported. MIX and WIPE will switch the currently selected buttons for next transition to the given state.
WIPE PATTERN SELECT	C8	only Write
ALL STOP	F2	
LEARN E-MEM REGISTER	DA	
RECALL E-MEM REGISTER		

Note:

The GVG "DSK" will always translated to the X^{ten}DD *"P/P" mixer effect stage.*

7.5 ROUTER INTERFACE

7.5.1 ROUTER INTERFACE WITH ASCII-PROTOCOL

7.5.1.1 General

The RS422 router interface permits the control of external crossbars such as **Mars**, **Venus** or **Jupiter**.

The following applications are conceivable:

- Switching of an emergency crossbar

- Connection to upstream crossbars

- External Aux buses

An external crossbar can be controlled from the switcher if the crossbar features a corresponding controller such as:

Mars:	CE-300 controller
Venus:	SC-400 controller

Control is also possible with the control system **Jupiter** provided this is equipped with the VM-3000 controller.
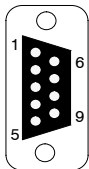
In addition, the corresponding video and control wiring must be provided. The ROUTER INTERFACE protocol for the port is loaded by the switcher mainframe as a standard and need not be selected separately.
The following pages contain more detailed information on wiring and control. The instruction set for the ASCII protocol is defined in **BCS-3000 ASCII computer interface protocol documentation**.

The transfer of the source mnemonic codes from upstream crossbars to the switcher does not belong to the router interface but is possible with the IDENT XBAR protocol which can be selected in the CONFIG PANEL menu.

7.5.1.2 Interfaces

The interface assignment corresponds to an ES bus controller.

Jupiter, Mars, Venus RS 422	Pin	Signal
9 pin D-type female	1	Frame GND
	2	RxA
	3	TxB
	4	Receive common
	5	-
	6	Transmit common
	7	RxB
	8	TxA
	9	Frame GND

7.5.1.3 Connection Cable
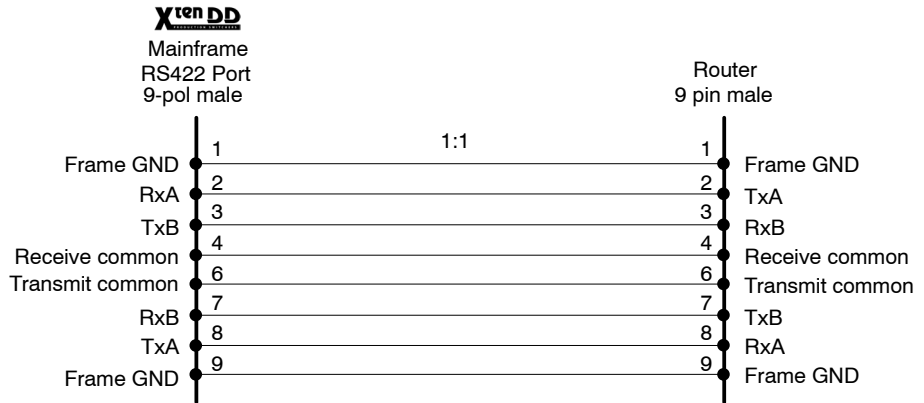
Attention:

The EMC regulations require the use of properly shielded cables in the installation of the device or the system.
This applies for both video and control cables.
Suitable cables can be ordered from THOMSON. Please indicate the desired cable length when ordering.

7.5.1.4 Menu Settings

Setup in the Install menu

To install the ASCII protocol use the **Install EBox** menu. Activate the **Router** index card and select for "Crosspoint Control" the **ascii_drv__v10x** protocol. The port has to be a RS232 serial port (9600, 1stop bit, 8 data bit, no parity).

