GRASS VALLEY GROUP

Installation Planning Guide

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KALYPSO

VIDEO PRODUCTION CENTER

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Grass Valley Group Web Site

The www.grassvalleygroup.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.

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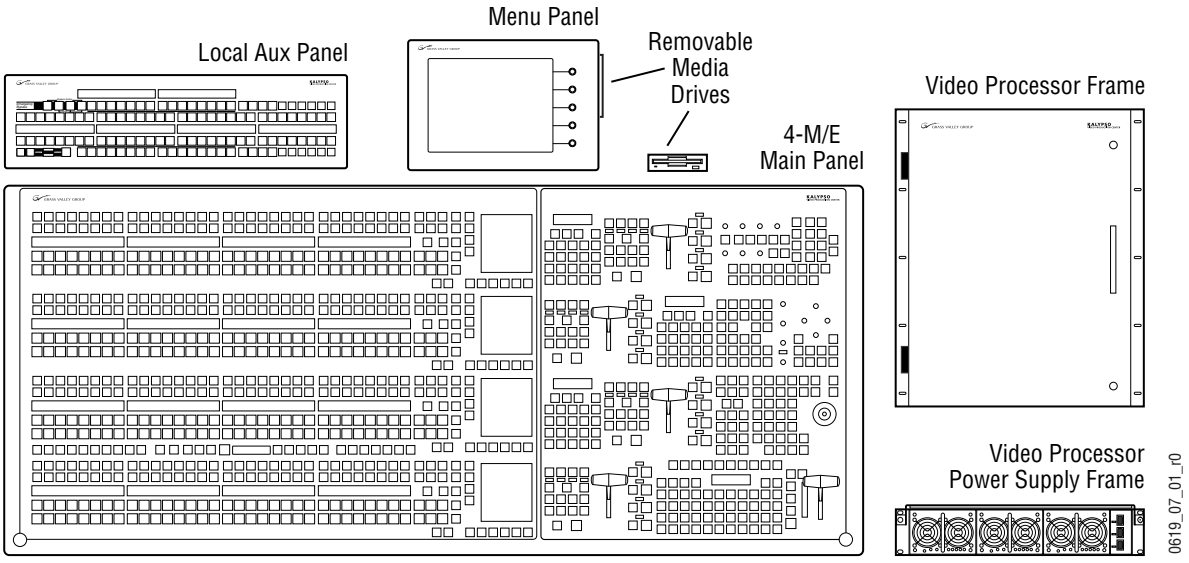
Kalypso Video Production Center

The Kalypso Video Production Center features powerful digital video switching, mixing, and keying with E-MEM, plus integrated control of other production devices such as external effects systems, VTRs, DDRs, and facility routers. The architecture of the system provides a flexible, quickly reconfigurable system able to meet the demanding requirements of live production and post production applications. Refer to the Kalypso *Ordering Guide* for information on the many hardware and software options available. Online documentation is available on the Grass Valley Group web site. The URL for the Grass Valley Group website is found on the copyright page at the front of this manual.

Standard System Components

A Kalypso System consists of a Control Surface comprising two or more control panels, a Video Processor frame, Video Processor Power Supply frame, and removable media drives. Several of the standard 4-M/E system components depicted in Figure 1 are also common to 2-M/E systems.

Figure 1. 4-M/E System Components



Main Panel	4-M/E	page 10	Local Aux Panel	page 13	Removable Media Drives	page 7
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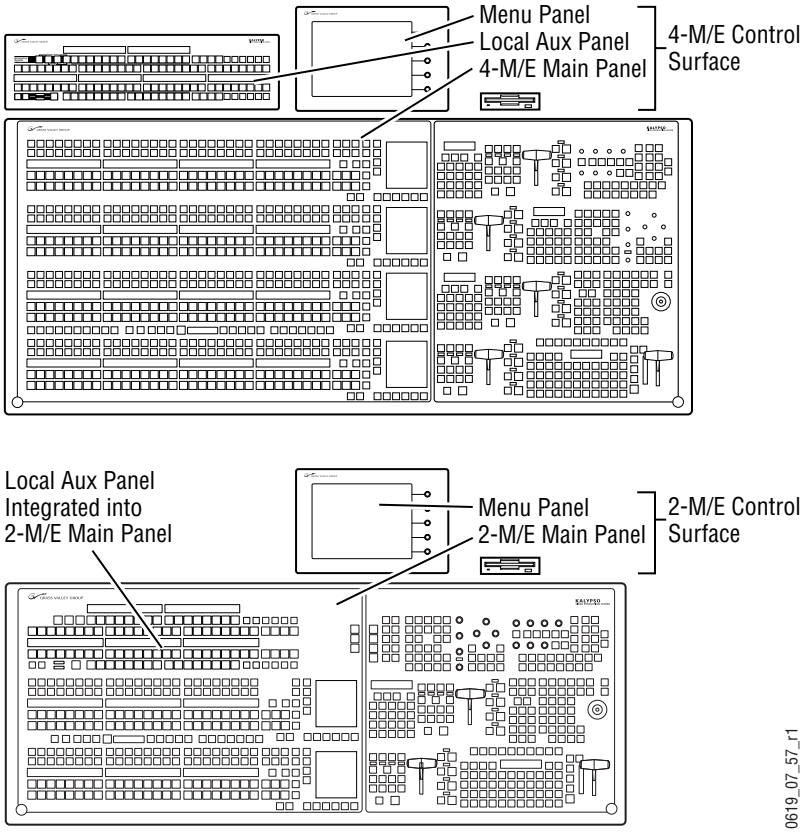
					Video Processor Power Supply Frame	page 27

Control Surface

The modular design of Kalypso control panels provides flexibility for mounting component panels in various environments, and allows the addition of specialized accessory control panels. A group of panels available to a single operator is called a Control Surface. A Control Surface consists of at least two components, a Main panel and a Menu panel. The 4-M/E has a separate Local Aux panel, while the 2-M/E has a Local Aux subpanel integrated into the Main panel (see Figure 2).

Figure 2. Kalypso Control Surface



Main Panel

The Main panel provides the operator with real time control of the system. Panel ventilation is accomplished by two fans which draw air through slots around buttons and expel it at the rear of the panel, where connections to the Kalypso Video Processor frame and other Control Surface components are located.

Menu Panel

The Menu panel provides access to additional system controls that generally do not require real time adjustment.

Local Aux Panel

The Local Aux panel provides control of Kalypso System Aux buses, the Emergency Bypass system, Still Store source selection, switched preview, gang roll control, and router source selection.

Removable Media Drives

Two removable media drives are standard components of a Kalypso system. Included are a CD-ROM drive (installed inside the Menu panel), and an external USB 250 MB Zip drive (which connects to the Menu panel). No special mounting brackets or specific placement is required for the Zip drive; placement is restricted only by USB cable length.

An external USB CD-ROM drive is provided with the Menu panel Flush Mount kit, as flush mount installation may block access to the drive inside the Menu panel.

Main Panel

Main panel installation requires careful attention to the console support structure and the console cutout dimensions necessary to accommodate the mounting flanges located on the front and sides of the tub (Figure 3).

CAUTION The 4-M/E Main panel weighs approximately 86 kg (189 lb) and the 2-M/E Main panel weighs approximately 63 kg (138 lb). Prior to installation, ensure that your console is structurally capable of supporting the Main panel.

The Main panel was designed to be flush mounted in a console, but it may also be surface mounted. Figure 4 provides installation details for both flush mount and surface mount installations. Refer to *4-M/E Main Panel* on page 10 for dimensions and other information specific to the 4-M/E Main panel, or *2-M/E Main Panel* on page 11 for information specific to the 2-M/E Main panel.

Figure 3. Mounting Flanges

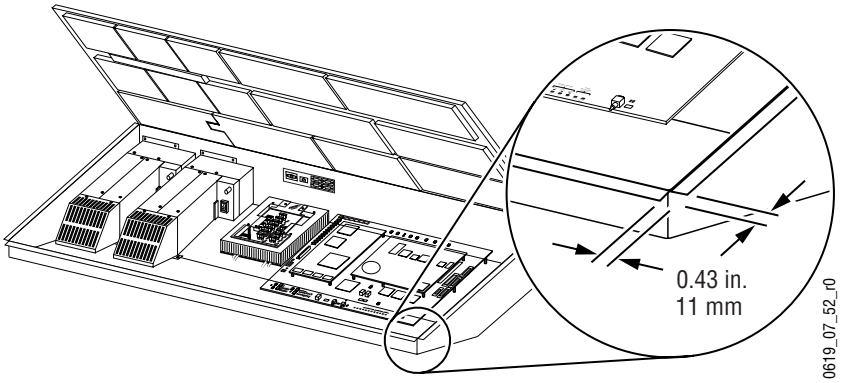
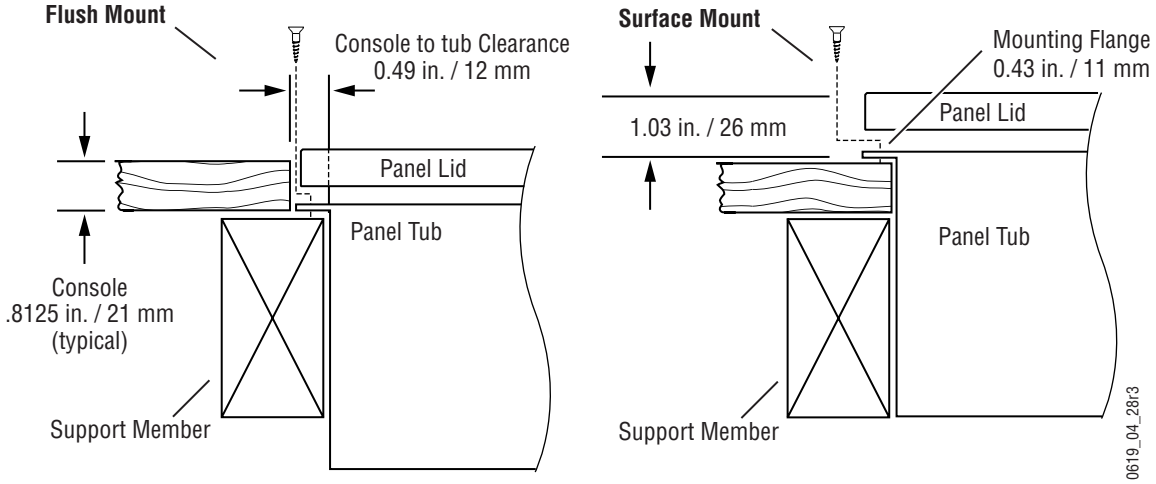
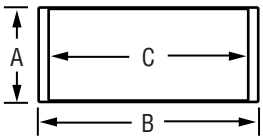


Figure 4. Main Panel Mounting Options, Front Left View



Mounting Option	Cutout Dimensions					
	A[1]		B[1]		C[2]	
	2-M/E	4-M/E	2-M/E	4-M/E	2-M/E	4-M/E
Flush Mount[3, 4]	20.09 in. (510 mm)	25.06 in. (637 mm)	49.51 in. (1258 mm)	55.63 in. (1413 mm)	48.66in. (1236 mm)	54.78in. (1391 mm)
Surface Mount[3]	18.70 in. (475 mm)	23.81 in. (605 mm)	48.66in. (1236 mm)	54.78in. (1391 mm)	n/a	n/a



[1] Console surface cutout.

[2] Distance between flush mount support members.

[3] Recommended tilt of 5˚; maximum tilt of 15˚. The recommended five degree tilt may be obtained by elevating the rear of the panel approximately two inches relative to the front of the panel.

[4] See *Cosmetic Bracket* (below) for additional flush mount considerations.

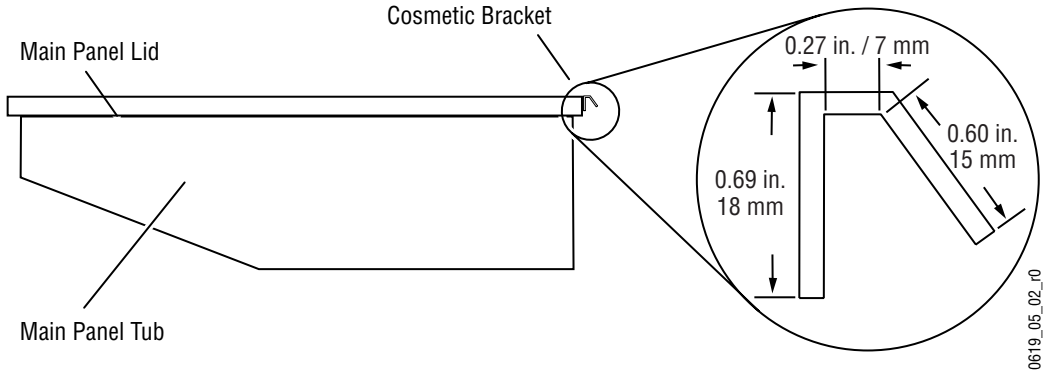
The Main panel lid is held in the open position by two gas spring assemblies. The ability of these devices to support the lid is compromised if the installed panel tilts toward the user at an angle greater than 15 degrees.

Cosmetic Bracket

4-M/E and 2-M/E systems manufactured since March 2001 are shipped with a cosmetic bracket attached to the rear of the Main panel lid (Figure 5). The purpose of the cosmetic bracket is to cover a visible gap between the rear of the panel and the mounting surface when the panel is flush mounted.

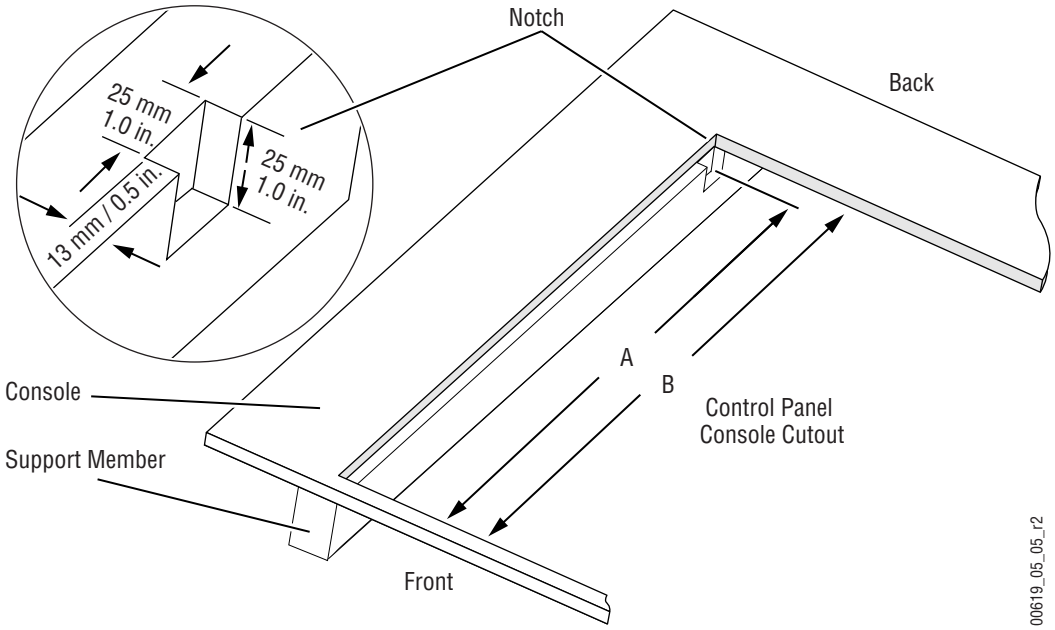
The cosmetic bracket is removable (see the Kalypso *Installation and Service Manual* for details) and can be ordered for older systems. It is recommended the bracket be removed if the Main panel is surface mounted.

