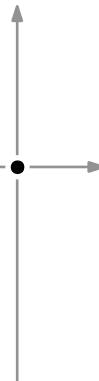


KayakDD-2™

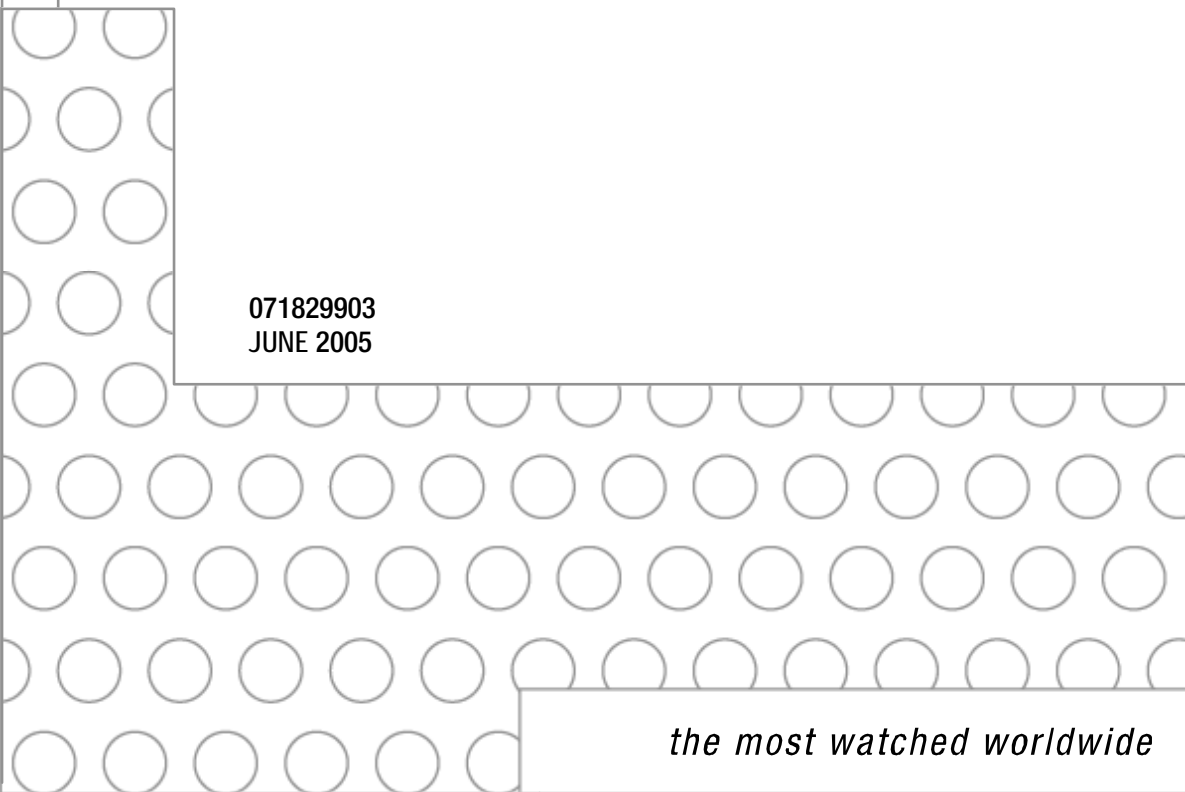
DIGITAL PRODUCTION SWITCHER

Planning and Installation Manual



SOFTWARE VERSION 6.7.1

071829903
JUNE 2005



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Grass Valley Web Site

The www.thomsongrassvalley.com web site offers the following:

Online User Documentation — Current versions of product catalogs, brochures, data sheets, ordering guides, planning guides, manuals, and release notes in .pdf format can be downloaded.

FAQ Database — Solutions to problems and troubleshooting efforts can be found by searching our Frequently Asked Questions (FAQ) database.

Software Downloads — Software updates, drivers, and patches can be downloaded.

CERTIFICATE

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Including its implementation, meets the requirements of the standard:

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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
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The method of operation for quality certification is defined in the KRQ General Terms and Conditions for Quality Certification. Integral publication of this certificate and adjoining reports is allowed.

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Konformitätserklärung
Declaration of conformity

Wir
We THOMSON Broadcast and Media Solutions GmbH
Business Unit Production Switchers and Effects
Brunnenweg 9
D-64331 Weiterstadt
Germany

erklären in alleiniger Verantwortung, dass das Produkt
declare under our sole responsibility that the product

Kayak DD-2 bestehend aus
Production Switcher consistent of

RC3900 2 ME Mainframe
RC4000 Control Panel 2M/E

auf das sich diese Erklärung bezieht, mit folgenden Normen übereinstimmt:
to which this declaration relates is in conformity with the following standards:

EN 55103-1 /1996
EN 55103-2 /1996

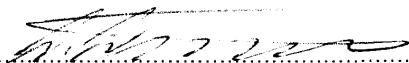
EN 60950 /2001

entsprechend den Bestimmungen der Richtlinien 89/336/EWG und 73/23/EWG.
following the provisions of 89/336/EEC and 73/23/EEC directives.


General Manager

Wilfried Wüst

Weiterstadt, den 9.12.2003
.....
(Ort und Datum der Ausstellung)
(place and date of issue)


.....
(Rechtsgültige Unterschrift)
(legal signature)

Quality Support: Lothar Schmelz


.....

1 Preface

1.1 About This Manual

This KayakDD-2 Planning and Installation Manual provides installation, configuration, and service information for the Thomson Grass Valley KayakDD Digital Production Switcher. This manual is designed for technical personnel responsible for installing and maintaining KayakDD-2 systems.

1.2 Standard Documentation Set

The standard KayakDD-2 documentation set consists of a:

- Operating Instructions,
- Planning and Installation Manual, and
- Release Notes.

The *Operating Instructions* contains background information about the KayakDD-2 Digital Production switcher and describes operating procedures. This manual can be used while learning about KayakDD-2 and for enhancing your basic knowledge of the system.

The *Planning and Installation Manual* contains information about installing, configuring, and maintaining the system. The service part in this current manual is in preparation.

The *Release Notes* contain information about new features and system enhancements for a specific software version, and also includes software installation procedures. Always check the release notes for your current system software before you begin operating your system.

1.3 Other Documentation

Communication protocols of KayakDD-2 are available upon request for developers and software engineers to use to design editor and other external interfaces to the KayakDD-2 system.

2 *Regulatory Notices*

2.1 *Certifications and Compliances*

2.1.1 *FCC Emission Control*

This equipment has been tested and found to comply with the limits for a Class A (Control Panel) and Class B (Mainframe) digital device, pursuant to 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.

Changes or modifications not expressly approved by Thomson Grass Valley can affect emission compliance and could void the user's authority to operate this equipment.

2.1.2 *Canadian EMC Notice of Compliance*

This digital apparatus does not exceed the Class A (Control Panel) and Class B (Mainframe) limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant hors des limites applicables aux appareils numériques de la classe A pour des pupitre de control et classe B pour le rack prescrites dans le Règlement sur le brouillage radioélectrique édicte par le ministère des Communications du Canada.

2.1.3 *FCC Emission Limits*

This device complies with Part 15 of the FCC 47 Rules. Operation is subject to the following two conditions: (1) This device may no cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesirable operation.

2.1.4 Certification and Compliance

This product has been evaluated for Electromagnetic Compatibility under the EN 55103-1/2 standards for Emissions and Immunity and meets the requirements for E1/E2 environment.

This product complies with Class A (Control Panel) and Class B (Mainframe). In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

This product has been evaluated and meets the following Safety Certification Standards:

Category	Standard	Designed/tested for compliance with
Safety	ANSI / UL60950	Safety of Information Technology Equipment, including Electrical Business Equipment.
	IEC 60950	Safety of Information Technology Equipment, including Electrical Business Equipment
	CAN/CSA C22.2, No. 60950-00	Safety of Information Technology Equipment, including Electrical Business Equipment.
	Europe: EN 60950	Safety of Information Technology Equipment, including Electrical Business Equipment.
	73/23/EEC	Low Voltage Directive

Category	Standard	Designed/tested for compliance with
EMI	EMC Directive 89/336/EEC via EN 55103-1 and 2	Audio, Video and Entertainment Lighting Control for the European Community.
	EN 55103-1 standards	Electromagnetic compatibility. Product family standard for audio, video, audio-visual and entertainment lighting control apparatus for professional use. Part 1 Emissions, Environment E1/E2 EN 55022: Class A (Control Panel) and Class B (Mainframe) Radiated and Conducted Emissions EN 61000-3-2: Power Line Harmonic Emissions, Radiated Magnetic Field Emissions, Peak Inrush Current
	EN55103-2 standards	Electromagnetic compatibility--Product family standard for audio, video, audio-visual and entertainment lighting control apparatus for professional use. Part 2 Immunity, Environment E1/E2 EN 50082-1: Immunity EN 61000-4-2: Electrostatic Discharge "ESD" Immunity EN 61000-4-3: Radiated RF Electromagnetic Field Immunity EN 61000-4-4: Electrical Fast Transient/Burst "EFT" Immunity EN 61000-4-5: Surge Immunity EN 61000-4-6: Conducted RF Immunity EN 61000-4-11: Voltage Dips, Short Interruptions and Voltage Variations Annex A - Radiated Magnetic Field Immunity Note: This only applies to assemblies sensitive to magnetic fields
	US FCC Class A	CISPR Pub. 22 (1985)
	Canada FCC Industry Canada	
Australia & New Zealand:	AS/NZS 3548	

3 *Safety Summary*

Read and follow the important safety information below, noting especially those instructions related to risk of fire, electric shock or injury to persons. Additional specific warnings not listed here may be found throughout the manual.

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 that contained in the operating instructions unless you are qualified to do so.

3.1 *Safety Terms and Symbols*

3.1.1 *Terms in This Manual*

Safety-related statements may appear in this manual in the following form:

WARNING!

Warning statements identify conditions or practices that may result in personal injury or loss of life.

CAUTION!

Caution statements identify conditions or practices that may result in damage to equipment or other property, or which may cause equipment crucial to your business environment to become temporarily non-operational.

3.1.2 *Terms on the Product*

The following terms may appear on the product:

DANGER!

A personal injury hazard is immediately accessible as you read the marking.

WARNING!

A personal injury hazard exists but is not immediately accessible as you read the marking.

CAUTION!

A hazard to property, product, and other equipment is present.

3.1.3 Symbols on the Product

The following symbols may appear on the product:



Indicates that dangerous high voltage is present within the equipment enclosure that may be of sufficient magnitude to constitute a risk of electric shock.



Indicates that user, operator or service technician should refer to product manual(s) for important operating, maintenance, or service instructions.



This is a prompt to note fuse rating when replacing fuse(s). The fuse referenced in the text must be replaced with one having the ratings indicated.



Identifies a protective grounding terminal which must be connected to earth ground prior to making any other equipment connections.



Identifies an internal Protective Bounding Conductor (PBC) terminal proper earthing of metal parts auf the unit (EN 60950 / 1.1.13.9).



Indicates that static sensitive components are present which may be damaged by electrostatic discharge. Use anti-static procedures, equipment and surfaces during servicing.

3.2 Warnings

The following warning statements identify conditions or practices that can result in personal injury or loss of life.

WARNING — To reduce the risk of electrical shock, do not remove cover or back. No user-serviceable parts inside. Refer to qualified service personnel.

- **Dangerous voltage or current may be present** — Disconnect power and remove battery (if applicable) before removing protective panels, soldering, or replacing components.
- **Do not service alone** — Do not internally service this product unless another person capable of rendering first aid and resuscitation is present.
- **Remove jewelry** — Prior to servicing, remove jewelry such as rings, watches, and other metallic objects.
- **Avoid exposed circuitry** — Do not touch exposed connections, components or circuitry when power is present.
- **Use proper power cord** — Use only the power cord supplied or specified for this product.
- **Ground product** — Connect the protective conductor of the power cord to earth ground.
- **Operate only with covers and enclosure panels in place** — Do not operate this product when covers or enclosure panels are removed.
- **Use correct fuse** — Use only the fuse type and rating specified for this product.
- **Use only in dry environment** — Do not operate in wet or damp conditions.
- **Use only in non-explosive environment** — Do not operate this product in an explosive atmosphere.
- **High leakage current may be present** — Earth connection of product is essential before connecting power.
- **Dual power supplies may be present** — Be certain to plug each power supply cord into a separate branch circuit employing a separate service ground. Disconnect both power supply cords prior to servicing.
- **Double pole neutral fusing** — Disconnect mains power prior to servicing.
- **Use proper lift points** — Do not use door latches to lift or move equipment.
- **Avoid mechanical hazards** — Allow all rotating devices to come to a stop before servicing.

3.3 Cautions

The following caution statements identify conditions or practices that can result in damage to equipment or other property:

- **Use correct power source** — Do not operate this product from a power source that applies more than the voltage specified for the product.
- **Use correct voltage setting** — If this product lacks auto-ranging power supplies, before applying power ensure that each power supply is set to match the power source.
- **Provide proper ventilation** — To prevent product overheating, provide equipment ventilation in accordance with installation instructions.
- **Use anti-static procedures** — Static sensitive components are present which may be damaged by electrostatic discharge. Use anti-static procedures, equipment and surfaces during servicing.
- **Do not operate with suspected equipment failure** — If you suspect product damage or equipment failure, have the equipment inspected by qualified service personnel.
- **Ensure mains disconnect** — If mains switch is not provided, the power cord(s) of this equipment provide the means of disconnection. The socket outlet must be installed near the equipment and must be easily accessible. Verify that all mains power is disconnected before installing or removing power supplies and/or options.
- **Route cable properly** — Route power cords and other cables so that they are not likely to be damaged. Properly support heavy cable bundles to avoid connector damage.
- **Use correct power supply cords** — Power cords for this equipment, if provided, meet all North American electrical codes. Operation of this equipment at voltages exceeding 130 VAC requires power supply cords which comply with NEMA configurations. International power cords, if provided, have the approval of the country of use.
- **Use correct replacement battery** — This product may contain batteries. To reduce the risk of explosion, check polarity and replace only with the same or equivalent type recommended by manufacturer. Dispose of used batteries according to the manufacturer's instructions.
- **Troubleshoot only to board level** — Circuit boards in this product are densely populated with surface mount technology (SMT) components and application specific integrated circuits (ASICs). As a result, circuit board repair at the component level is very difficult in the field, if not impossible. For warranty compliance, do not troubleshoot systems beyond the board level.

4 *Technical Specification*

4.1 *Power Supply Frame*

Line voltage	100V-240V AC +/-10% autorange, power factor corrected (48V / 5A DC Input for ext. redundancy)
Line frequency	50/60Hz +/- 5%
Power consumption	max. 250W (max. 310W with 48V DC supply for panel)
Leakage current	< 2 mA
RAMRecorder buffer voltage:	6...8V DC approx. 150 mA.
DC-OUT for control panel	48V DC, max 1.6A

4.2 *Power Supply Panel*

DC-IN	48V DC In, max 1.3A
Power consumption	max. 60W

4.3 *Environmental Data*

Storage temperature	-20°C to +70°C (-4°F to 158°F)
Operating temperature	+5°C to +40°C (41°F to 104°F)
Relative humidity	≤ 95% non-condensing
Electromagnetic environment	E2 (according to EN55103-1, -2)

4.4 Video System Data

Standards	Interlaced 525 lines (59.94/60Hz) or 625 lines (50Hz) switchable or autosensing
Data rate	270Mbit
Aspect Ratio	4:3 or 16:9 switchable
Signal Processing	4:2:2 in conformity with ITU-R 601
Minimum Delay	20 μ sec
Blanking horizontal	Transparent for background signal
Blanking vertical	Transparent for background signal, except for lines 6 and 319 (625/50Hz)
Number Bits	10

4.5 Serial Digital Video Inputs

Number & format	32 inputs according to ITU-R656, 270Mbit/s
Return loss	> 15dB, 5-270MHz
Type of Connector	75 ohm BNC (SMPTE 259M)
Nominal Amplitude	800mV peak-to-peak terminated
Autophasing range	43 μ sec
Channel Coding	conforms to SMPTE RP-259M
Ancillary Data	Blanked or passed (user selectable)
Embedded audio	Blanked or passed (user selectable)
EDH	Blanked
Input Impedance	75 ohm
Max cable length	225 meters (738ft) (inputs 1..24) Inputs 25..32 150m.

4.6 Serial Digital Video Outputs

Number & format	20 outputs according to ITU-R656, 270Mbit/s
Return loss	> 15dB, 5-270MHz
Type of Connector	75 ohm BNC (SMPTE 259M)
Nominal Amplitude	800mV peak-to-peak +/-10% (SMPTE 259M)
Rise & Fall Times	400 to 1400picoseconds 75 ohm termination between 20% and 80% amplitude
Jitter	ITU R 601/656
Output Impedance	75 ohm
DC Offset	< 50mV with 75 ohm termination

4.7 Analog Reference Input

Video Standard	525 line (59.94Hz/60Hz) or 625 line (50Hz) BNC, 0.3V sync, black-burst or CCVS
Return loss	> 40dB, up to 5MHz
Connectors	2 BNC loop through
Impedance	75 ohm external

4.8 Control Panel Connection

Type of connection	10/100 Base T
Protocol	TCP(UDP)/IP as in XtenDD
Cable and connectors	CAT5 UTP, RJ45 connectors; 1 Frame and 1 Panel connect without use of external hub/switch.
max. Cable length	100m / 300ft

4.9 Mechanical Data

KayakDD-2 Control Panel

Width	809 mm	(31.8 inch)
Depth	418 mm	(16.5 inch)
Mounting Depth	33 – 81 mm	(1.3 - 3.2 inch)
Weight	10 kg	(22 lb)

KayakDD-2 Mainframe

Height 3 RU	134 mm	(5.3 inch)
Width	482 mm	(19 inch)
Depth	430 mm	(17 inch)
Weight	8.3 kg	(18.3 lb)

5 *System Overview*

5.1 *Introduction*

The Grass Valley KayakDD™ digital production switcher is an affordable, compact, and flexible system that offers an array of high-end features for everything from live studio and mobile production to small corporate studios and editing applications.

The KayakDD switcher leverages many of the features found in the Thomson Grass Valley XtenDD™ and Zodiak™ switchers. The result is a compact system with superior image quality and features not found in any other product.

Switchable between 525-line and 625-line formats, the KayakDD system includes four high-quality keyers and complete machine control functionality. It features 32 inputs, 10 fixed outputs, and 10 timed auxiliary buses. And it accommodates such options as Chromatte™ Chroma Keying, RGB color correction, and up to eight Digital Picture Manipulators for sophisticated digital video effects.

For ease of operation, the KayakDD system features an intuitive menu using an integrated touch-screen color display. It also offers a networking capability that enables different frames to be delegated to a single panel as well as multiple panels to share a single frame.