Tally	Aux CP	ExtAux	UMD	ME	Machine	Editor	P-Bus
Timing	Input	GPI	GPO	DVE	Router	Ext. DSK	Aux Bus

Parameter	Setting		
Mnemonic Transfer			
Port	None		
Type	none		
Crosspoint Control			
Port	None		
Type	none		**Type**
Audio follow Video			✓ none
Port	None		ascii_drv_v104
Type	none		prosan_v101
			probel_ctrl_v322
Automation Control 1			probel_syst_v322
Port	None		probel_mtrx_v322
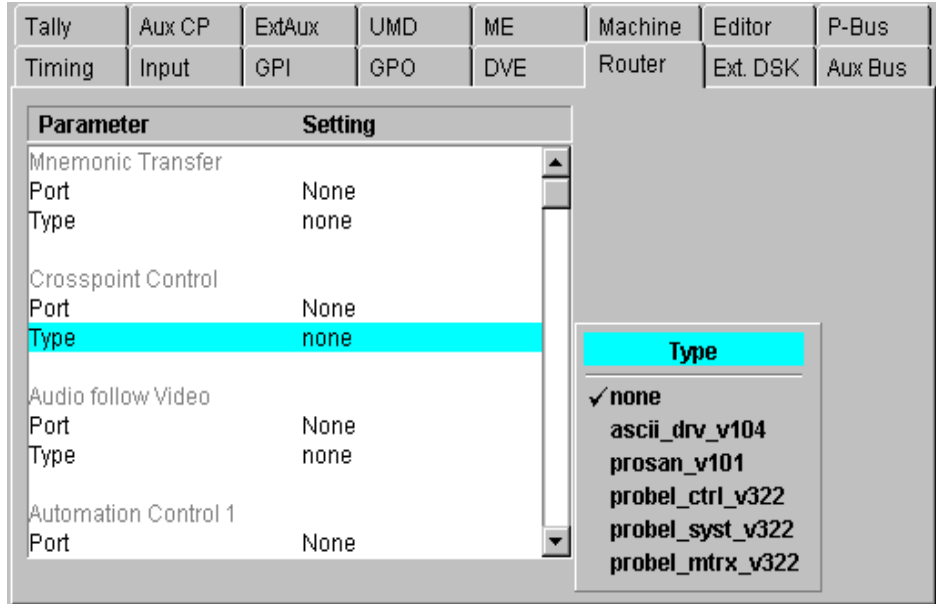
Port: RS422
(Protocol) Type: **ascii_drv_v10x** (protocol driver DS 0120)

Further you have the possibility to select the router output. Use the ExtAux index card and select up to 48 outputs of the router.

Timing	Input	Port	GPI	GPO	DVE	Router	Ext. DSK
Aux Bus	Tally	Aux CP	ExtAux	UMD	ME	VTR	Editor

ExtAux Bus	Router Output	Router Level
1	32	0
2	0	0
3	0	0
4	0	0
5	0	0
6	0	0
7	0	0
8	0	0
9	0	0
10	0	0
11	0	0
12	0	0
13	0	0
14	0	0
15	0	0