Figure 5. Main Panel with Attached Cosmetic Bracket, Side View



If you choose to use the cosmetic bracket and your Main panel installation has a console support structure similar to that shown in Figure 6, it will be necessary to cut notches in the support members at the left and right rear corners of the console cutout (see the notch dimensions in Figure 6). This enables the Main panel lid to clear the support structure upon opening.

Figure 6. Support Member Notch Dimensions



Mounting Option	Dimensions			
	A		B[1]	
	2-M/E	4-M/E	2-M/E	4-M/E
Flush Mount	19.09 in. (485 mm)	24.06 in. (611 mm)	20.09 in. (510 mm)	25.06 in. (637 mm)

[1] Console cutout dimension.

4-M/E Main Panel

4-M/E Main panel options include a redundant power supply and Source ID displays for M/E 1, 2, and 3. (Source ID displays are standard on PGM/PST and on the Local Aux panel.) Refer to Figure 7 through Figure 9 for panel dimensions and connector layout.

Figure 7. 4-M/E Main Panel Dimensions

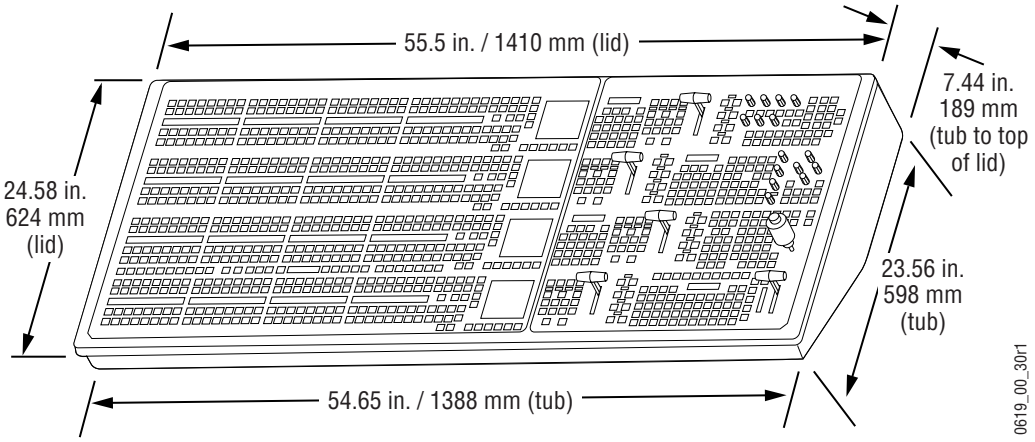
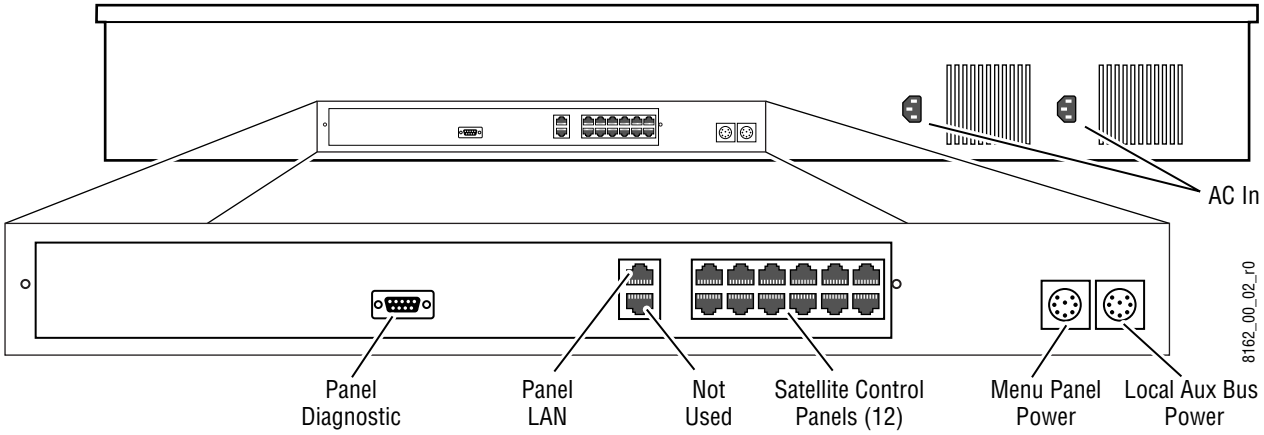
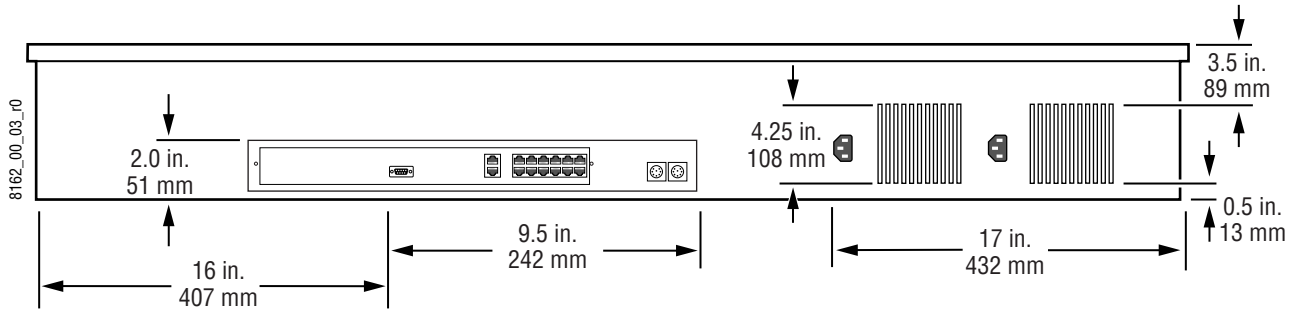


Figure 8. 4-M/E Main Panel, Rear View



CAUTION Regardless of mounting method or cutout dimensions, ensure that there is at least 152 mm (6 in.) of clear space at the rear of the Main panel below the mounting surface for proper cable clearance and air flow. Allow an extra 203 mm (8 in.) to 254 mm (10 in.) of mounting surface behind the Main panel for peripheral components (e.g., Local Aux panel).

Figure 9. 4-M/E Main Panel Dimensions, Rear View



2-M/E Main Panel

Source ID displays are standard on the 2-M/E Main panel, M/E 1, PGM/PST row and on the Local Aux subpanel. A redundant power supply is optional. Refer to Figure 10, Figure 11, and Figure 12.

Figure 10. 2-M/E Main Panel Dimensions

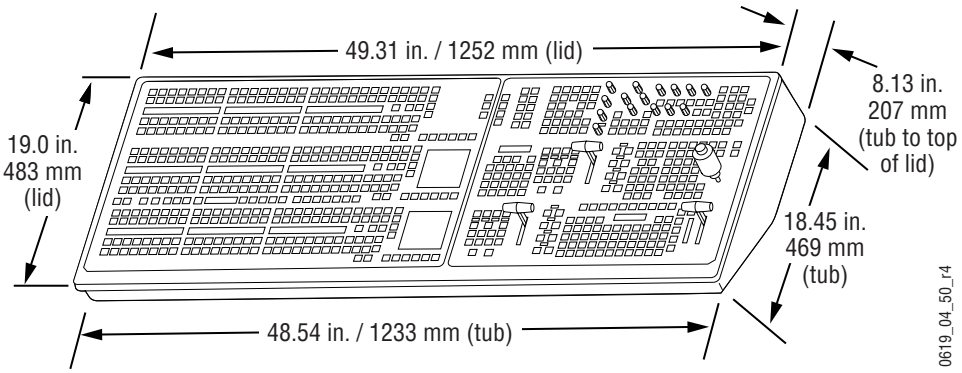
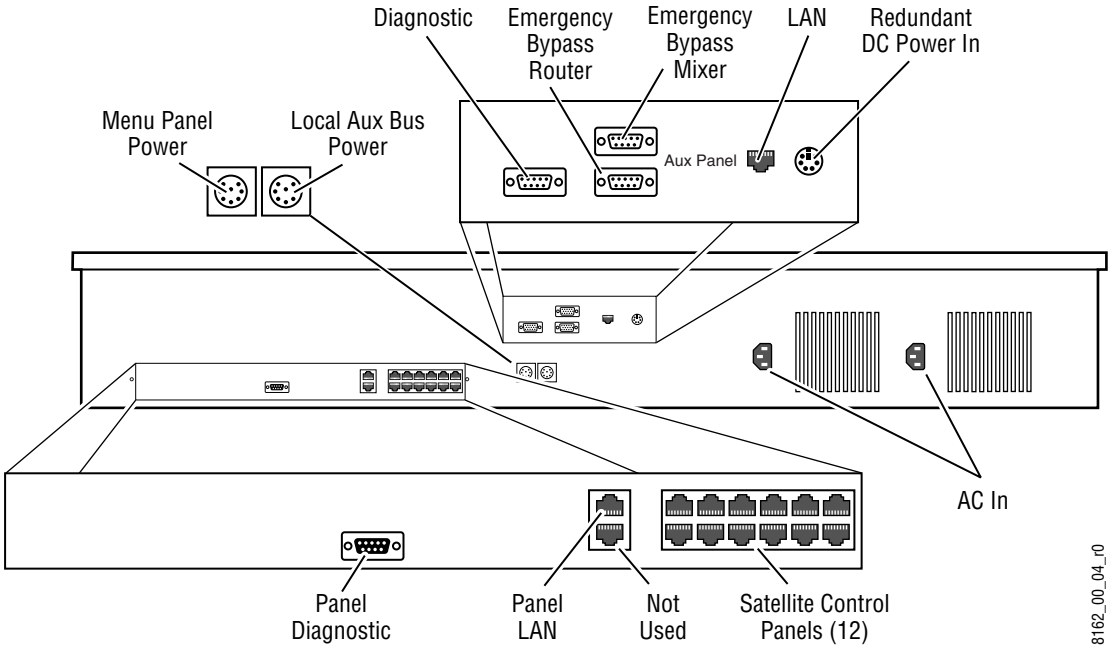
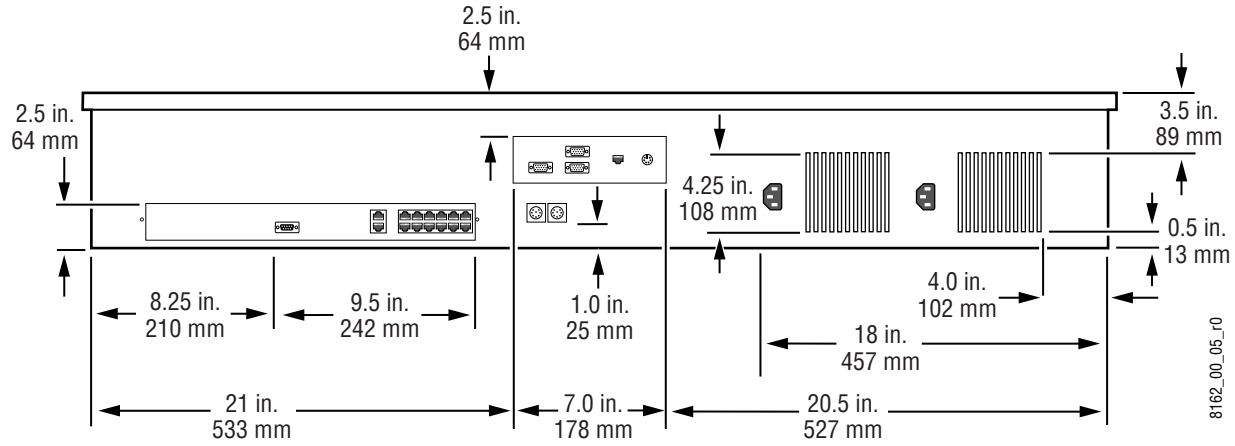


Figure 11. 2-M/E Main Panel, Rear View



CAUTION Regardless of mounting method or cutout dimensions, ensure that there is at least 152 mm (6 in.) of clear space at the rear of the Main panel below the mounting surface for proper cable clearance and air flow. Allow an extra 203 mm (8 in.) to 254 mm (10 in.) of mounting surface behind the Main panel for peripheral components.

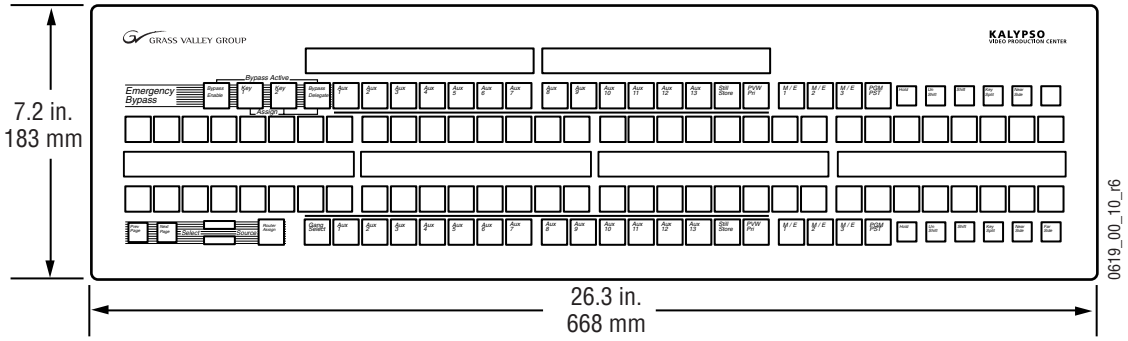
Figure 12. 2-M/E Rear Panel Dimensions



Local Aux Panel

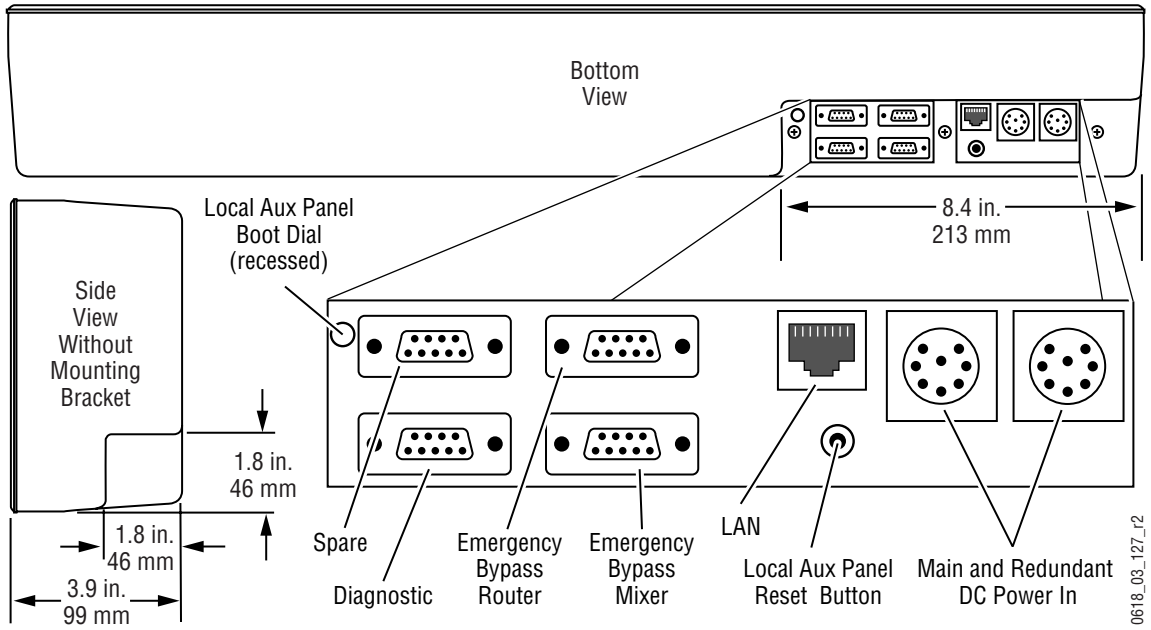
The Local Aux panel (Figure 13) provides control of Kalypso System Aux buses, the Emergency Bypass system, Still Store source selection, switched preview, gang roll control, and router source selection. The Local Aux Panel is integrated into the design of the 2-M/E Main panel, so a separate Local Aux panel is not provided with 2-M/E systems.