Only 3 RU high, the lightweight KayakDD-2 switcher is designed to be highly portable.

5.1.1 *Features*

- Switchable between 525-line and 625-line formats
- Fully digital 10-bit, 4:2:2 inputs, outputs, and video processing
- Compact, lightweight 3 RU frame
- Low power consumption
- Intuitive menu with touch screen
- 32 inputs
- 10 fixed M/E outputs (2x PGM, 1x Preview, 1x Clean, 1x CleanPVW per M/E)
- 10 timed auxiliary buses
- Internal frame optional RAMRecorder holds short clips and stills and works as frame synchronizer
- Remote monitoring support via optional NetCentral software
- Four keyers, each with linear, luminance and optional Chromatte™ chroma key functionality per M/E
- Optional RGB color correction
- Four channels of high-end digital effects (Option) per M/E

5.1.2 Supported Control Protocols

- Supports extensive list of control protocols, including those for:
- VTRs (BVW-75)
- Servers (Louth VDCP, Odetics BVS)
- Routers/Routing Control Systems (Trinix™, Venus™, Triton™, and third-party routers; Jupiter™ and Encore™ {future} router control systems)
- Control Systems (Grass Valley Andromeda™ and third-party systems)
- Grass Valley under monitor displays
- Grass Valley external auxiliary panels
- ESAM II for audio-follow-video applications
- Edit controllers (native and Grass Valley Model 100 and 200)

5.1.3 KayakDD-2 Ordering Information

Type	Description
KAYAK-DD-2	Frame: 2 M/Es, all inputs and outputs, 8 keys (2 ChromaKeyers ME1 Key1 and ME1 Key2), 2V/K Channels TE (DVE) = 1 per bank, YUV color corrector, Frame store (fill and key) per keyer, Serial ports, all protocols, GPI/Tally. Control Panel: 2ME, 24Source buttons. Source mnemonics TFT menu display with touchscreen; standard length DC-CABLE (20m), crossover LAN cable (20m)
KDD2-DPM-1	License to operate additional 3 DVE (iDPM) channels plus non-linear effects in ME1
KDD2-DPM-P	License to operate additional 3 DVE (iDPM) channels plus non-linear effects in PP
KDD2-RAMREC	KayakDD Four-Channel RAM-Recorder incl. FileTransfer. RAM-Recorder can also be used to synchronize incoming non-synchronous signals
KDD2-RGB	License for RGB color correction for all ME and PP buses = 14 Color correctors
KDD2-CHROMA	License for two additional flexible ChromaKeyers six additional ChromaKeyers
KDD2-NETCEN	License for NetCentral agent
KDD2-MNEMO-KIT	Source Mnemonics upgrade kit. Material only. Installation only by Authorized Service Provider (addtl. Expense for labor time)
KDD2-WHITEKEYS	White keycaps for multicolor illumination <i>This option is initial order only and not field upgradeable</i>
KDD2-COLORKEYS	GV style colorkeys <i>This option is initial order only and not field upgradeable</i>
KDD-DC-CABLE-100	100m DC power cable
KDD-DC-CABLE-50	50m DC power cable
KDD-PSU	Same external power supply as for KayakDD-1
KDD-PSU-CABLE-5	5m cable PSU to mainframe
KDD-PSU-CABLE-20	20m cable PSU to mainframe

Type	Description
KDD2-FRAME	Frame: 2 M/Es, all inputs and outputs, 8 keyers (2 ChromaKeyers), 2V/K Channels iDPM (DVE) = 1 per bank), YUV color corrector, frame store (fill and key) per keyer, serial ports, all protocols, GPI/Tally.
KDD2-PANEL	Control Panel: 2ME, 24Source buttons. Source mnemonics TFT menu display with touchscreen

For later order of any combination of KDD2-DPM, KDD2-DPM-P, KDD2-RAMREC, KDD2-RGB, KDD2-CHROMA and KDD2-NETCEN order **KDD2-SW-OPT** once per switcher and include iButton ID and serial number in the order.

5.2 System Components

A KayakDD-2 Production Switcher system consists of a control panel with integrated menu display (color TFT with touch-screen) and a Video Processor Frame with three rack units (3 RU) height.



Figure 1 Video Processor Frame

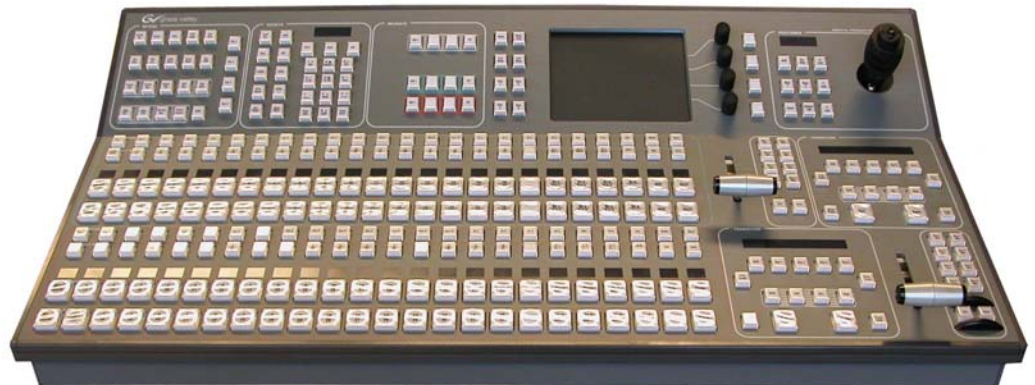


Figure 2 Control Panel

5.3 Control Surface



Figure 3 KayakDD-2 Control Panel Surface

The panel is organized into subpanels that contain groups of related controls. The panel provides real time button, knob, and lever arm control of one full function mix/effects (PGM/PST with full M/E capability).

Connectors to the KayakDD Video Processor frame and to other components of the KayakDD Control Surface are located on the rear of the panel.

5.4 Video Processor Frame

5.4.1 System Components

The KayakDD-2 Video Processor frame houses most of the system electronics in a very compact design. A built-in fan system allows cooling of the frame. The frame contains the following modules:

- Mainboard RY 3910
- Expansion Board RY 3920
- M/E Processor Board RY 3720
- Power Supply Unit
- Fan Unit RC 3740
- Cable Set RC 3950

The figure below shows the frame with opened housing.

The KayakDD system has been designed for easy maintenance. There are no serviceable parts inside. Modules and power supplies should be removed and replaced from Thomson Grass Valley service personnel only!

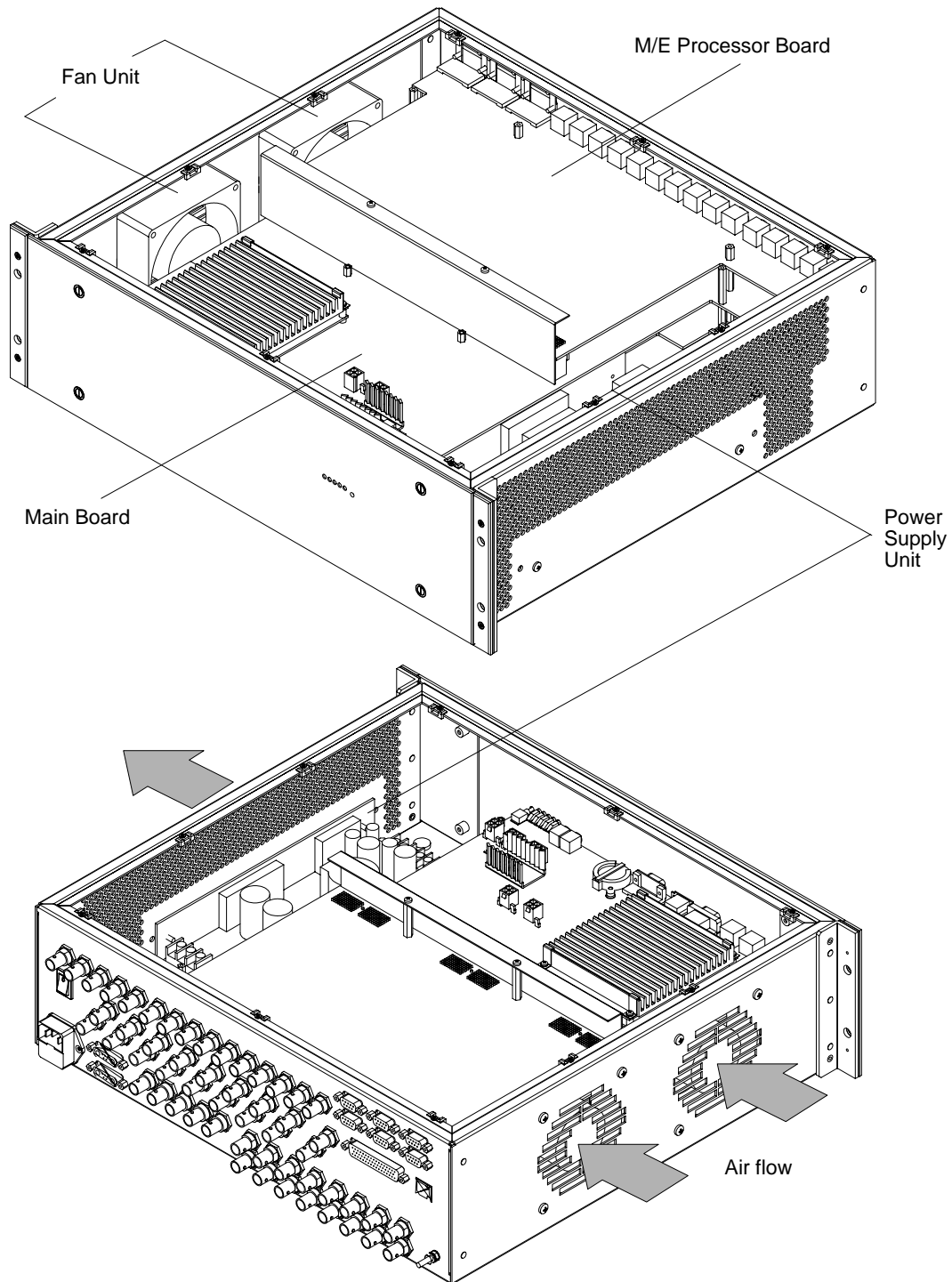


Figure 4 KayakDD-2 Video Processor Frame

5.4.2 Video Processor Frame Options

Digital Pictures Manipulator

The KayakDD Digital Pictures Manipulators (iDPM) per keyer provide the following internal digital effects capability:

- 2-D effects in 3-D space with perspective (= 3D-planar),
- Border, outline, and extrude effects,
- Independent drop shadow,

with the (KDD2-DPM-1 resp. KDD2-DPM-P option which includes the KURL™ functionality)

- Page turn, Page Rolls
- Splits, mirrors and slits.

RGB Color Correction

In addition to the standard solarization, posterization, mosaic capabilities and YUV color correction, RGB color correction can be added to all M/E background, keyer fill, and utility buses.

Chroma Keyers

In addition to the two standard chroma keyers, two more chroma keyers are added to the system with the KDD-RGB option.

5.5 Functional Overview

5.5.1 Video Signal Flow

The basic system architecture (Figure 5) of the KayakDD system has been designed for operational flexibility. For example, all the outputs from the M/E are routed back to the video crosspoint matrix, making all these signals accessible to the entire system.

The 32 video inputs to the Video Processor frame can be mapped to any of the 24 crosspoint buttons.

Internally generated white, black and three color backgrounds are also available sources, as are the four RAMRecorder outputs. This source-to-button mapping is done through the touch screen menu and can be stored as a user profile for any number of individual users. Button mapping is the same on all buses.

The system has a full M/E with PGM/PST being a full M/E as well.

The selected video on each bus is deserialized and reclocked before entering the video processing circuitry. Video processing is available for each separate M/E background, Key, and Utility bus, providing built-in solarization, posterization and mosaic effects. In addition, contrast, brightness, and hue can be adjusted on a bus-by-bus basis.

Each M/E has four full-function keyers with optional internal Digital Picture Manipulator effects. Each keyer has access to its own wipe generator as well as a pair of standard floating chroma keyers which may be assigned to any keyers in the system. Two complex wipe generators serve each M/E, providing a wide range of wipe choices with modulation, rotation and multiplication of each one. Wipe signals can also be taken from the Utility bus on the M/E.

The outputs from M/E Program and Preview are fed to dedicated BNCs and sent back to the crosspoint circuitry for the Auxiliary buses as well as the clean feed output.

The 10 Aux bus outputs can be utilized in a number of ways. Every Aux bus provides individually adjustable safe area and crosshair (center cross) capability. Each AUX bus has a line synchronizer.

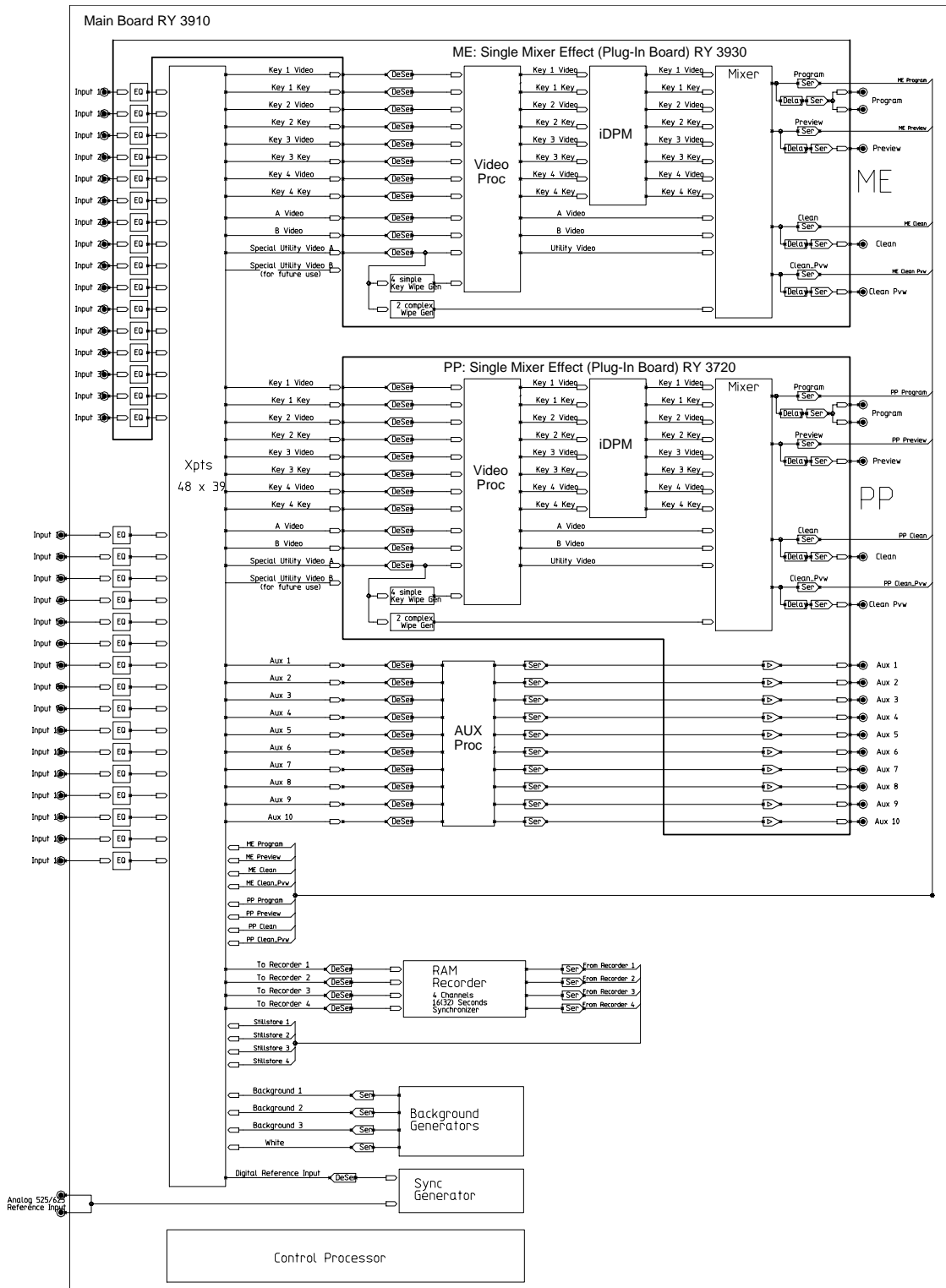


Figure 5 KayakDD-2 Simplified Video Flow Diagram

5.5.2 System Control

KayakDD-2 system control is designed for flexibility and simplicity. Ethernet, serial, parallel, and USB are used for system component interconnections. Tally and GPI control are available.

6 *Installation*

6.1 *Pre-Installation Procedures*

Before you physically install the KayakDD-2 system, familiarize yourself with the tools required, physical specifications, and safety and power requirements covered in this section.

6.1.1 *System Survey*

Check all parts received against the packing list enclosed with your shipment, and examine the equipment for any shipping damage. Immediately report any missing or damaged items to the carrier and to your Thomson Grass Valley Service Representative.

6.1.2 *Line Voltage*

KayakDD-2 components utilize auto-ranging power supplies which accommodate 100 - 240V. No switch settings are required, nor are any possible.

6.1.3 *Safety Requirements*

To prevent injury or equipment damage, read, understand, and follow all installation safety precautions.

WARNING!

The Video Processor frame weighs approximately 8.3 kg (18.3 lb). Provide appropriate equipment to support the frame during installation.

WARNING!

Electrical potential is still applied to some internal components even when power to the frame is off. To prevent electrical shock when working on this equipment, disconnect the AC line cords from the AC source before working on any internal components. Residual voltage may be present immediately after unplugging the system; wait thirty seconds to allow capacitors to discharge before working on the system.

CAUTION!

To avoid static damage to sensitive electronic devices, protect the KayakDD-2 system from static discharge. Avoid handling frame modules in a high static environment. Use a grounding strap when handling modules, and touch the frame before you remove any modules.

6.1.4 *Installation Tasks*

After completing the Pre-Installation procedures, the recommended installation tasks given in this section are:

1. Unpack the equipment,
2. Install the KayakDD-2 Video Processor frame,
3. Install the KayakDD-2 control panel,
4. Connect all cables between KayakDD-2 devices,
5. Connect cables to video inputs and outputs, and
6. Connect the power cables.

Power up and configuration, including setting IP addresses, is covered in detail in the next sections of this manual.