Router Output: **48** (max)
Router Level: **0**

7.5.1.5   Basic Applications
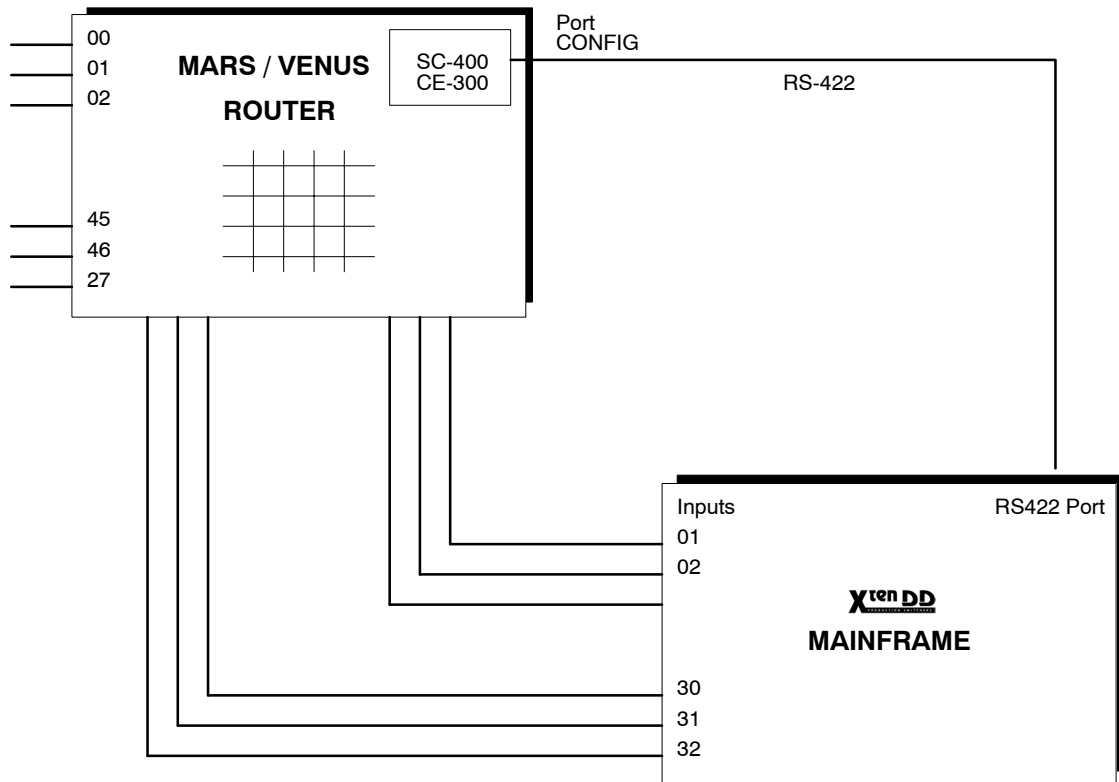
Basic diagram for pre-routing

Note: No tally lighting via pre-router

Distribution
Amplifiers

Inputs

01
02

X^{ten} DD
MAINFRAME

31
32

Outputs

PGM ME1   ....   CLEAN

RS422 Port

RS-422

00
01

ROUTER

30
31
BLACK
32

not assignet   33
not assignet   34
PRM ME1   35
PGM ME2   36
PGM PP   37
PVW ME1   38
PVW ME2   39
PVW PP   40
Clean feed   41

SC-400
CE-300

Port
CONFIG

Basic diagram for parallel routing

8 Bus outputs
similar to the internal
mixer buses
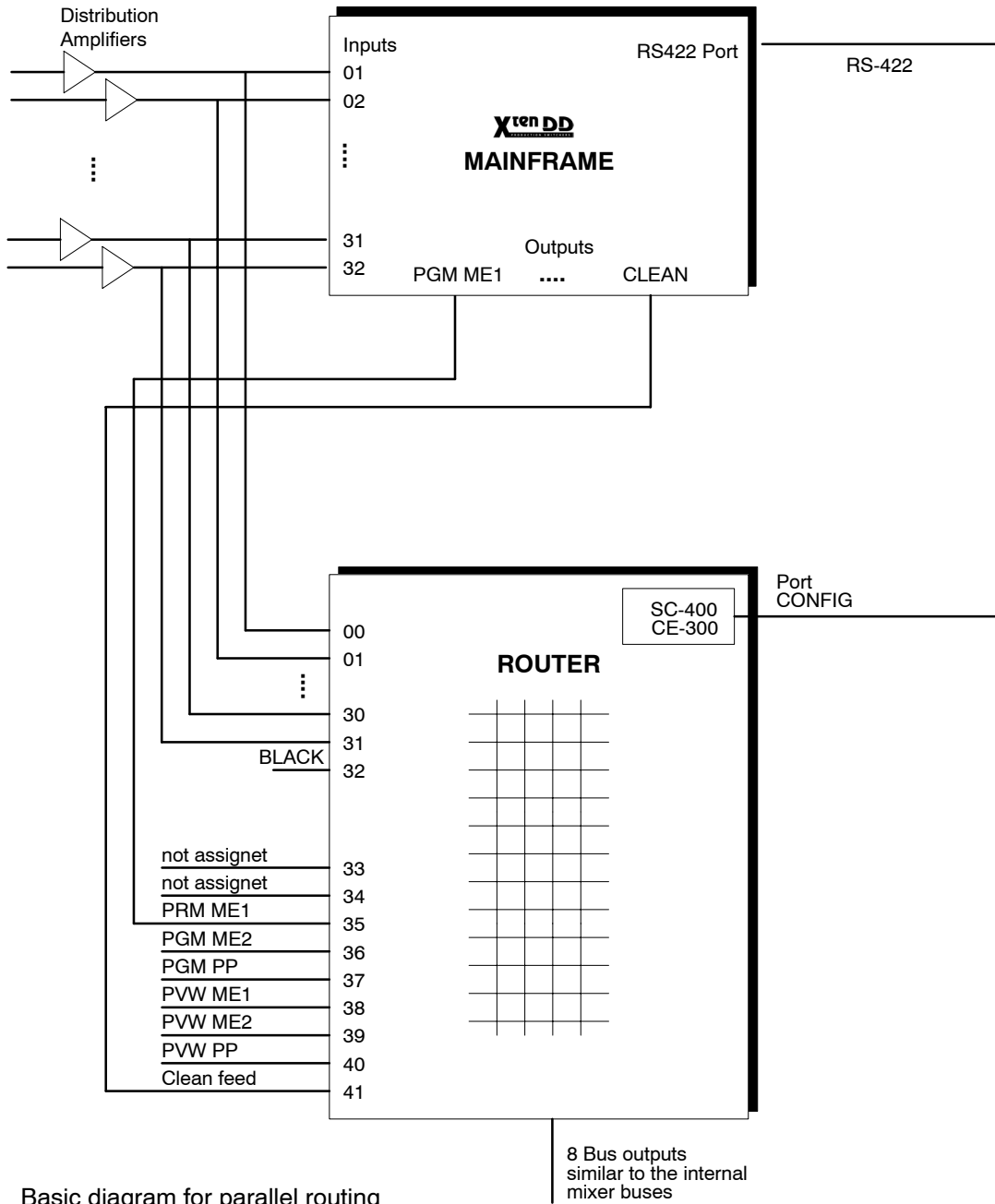
Note: No tally lighting via parallel-router