Figure 13. Local Aux Panel Dimensions



Ports located on the rear of the Local Aux panel (Figure 14) provide connections to the Kalypso Main panel. The Kalypso system may also be configured with several types of Remote Aux panel. Refer to *Remote Aux Panels on page 29* for more information on these panels.

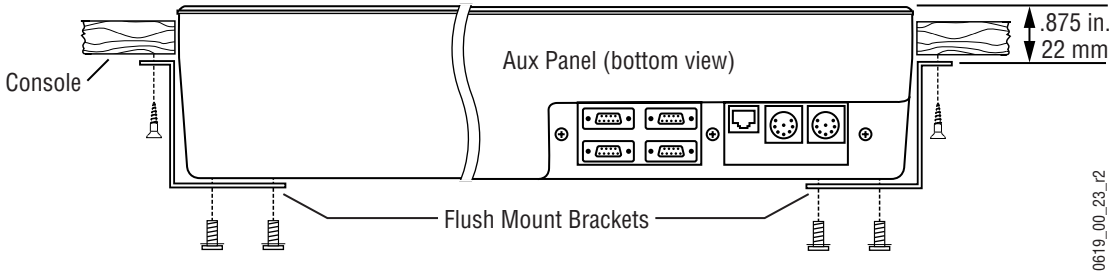
Figure 14. Local Aux Panel Connections



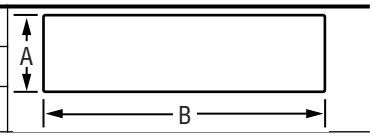
Mounting Brackets

When ordering your system, you will specify the type of Local Aux panel mounting bracket (flush or console). If a preference is not given, flush mount brackets will be shipped. Flush mount brackets depicted in Figure 15 provide console flush mount capability.

Figure 15. Local Aux Panel Console Flush Mount



Aux Panel Console Cutout Dimensions	
A	B
7.32 in. (186 mm)	26.42 in. (671 mm)



When flush mounting the Local Aux panel, leave the area near the fan open for cooling (Figure 16).

Figure 16. Local Aux Panel Fan Position

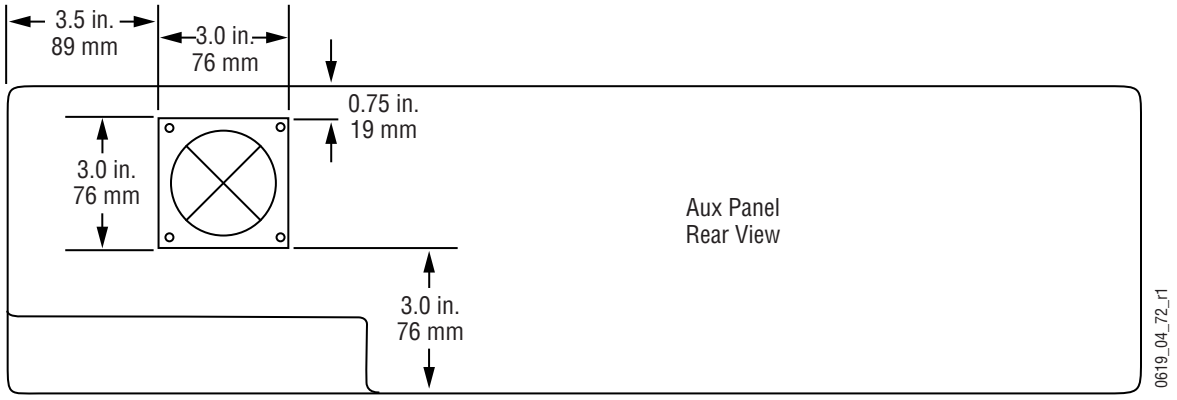
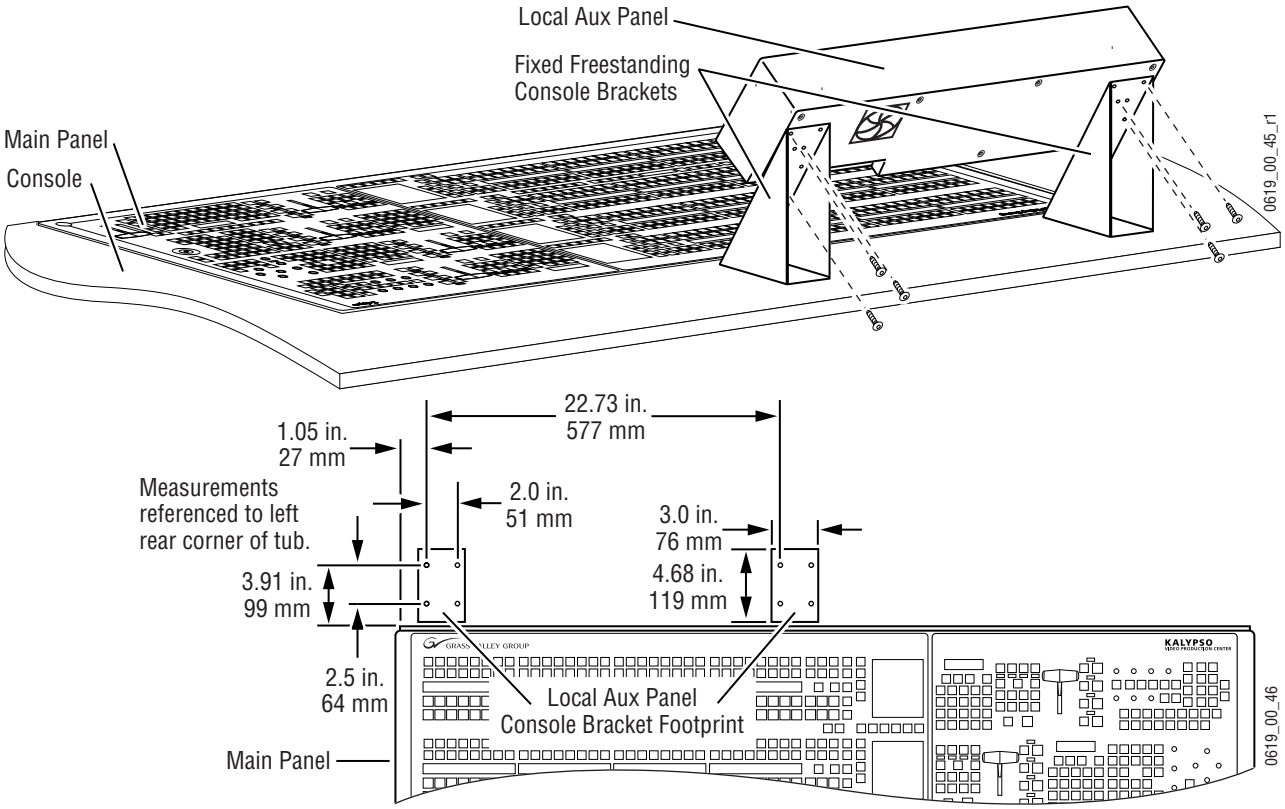


Figure 17 provides guidance for mounting the Local Aux panel using free-standing console brackets so that its Source Selection buttons align with those on the 4-M/E Main panel.

Figure 17. Recommended Bracket Placement for Console Mounting Local Aux Panel



Power Cabling

4-M/E Systems

Normally, the Local Aux panel receives power from the Main panel via a cable connected between the two panels. If the Main panel has two power supplies, there is already redundant power protection. It is also possible to install an external power supply (see Figure 18) for additional redundancy that connects to the Redundant DC Power In connector on the Local Aux panel (see Figure 14). If desired, two separate external power supplies can be connected to the Main and Redundant DC Power In connectors on the Local Aux panel. This eliminates the need to connect a power cable from the Main panel to the Local Aux panel.

2-M/E Systems

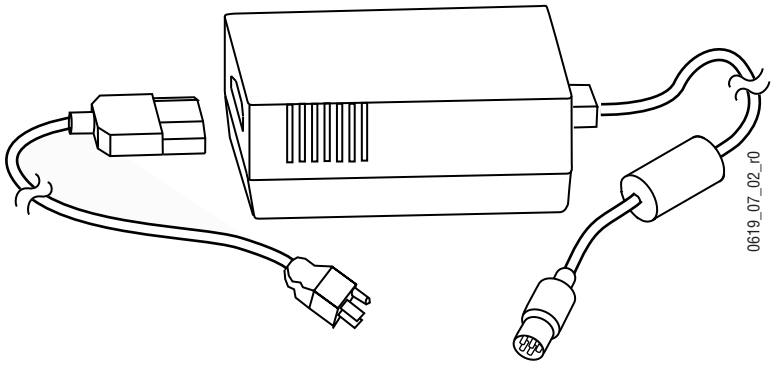
Local Aux control is integrated into the Main panel, but it has a separate processor. It is powered by a direct connection inside the Main panel. If the Main panel has two power supplies, there is already Local Aux control

redundant power protection. You can optionally add an external power supply (see Figure 18) that connects to the Aux Panel Redundant DC Power In connector on the Main panel (see Figure 11).

External Power Supply

A brick style external power supply is available that allows the Local Aux panel to be powered independently from the Main panel (Figure 18). This same power supply can be used with the Menu panel.

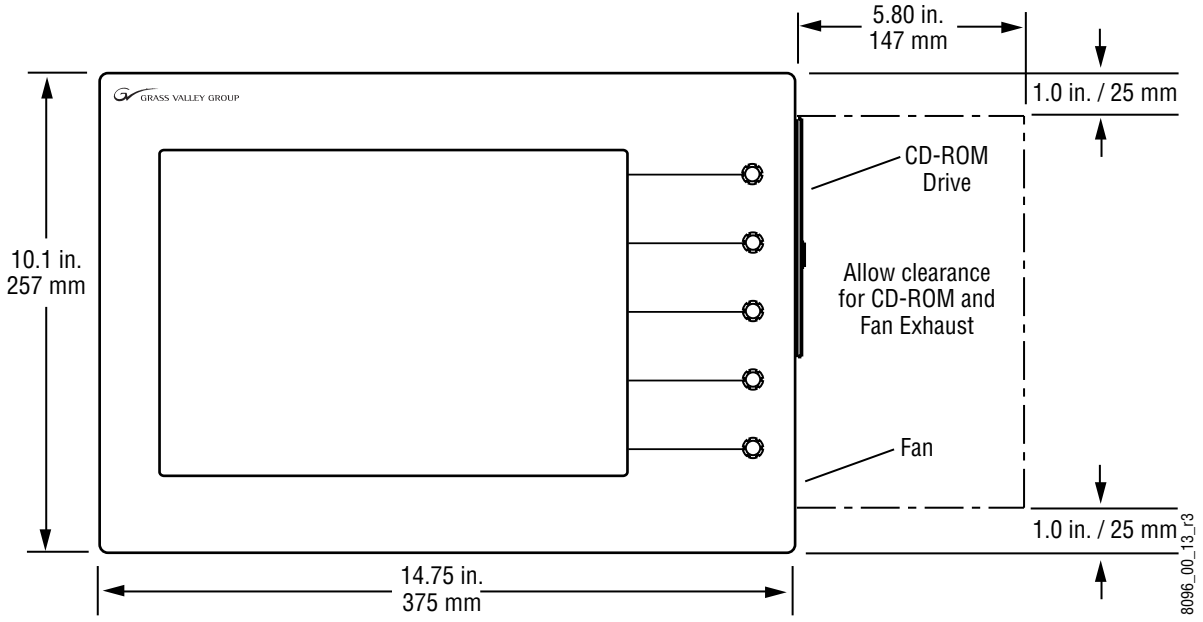
Figure 18. Optional External Power Supply



Menu Panel

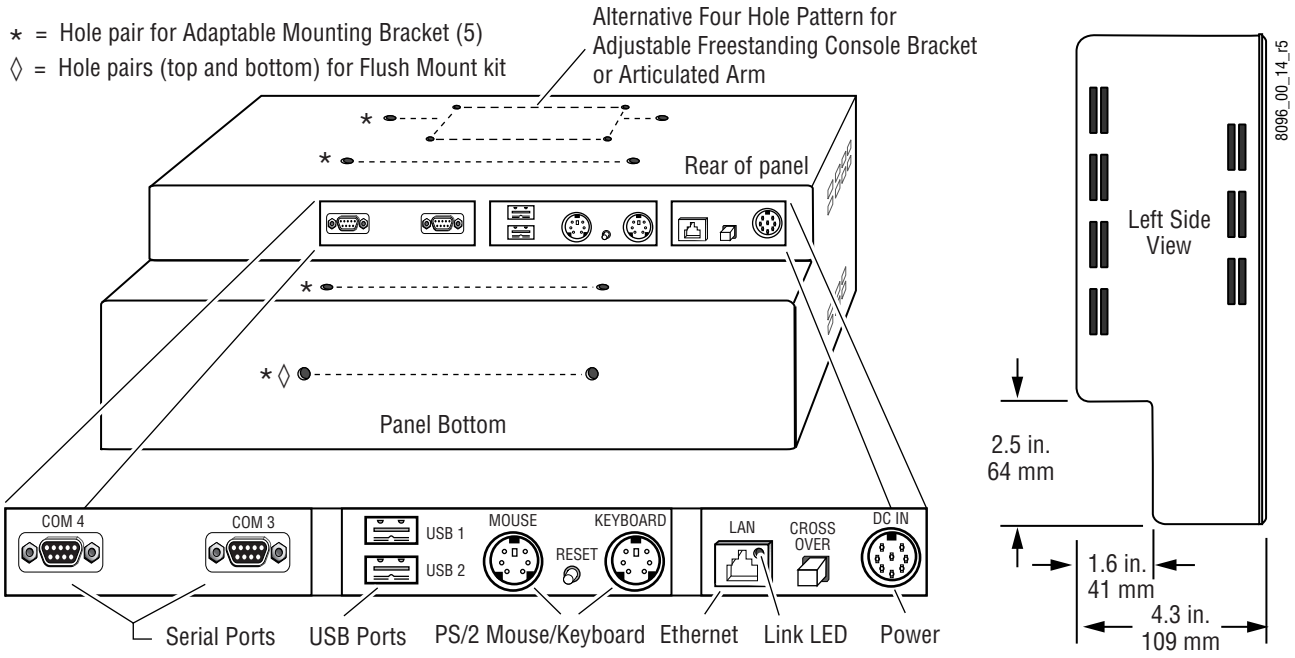
The Menu panel includes a touch screen display, five knobs for adjusting parameter values, a cooling fan, and an internal CD-ROM drive (Figure 19).

Figure 19. Menu Panel Dimensions



Ports located on the rear of the Menu panel (Figure 20) provide connections to the Main panel, Video Processor frame, an external USB Zip drive, a PS/2 mouse and keyboard, and other devices. For example, the USB ports can be used with a USB style mouse and keyboard, and/or for additional USB data storage devices.