6.2 Mounting the Processor Frame

6.2.1 Video Processor Frame Measurements

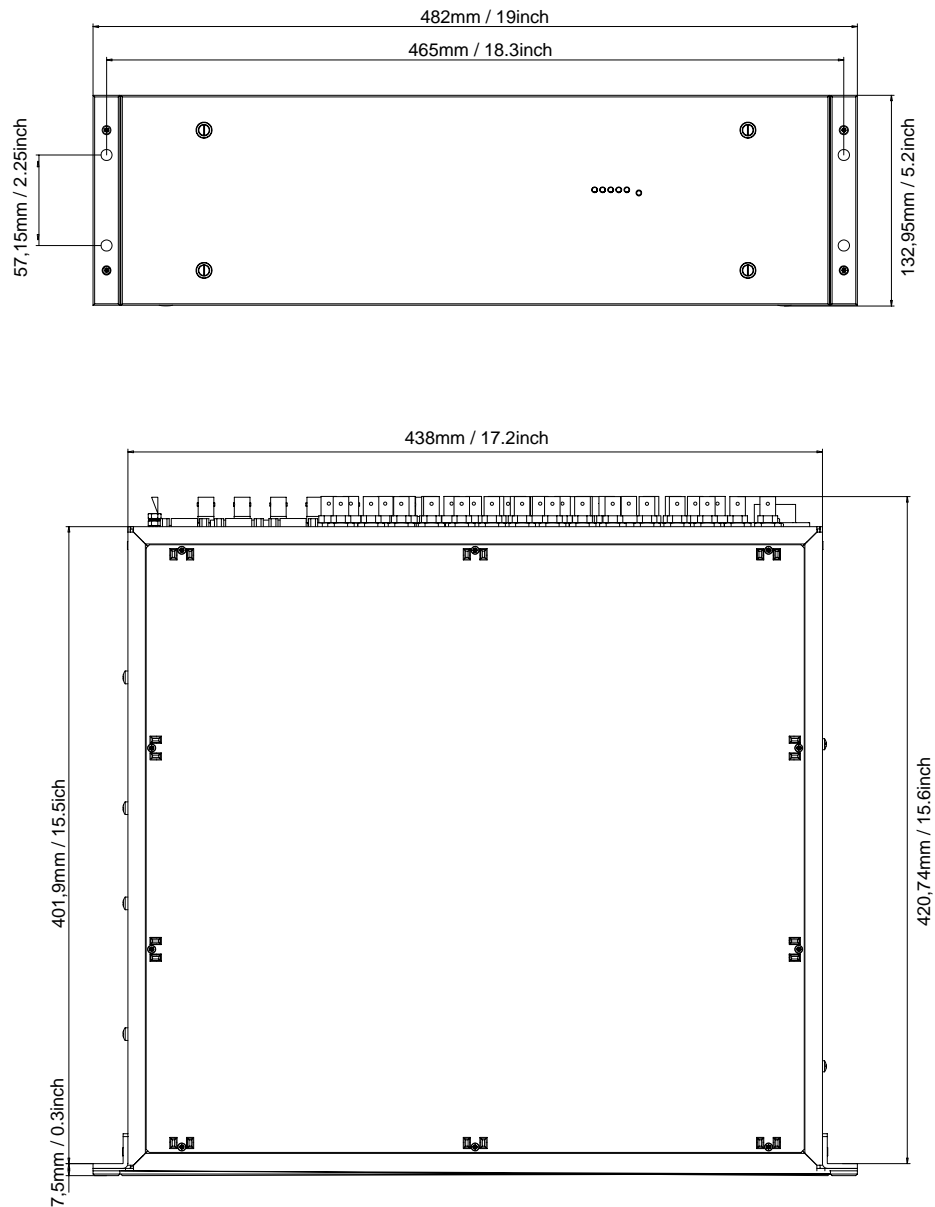


Figure 6 KayakDD-2 Video Processor Frame Dimensions

6.2.2 General Rack Mounting Instructions

- The maximum ambient temperature for this unit is 40°C (104°F).
- 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. Airflow through KayakDD is from the left side of the frame to the right side of the frame.
- 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 Specifications.
- 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.
- 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 Specifications.

The video processor frame has to be mounted in a rack using the delivered screws. For mobile application, using of slide rails are strongly recommended. For installation, Thomson Grass Valley optionally provides a 19-inch cabinet with mounting accessories. When using cabinets of other manufacturers, observe the respective mounting instructions.

6.2.3 Rack Mounting Procedure

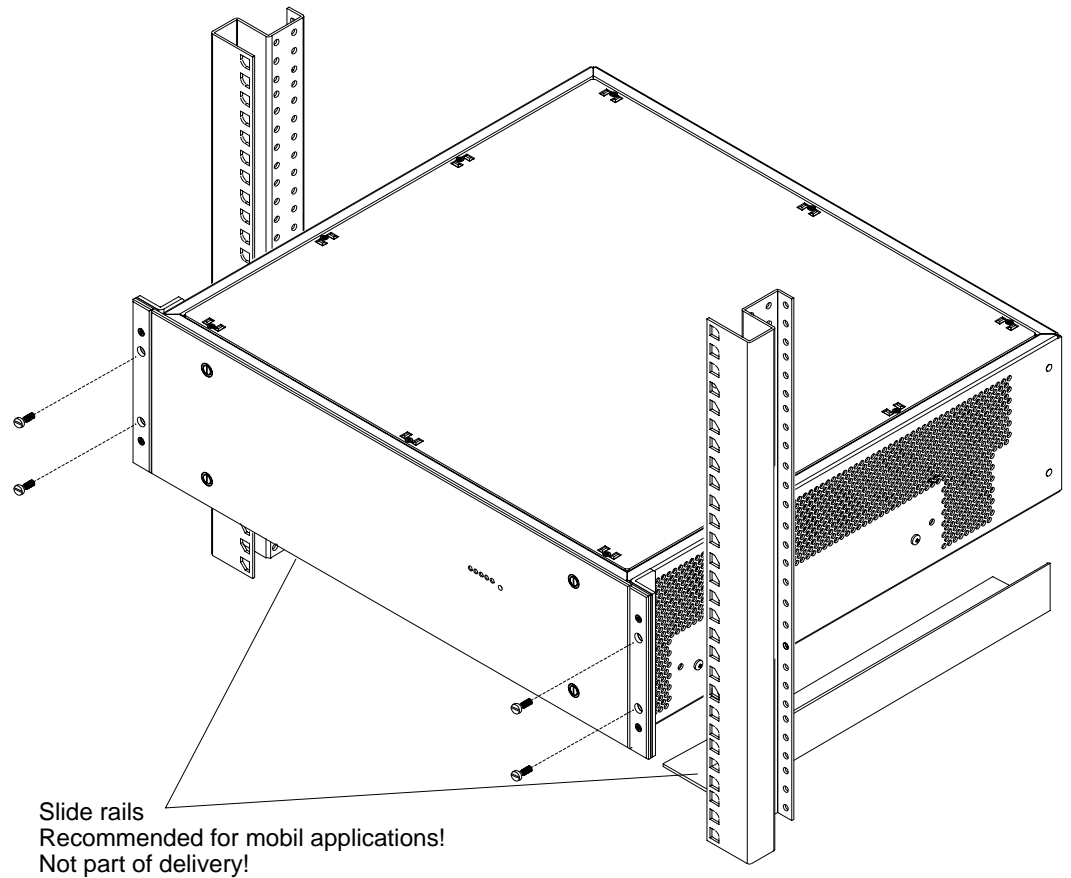


Figure 7 KayakDD-2 Video Processor Frame Rack Mounting

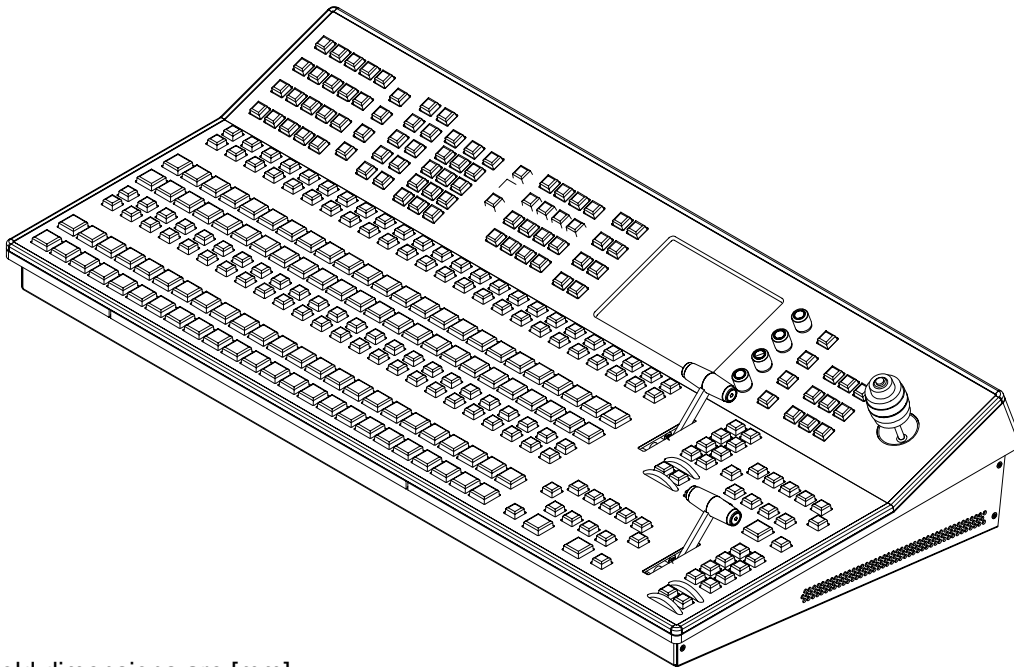
- Place the right and left bottom ends of the KayakDD-2 on the slide rails, and slide the equipment to the rear.
- Fix the rack angles of the video processor frame to the rack using the delivered four screws.

WARNING!

For normal rack mounting the rack angle are strong enough. If the video processor frame is fixed with at the rack angles only, do not load the frame with other equipment or the cables. For mobile application (flight case, OB van), it is not allowed to fix the video processor frame using the rack angles only!

6.3 Mounting the Control Panel

6.3.1 Control Panel Measurements



Bold dimensions are [mm]

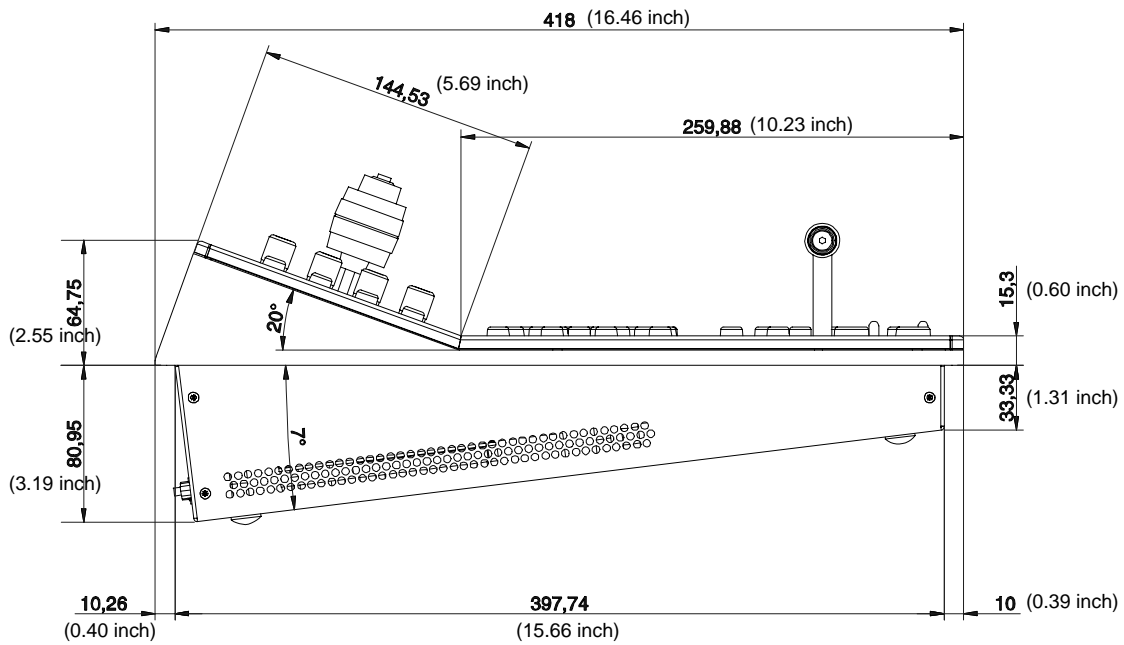


Figure 8 KayakDD-2 Control Panel Measurements 1 of 2

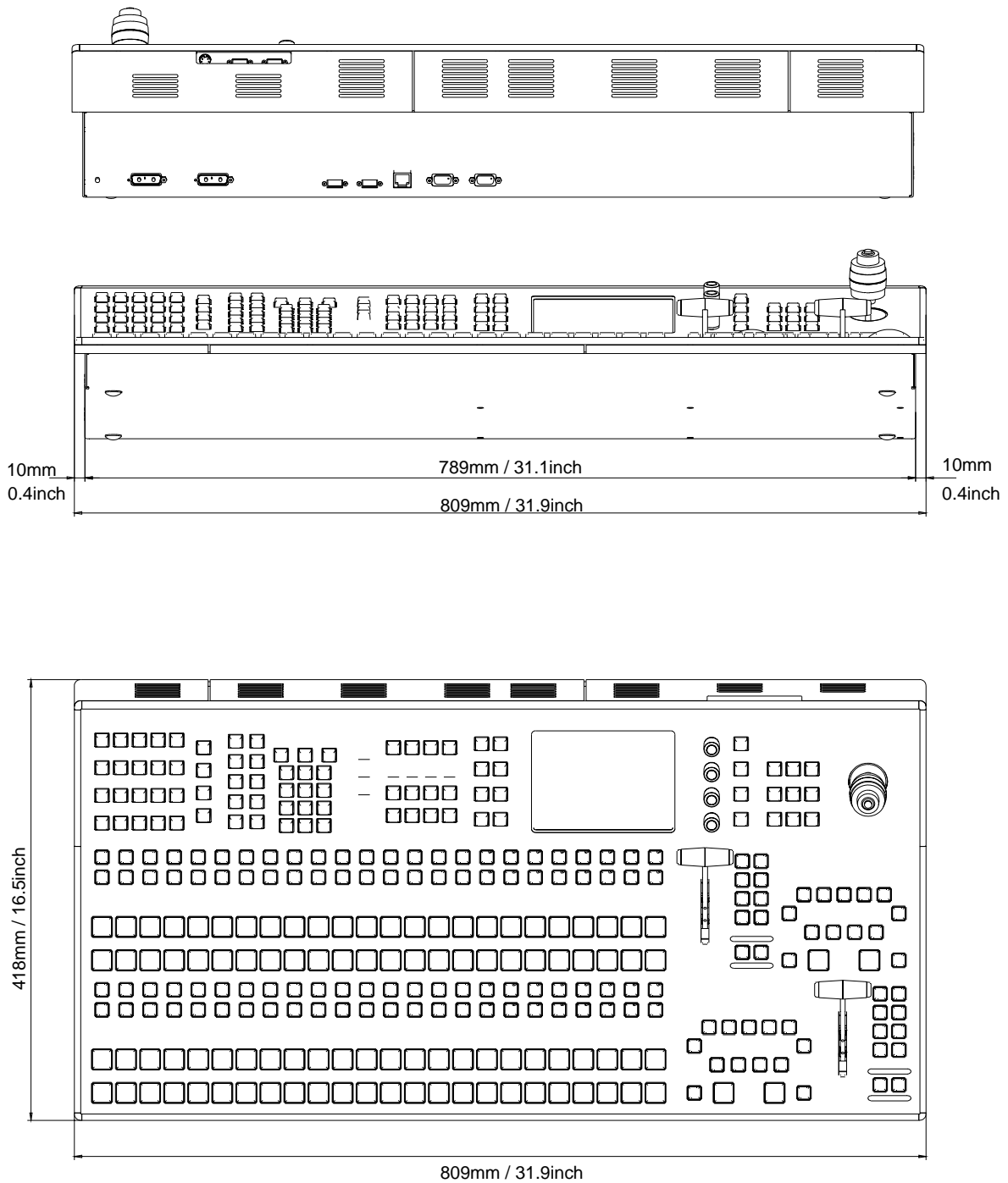


Figure 9 KayakDD-2 Control Panel Measurements 2 of 2

6.3.2 Table Top Mounting

In many cases the panel can just be put on a table. Gummed feet prevent accidental movement of the panel.

6.3.3 Cut Out Dimensions for Surface Mounting

For surface mounting of the control panel the cutout dimensions are:

791 mm x 400 mm

CAUTION!

Regardless of mounting method or cutout dimensions, ensure that there is at least 2 inch (50 mm) of clear space at the rear of the panel below the mounting surface for proper cable clearance and air flow.

6.3.4 Mounting Holes for Panel Fastening

For fastening the panel in a table there are four M4 thread drillings on the panel. Those allow to fasten the panel from below the table. The length of the screws is dependent on the respective thickness of the tabletop (see Figure 9 and 10 with mounting details below).

The figure below shows the position of the mounting holes.