7.5.1.6   IDENT XBAR Interface

If a ***Venus*** preselection matrix or a ***Jupiter*** control system is connected to the **Xᵗᵉⁿ DD** production switchers, the IDENT XBAR protocol may be used to transmit the abbreviated names of the sources corresponding to the current switcher status from the matrix to the switcher. The current source name is then indicated in the displays (option) of the source selection keys.

Installation

The installation of this mode of operation is made in the **INSTALL EBOX** menu (see above). The IDENT XBAR protocol must be selected for the port that is linked e.g. to the router's controller interface.

Note: *The controller interface must have the corresponding software. For the Jupiter control system a VM board or a SI board is available as interface.*

XBAR Protocol

The protocol serves to transmit mnemonic codes to the switcher at a rate of

38.4 kBaud, 8 databits, no parity, 1 stop bit.

The transmission can be made from any computer system with a serial interface. The serial interface must correspond to the RS-422 standard.

In this mode the switcher operates as tributary, the port (9 pin D-sub, female) of the switcher is assigned as follows:

RS-422
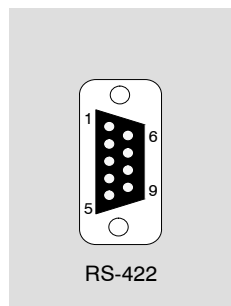
Pin 1, 9	Frame ground
Pin 2	Transmit A
Pin 3	Receive B
Pin 4	Receive common
Pin 5	not connected
Pin 6	Transmit common
Pin 7	Transmit B
Pin 8	Receive A

7.5.2   SANDAR PROSAN ROUTER SYSTEM

The PROSAN protocol was invented by Sandar and is used to communicate with an external router. The ability of the protocol allows to switch a crosspoint and to get the name of the output and also the name of the input. Additional informs the protocol the communications partner whether the status of an output has changed.