Figure 20. Menu Panel, Bottom and Side Views



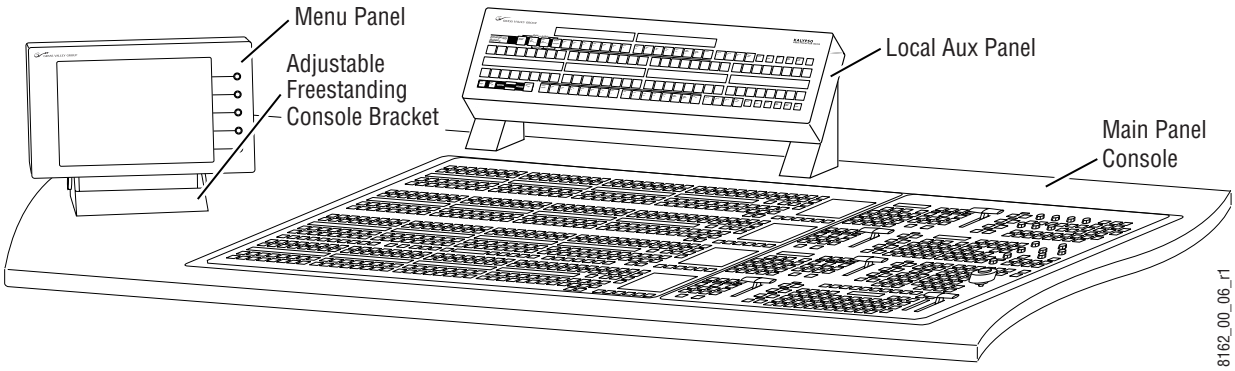
Menu Panel Ventilation

Air is drawn into the Menu panel through slots along the top and left side of the panel. Air is expelled out of the Menu panel by a fan located on the right side of the panel (see Figure 19). When mounting the panel, be sure to leave either the top or left side slots unobstructed for proper air intake. The right side of the panel requires clearance for the fan exhaust.

Recommended Mounting Location

The recommended mounting location for the Menu panel is to the left or right of the Main panel (see Figure 21). This provides the most comfortable reach to the touch screen, soft knobs, and internal CD-ROM and also clears the area for better viewing of monitors beyond the Main panel. When considering mounting options, remember that the optimum Menu panel viewing angle is 90 degrees in both the horizontal and vertical planes.

Figure 21. Recommended Menu Panel Mounting Location



CAUTION When finalizing the location of the Menu panel, be sure to open the Main panel lid and check for sufficient clearance between the Menu panel and the Main panel components. Without sufficient clearance, the lever arm or joystick could damage the Touch Screen when the Main panel is opened.

Available Mounting Brackets

When ordering your system, you will specify the type of Menu panel mounting bracket. Three different mounting brackets are available to provide a wide variety of installation options. One bracket type is included with each system, and one additional bracket of your choice is also included:

- Adaptable Mounting bracket (always included), and choose either
- Adjustable Freestanding Console bracket,

  - or -

- Flush Mount kit.

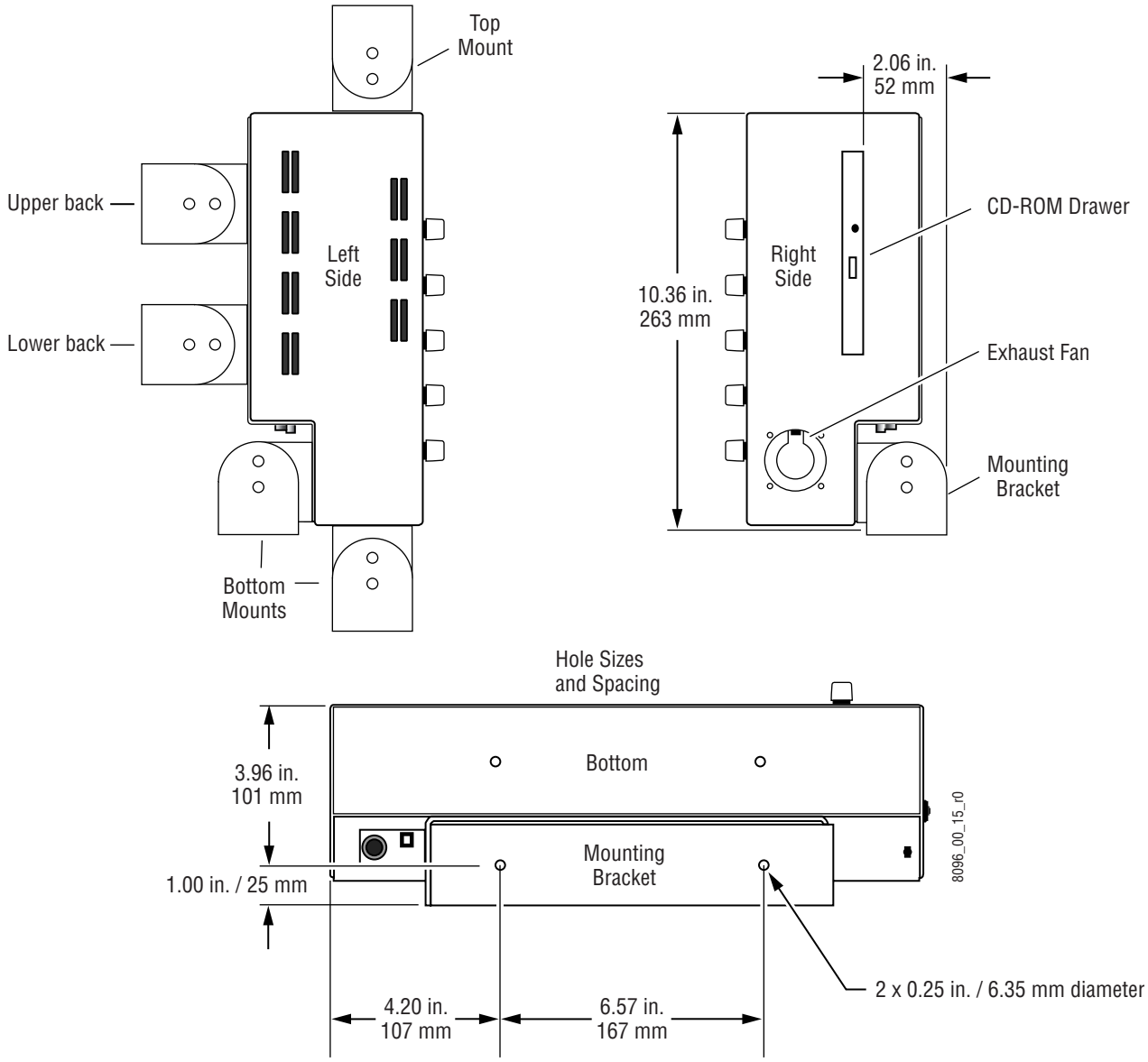
If a preference is not given, the Flush Mount kit will be shipped.

CAUTION All Menu panel mounting holes are tapped 10-32. Do not penetrate the case more than 0.24 in. / 6.10 mm.

Adaptable Mounting Bracket

The Adaptable Mounting bracket allows the Menu panel to be mounted from above, from below, or from the back, using pairs of screw holes as shown in Figure 22.

Figure 22. Optional Placement of Adaptable Mounting Bracket



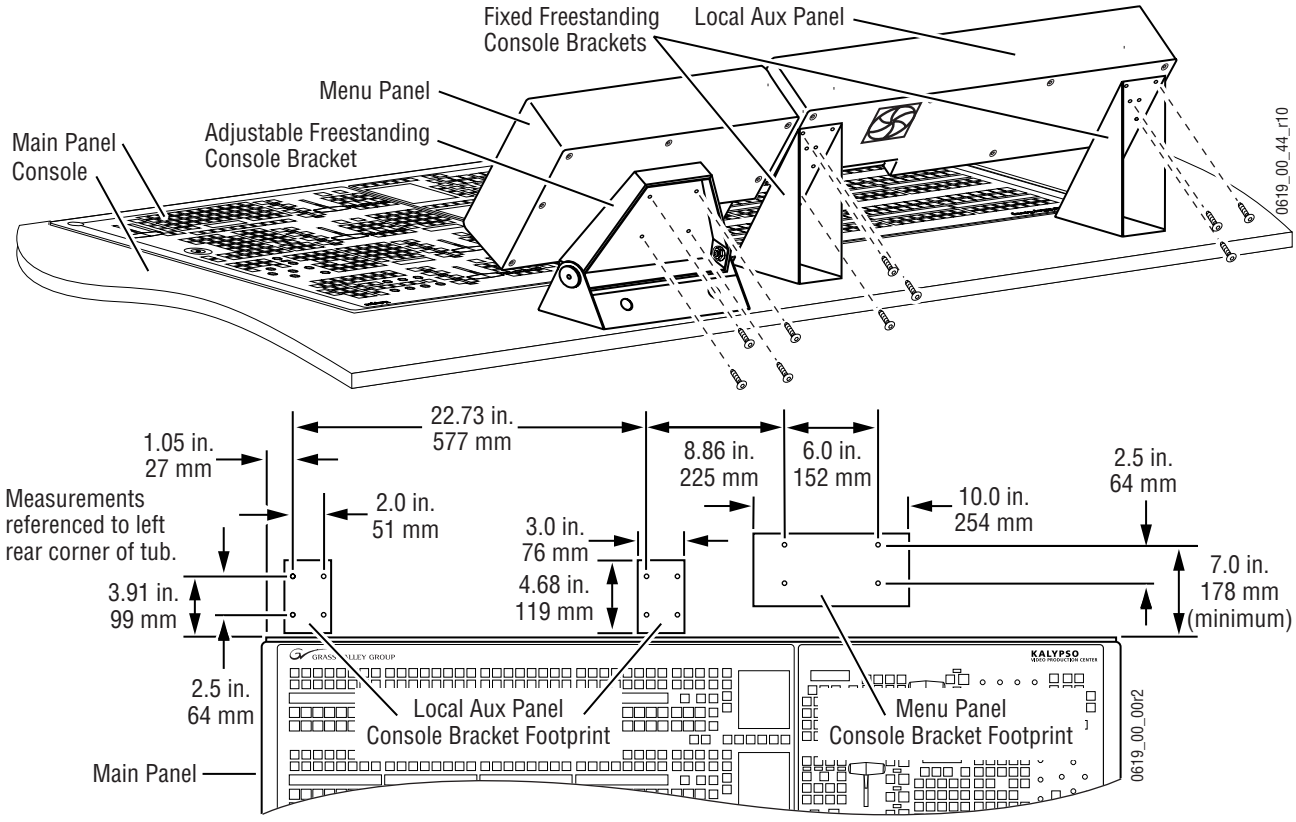
This Adaptable Mounting bracket allows the Menu panel to be tilted on a horizontal axis for optimum viewing. After the final location and angle of the Menu panel has been established, tighten the clamping pivot screws. This bracket is not intended to be friction-lock adjustable.

Adjustable Freestanding Console Bracket

A single four-hole screw pattern on the back of the Menu panel (Figure 20) accommodates the Adjustable Freestanding Console bracket. This bracket's friction-lock can be set during installation to allow the user to tilt the Menu panel on a horizontal axis during use for optimum viewing.

The Adjustable Freestanding Console bracket can be used to mount the Menu panel to the console in the recommended position (Figure 21 on page 18). The Menu panel can also be mounted above the Main panel with this bracket, as shown in Figure 23. If installed in this orientation, follow the recommended mounting dimensions to ensure adequate clearance when the Main panel lid is opened.

Figure 23. Optional Placement of Menu Panel



If an overhang or wall exists by the Main panel, this bracket can be rotated to allow mounting the Menu panel to that surface (like the Adaptable Mounting bracket).

The four-hole screw pattern on the Menu panel may also be used to attach a user-supplied articulated arm, for even more flexibility.

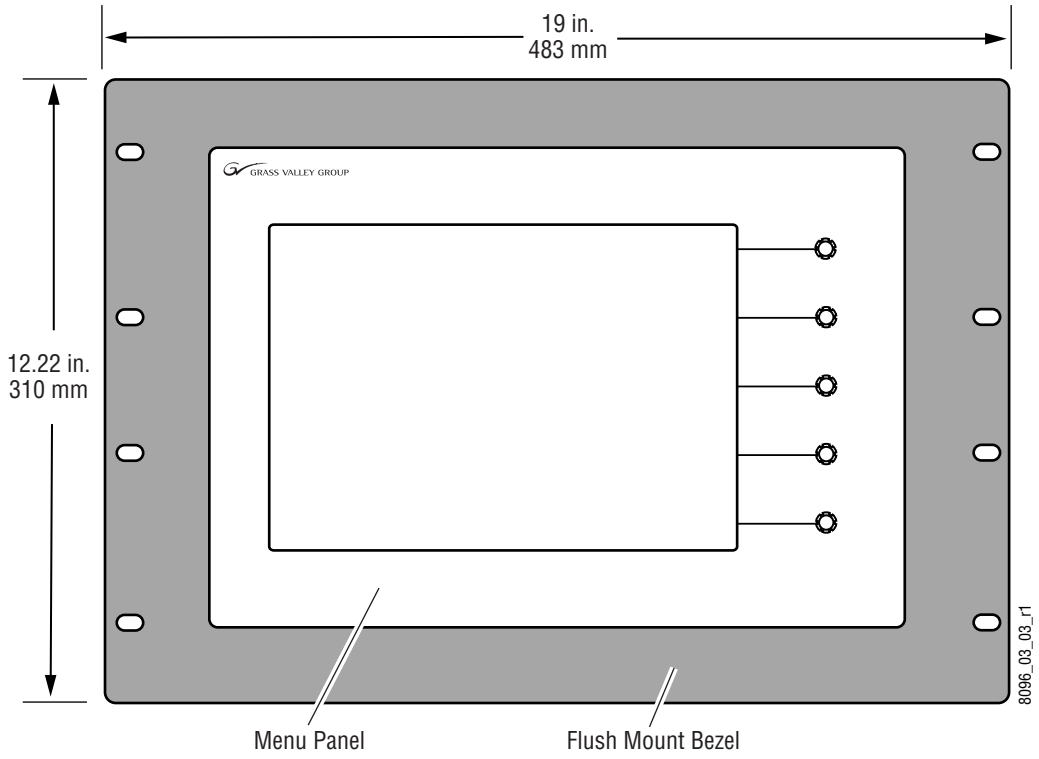
Flush Mount Kit

The Flush Mount kit allows the Menu panel to be installed in a standard 19 in. (483 mm) rack (Figure 24), occupying seven rack units. Alternatively, the Menu panel can be set into a console cutout (Figure 26 on page 23).

Access to the CD-ROM on the right side of the Menu panel is blocked with this mounting option, so an external CD-ROM with a USB cable is provided. The external CD-ROM drive connects to one of the two USB ports on the Menu panel, and receives its power through this cable.