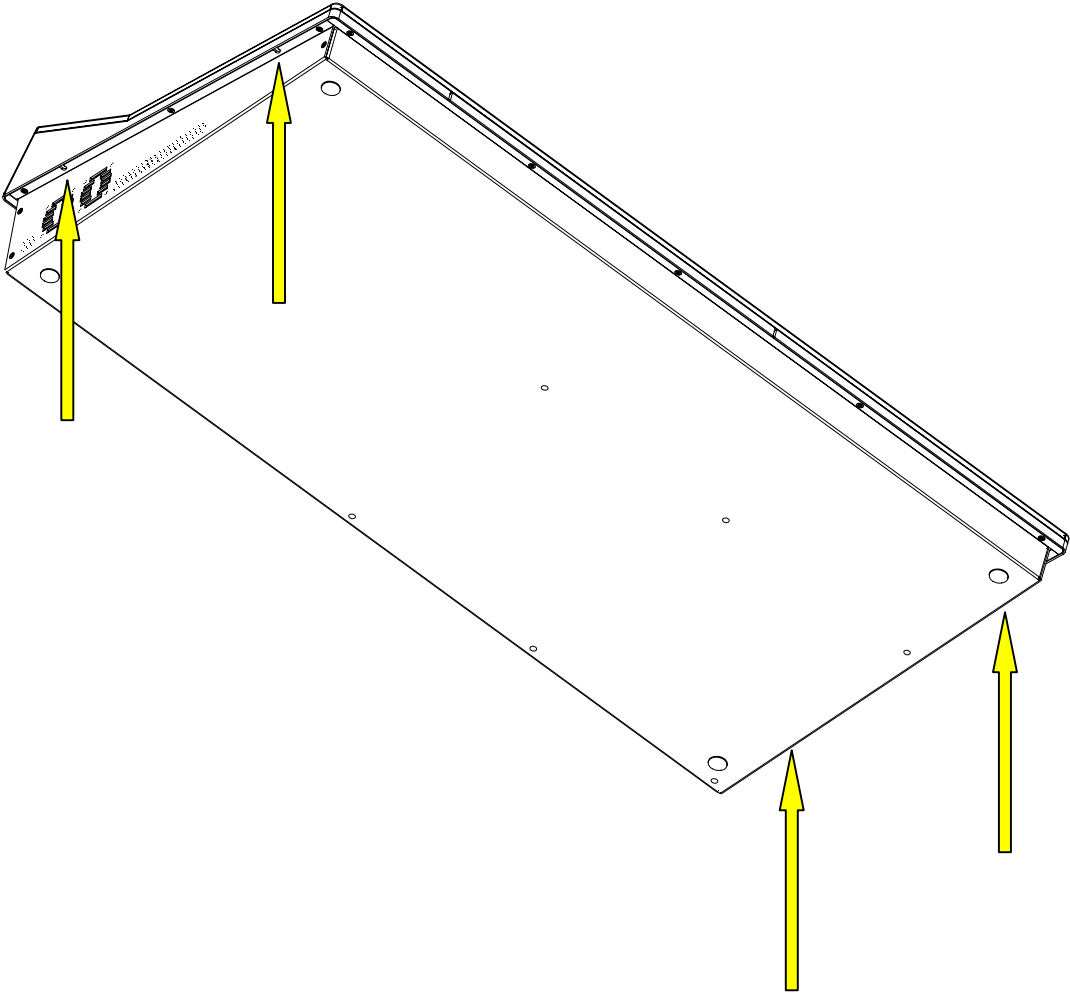


Figure 10 Bottom View, Position of the Mounting Points

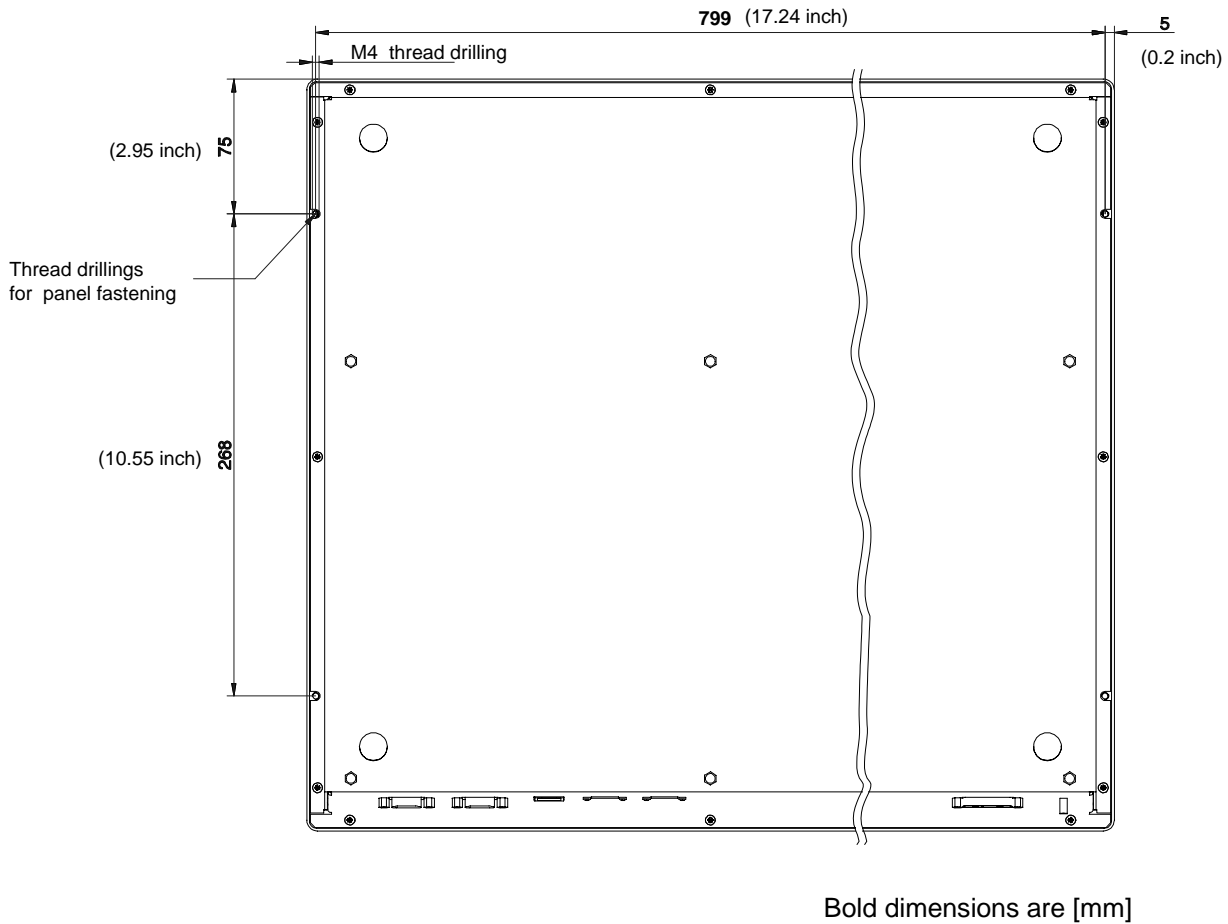
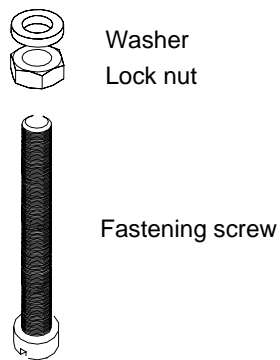


Figure 11 Bottom View, Measurements of the Mounting Points



Panel Fastening Procedure:

The length of the screw is dependent on the thickness of the tabletop! The M4 screw should be approx. 25 mm of (1 inch) longer than the thickness of the tabletops. Screw lock nut completely on the fastening screw and put on a washer. Then turn the fastening screw from below through the drillings in the table in the thread drillings of the frame. At least turn the locking nut up to fix the panel.

Figure 12 Panel Fastening Procedure

6.4 Control Panel Connectors



Figure 13 Control Panel Connectors

The rear of the KayakDD-2 Panel provides the power and system control connectors for the system:

Jack	Designation	Note
J1-A	DC POWER IN	<p>DC power input connector for 48V operating voltage. Connecting with the DC POWER OUT at the Processor Frame. An interconnecting cable with a length of 10 m (32ft.) is enclosed.</p> <p>Alternatively optional cables of 50m (164 ft) and 100m (328 ft.) length can be used.</p> <p>In case of longer distances (e.g. using fiberoptic cabling (not supplied by Thomson Broadcast & Media Solutions)) a separate 48V Power Supply Unit has to be connected.</p> <p>NOTE! <i>The external power supply unit must comply with the SELV (Safety Extra Low Voltage) standard exclusively. ELV and TNV standard is not permitted!</i></p>
J1-B	RED. DC POWER IN	<p>DC power input connector for 48V operating voltage from Redundant Power Supply Unit KDD-PSU.</p> <p>An interconnecting cable with a length of 5 m (16ft.) is delivered with KDD-PSU.</p> <p>Alternatively optional cables of 20m (64 ft) length can be used.</p>
	M4 threaded pin	Screw terminal for additional unit earthing

Jack	Designation	Note
J2 J3	USB USB 2	1 Spare, for future use! Connectors for USB devices, e.g. CD-ROM Drive, Mouse, Keyboard or Memory Stick. Only recommended devices are supported. For recommended Memory Stick refer to chapter 7.2.1 below. Function of other devices can not be guaranteed.
J4	LAN	RJ45 connector for connection to the Processor Frame. An crossed interconnecting cable with a length of 20 m is enclosed. Cables with lengths of 20m or 50m can be ordered optionally.
J5	RS 485	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.
J6	RS 232	RS232 interface for connecting a diagnosis computer or other external devices.

Additional connectors at the rear of the menu display.



These connectors are operator accessible!

Jack	Designation	Note
	USB 3 USB 4	Spare, for future use! Connectors for USB devices, e.g. CD-ROM Drive, Mouse, Keyboard or Memory Stick. Only recommended devices are supported. For recommended Memory Stick refer to chapter below.
	P/S 2	Possibility to connect a P/S 2 Mouse or Keyboard.

6.5 Processor Frame Connectors

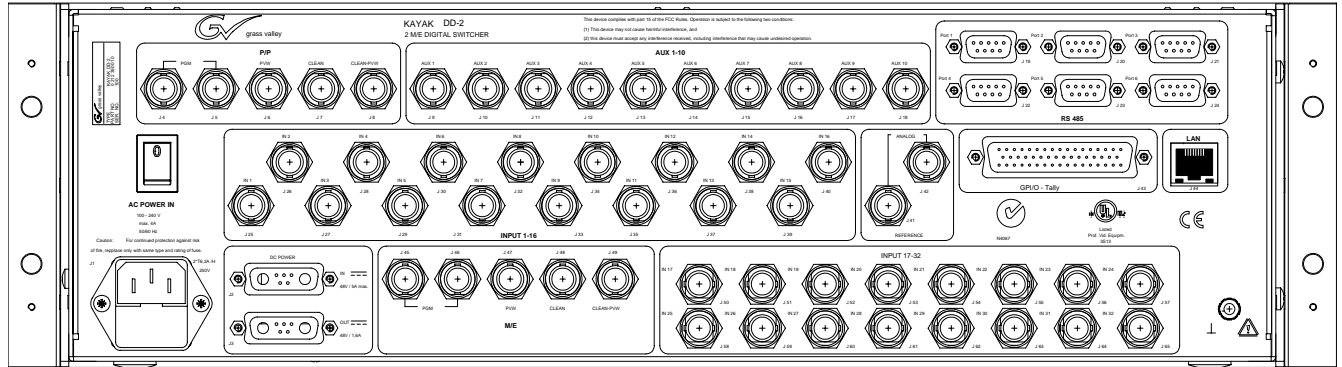


Figure 14 Video Processor Frame Connectors

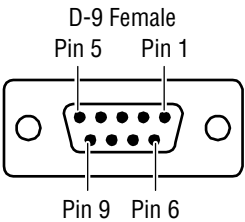
Jack	Designation	Note
J1	AC POWER IN	Mains connector (IEC-320, CEE-22) for power supply to the Video Processor Frame. Operating Voltage: 100V-240V AC +/-10% widerange Caution! Double-pole or neutral fusing. After operation of the protective device, parts of the equipment that remain under voltage might represent a hazard during servicing. Caution! For continued protection against risk of fire, replace only with same type and rating of fuse! 2x T 6.3A /H 250
	AC POWER IN	Frame power switch
J25 : J40	INPUT IN1 – IN16	BNC / Serial Comp (ITU-R 656) video inputs Maximum cable length 225m (738 ft)
J50 : J65	INPUT IN17 – IN32	BNC / Serial Comp (ITU-R 656) video inputs In 17 ...24: Maximum cable length 225m (738 ft) In 25 ...32: Maximum cable length 150m (492 ft)

Jack	Designation	Note
J45/J46	M/E OUTPUTS	BNC / Serial Comp (ITU-R 656)
J47	PGM	Double Program output
J48	PVW-A	Preview output
J49	CLEAN	Clean output
	CLEAN PVW	Clean Preview output
J4/J5	P/P OUTPUTS	BNC / Serial Comp (ITU-R 656)
J6	PGM	Double Program output
J7	PVW-A	Preview output
J8	CLEAN	Clean output
	CLEAN PVW	Clean Preview output
J9 : J18	AUX 1 – AUX10	Auxiliary Outputs, BNC / Serial Comp (ITU-R 656)
J41 J42	REFERENCE	Reference input, BNC / 75 ohms Loop through sync input for analog Blackburst or CCVS signal.
J19 : J24	RS 485 PORTS	Six control ports, 9-pin D-type female RS485 serial ports for devices such as DVEs, Editors, Routers and for Machine Control (Disk Servers, VTR).
J43	GPI/O - TALLY	50-pin D-type female General-purpose interface connector with 8 input channels and 32 output channels. The connector is used for Tally also. Refer table below for respective pin assignment.
J44	LAN	RJ45 connector for connection to the Control Panel. An interconnecting cable with a length of 10 m is enclosed. Cables with lengths of 20m or 50m can be ordered optionally.

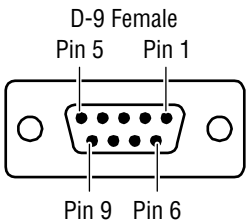
Jack	Designation	Note
J2	DC POWER IN	<p>Input connector for external DC Power Supply Unit (KDD-PSU) for redundancy (High current D-Sub, female).</p> <p>Input voltage: 48V/ 5A</p> <p>Note: <i>The external power supply unit must comply with the SELV (Safety Extra Low Voltage) standard exclusively. ELV and TNV standard is not permitted!</i></p> <p>Additionally the 8V DC voltage for RAM Recorder buffering can be supplied via this socket.</p> <p>Refer table below for respective pin assignment.</p>
J3	DC POWER OUT	<p>Output connector for Panel DC Power Supply. (High current D-Sub, male).</p> <p>Output voltage: 48V/ 1.6A max</p> <p>An DC power interconnecting cable with a length of 10 m is enclosed.</p>

6.6 Pin Assignments

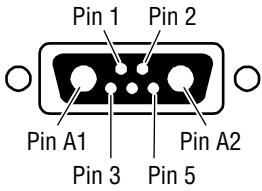
6.6.1 RS 485 Port

Socket	Pin	Bus Controller	Tributary
 <p>D-9 Female Pin 5 Pin 1 Pin 9 Pin 6</p>	1	Chassis Ground	Chassis Ground
	2	RxA (-)	TxA (-)
	3	TxB (+)	RxB (+)
	4	Signal Ground	Signal Ground
	5	Not used	Not used
	6	Signal Ground	Signal Ground
	7	RxB (+)	TxB (+)
	8	TxA (-)	RxA (-)
	9	Chassis Ground	Chassis Ground

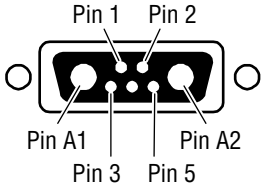
6.6.2 RS 232 Port

Socket	Pin	Signal
 <p>D-9 Female Pin 5 Pin 1 Pin 9 Pin 6</p>	1	Chassis Ground
	2	Transmit Data
	3	Receive Data
	4	Not used
	5	Signal Ground
	6	Not used
	7	Clear to Send
	8	Request to Send
	9	Not used

6.6.3 Panel DC Power In

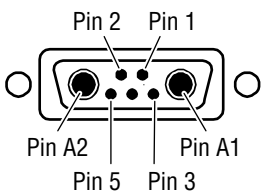
Socket	Pin	Signal
D-Sub Male 	A1	48 V (+)
	A2	48 V (-)
	1	-
	2	-
	3	-
	4	-
	5	-

6.6.4 Frame DC Power In

Socket	Pin	Signal
D-Sub Male 	A1	48 V (+)
	A2	48 V (-)
	1	Ground
	2	Return Sense *
	3	+ 7 V (RAM Rec)
	4	-
	5	48V Return *

* Note: Pins 2 and 5 must be connected in the plug of the external power supply unit.

6.6.5 Frame DC Power Out

Socket	Pin	Signal
D-Sub female D-Sub Female 	A1	48 V (+)
	A2	48 V (-)
	1	-
	2	-
	3	-
	4	-
	5	-

6.6.6 Frame GPIO – Tally

Socket	Ribbon Cable	50-Pin D-Sub	Signal	
<p>D-50 Female</p> <p>Pin 1</p> <p>Pin 18</p> <p>Pin 34</p> <p>Pin 17</p> <p>Pin 33</p> <p>Pin 50</p>	1		1	GPInCom
	2	34		GPInCom
	3		18	GPIn1
	4		2	GPIn2
	5	35		GPIn3
	6		19	GPIn4
	7		3	GPIn5
	8	36		GPIn6
	9		20	GPIn7
	10		4	GPIn8
	11	37		GPIOOutComA
	12		21	GPIOOut1A
	13		5	GPIOOut2A
	14	38		GPIOOut3A
	15		22	GPIOOut4A
	16		6	GPIOOutComB
	17	39		GPIOOut5B
	18		23	GPIOOut6B
	19		7	GPIOOut7B
	20	40		GPIOOut8B
	21		24	GPIOOutComC
	22		8	GPIOOut9C
	23	41		GPIOOut10C
	24		25	GPIOOut11C
	25		9	GPIOOut12C
	26	42		GPIOOutComD
	27		26	GPIOOut13D
	28		10	GPIOOut14D
	29	43		GPIOOut15D
	30		27	GPIOOut16D
	31		11	GPIOOutComE
	32	44		GPIOOut17E
	33		28	GPIOOut18E
	34		12	GPIOOut19E
	35	45		GPIOOut20E
	36		29	GPIOOutComF
	37		13	GPIOOut21F
	38	46		GPIOOut22F
	39		30	GPIOOut23F
	40		14	GPIOOut24F
	41	47		GPIOOutComG
	42		31	GPIOOut25G
	43		15	GPIOOut26G
	44	48		GPIOOut27G
	45		32	GPIOOut28G
	46		16	GPIOOutComH
	47	49		GPIOOut29H
	48		33	GPIOOut30H
	49		17	GPIOOut31H
	50	50		GPIOOut32H

6.7 Cabling and Control

6.7.1 Cabling

The cabling of a standard KayakDD-2 application is illustrated in figure below.