The combination of a **Xten DD** switcher and a sandar router provides the ability to switch the router via the external auxbus, to get the name of the inputs which are visualized on the external auxbus. And to support the name transfer for the crosspoints. To complete the functionality the external auxbus reacts if somebody switches the crosspoints. More accurate, if somebody switch on the router without using the switcher the external auxbus shows this by following with the LED. The communication is realized with a RS 232 serial interface.
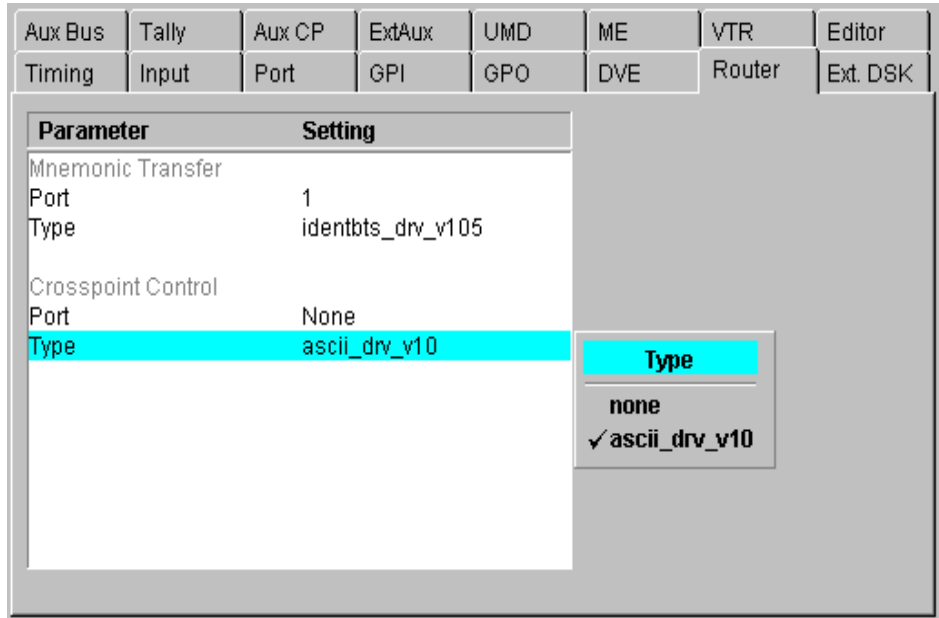
7.5.2.1   Installation and Cabling

Connection cable   The Effect Loop control requires a special cable (connector/connector). The cable is assigned as follows:

7.5.2.2 Configuration

Setup in the
Install menu

To install the PROSAN protocol use the **Install** menu. Activate the **Router** index card and select for "Crosspoint Control" the **prosan_v100** protocol. The port has to be a RS232 serial port.

Aux Bus	Tally	Aux CP	ExtAux	UMD	ME	VTR	Editor
Timing	Input	Port	GPI	GPO	DVE	Router	Ext. DSK

Parameter	Setting
Mnemonic Transfer	
Port	1
Type	identbts_drv_v105
Crosspoint Control	
Port	None
Type	ascii_drv_v10

Type

none
✓ ascii_drv_v10

Port:	**11** to **15** (RS232)
(***Protocol) Type:***	**prosan_v100** (protocol driver DS 0121)

Further you have the possibility to select the router output and the router level. Select the ExtAux index card. There you can select up to 254 outputs of the router.

Timing	Input	Port	GPI	GPO	DVE	Router	Ext. DSK
Aux Bus	Tally	Aux CP	ExtAux	UMD	ME	VTR	Editor