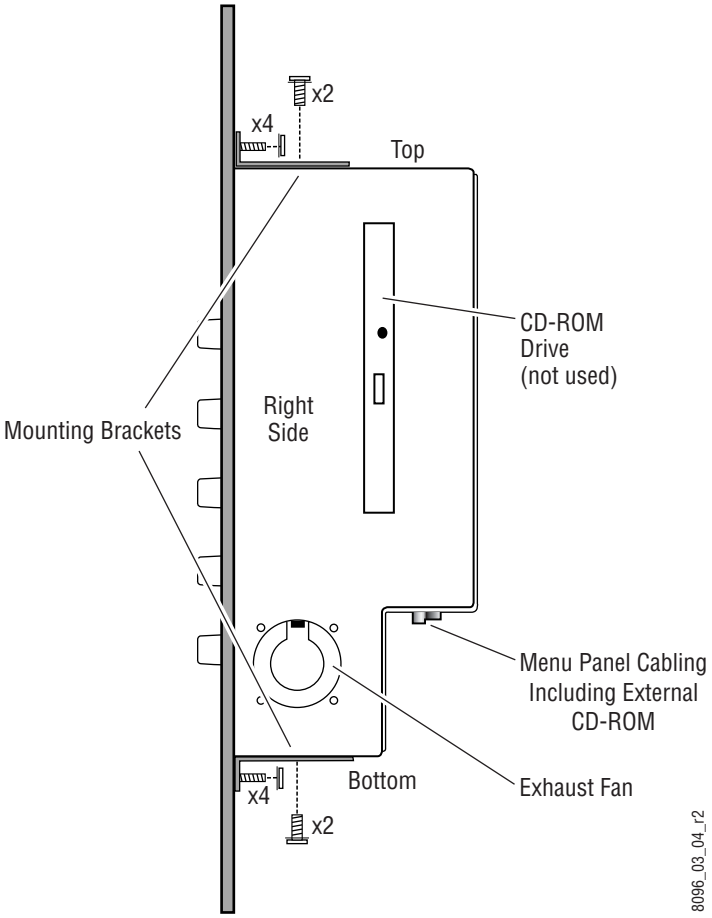
Clearance for the exhaust fan on the right side of the panel and the interconnect cables to the external CD-ROM, Main panel and Video Processor frame on the bottom of the panel must also be taken into consideration when mounting the panel in this manner.

Figure 24. Optional Flush Mount Kit



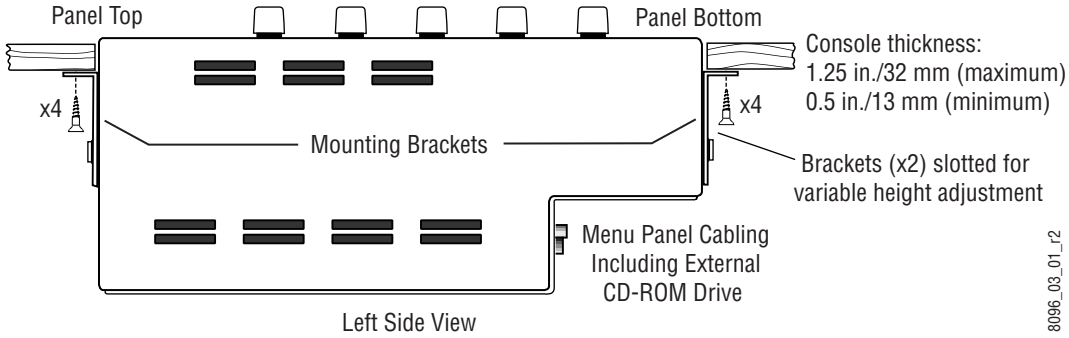
The Flush Mount bezel is attached to the top and bottom of the Menu panel with two mounting brackets as shown in Figure 25. Four #10 screws are included for attaching the Flush Mount assembly to the Menu panel.

Figure 25. Attaching Flush Mount Bezel to Menu Panel



To install the Menu panel into a console cutout, the Flush Mount bezel can be removed. The mounting brackets can then be used to support the top and bottom of the Menu panel in the console cutout Eight wood screws (not provided) are required for securing the mounting brackets to the console (Figure 26).

Figure 26. Menu Panel Console Installation

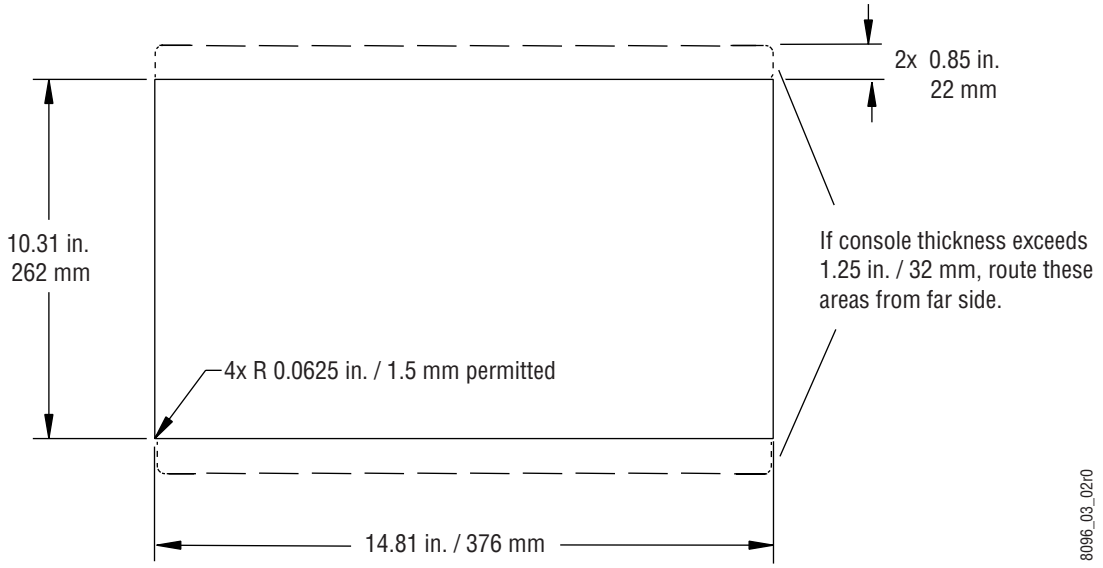


CAUTION Console thickness should not be less than 0.5 in./13 mm for proper support of the Menu panel.

The Menu panel attaches to the bracket using slotted holes, permitting a 1.5 in. (38 mm) range of height adjustment to accommodate different console thicknesses (Figure 26). For the best cosmetics, it is recommended to have the Main panel protrude slightly above the console surface to conceal the cut console edge.

Dimensions for the console cutout without the Flush Mount bezel are given in Figure 27.

Figure 27. Menu Panel Console Cutout Dimensions



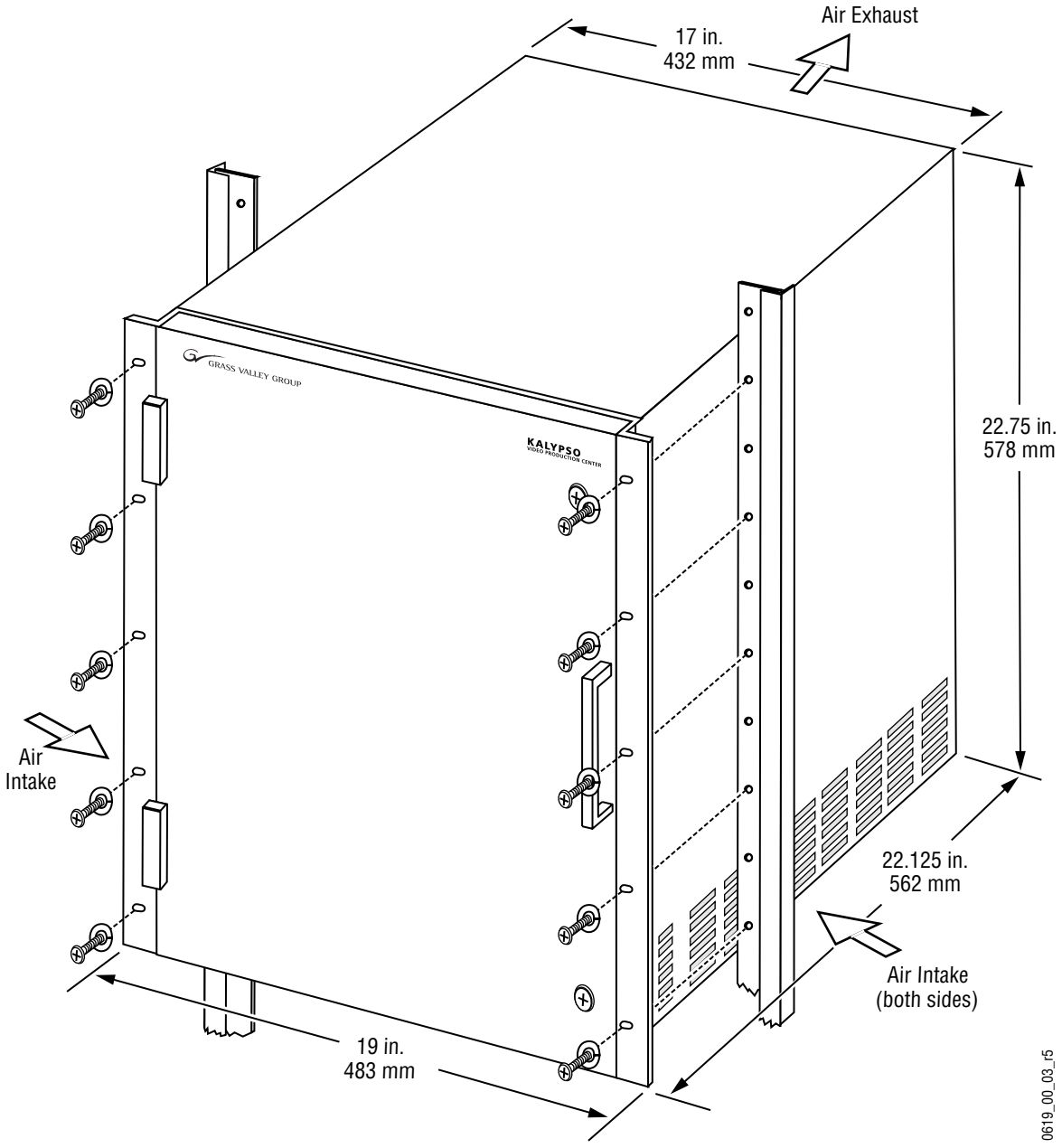
Power Cabling

The Menu panel normally receives its power from the Main panel. The Menu panel can be powered separately using the same model optional power supply available for the Local Aux panel (see Figure 18 on page 16).

Video Processor Frame

The Kalypso Video Processor frame is a 13 rack unit chassis which mounts in a standard 483 mm (19 in.) rack (Figure 28). It has a built-in cooling system consisting of a fan/plenum mounted in the upper section of the frame, and an air filter in the lower section. Cooling air is drawn in at the lower sides of the frame, up through the filter and modules, then expelled out the back of the fan/plenum. In racks with forced air cooling that enters from above, heated exhaust air may be forced down to the air intakes and cause elevated frame temperatures. In these cases installing ducts or baffles to keep airflows separate is advised.

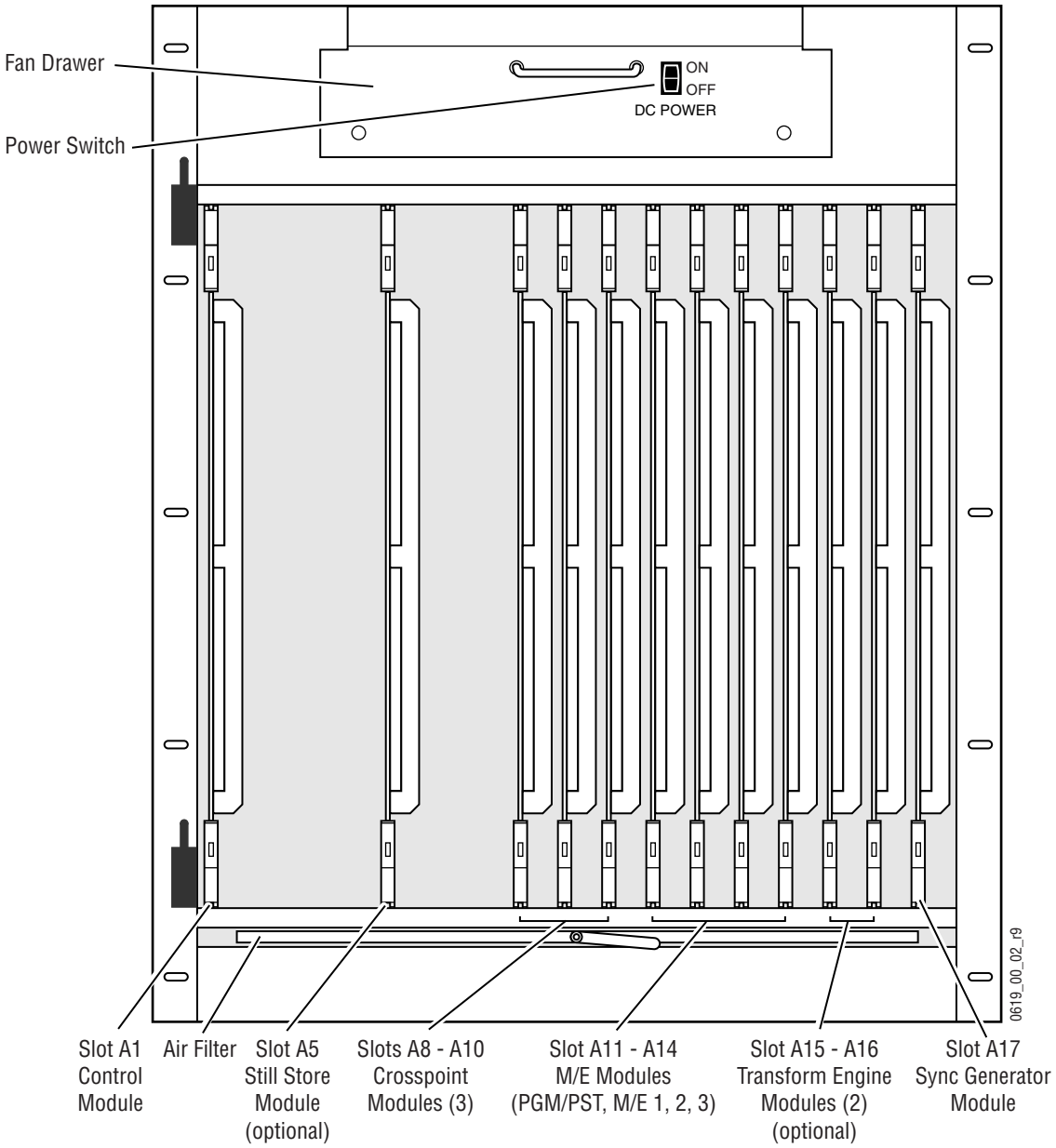
Figure 28. Video Processor Frame Dimensions



The Kalypso Video Processor frame has front and rear bays. The front bay (Figure 29) provides access to the Fan Drawer, Air Filter, and removable modules such as the Control, Crosspoint, M/E, and Sync Generator.