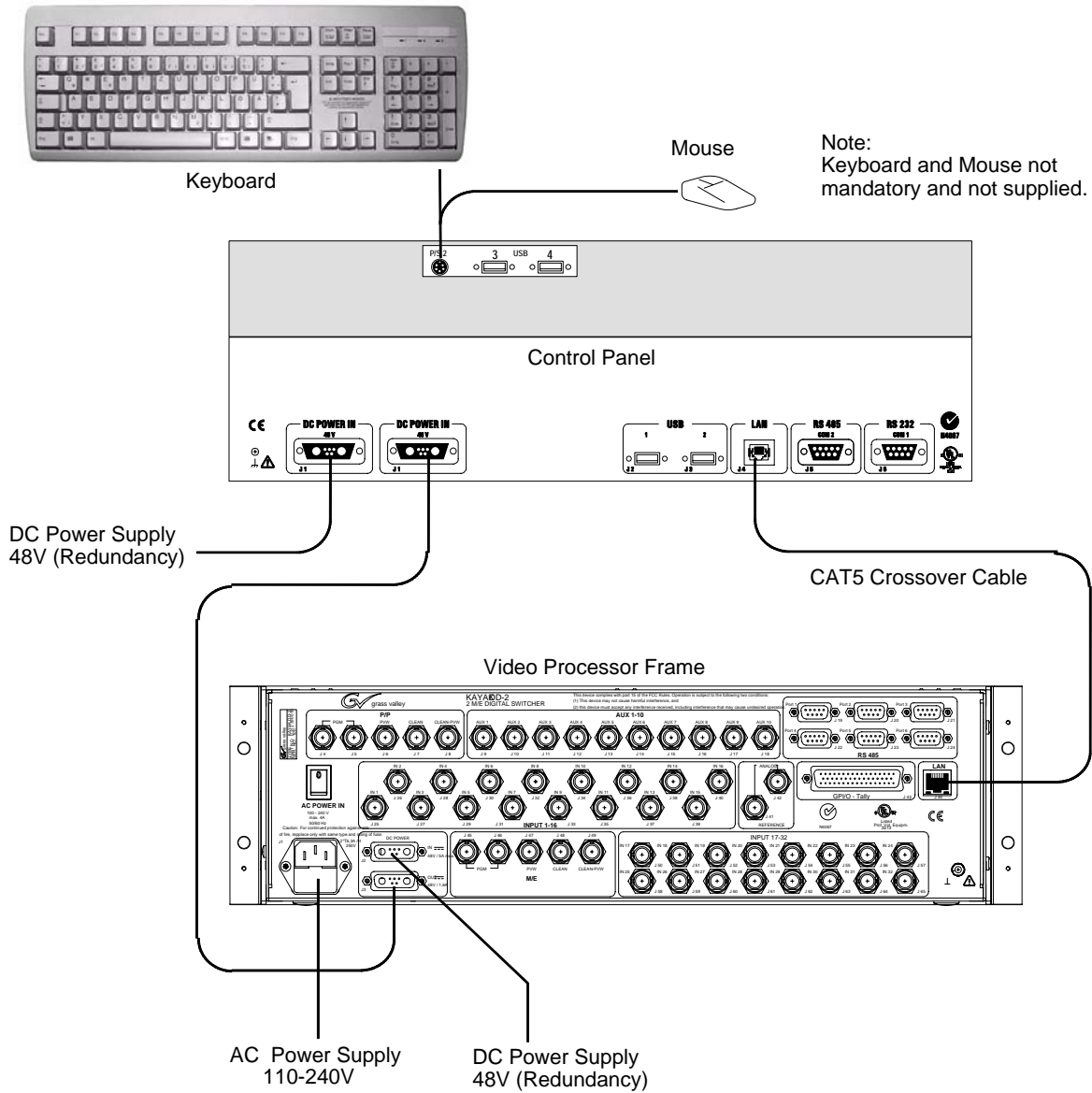


Figure 15 KayakDD-2 Standard Cabling

6.7.2 Control Cabling

A simple KayakDD system consisting of a Control Panel and Video Processor frame uses point-to-point connections and does not require connection to an external Ethernet Local Area Network (LAN).

The KayakDD system uses Ethernet, serial, parallel, and USB connections.

Tally and GPI/O control are also available.

6.7.2.1 Mouse and Keyboard Connection

A standard PS/2 mouse and keyboard can be installed to the rear of the control panel if desired (see figure above). Be sure to power down before installing either the mouse or keyboard.

6.7.2.2 LAN Cable Polarity

The point-to-point connections between the Control Panel and the Video Processor frame, require that the Transmit (TX) and Receive (RX) pairs in the Ethernet cables be swapped. This is normally achieved with a special peer-to-peer (crossover) LAN cable or an Uplink port on the switch or hub.

NOTE!

The LAN cable supplied with the KayakDD system is a cross-wire cable!

If no communication can be established (either LAN Link LED is off), a possible cause may be incorrect cable polarity.

6.7.2.3 LAN Requirements

A simple KayakDD system uses point-to-point connections and does not require an external Ethernet Local Area Network (LAN).

A KayakDD system requires a LAN when components in addition to a Control Panel, and Video Processor frame are connected or when external network access to a file system is desired. An appropriately sized Ethernet switch will be required.

CAUTION!

Ethernet hub or switch are necessary to exceed maximum cable runs. An existing facility Ethernet switch (not hub) can support KayakDD if an adequate number of ports are available. Keep your facility network and technical network separate in order to avoid network traffic negatively affecting KayakDD system operation.

Refer to table below for Ethernet specifications.

NOTE! All Ethernet components must be supplied by the customer.

Ethernet Specifications		
Cables	Type	10Base-T and 100Base-T compatible. Category 5 cable, 8 conductor twisted pair. The system will work at 10Base-T with reduced performance. 100Base-T components are highly recommended.
	Connectors	RJ-45 male connector at each end of cable.
	Length	10Base-T: 984 ft (300 m) maximum. 100Base-T: 328 ft (100 m) maximum. Use a switch when necessary to exceed maximum cable runs.
Switch	Speed	Dual: 10 and 100 Mb
	Ports	RJ-45 auto-negotiating 10/100 Mb; number of ports required is dependent upon system size.
	Unmanaged	Recommended. Configuration not required, but do not provide remote monitoring capability.
	Managed	May be used. Require configuration, but offer remote monitoring capability.

6.7.2.4 Ethernet Switches and Hubs

KayakDD optional components rely primarily on Ethernet switches for LAN interconnects. A hub is required only if there is a need to exceed 328 ft (100 m) between a Control Panel and Video Processor frame. If a hub is used, connect the hub to the switch via the Uplink port, or through a peer-to-peer crossover cable.

6.7.2.5 Factory Settings

The default factory setting for the IP address is

- 192.168.0.70 for the video processor frame
- 192.168.0.73 for the control panel

The Device Setup menu allows to change the IP address. It is only allowed to change the **last** octet of the IP address (to accommodate several KayakDDs on the same network).

IMPORTANT NOTE!

In order to integrate KayakDD devices into an existing network, ask the local network administrator for the subnet mask of the network. Before changing IP addresses always set the subnet masks of the KayakDD devices to the mask of the local network. If all changes are made and a frame is not visible to the panel, press 'Rescan' in the "Device Control" menu of the panel.

6.7.3 Video

Different video and control wiring configurations may be used to meet individual facility requirements. All KayakDD-2 system video inputs and AUX outputs are configurable. For cabling configuration flexibility, each input can be mapped to any KayakDD-2 panel source select button, and any KayakDD-2 system video signal can be mapped to any AUX output connectors.

Program and Preview bus outputs for the M/E have dedicated output connectors as well.

6.7.3.1 Inputs

Physical inputs are the actual BNC connectors that feed a signal into KayakDD-2. These non-looping inputs on the back of the Video Processor frame are numbered 1 through 16. Each receives a 270 MHz serial digital video signal. All video inputs are software configurable, and each input can be mapped to any KayakDD-2 panel source select button.

6.7.3.2 Outputs

The KayakDD-2 frame provides dedicated program and preview video output connectors for the M/E. The main program output signal is available on two BNC connectors. All other outputs are available on one BNC connector only.

Any KayakDD-2 video source can be routed to any Aux bus output (1 through 10).

6.7.3.3 Reference Input

The looping reference input accepts analog 525 or 625 composite video. Burst is not required, but typically facility reference color black is used. The timing of all switcher inputs and outputs are referenced to this signal.

KayakDD-2 can auto-sense whether the reference is 525 or 625 and can change the internal standard accordingly.

6.7.4 Video Timing and Delay

The total delay of a video input to the switcher output can vary according to the relationship of the input to the switcher reference. The switcher will autotime inputs by a specified amount ($\pm B \mu s$). Inputs must be within this timing range to be properly timed at the output. A timing diagram for illustrating the input autotiming window and various switcher delay values is provided in figure below.

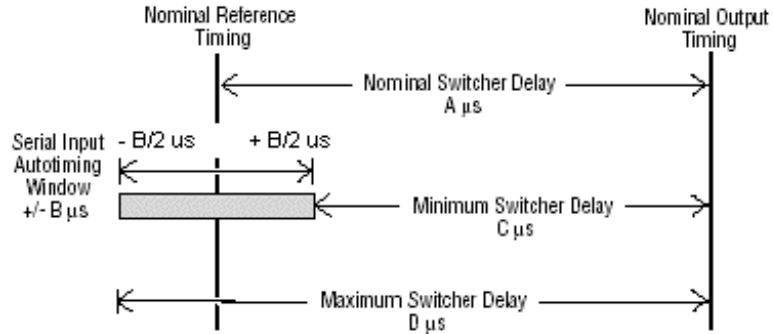


Figure 16 Timing and Delay

NOTE!

For both 525 and 625 switcher operation, the approximate maximum switcher delay is one line of video. Exception is the use of a Digital Picture Manipulator. The signal going through the Digital Pictures Manipulator is delayed by one frame.

- For inputs entering the switcher in zero time with the reference, the total delay through the switcher is expressed as the Nominal Switcher Delay (**A** μs).
- Inputs that reach the switcher at the latest point in the autotiming window (**+ B** μs) will have a total delay that equals the length of switcher processing. This value is expressed as the Minimum Switcher Delay (**C** μs).
- Inputs that reach the switcher at the earliest point in the autotiming window will have a total delay equal to the Nominal Switcher Delay (**A** μs) plus the autotiming value (**- B** μs). This value is expressed by the Maximum Switcher Delay value (**D** μs).

Delay values for a KayakDD system are given in table below

System Video Delay Values		
Typical Switcher Delay	A	36 μs
Autotiming Range	B	53 μs
Minimum Switcher Delay	C	10 μs
Maximum Switcher Delay	D	63 μs

6.7.5 GPI / Tally Outputs

The KayakDD-2 GPI / Tally system has 32 universal relays that interface source tally and GPI Output information to an external system through the Tally Port connector, J43. The channels can be assigned in the Setup menu.

Tallies are a source attribute and relays are automatically assigned to a source when source definitions are defined in the Setup menu during initial system configuration. The nominal rating specification for each relay is 2 A, 30 V.

6.7.6 GPI Inputs

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 Video Processor frame and controlling devices. The internal optocouplers are supplied separate (galvanically insulated) voltage (12V fan supply).

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!

6.7.7 Tally Adapter

A 50pin male sub-d connector (the counterpart of the Frame-Tally connector) is part of the delivered accessories. Please purchased a 50pol ribbon cable with desired length and mount the connector by pressing with a recommended tool.



Figure 17 Tally Adapter Cable

7 Service Instructions

7.1 Running Panel Tests

For faster checking the function of the KayakDD Control Panels, a series of test procedures are available which can be called by simply pressing the button.

For selecting the tests, simultaneously press the buttons

BlackPreset + Trans Preview + BGD (or Key 1 ... Key 4)

in the **TRANSITION** control panel.

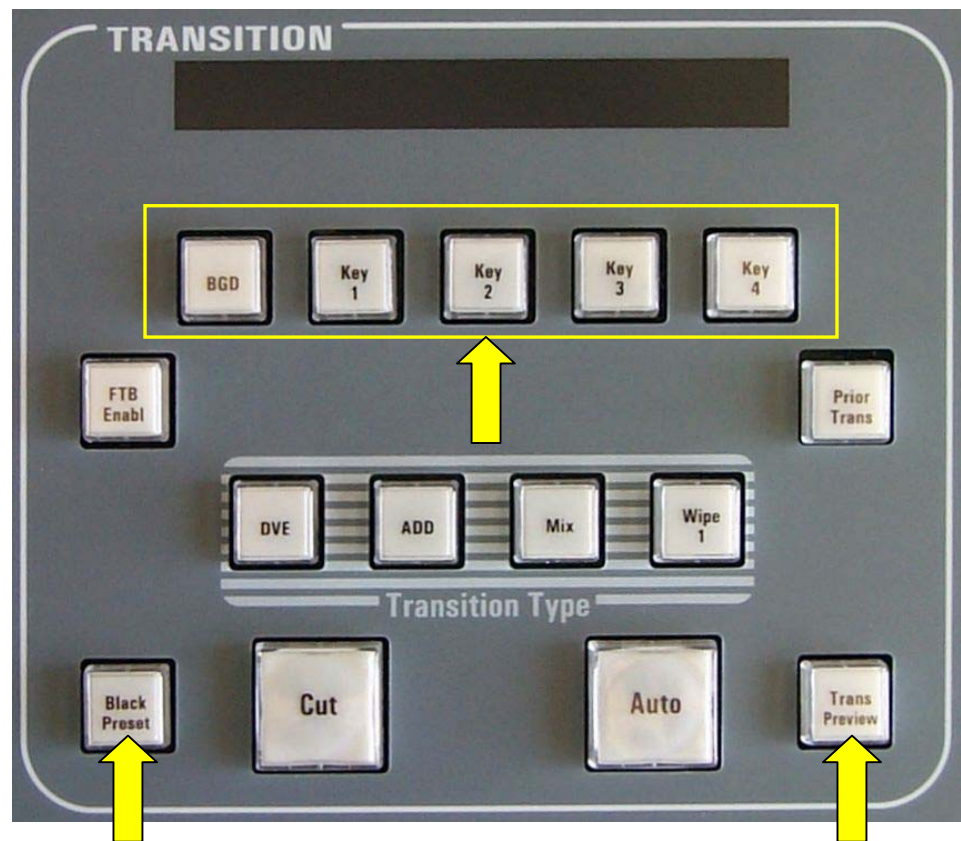


Figure 18 KayakDD Control Panel Detail – Transition Panel

7.1.1 **Local Panel Test Mode 1 (Button Test):**

Button combination: **Black Preset + Trans Preview + BDG**

In this test mode, the logical address of the pressed button appears in the display.

7.1.2 **Local Panel Test Mode 2 (LED Test):**

Button combination: **Black Preset + Trans Preview + Key1**

In this mode, the lamp of the pressed button is lit. The underfloor LEDs will be switched on and off with the neighbouring bright button.

Special test buttons:

BGD, Key1 - Key4	→ Switch "On" underfloor LEDs on
Shift, Make (PGM+PST+Delegation)	→ Switch "Uncal" underfloor LEDs on
Key1 Cut / Key4 Cut	→ Switch the arrow (Fader) on

7.1.3 **Local Panel Test Mode 3 (Group Test / On Air Highlight Test):**

Button combination: **Black Preset + Trans Preview + Key2**

In this mode, whole button groups are switched on and off by pressing any button in the group. In the key bus, program and preset can be also switched between white and red.

7.1.4 **Local Panel Test Mode 4 (Connect Mode):**

Button combination: **Black Preset + Trans Preview + Key3**

This is no test mode, but a possibility to be connected to a mainframe without using sidepanel. Simply enter the last byte of the IP address and confirm with <Return>. Afterwards leave the test mode with Black Preset + Trans Preview + Key3, and then one can control the mainframe.

7.1.5 Local Panel Test Mode 5 (Colour Test):

Button combination: **Black Preset + Trans Preview + Key4**

In this mode select a key group on the number block, and then select with the buttons Key1-4 the different colours (Key1 = white, Key2 = red, Key3 = green, Key4 = blue). The most groups have only white LEDs, the four bus rows are white and red and the number block has all four colours.

Press the following transition buttons to change the brightness:

DVE → Dark in large steps
ADD → Dark in small steps
Mix → Bright in small steps
Wipe → Bright in large steps

7.2 Software-Update

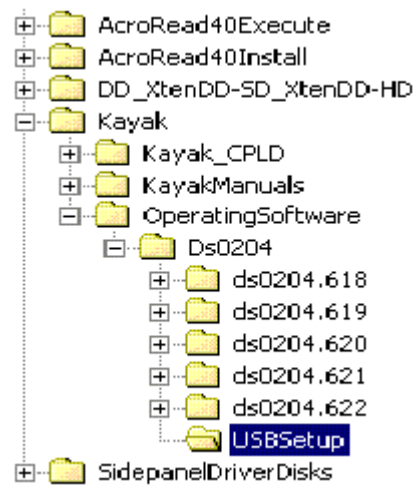
7.2.1 Recommended Memory Sticks

For KayakDD software installation a USB Memory Stick is necessary. At the time the following types are approved:

- APACER Flash Drive (HandySteno) 256MB (USB1.1)¹
- APACER Flash Drive (HandySteno) 256MB (USB2.0)¹
- APACER Flash Drive 128MB (USB1.1)¹
- APACER Handy Steno HT202 USB 2.0 Flash Drive 128MB
http://www.apacer.com/apacer_english/product_html/handy_steno11.asp
- TRANSCEND JetFlash Type TS256MJFLASHA (USB2.0)
<http://www.transcend.com.tw> <http://www.transcendusa.com>
- MEMOREX Thumb Drive USB 256 MB
<http://www.memorex.com/products>
- SanDisk Cruzer Mini 256MB, SanDisk Cruzer Mini 128MB
<http://www.sandisk.com/consumer/cruzermini.asp>
- Twinmos Mobile DiskIII 128MB²
<http://www.twinmos.com>
- PQI Corp.: Intelligent Stick 1GB, CoolDrive 512MB, CoolDrive 1GB
<http://www.pqi1st.com/products/istick.asp>

7.2.2 Preparing the USB Memory Stick

- Plug an USB memory stick into a standard PC or laptop
- Insert the installation CD ROM (DS0205.xxx)
- Open the USBSetup directory



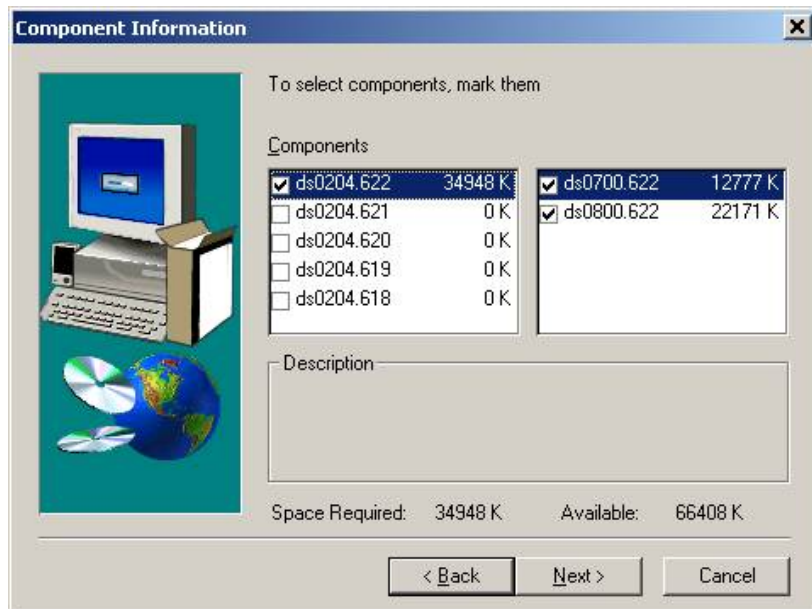
¹ Cable adapter needed for KayakDD USB 4 slot

² USB Setup does not detect this device as removable device

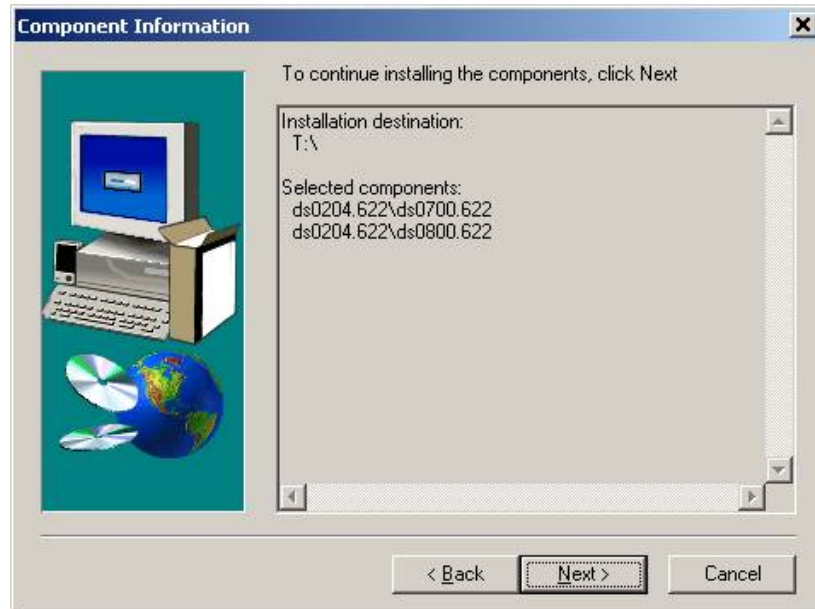
- Start the **setup.exe** installation program
- Press the **Next** button inside the Welcome window
- The installation program scans the system for removable devices to determine the destination folder



- If the proposed folder doesn't match your USB installation device, choose another folder by using the Browse menu
- Press **Next** to get into the Component Information window



- Select the version you want to install on your USB device - it is possible to select more than one version
- Press **Next** to get an overview of selected components



- Press Next to start the installation

IMPORTANT NOTE!