ExtAux Bus	Router Output	Router Level
1	32	0
2	0	0
3	0	0
4	0	0
5	0	0
6	0	0
7	0	0
8	0	0
9	0	0
10	0	0
11	0	0
12	0	0
13	0	0
14	0	0
15	0	0
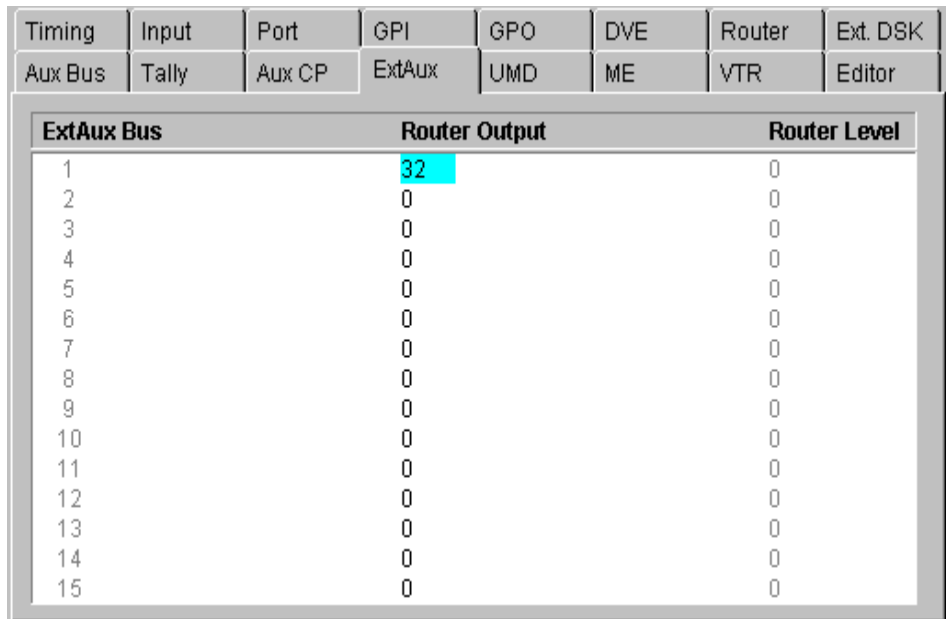
Router Output:	**32** (max)
Router Level:	**6** (max)

7.6 AUDIO-FOLLOW-VIDEO INTERFACE

7.6.1 YAMAHA DIGITAL MIXING CONSOLE *O3D*

7.6.1.1 General

The audio switcher follows only PGM (PST). Only PGM is always to be heard. The crossbar selection only is switched. If there is no audio assigned to the video, the last audio source stays.

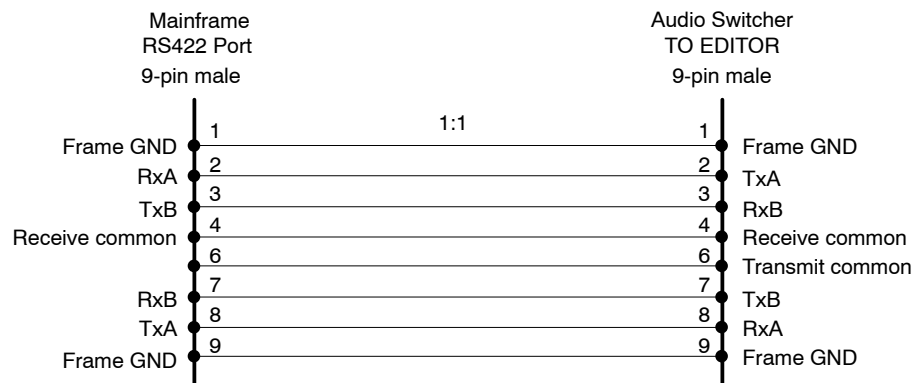|	
CUT	PGM and PST sources swap according to the video
AUTO	works only correctly when the associated audio sources differ from each other. Otherwise, the equal audio sources are temporarily muted.
PGM/PST	enables to control the two busses as EXT AUX BUSSES. When switching on these and simultaneously on the corresponding video crossbar, the principle is applied that "the last" is winning.

With the ESAM2 protocol, transition with the fader is not possible.

7.6.1.2   Installation and Cabling

Communication is made via RS422 interface with 1:1 connection. Establish the cable connection between on of the RS422 ports of the DD35 mainframe and the port **TO EDITOR** at the O3D audio switcher.

Xten DD **Mainframe**	RS422 port	TO EDITOR	YAMAHA **O3D**

Mainframe RS422 Port 9-pin male	1:1		Audio Switcher TO EDITOR 9-pin male
Frame GND	1	1	Frame GND
RxA	2	2	TxA
TxB	3	3	RxB
Receive common	4	4	Receive common
	6	6	Transmit common
RxB	7	7	TxB
TxA	8	8	RxA
Frame GND	9	9	Frame GND
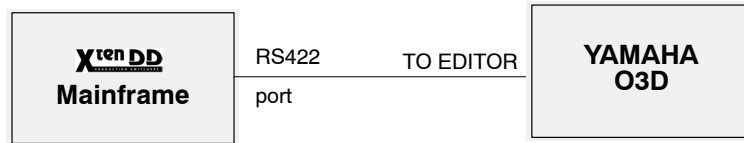
7.6.1.3 Port configuration