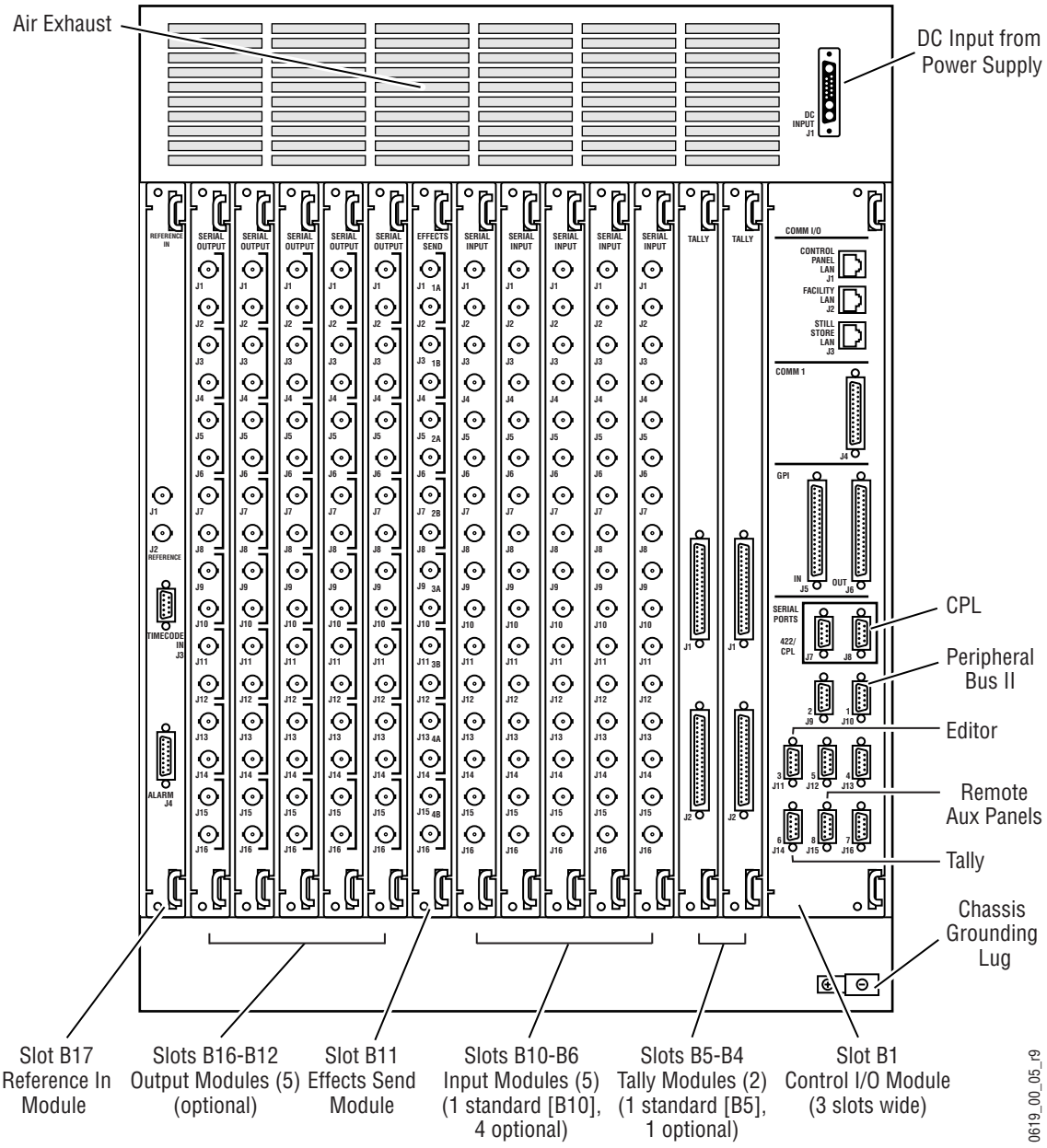
CAUTION For clarity, the Kalypso Video Processor frame is shown below with the front door removed. The front door must remain in place and closed during normal system operation to maintain maximum cooling efficiency.

Figure 29. Video Processor Frame, Front Bay View



Power, control, and video connections are made at the rear of the Video Processor frame. Figure 30 shows a fully loaded rear bay. Some of the front and rear bay modules shown in Figure 29 and Figure 30 are optional and may not be included in your system configuration.

Figure 30. Video Processor Frame, Rear Bay View



Video Processor Frame Options

Table 1 lists the modules that may be purchased as options.

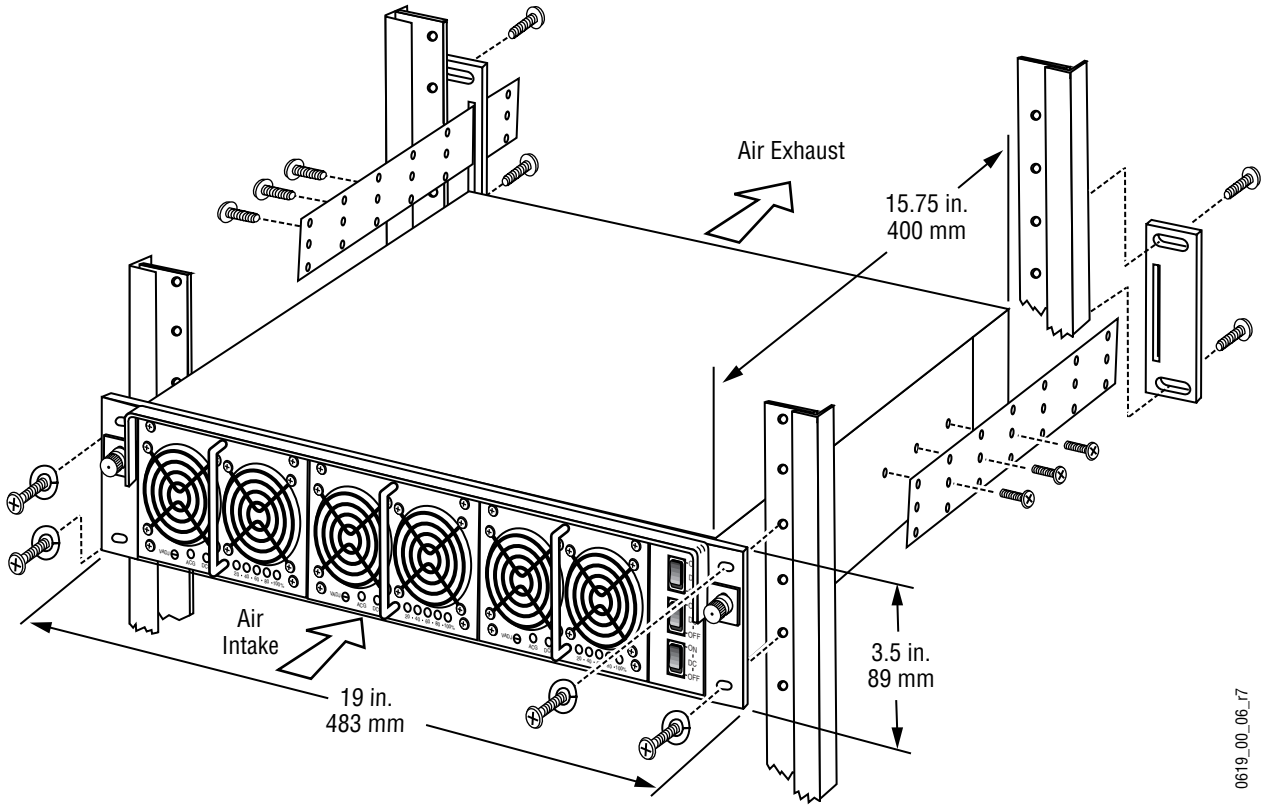
Table 1. Video Processor Frame Module Options

Option Name	Hardware Location (Frame Front/Rear)	Description
Transform Engine	Front, Slot 15 and/or 16	Each option module contains three transform engines.
Still Store	Front, Slot 5	Option includes two inputs, eight outputs. Storage for 100 frames, hard drive storage for thousands of frames, and animation capability.
Tally	Rear; either Tally slot indicated in Figure 30 may be used.	One Tally module is standard and one may be added as an option. The standard module provides tally relay closures one through 64. The optional module provides tally relay closures 65 through 128. Two levels of tally per module allowed.
Input Options	Rear; any of the Input module slots indicated in Figure 30 may be used.	One Input module is standard. Up to four optional Input modules may be added.
Output Options	Rear; any Output module slot indicated in Figure 30 may be used.	Up to five optional Output modules may be installed. (The Effects Send module, which is standard, may be used as an Output module for up to eight outputs.)

Video Processor Power Supply Frame

The Kalypso Video Processor Power Supply frame is rack-mountable, occupying two rack units (Figure 31). It is separate from the Video Processor frame and has its own cooling fans.

Figure 31. Video Processor Power Supply Frame Dimensions

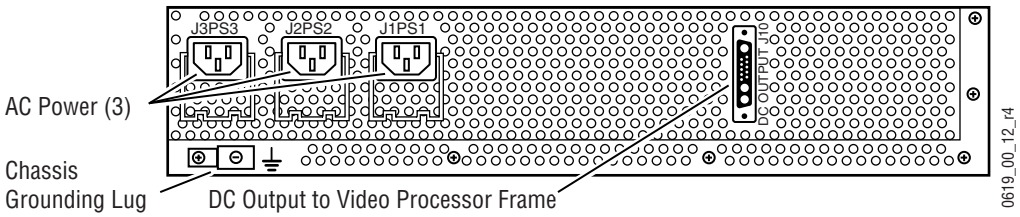


The power supply can contain up to three slide-in modules rated at 1000 watts each. Two power supply modules are required to run the system. An optional third module may be added to provide redundant power. With three modules installed, one module can fail without causing system failure. Modules are hot-swappable and current sharing. It is recommended that each module's AC input be connected to a separate AC supply circuit. Any module(s) for which a separate supply circuit is not available should be connected to a UPS.

A blank module can be installed in the empty slot when the power supply frame is not fully populated with three power modules. Every Kalypso power supply is shipped with one blank power module for this purpose, regardless of whether two or three power modules are ordered.

An included 1 m (3.28 ft) interconnecting DC power cable allows the Video Processor Power Supply frame to be installed either above or below the Video Processor frame. All power connections are located at the rear of the Video Processor Power Supply frame (Figure 32).

Figure 32. Video Processor Power Supply Frame, Rear View



Optional System Components

Remote Aux Panels

Remote Aux panels control Kalypso aux buses from remote locations. Three 24-Crosspoint and two 32-Crosspoint Remote Aux panel configurations are available for Kalypso systems. Refer to Table 2 and the following sections for panel-specific information.

Table 2. Remote Aux Panel Summary

	24-Crosspoint Aux Panel	32-Crosspoint Aux Panel
Connection	Serial Port Daisy Chain	Ethernet
Maximum Panels[1]	32	40
External Sources Controlled	48 (24 unshifted, 24 shifted)	64 (32 unshifted, 32 shifted)
Available Configurations	KAL-24AUX1 (1 RU, single bus)	KAL-32AUX1 (single bus)
	KAL-24AUX2 (2 RU, single bus)	KAL-32AUX2 (16 bus delegate buttons)
	KAL-24AUX3 (3 RU, 18 bus delegate buttons)	--

[1] A maximum of 40 Remote Aux panels, in any combination, can be connected to a 4-M/E or 2-M/E.

Remote aux panels may be purchased with the Kalypso system or added at a later time. For more information on Kalypso options, refer to the Kalypso *Data Sheet* or Grass Valley Group *Full Line Product Catalog*. Online documentation is available on the Grass Valley Group web site. The URL for the Grass Valley Group web site is found on the copyright page at the front of this manual.

Note Remote Aux panels used with Model 2200, 3000, and 4000 systems can be upgraded to 24-Crosspoint functionality for use in a Kalypso environment. See the Kalypso *Model 4000 Remote Aux Panel Upgrade Instruction Manual* for details. Online documentation is available on the Grass Valley Group web site. The URL for the Grass Valley Group website is found on the copyright page at the front of this manual.

24-Crosspoint Remote Aux Panels

These panels are designed to select 48 external sources (24 unshifted and 24 shifted). Thirty-two 24-Crosspoint Remote Aux panels can be daisy-chained on a single serial control port on either the 4-M/E or 2-M/E Video Processor frame. Three panel configurations are available, identified by the number of rack units (RUs) each occupies in a standard 19 in. (483 mm) equipment rack (see Figure 3 through Figure 34). The 1 and 2 RU panels (KAL-24AUX1 and KAL-24AUX2) are dedicated to a single bus. The 3 RU panel (KAL-24AUX3) panel has 18 bus delegate buttons. All three panels have the same connectors and DIP switches as that depicted for the KAL-24AUX1 in Figure 35 on page 30.

Figure 3. KAL-24AUX1 (1 RU)

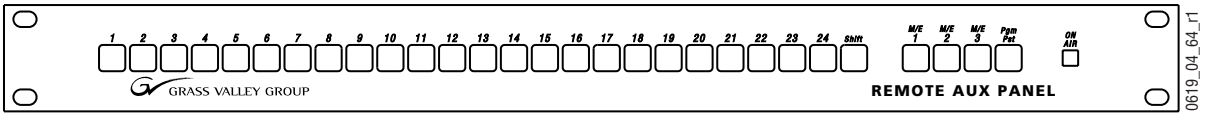


Figure 33. KAL-24AUX2 (2 RU)

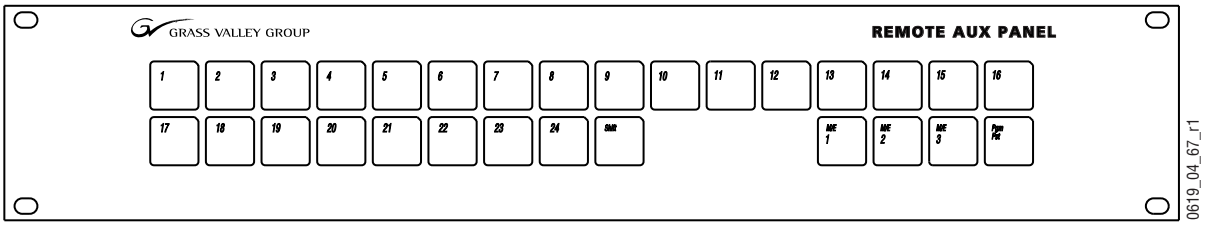
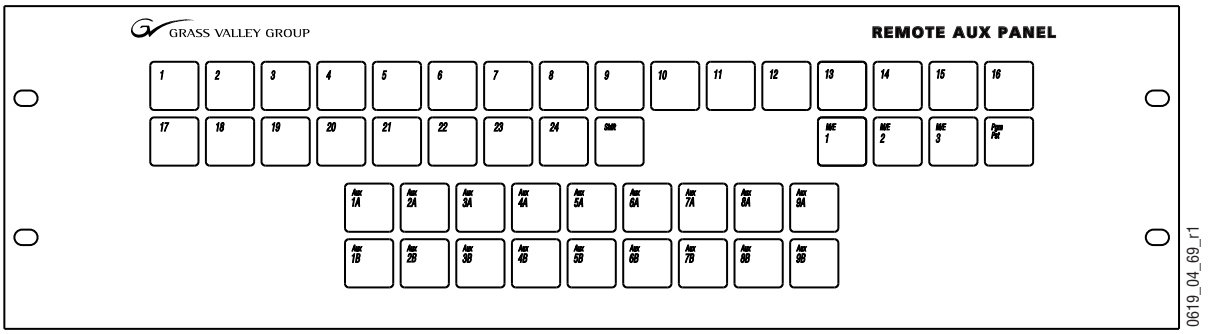


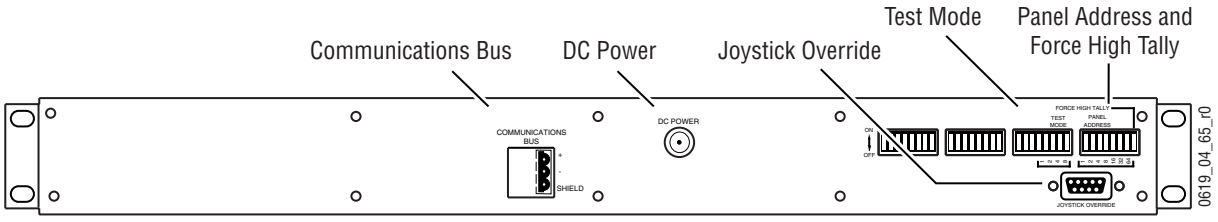
Figure 34. KAL-24AUX3 (3 RU)



24-Crosspoint Remote Aux Connections

The 24-Crosspoint Remote Aux rear panels have connectors for DC power, Communications Bus, and Joystick Override (Figure 35).