It is recommended to install the USB memory stick directly from the original CD ROM. Never delete or change files on an successfully installed USB memory stick, otherwise the KayakDD software installation process will fail (checksum error after 99 percent of the installation process is completed).

NOTE!

On KayakDD control panel use the USB ports 2 and 4 - ports 1 and 3 are not supported!

- Plug-in the memory stick in the control panel's USB 2 or USB 4 slot. In case that your stick doesn't fit (mechanically) in USB 4 slot, please use the enclosed extension cable as adapter.

If the control panel software has recognized a valid Kayak release version on the memory stick, the Device Control menu is called automatically.

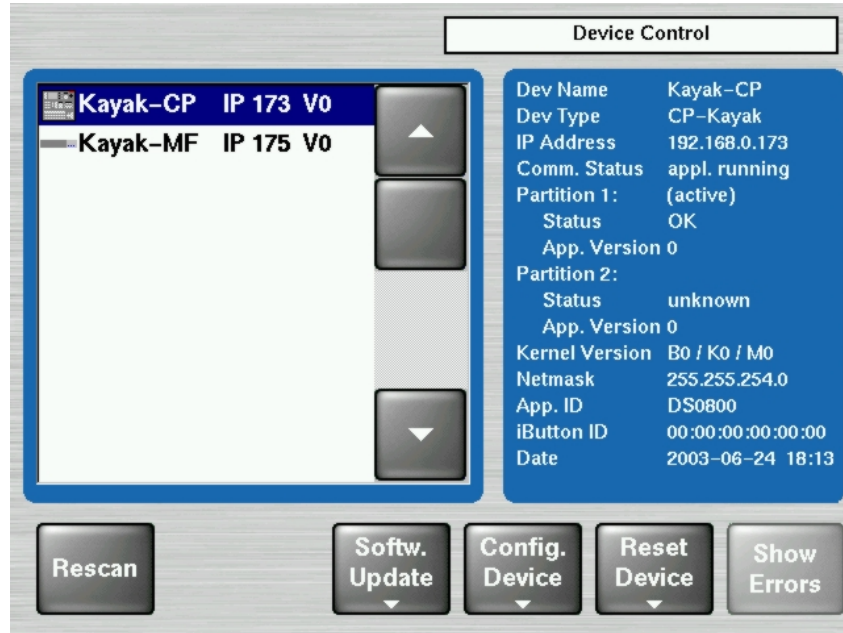


Figure 19 Device Control Menu

The Device Control menu shows all in the network connected devices (Kayak-MF = Mainframe, Kayak-CP = Control Panel) with IP address and software version installed.

7.2.3 Software Loading/Update

- Select the respective device in the menu list.
- Menu **Software Update** appears
- Push button **Start Install**.
- The correct software will be installed in the respective device (MF or CP) automatically.

NOTE!

Two partitions are available in the flash for the application software. With "Start Install" the empty or a partition which is older as the active partition (recommended) will be updated. With "Install Part. X" the current active software will be updated.

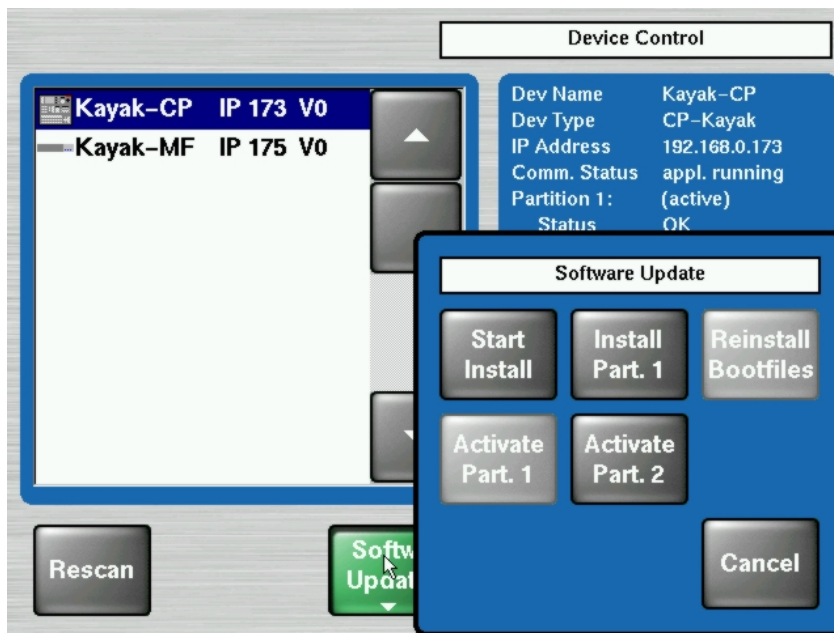


Figure 20 Device Control Menu with Software Update Dialog

7.2.4 Installation Procedure

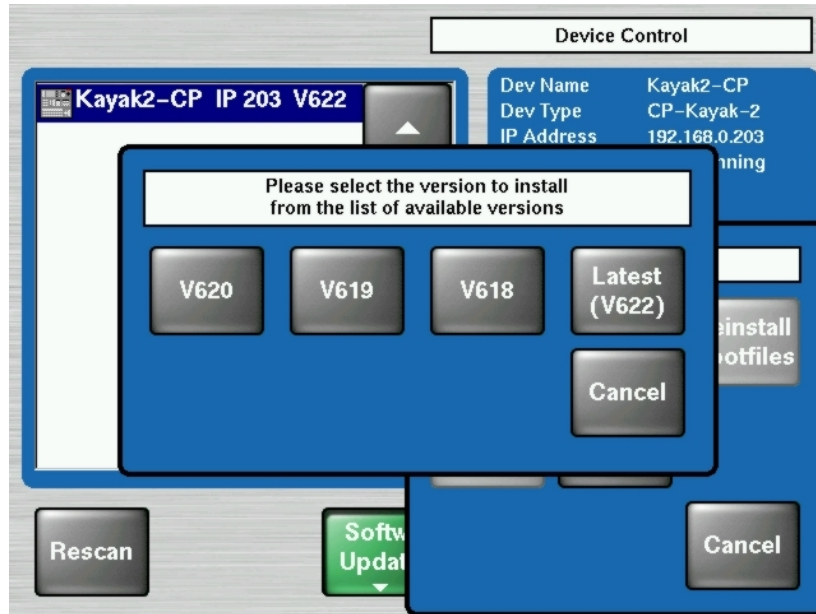


Figure 21 Start Installation Procedure

- After pressing the **Start Install** button the available versions are shown. Select the version to install. The installation procedure starts.
- The progress of the installation procedure is displayed in percent. The currently installed file (file name) is shown as well.

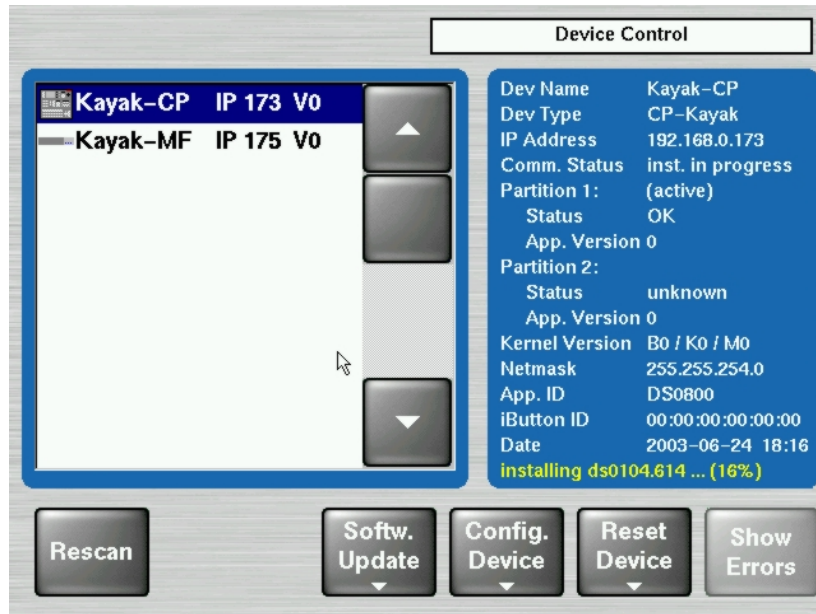


Figure 22 Installation Procedure

- The Installation Procedure can be cancelled by using the button **Abort Install** in the menu **Software Update**.

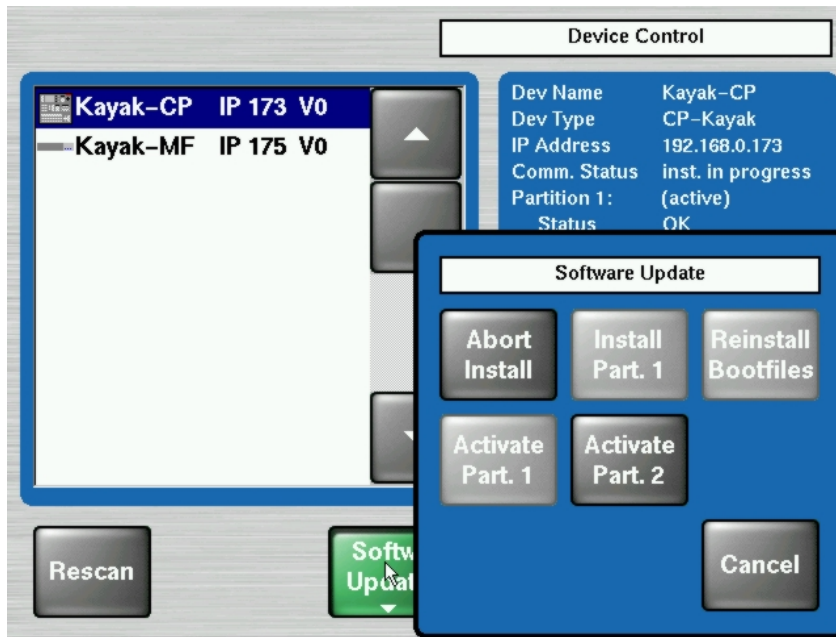


Figure 23 Cancel Installation Procedure

- After canceling the installation, the Status **inst. failed** is displayed.
- The respective partition can not be used and not be activated.

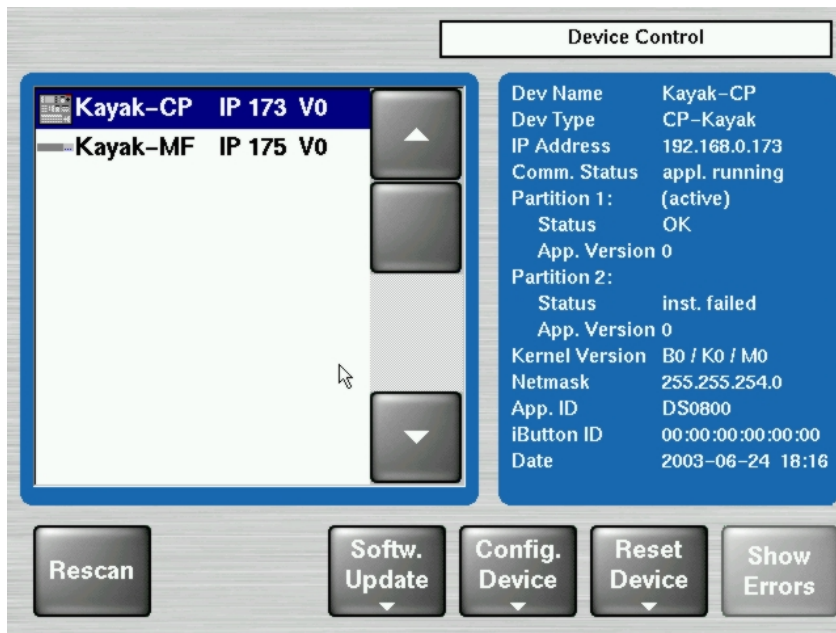


Figure 24 Device Control Installation Status

- After finishing the installation procedure, the system ask **Do you want to reset the device now?** The installed software is available after a restart only!

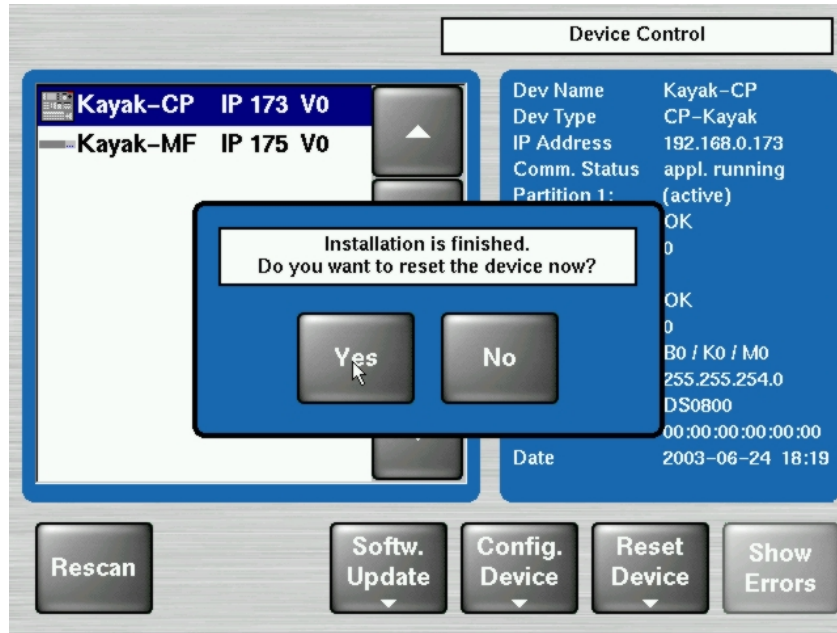


Figure 25 Finish Installation

Important Note:

- **Do not cancel the installation by switching off the devices!**
- **Do not pull out the memory stick during the installation procedure!**
- **Cancel the installation with the Abort Install button only!**
- **Perform a reset after each device software upgrade**
- **Verify that the active partition shows the new software version (e.g. 6.2.2.8).**

7.2.5 Updating the CPLD Firmware

At the end of each installation process the system checks whether an CPLD update is necessary. This is done by comparing the versions of the installed CPLD firmware files on flash with the current CPLD version tags stored within an EEPROM of each hardware board. If the version of at least one file is newer an update of the CPLD is necessary and the user is notified.

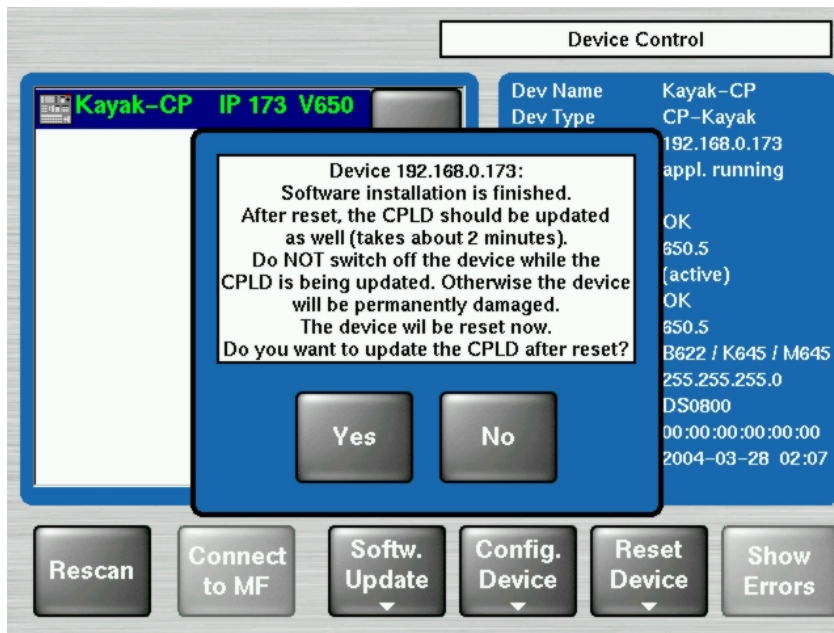


Figure 26 CPLD Update

To skip the CPLD update press **No**, to confirm the update press the **Yes** button (recommended). After the user has confirmed the update, the device will be restarted. During this sequence the CPLD will be updated. The progress of the update procedure is displayed in percent within the Device Control menu. The currently installed file (file name) is shown as well.

Don't change to a menu other than the Device Control menu after initiating an CPLD update on a Kayak mainframe! Otherwise the update process can't be monitored.

CAUTION!
Do NOT switch off the device while the CPLD update is running – monitored by red progress indication. Otherwise the device will be permanently damaged!

After the CPLD update is finished the system has to be restarted. This brings the device to normal operation mode.

If the installation process is terminated from the system refer to the Trouble Shooting section 7.4.5 of the manual.

7.3 Device Configuration

7.3.1 Configure Device Menu

With the menu "Configure Device" the following configuration data of a device can be changed:

- The date and time of the selected device (**Set Date**)
- The date and time of all connected devices (**Set all Data**)
- IP Address of the selected device (**Set IP Addr**)
- Net mask of the selected device (**Set Netmask**)

Important Remark:

This function should be used by a qualified network administrators only. Different netmasks for MF and CP lead to limited communication between the net devices.