The configuration of the port has to be made in the menu ***Install / E-Box / Router***:

Tally	Aux CP	ExtAux	UMD	ME	Machine	Editor	P-Bus
Timing	Input	GPI	GPO	DVE	Router	Ext. DSK	Aux Bus

Parameter	Setting
Mnemonic Transfer	
Port	8
Type	identbts_drv_v110
Crosspoint Control	
Port	9
Type	ascii_drv_v104
Audio follow Video	
Port	10
Type	esam2_v101

In case of error after software installation, additional (default) settings can be checked in the file "**Environ.ini**". The menus ***Install / EBox / Copy*** enable to copy this file onto the harddisk and to enter the corresponding values if they are not yet entered there.

> **parity** = 2
> **stopbit** = 1
> **trep** = 0
> **baudrate** = 38400.
>
> **port** = 1 .. 10 (select a RS422 Port)
> **protocol type** = **esam2_v100** (protocol driver DS 0188)

7.6.1.4   Menu Settings

Config / EBox menu
Audio index card

Index card serves for adjustment of audio switchers via the ESAM2 protocol.

This menu enables to define logical audio sources which can consist of as many physical audio sources as you like. Then, audio sources can be assigned to the video sources. The audio switcher can be only coupled to one M/E of the DD35 switcher. In the audio switcher, only the line output is switched.

```
Aux Name  AuxCouple  SubsTab   DVE
Audio      Global     Input    GPI      GPO      AUX CP   ME      Editor

Audio                Audio        Video     Audio              Audio Settings
Input    Name       Source       Input     Input
1       AU 2    ▲              ▲    1  IN01   15 AU10 ▲    M/E        None
2                                    2  IN02                Program    None
3                                    3  IN03   14 AU 9      Preset     None
4       JAZZ                         4  IN04
5       Nois                         5  IN05    2
6       beep                         6  IN06
7                                    7  IN07    1  AU 2
8       AU 3                         8  IN08
9       AU 4                         9  IN09
10      AU 5                        10  IN10
11      AU 6                        11  IN11   34
12      AU 7                        12  IN12    3
13      AU 8                        13  IN13
14      AU 9                        14  IN14
15      AU10   ▼              ▼    15  IN15   ▼
```

It is possible to define up to 64 internal audio channels. In the left listbox, they are provided with a name. To each of these internal audio channels can be assigned as many audio channels as you like. They are displayed in the listbox **Audio Source**.

The buttons **Add Source** and **Delete Source** enable to vary them. The respective internal audio channel is marked green for this purpose.

To each video input can be assigned an internal audio channel. This is indicated in the third listbox.

The listbox **Audio Settings** is used to perform basic adjustments.

M/E:	The audio switcher operates only on one M/E which is specified here.
Program / **Preset**:	Audio Program and Audio Preset can be mapped on an external Aux bus.

A new file card for the AFV settings is in preparation.

O3D Menu Settings

In order to establish the communication between video and audio switcher, the audio switcher has to be provided with an additional software (O3DVEK for Video Editing).

Furthermore, a setup has to be made on the audio switcher.

Steps:

1. Enter the menu **MIDI**/**HOST** which can be accessed by button **Utility** (toggling through the individual pages by pressing the button repeatedly).

2. Settings:
   Host Interface to <**Editor**>
   To Editor to <**Enable**>
   Frame Type to <**25**>
   Parity Flag to <**Even**>
   Fader Mode to <**From-To**>

   The last setting does not depend on the interface but on the behavior of the faders.

3. Functional tests:
   The **Utility** button also enables to get to the dialog **MIDI Moni.** where the messages are recorded coming from the video switcher. In this mode is not switched but only recorded.

4. For testing the switch procedures, push the **Automix** button. By toggling you then reach the menu **From-To**. In the upper part of the menu the actual state of the program bus and in the lower part the actual state of the preset bus is shown.