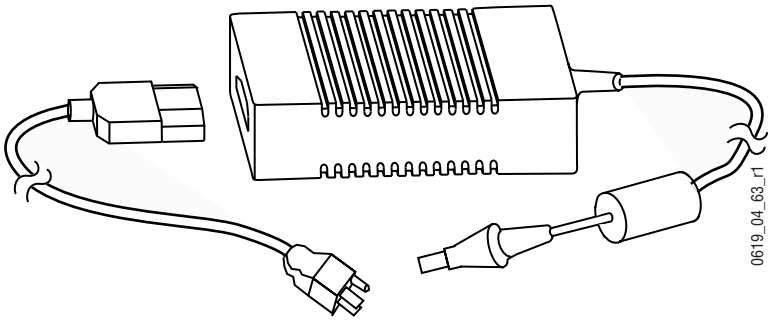
Figure 35. KAL-24AUX1 (1 RU), Rear View



Note All KAL-24AUX rear panels have similar layouts and have the same connectors.

Power Supply – The 24-Crosspoint Remote Aux panel power supply (Figure 36) should be securely fastened to a horizontal surface or attached to a support inside the equipment rack. Verify that the power supply cord reaches the 24-Crosspoint Remote Aux Control panel and the AC source.

Figure 36. KAL-24AUX Power Supply



Communications Bus – The communications bus cable connector shipped with each panel must be attached to the supplied cable or a user fabricated cable (refer to Figure 37). The supplied cable is 50 m (164 ft) long and has a pre-wired 9-pin D connector on one end. If fabricating a cable, use a shielded twisted pair cable such as Belden 8451 and refer to Table 4 for wiring connections.

Thirty-two 24-Crosspoint Remote Aux panels can be daisy-chained on a single serial control port on either the 4-M/E or 2-M/E Video Processor frame, but the total length of cable in the panel daisy-chain cannot exceed 320 m (1000 ft). Allow enough cable to reach each control panel connector, plus about 1 m (approximately 3 ft) extra.

Figure 37. KAL-24 AUX Communications Bus Connector Cable Wiring

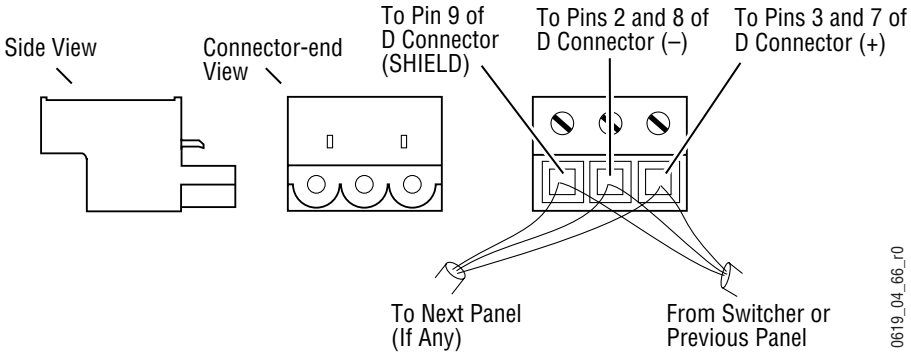
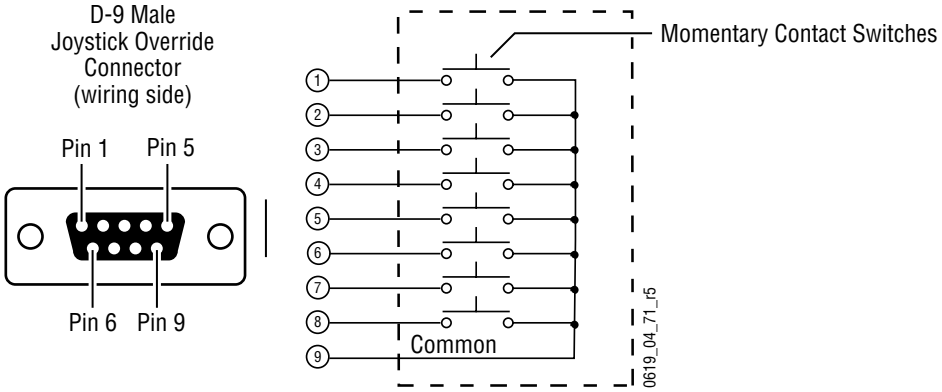


Table 4. Cable Polarity

Panel Connector	D-Connector Pins	Factory Supplied Cable
+ (Plus)	3 and 7	Red
- (Minus)	2 and 8	Black
Shield	9	Shield

Joystick Override – A user fabricated cable, external switch, and a 9-pin D connector are required to implement camera joystick override. Use shielded cable and connect the shield to the metal connector shell when fabricating the joystick override cable. Refer to Figure 38 for connector wiring.

Figure 38. KAL-24AUX Joystick Override Connector Cable Wiring



32-Crosspoint Remote Aux Panels

These panels are designed to select 64 external sources (32 unshifted and 32 shifted). The number of 32-Crosspoint Remote Aux panels that can be network connected to either the 4-M/E or 2-M/E Video Processor frame is 40. Two panel configurations are available, identified by the number of rack units (RUs) each occupies in the standard 19 in. (483 mm) equipment rack (see Figure 39 and Figure 40). Both panels have the same connector layout as that depicted for the KAL-32AUX1 in Figure 41.

The 1 RU panel (KAL-32AUX1) is dedicated to a single bus. The 2 RU panel (KAL-32AUX2) panel has 16 bus delegate buttons, that can be any of up to 16 Aux buses in the switcher.

Figure 39. KAL-32AUX1 (1 RU)

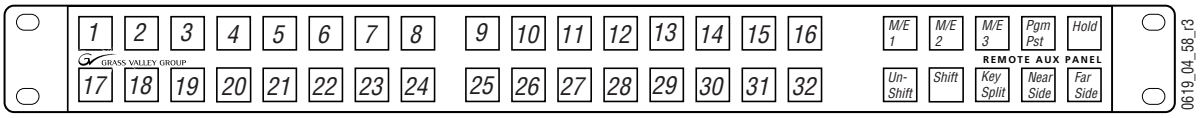
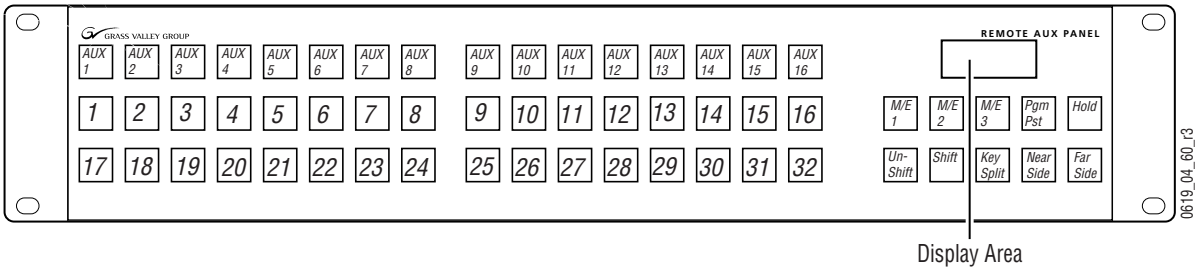


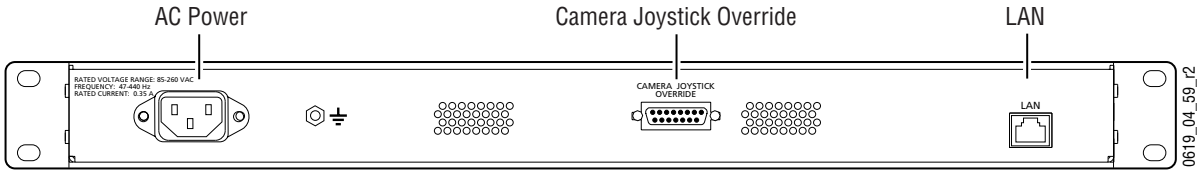
Figure 40. KAL-32AUX2 (2 RU)



32-Crosspoint Remote Aux Connections

The 32-Crosspoint Remote Aux rear panels have connectors for AC power, LAN, and Camera Joystick Override (Figure 41).

Figure 41. KAL-32AUX1 (1 RU), Rear View



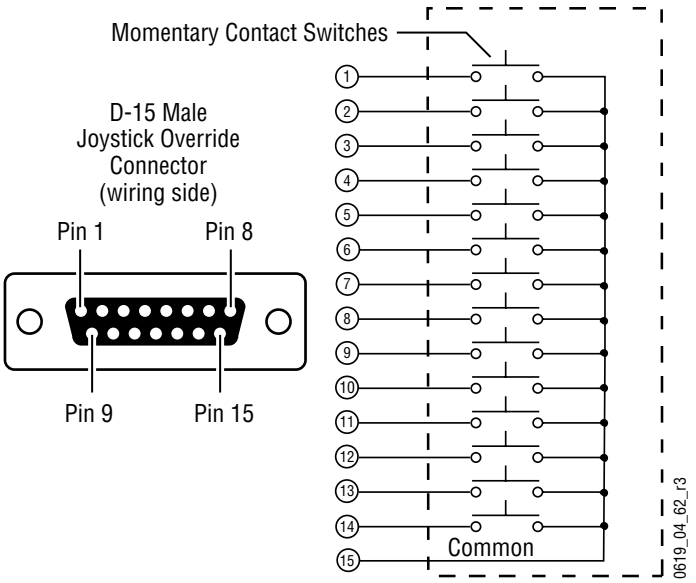
Note The rear panel layout is the same for both KAL-32AUX panels.

AC Power – The 32-Crosspoint Remote Aux panels have internal power supplies which connect directly to facility AC power by supplied line cords.

LAN – The 32-Crosspoint Remote Aux panels employ Ethernet network configuration. Refer to *Ethernet Switches and Hubs* on page 45 for information on system topography.

Camera Joystick Override – A user fabricated cable, external switch, and a 15-pin D connector are required to implement camera joystick override. Use shielded cable and connect the shield to the metal connector shell when fabricating the joystick override cable. Refer to Figure 42 for connector wiring.

Figure 42. KAL-32AUX Joystick Override Connector Cable Wiring



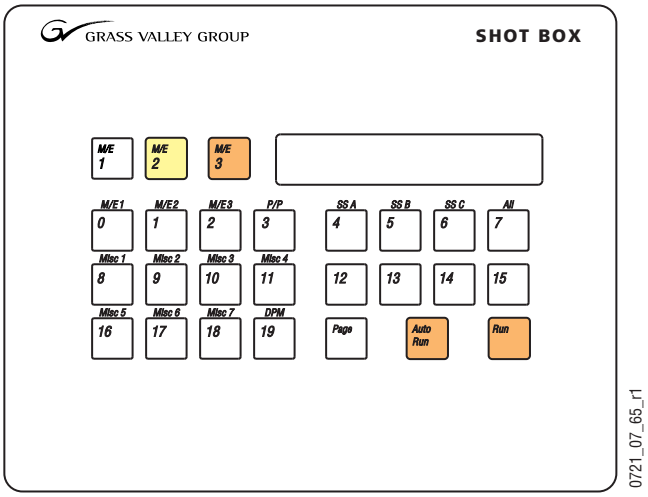
Shot Box

The E-MEM Shot Box (Figure 43) is a separate panel that is designed for rapidly recalling previously built effects. Features include single button delegation for M/E 1, 2, 3, or PGM/PST, five pages of 20 registers allowing access to all 100 registers, register and page readout display, and Pvw, Run and Auto Run controls.

Note The Shot Box option is initially being released with limited functionality. A fully featured version is planned for a future software release. An upgrade path will be available at that time.

The initial Shot Box operates with Release 5.0 and higher software versions using the Editor protocol.

Figure 43. Kalypso Shot Box



Installation

The dimensions in Figure 44 allow clearance for sheet metal and fasteners, and provide top plate overlap of approximately 0.6 in. (15 mm) on all sides. If the mounting surface is 0.75 in (19 mm) or less in thickness, the mounting nuts will not need to be countersunk (Figure 44). Refer to Figure 45 for exact screw placement and sheet metal dimensions.

Figure 44. Shot Box Cutout

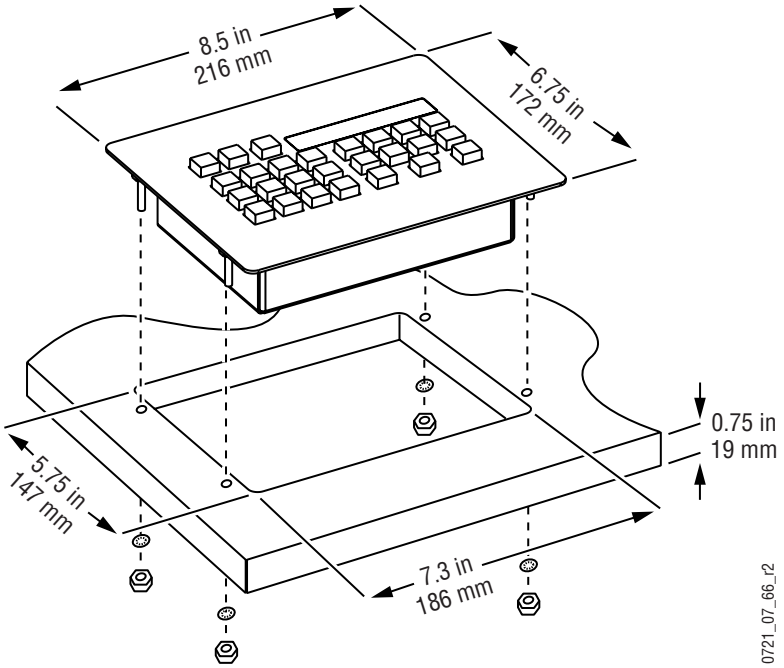
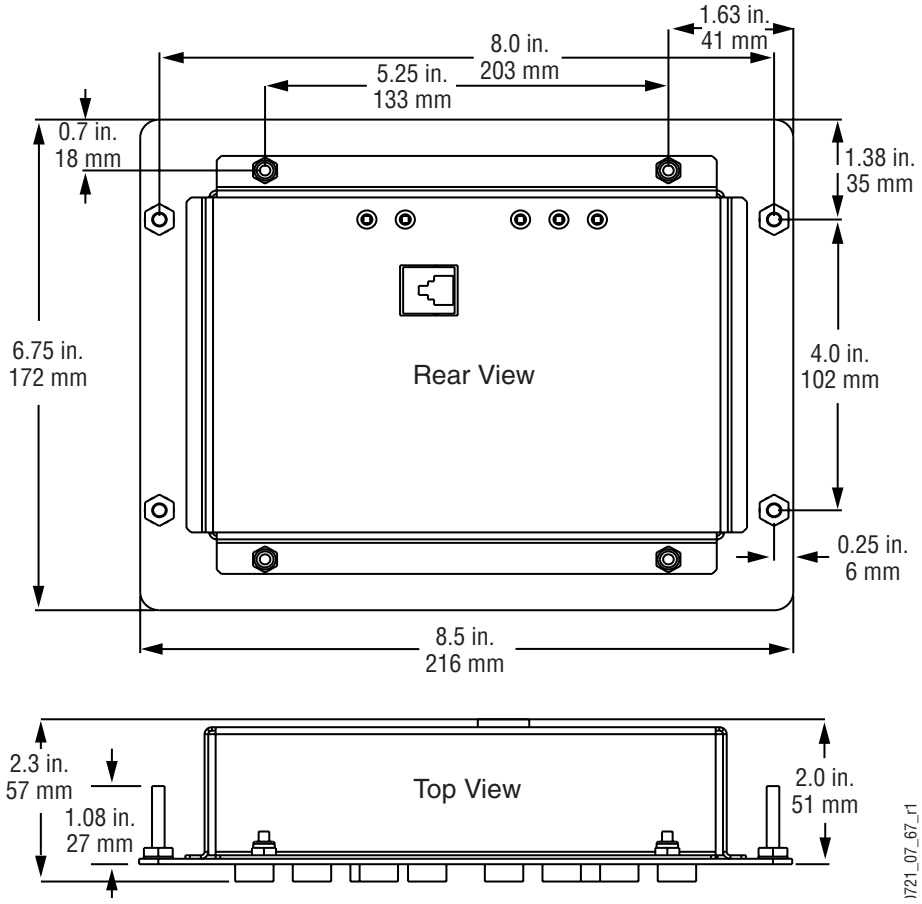


Figure 45. Shot Box Dimensions

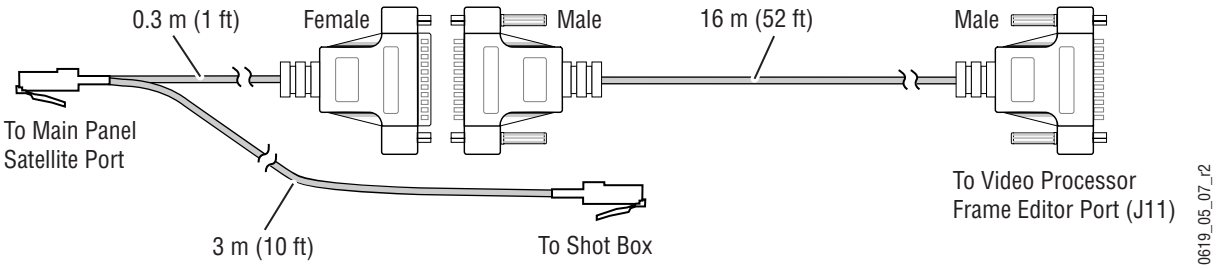


Cabling

The provided cables connect the Main panel, Shot Box, and Video Processor frame as shown in Figure 46. Power passes from the Main panel to the Shot Box over this cable.