- Logical device name ("**Set Name**"). Default Kayak-MF or Kayak-CP, the name is can be defined by the user.



Figure 27 Configure Devices

7.3.2 Reset / Check / Clear Device Menu

The menu „Reset/Check/Clear Device“ should only be used by qualified users!
The following functions can be configured:

- Start/Restart the device (**Reset DEVICE**)
- Re-initialize the RAM disk area on the flash (**RAM disk Clear**)
- Re-initialize the Application disk area on the flash (**Clear AppDisk**)
- Deleting the Application State (**Clear AppState**)
- Deleting the Operational State (**Clear OpState**)
- Re-initialize the State Memory Partition (**Clear StateMem**)
- File system check of four flash partitions (**Check" Flashx**)

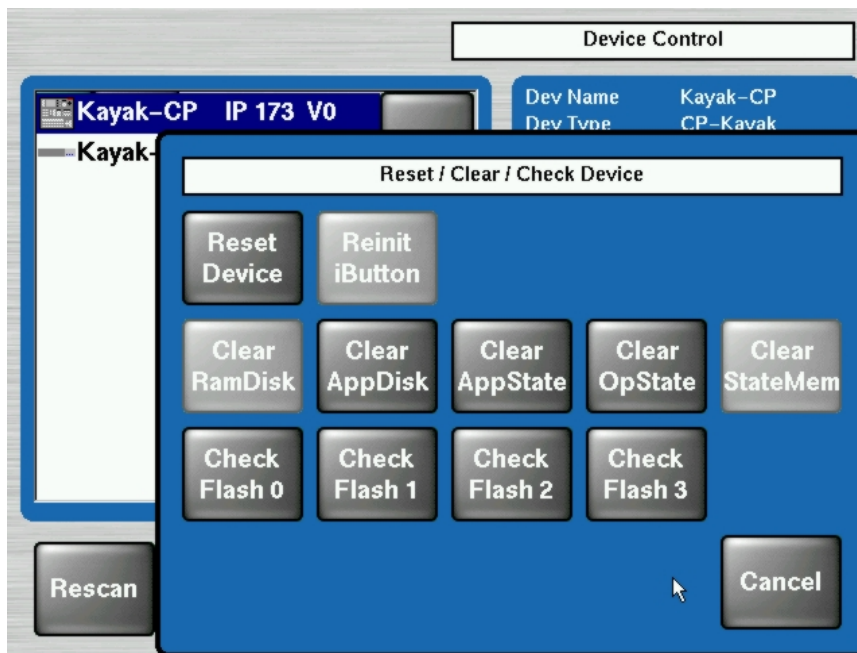


Figure 28 Reset/Clear/Check Devices Menu

7.4 Trouble Shooting

7.4.1 How to Calibrate the TouchScreen

In order to arrive the menu „Touchscreen Calibration“, go the following path:

Home / Install / Touchscreen Calibration / Start Calibr.

or use the following shortcut:

Menu Lock + User 3

and follow the instructions on the display.

7.4.2 Lost LAN Connection

Connect to a mainframe (in case the panel lost the IP address and therefore does not connect automatically)

Proceed as follows:

- Press the following buttons together in TRANSITION subpanel:
Black Preset + Trans PVW + Key3,
this switches the EFFECTS subpanel into address entry mode,
- Type in the last group of the mainframe IP address (example, if the address is "192.168.0.70" type in "70") and press ENTER.
- The panel will **'load systemfiles'** etc. i.e. connect to the mainframe.

7.4.3 Problems with Network Configuration

When an IP address of a KayakDD frame has been changed in order to integrate the devices into an existing network and the subnet mask of the device does not fit to the mask of the network, the connection between frame and panel will be lost.

In this case establish a serial terminal connection to the frame and replace the IP address. This should be done by qualified service personnel only!

Type the following command into the terminal shell:

sysIPAddressSet "<old IP address>"
example: **sysIPAddressSet "192.168.0.71"**

After pressing **'Rescan'** in the Device Control menu of the panel, the frame should be visible again. If **'Rescan'** doesn't help, reboot frame and panel.

IMPORTANT NOTE!

In order to integrate KayakDD devices into an existing network, ask the local network administrator for the subnet mask of the network. Before changing IP addresses always set the subnet masks of the KayakDD devices to the mask of the local network. If all changes are made and a frame is not visible to the panel, press 'Rescan' in the "Device Control" menu of the panel.

Network configuration defaults:

- IP address frame: 192.168.0.70
- Subnet Mask frame: 255.255.255.0
- IP address panel: 192.168.0.73
- Subnet Mask panel: 255.255.255.0

7.4.4 How to Connect a PC / Laptop to the KayakDD

First the following things are needed:

- Laptop / PC
- Hub / Switch
- 3 x Twisted Pair Network Cable (1:1)

Connect the KayakDD Panel, Frame and the PC / Laptop like as the following picture:

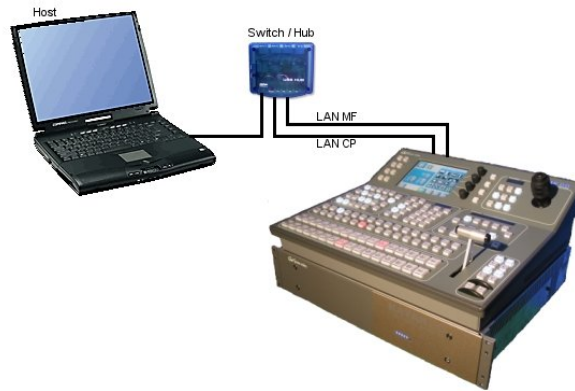


Figure 29 PC Connection

Network Properties Windows 2000/XP:

Right click on "My Network Places", choose Properties.

Configuration:

- Right click on "Local Area Connection", choose Properties.
- Choose TCP/IP and click on Properties
- Select "Use the following IP address"
- Register a IP Address (192.168.0.xxx)
- Register a Subnet Mask (255.255.255.0)
- Click on OK

Identification:

- Go to "Advanced / Network Identifications"
- Choose Properties
- Register a computer name
- Register a workgroup
- Click on OK.

Network Properties Windows 95/98:

Right click on Network Neighborhood, choose Properties.

Configuration:

Choose TCP/IP and click on Properties

- Choose Specify an IP address
- Register a IP Address (192.168.0.xxx)
- Register a Subnet Mask (255.255.255.0)
- Click on OK

Choose File and Print Sharing

- Select I want to be able to give others access to my files.
- Select I want to be able to allow to print to my printer(s).
- Click on OK

Identification:

- Register a computer name
- Register a workgroup
- Click on OK and reboot the PC / Laptop.

7.4.5 CPLD Update Trouble Shooting

7.4.5.1 Inconsistent EEPROM Data

When the software installation process checks whether an CPLD update is necessary or not, it initiates a plausibility check of the EEPROM data of each hardware board. If the EEPROM data is not plausible the user is notified and the update will not be initiated.

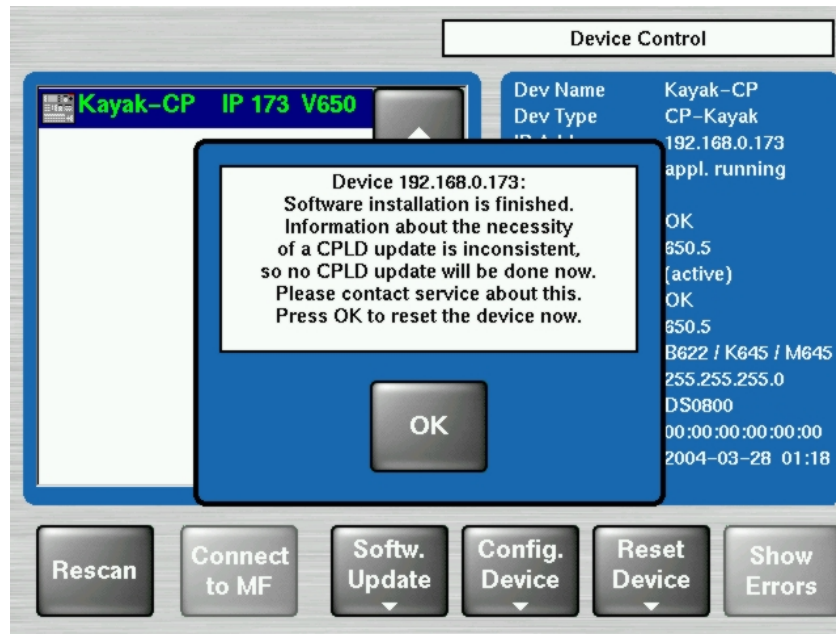


Figure 30 Error Message during CPLD update

The CPLD update can be performed manually at any time. An update even tries to correct inconsistent EEPROM data. Nevertheless a manually CPLD update should always be done by qualified service engineers or experienced users only!

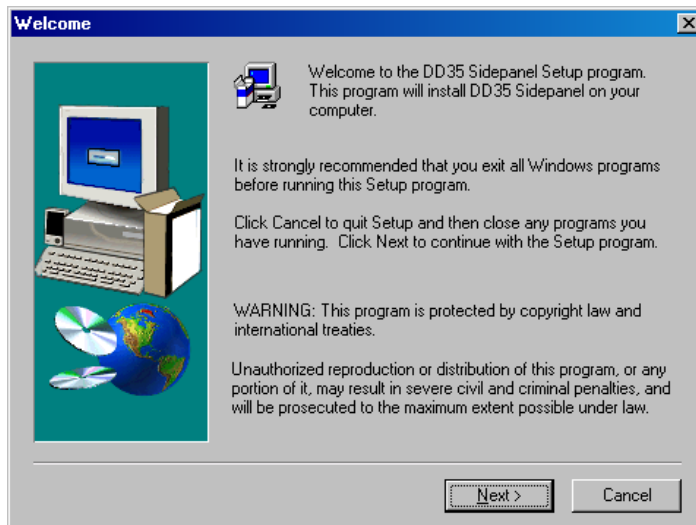
7.4.5.2 Wrong Position of CPLD Program Switch

There is a switch (ETX. BSCAN) on each hardware board that controls external or internal programming of the CPLD. If this switch is set to **ON** the CPLD can't be updated by the software installation process. In this case the user is informed by an error message ("**CPLD update failed: validating chain failed, check test switch (EXT. BSCAN)**") and the update process will be terminated. If this happens contact your service engineers.

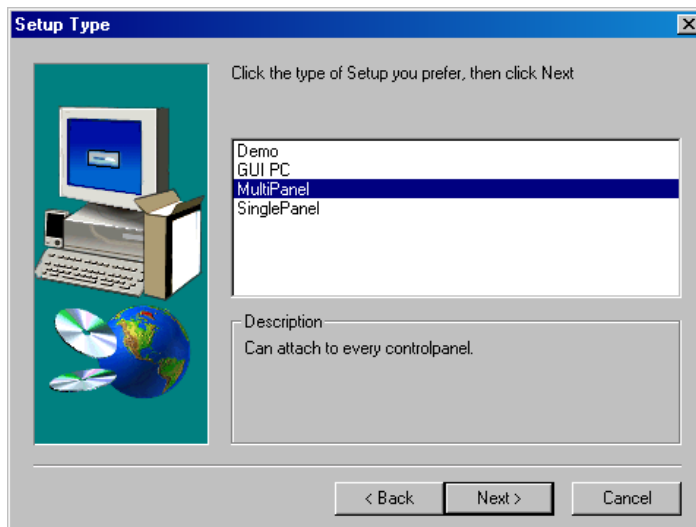
To bring the system back to normal operation mode, perform a reset.

7.4.6 How to Install the Sidepanel Software to a PC / Laptop

- Insert the KayakDD Software CD into the CD-ROM drive
- Go to the following menu: **CD-ROM:\ds0204.6xx\ds0203.4xx\W4xx\Disk1**
- Commit **Setup.exe**

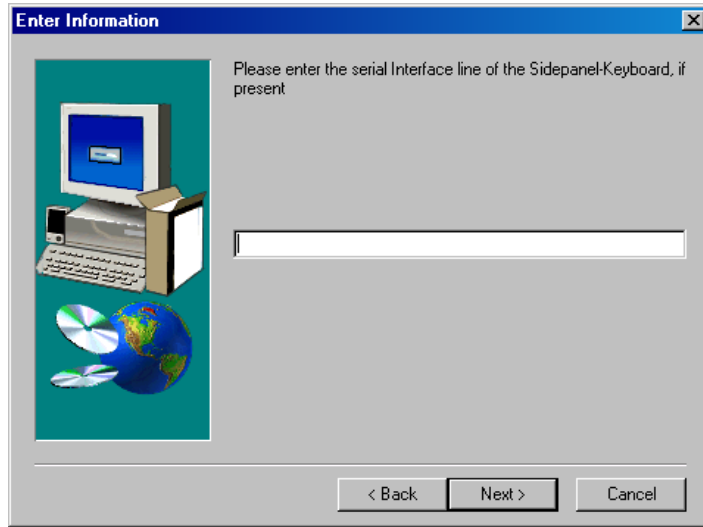


- Click **Next**.

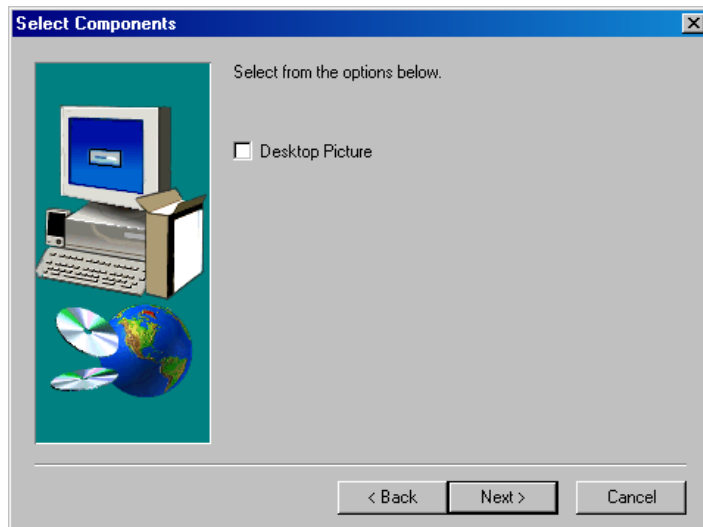


- Choose the type:
 - Demo: Demo version, no connection to a panel or a frame.
 - GUI PC: Connection only to a frame, not to a panel.
 - MultiPanel: Connection to frame and panel.
 - SinglePanel: Connection to a specified panel during the installation. It can't be changed later.

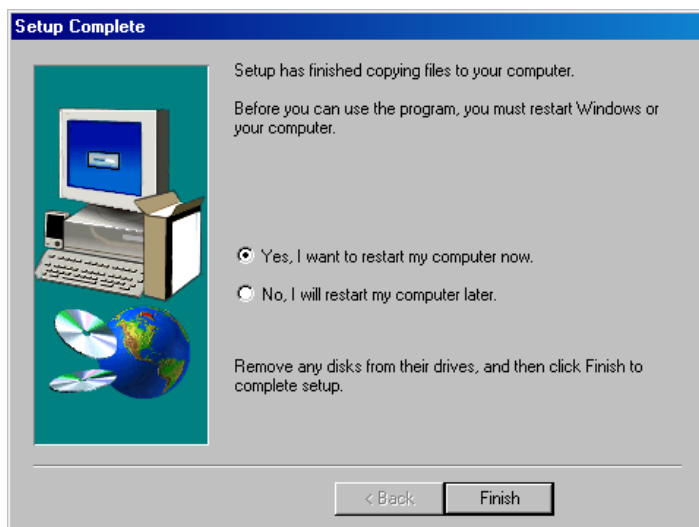
- Click **Next**.



- Enter the serial Interface of the Sidepanel Keyboard and click **Next**.



- Choose possibly **Desktop picture** and click **Next**.



- Accept the restart and click **Finish**.

Following the following steps to connect the KayakDD:

- Go to the **Startup** menu
- Activate E-Box and Panel
- Select the being requested frame / panel in the windows
- Click on **Connect** and **Attach**

7.4.7 Network Problems with Sidepanel

After the installation of the Sidepanel software it is recommend to use NetCheck in order to analyse the network stability. The NetCheck software can be located under Start – DD35 – NetCheck.

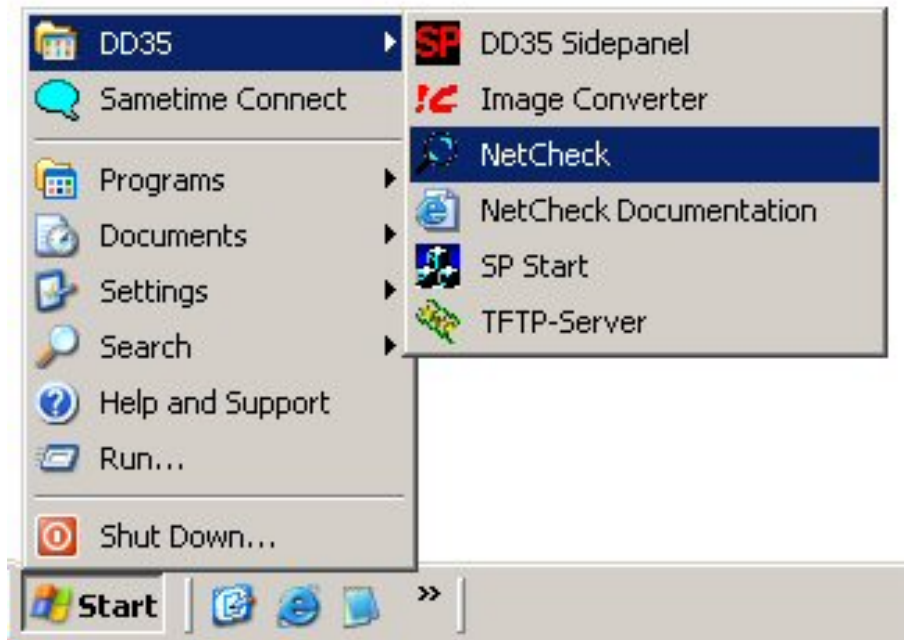


Figure 31 Path to the NetCheck Software

After starting the program **NetCheck** the following screen will be shown:

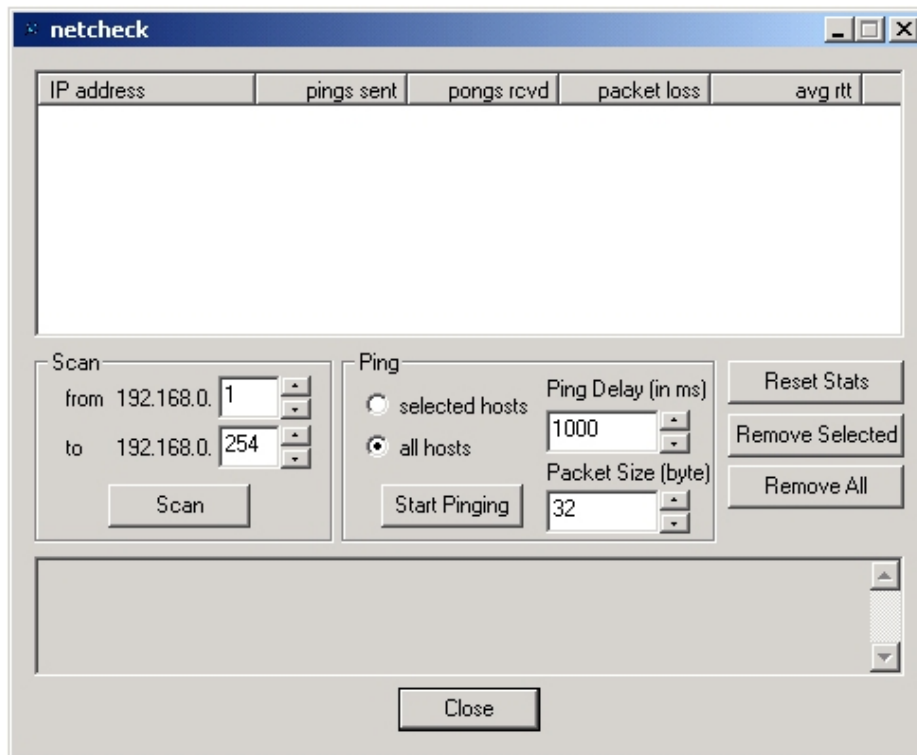


Figure 32 NetCheck Window

In the section **Scan** the IP range can be changed if required. Click on the **Scan** button in order for all components in the network to be indicated in the upper part.

In the section **Ping**, select **all hosts** or **selected hosts**. The default Ping Delay is 1000ms and the default Packet Size is 32bytes. It can be changed if required. Click on **Start Pinging** and the pings will appear in the upper part. When the required ping information has been obtained, click the button **Stop Pinging**. It is recommended to make 1000 pings because sometimes errors arise later.

NOTE!

The packet loss may not higher than 0.1%. If the packet loss is higher check your network. Possible reasons for network errors are unscreened cables, problems with switches and hubs or a network segment with to many traffic.

Click on **Reset Stats** to reset the ping values in the upper part.

Click on **Remove Selected** to delete the marked network components from the upper part.

To scan the network again click on **Remove All** and then restart the process with the **Scan** button.

7.4.8 Lifetime of the Internal Battery

The battery consuming is dependent of the operating time of the switcher. Take from the following list the lifetime of the battery:

Capacity	Type	Power – on time	Consuming	Days
200mA/h	CR 2032	12h / per day	20 μ A/h	830
200mA/h	CR 2032	24h / per day	50 μ A/h	365

NOTE!

If the switcher have a low battery and can not save the date and the time, then will appear a low-battery warning!

Newer production series of KayakDD are equipped with a Lithium battery **1000mA/h** (CR2477). The lifetime of the battery increases correspondingly!

7.4.9 Exchange the Battery

7.4.9.1 Open the KayakDD-2 Mainframe



Figure 33 KayakDD-2 Frame Front

1. Loosen the four screws and remove the front door in order to come to the inside.

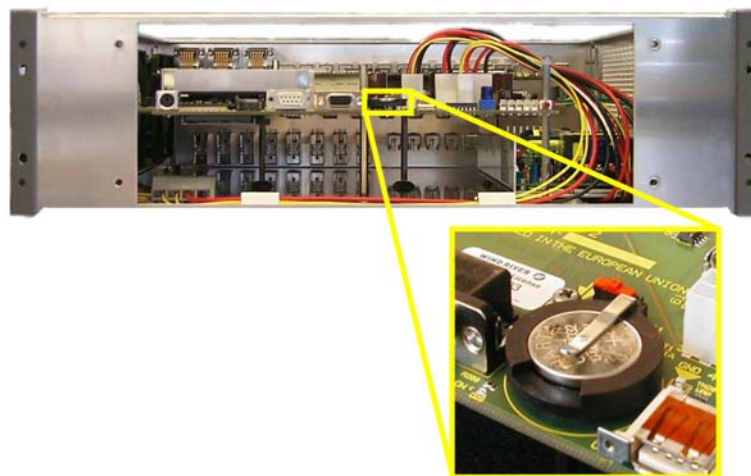


Figure 34 KayakDD-2-Frame Without Front Plate

2. Exchange the battery
3. Lift the battery
4. Push the battery forward
5. Close frame and fasten all screws.

7.4.9.2 Open KayakDD-2 Panel

1. Loosen the sixteen screws around the.

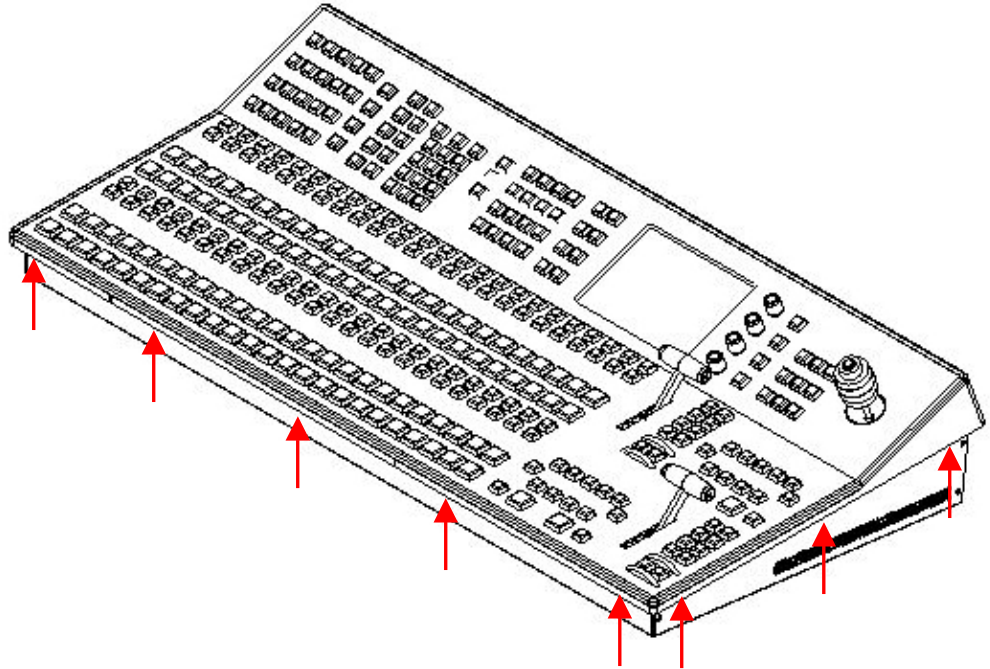


Figure 35 KayakDD-2 Control Panel

2. When all screws are loosened, lift the top of the panel carefully. The battery is located in the middle of the base board



Figure 36 Battery on the Board of the Control Panel

3. Exchange the battery
4. Lift the battery
5. Push the battery forward
6. Close panel and fasten all screws.

7.4.9.3 Settings

7.4.9.4 Frame Bios Settings

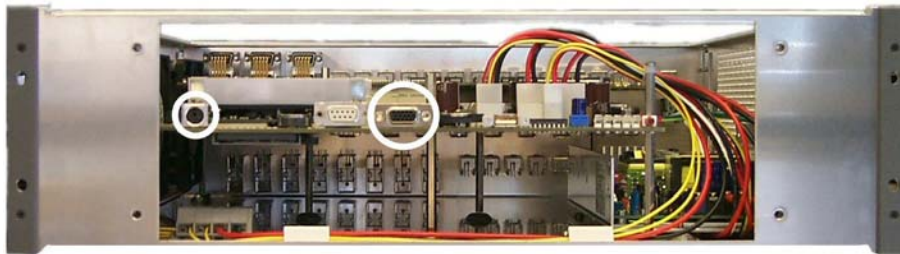


Figure 37 PS2 and VGA sockets on the KayakDD-2 Frame

Connect the keyboard with the PS2 connection and the VGA plug with the VGA socket.

To arrive the BIOS Menu, press the **F2** key during boot process of the switcher.

1. Load BIOS Setup Default with the key F9 and confirm with yes.
2. In the menu Advanced: set the options PNP OS installed and Halt On Errors to No.
3. Change the PCI-Interrupt Settings in the menu Advanced / PCI Configuration: Set the option PCI IRQ line 1 to 10.
4. Activate the USB Support in the menu Advanced / I/O Device Configuration: enable Legacy USB Support.
5. Modify the boot arrangement. In the menu Boot / Boot Device Priority: top → Removable Devices and then Hard Drive, the further is not relevant.
Note that the Hard Drive must be the Primary Master respectively the Compact Flash Card at the top in the arrangement.
6. Save the changed BIOS Settings with the Key F10 and confirm with yes.

7.4.9.5 Panel Bios Settings



Figure 38 PS2 and VGA sockets on the KayakDD-2 Panel

Connect the keyboard with the PS2 connection and the VGA plug with the VGA socket.

To arrive the BIOS Menu, press the **F2** key during the booting of the switcher.

1. Load BIOS Setup Default with the key F9 and confirm with yes.
2. In the menu Advanced: set the options PNP OS installed and Halt On Errors to No.
3. Change the display settings in the menu Advanced / Advanced Chipset Control: Set the option Display Mode to CRT only.
4. Change the PCI-Interrupt Settings in the menu Advanced / PCI Configuration: Set the option PCI IRQ line 1 to 10.
5. Activate the USB Support in the menu Advanced / I/O Device Configuration: enable the option Legacy USB Support and the option Host Controller.
6. Modify the boot arrangement. In the menu Boot / Boot Device Priority: top → Removable Devices and then Hard Drive, the further is not relevant. Note that the Hard Drive must be the Primary Master respectively the Compact Flash Card at the top in the arrangement.
7. Save the changed BIOS Settings with the Key F10 and confirm with yes.

7.4.9.6 Set Date and Time in Config Device Menu

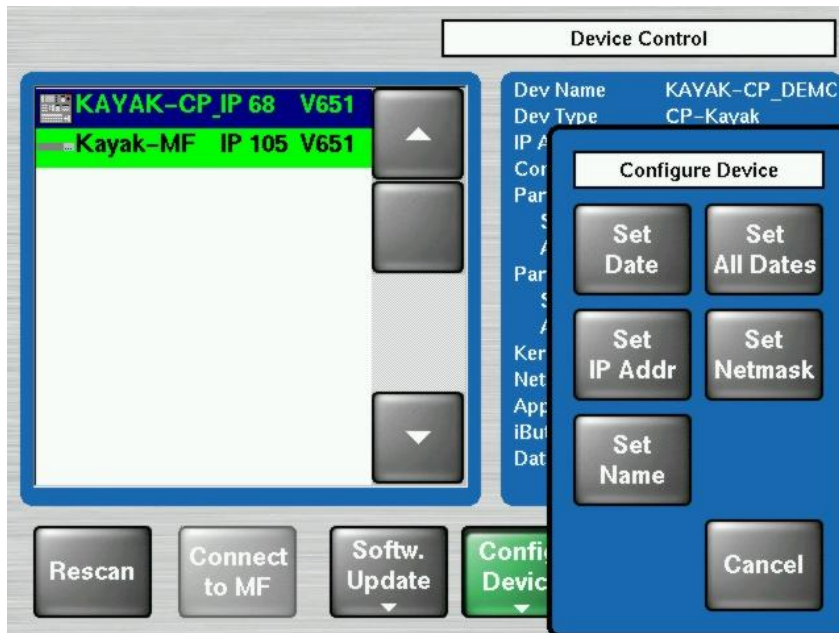


Figure 39 Config Device Menu

Select menu - Install – System – Device Control – Config Device

NOTE!

First select Panel or Frame!

Set Date: Set the date and the time of the selected device.

Set All Dates: Set date and time of all connected devices.

7.4.10 iButton Exchange for Spare Part Mainframe

The iButton is an EEPROM with a size of 512 Byte and contains your license key data. Note that a KayakDD mainframe as a spare part is delivered without iButton. Before operating please remove the iButton of your KayakDD mainframe and insert the iButton in the exchange unit.

7.4.10.1 How to Exchange the iButton

- Loosen the four screws and remove the front door in order to come to the inside.



Figure 40 KayakDD-1 Frame Front View

- The iButton is located on the left of the board in front of heat sink and can be simply removed by opening the contact clips.

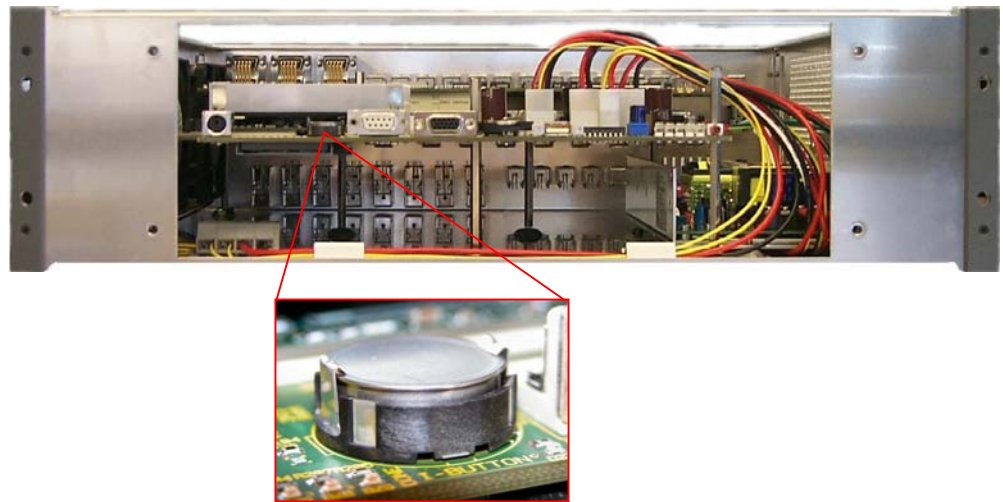


Figure 41 Position of the iButton

- Remove the iButton and insert it in the new delivered spare part mainframe!

7.5 Control Interfaces

7.5.1 Supported GVG100 Commands

Name	Command Code	Remark
CROSSPOINT BUS COMMAND	C1-C4 41-44	<u>Crosspoint interpretation:</u> GVG code Interpretation 00H BLK 01H...0x08H INPUT 1...8 09H COLOR BGD 1 All other codes are addressing directly the internal crosspoint numbers of the switcher
ANALOG CONTROL COMMAND	C5	Only Write supported: [Control# (EX) - ControlName] [00H (01H) - Transition Lever Arm] GVG100 max value of 0xFFFF is linear translated to the DD transition maximum of 0x7FFF
PUSHBUTTON COMMAND	C6 (C7)	Only Write C6 -> on C7 -> off Supported are: Program Bus Crosspoint 0-9 / 00H - 09H / C6 AUTO TANS / 0BH / C6 DSK MIX / 0CH / C6 DSK ON / 0DH / C6,C7 WIPE / 0EH / C6 MIX / 0FH / C6 Preset Bus Crosspoint 0-9 / 10H -19H / C6 REVERSE WIPE / 1DH / C6,C7 FADE TO BLACK / 1FH / C6 Key Bus Crosspoint 0-9 / 20H -29H / C6 GVG100 Wipe Pattern / 30H -39H / C6 BKGD / 48H / C6,C7 KEY / 49H / C6,C7 CUT / 4AH / C6 KEY ON / 52H / C6,C7
WIPE PATTERN SELECT COMMAND	C8	Only Write GVG100 related wipe numbers are directed to the corresponding wipe pattern in the DD switcher (00H -> Vertical Wipe, 01H-> Left Corner Wipe, ...). All other pattern codes are addressing directly the internal wipe pattern of the switcher
TRANSITION MODE COMMAND	CA	Only Write
TRANSITION RATE COMMAND	CC/CD/FD	Only Write
LEARN E-MEM REGISTER	DA	
RECALL E-MEM REGISTER	DB	
ALL STOP COMMAND	F2	

Name	Command Code	Remark
TRANSITION USHBUTTON SELECT COMMAND	FB	Supported are: Program Bus Crosspoint 0-9 / 00H - 09H AUTO TANS / 0BH DSK MIX / 0CH DSK CUT / 0DH WIPE / 0EH MIX / 0FH Preset Bus Crosspoint 0-9 / 10H -19H REVERSE WIPE / 1DH FADE TO BLACK / 1FH Key Bus Crosspoint 0-9 / 20H -29H GVG100 Wipe Pattern / 30H -39H BKGD / 48H KEY / 49H CUT / 4AH KEY CUT / 52H

NOTE!

Every ME related command effects the DD35/XtenDD/Kayak "PP" ME stage on default. To effect another ME use the "Editor ME Mapping" feature. The GVG „DSK“ will always translated to Key3 in the "PP mapped" ME stage.

TIMING!

The standard **GVG200** (not GVG100!) protocol timing will be used: **Commands will be executed in the third field after response.** If there are timing problems, fix them by changing the timing parameters of the editor.

7.5.2 Supported GVG200 Commands

Name	Command Code	Remark																		
TRANSITION MODE COMMAND	CA	Only Write																		
TRANSITION RATE COMMAND	CC/CD	Only Write																		
TRANSITION PUSHBUTTON SELECT COMMAND	FB																			
CROSSPOINT BUS COMMAND	C1-C4 (C1-CF for aux) 41-44 (41-4F for aux)	<p><u>Crosspoint interpretation:</u></p> <table> <tr> <td>GVG code</td> <td>Interpretation</td> </tr> <tr> <td>01H...0x14</td> <td>INPUT 1...20</td> </tr> <tr> <td>15H</td> <td>ME1 OUT</td> </tr> <tr> <td>16H</td> <td>ME2 OUT</td> </tr> <tr> <td>17H</td> <td>CLEAN FEED</td> </tr> <tr> <td>18H</td> <td>MAIN OUT</td> </tr> <tr> <td>21H</td> <td>ME3 OUT</td> </tr> <tr> <td>25H...27H</td> <td>COLOR BGD 1...3</td> </tr> <tr> <td>30H...4BH</td> <td>INPUT 21...48</td> </tr> </table> <p><u>Aux busses:</u> The number of Aux Busses is 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.</p>	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
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																			
PUSHBUTTON COMMAND	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 COMMAND	C8	Only Write																		
ALL STOP COMMAND	F2																			
LEARN E-MEM REGISTER	DA																			
RECALL E-MEM REGISTER	DB																			

NOTE!

The GVG „DSK“ will always be translated to the DD35 „PP“ mixer effect stage.

TIMING!

The standard GVG200 protocol timing will be used: **Commands will be executed in the third field after response.**