Note When the fully functioning version of the Shot Box becomes available, the RJ-45 port on the rear of the Shot Box will connect (via a 3 m (10 ft) cable with RJ-45 connectors at both ends) to one of the Main panel Satellite ports.

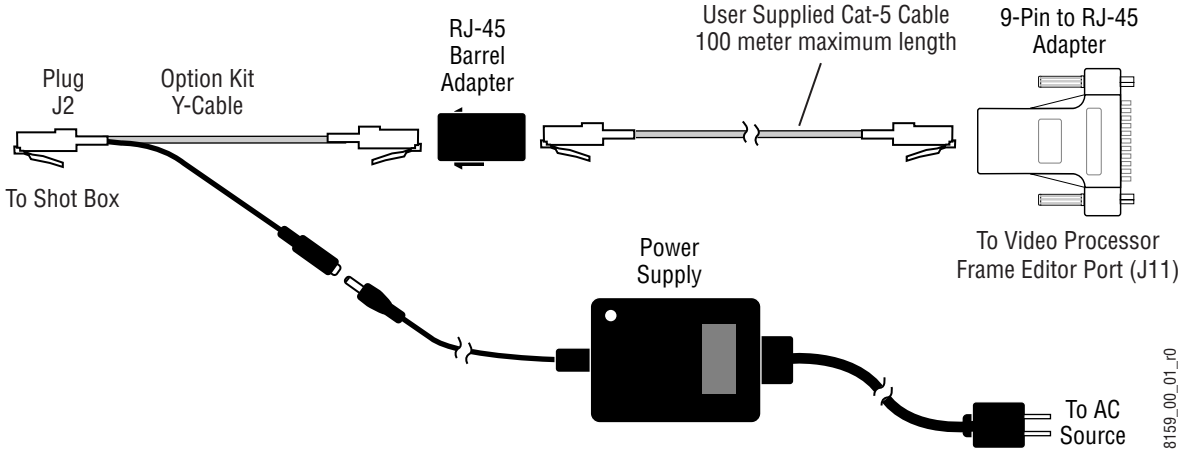
Figure 46. Provided Shot Box Cables and Connections



Optional Satellite Panel Extension

If the Shot Box is to be placed more than 3 m (10 ft) from the Main panel, an optional Satellite Panel extension kit is available, permitting installation up to 100 meters away. The kit consists of a Y-cable (to separate the communication path from the power path), a separate power supply, and two adapters. A Cat-5 extension cable of the desired length is to be provided by the end user. The Satellite Panel extension kit cabling replaces any existing Shot Box cabling (Figure 47).

Figure 47. Shot Box Panel Extension Cabling, Editor Port Connection



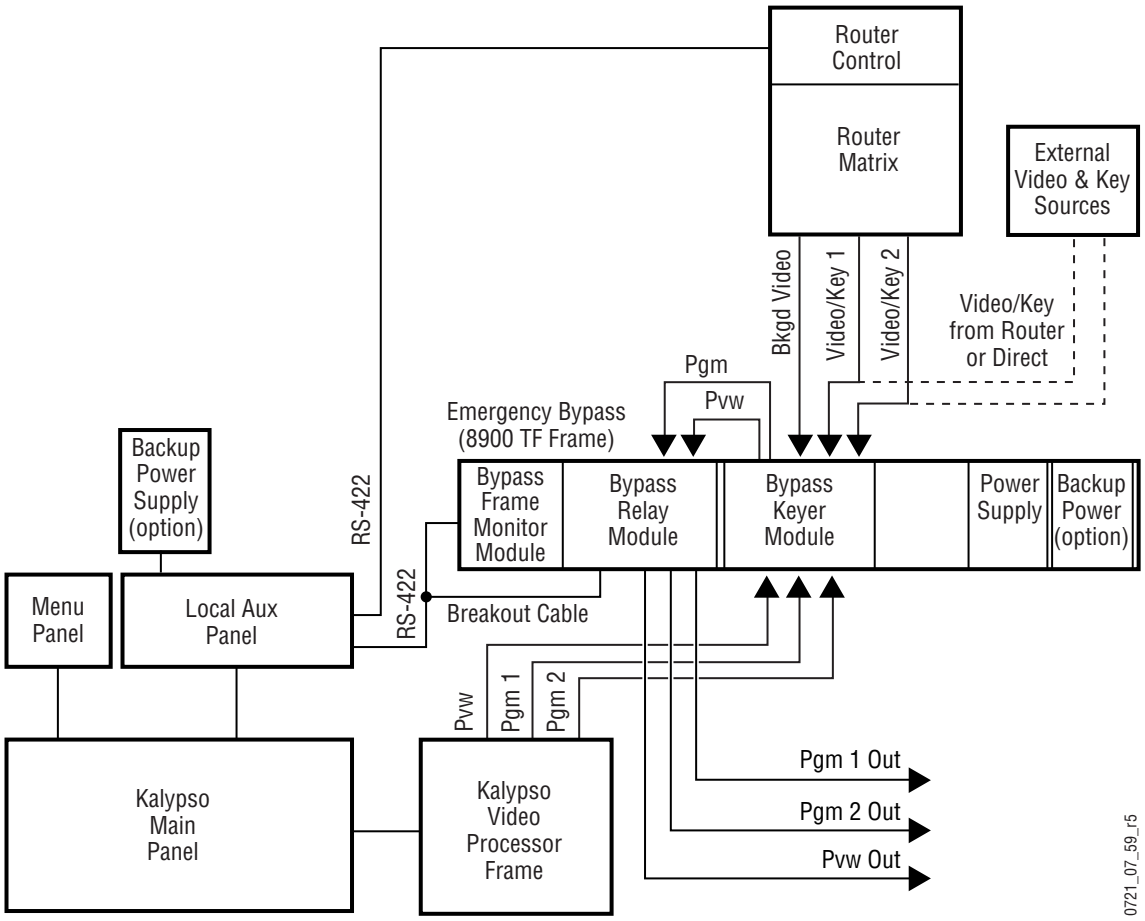
Note When the fully functioning version of the Shot Box becomes available, the RJ-45 port on the rear of the Shot Box will connect to one of the Main panel Satellite ports, and the 9-pin to RJ-45 adapter will not be used.

Emergency Bypass

The Emergency Bypass system provides basic switching capability should a component in the Kalypso system fail or lose power. The Emergency Bypass option uses an external router to perform the actual source selections. Operator control is provided by the Local Aux panel. If the Kalypso system Main panel and/or the Video Processor frame fails, the Local Aux subpanel, Emergency Bypass frame, and facility router can still provide basic switching and keying capability.

An example of an installed Kalypso Emergency Bypass system is shown in Figure 48.

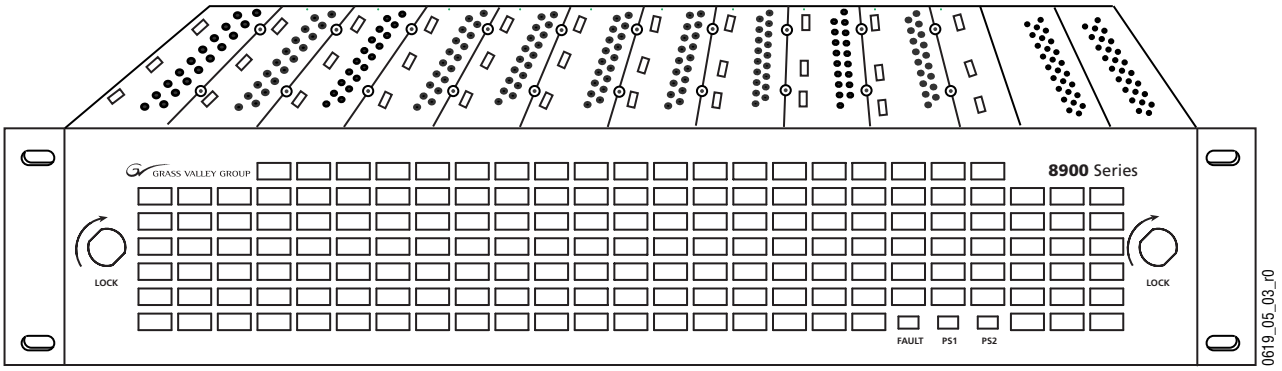
Figure 48. Emergency Bypass System



Emergency Bypass Frame

The 2 RU Emergency Bypass frame (Figure 49) fits a standard 19 in. (483 mm) equipment rack (See *Specifications* on page 55 for dimensions). Behind the front cover are ten slots for modules, plus one control slot and two slots for power supplies. The standard Kalypso Emergency Bypass option only uses two of these slots, typically slot 7 for the Relay Module and slot 8 for the Keyer module.

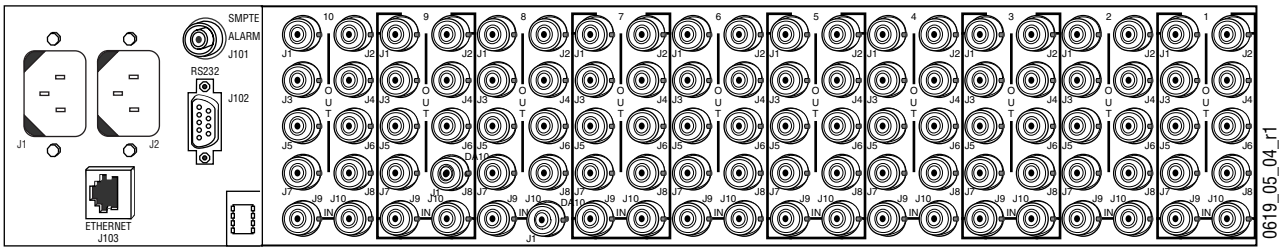
Figure 49. 8900TF Frame, Front View



The forced-air system has a front cover equipped with three fans for air circulation. The fan speed varies with the ambient frame temperature. Fan speed control voltage is generated on the Kalypso Emergency Bypass Frame Monitor module and can be disabled so that the fan runs at maximum speed only.

The right rear of the frame (Figure 50) includes ten groups of ten connectors (corresponding to the ten frame slots), which are used for input/output functions for inserted modules.

Figure 50. 8900TF Frame, Rear View



The power and communication section at the left rear of the frame provides RS-422 communications (the connector is labeled RS-232, but is RS-422 when the Kalypso Emergency Bypass Frame Monitor module is installed), AC power plug connections, and SMPTE Alarm BNC (J101) for fault reporting. The Ethernet connector is not used with the Kalypso Emergency Bypass option.

Frame Restrictions

Although the Emergency Bypass frame is derived from Grass Valley Group's 8900 Series Modular frame, it has been designed specifically for the Kalypso system, making the frame suitable only for Emergency Bypass modules.

CAUTION Do not plan to install any other types of 8900 series modules in the Emergency Bypass frame.

Power Supply Options

Redundant power options include:

- Redundant power supply for the Emergency Bypass frame, and
- Redundant power for the Local Aux panel: a 4-M/E Local Aux panel can use up to two redundant power bricks while only one can be used for a 2-M/E Local Aux subpanel (see *Power Cabling* on page 15).

See the Kalypso *Emergency Bypass Option Installation Instructions* and the 8900 Series Modular and SMS 7000 Router documentation sets for detailed information. Online documentation is available on the Grass Valley Group web site. The URL for the Grass Valley Group website is found on the copyright page at the front of this manual.

8950ADC Module - 4:4:4 Chroma Key Processing

The 8950ADC module in Grass Valley Group's 8900 modular product line can be configured to support full bandwidth chroma key processing on the Kalypso system.

Overview

In CCIR-601 digital signals, luminance (Y) is sampled at twice the rate of the two chrominance signals (Cr, Cb) – hence the 4:2:2 designation to indicate the sampling rate for Y:Cr:Cb respectively. So every pixel on the screen has a unique luminance value, but color information is transmitted for every other pixel. The receiving device typically repeats one chrominance value for two pixels, or generates the missing values by some form of interpolation. In neither case is the information regained that was lost by the original filtering to 4:2:2. This works for most video processing and transmission applications since the human eye is not nearly as responsive to color changes as it is to luminance changes. However, in chroma key processing, the user is selecting a particular color out of a scene, so chrominance bandwidth is paramount to achieving the best results.

In most cases, you can achieve excellent results even when using a 4:2:2 signal as both the video fill and the chroma key source. Pre-processing in the chroma keyer uses interpolation as described above in order to have a

chrominance value for each pixel. In some critical applications, however, there is something to be gained by utilizing unique chrominance values for each pixel for the highest input resolution when computing the chroma key.

It is important to note that the chroma keyer always does 4:4:4 processing. However, if the key source is a 4:2:2 signal, the chroma keyer computes the missing samples using interpolation. In the case of full bandwidth key sources, the chroma keyer actually receives chrominance samples for every pixel location from the external device.

Kalypso Solution

The Kalypso Video Production Center has a superior solution for full bandwidth chroma keys which keeps analog-to-digital conversion out of the digital switcher chassis and minimizes the number of input BNCs consumed by each 0:4:4 source. In addition, customers can accommodate any number of 0:4:4 sources as desired — limited only by the number of available digital inputs.

The Kalypso Video Production Center keeps analog signals out of the digital switcher chassis, but uses only two SDI input BNCs for a full bandwidth chroma key. The video fill is still a CCIR-601 standard video signal which comes in on one of Kalypso's inputs. The key source comes in on a separate input BNC.

The 8950ADC module has a special 0:4:4 mode that takes the RGB analog input from a camera or other chroma key source and converts it to a special 0.4.4. signal format for Kalypso. One 8950ADC module is used for each full bandwidth chroma key source.

As far as the Kalypso input board and crosspoint system know, the key source looks just like any other standard CCIR-601 video signal. However, all of the 0:4:4 chrominance samples you need to do a full bandwidth chroma key are present in the luminance and chrominance data bits of the CCIR-601 signal.

Note This special 0:4:4 chroma key signal cannot be viewed on a standard digital waveform monitor.

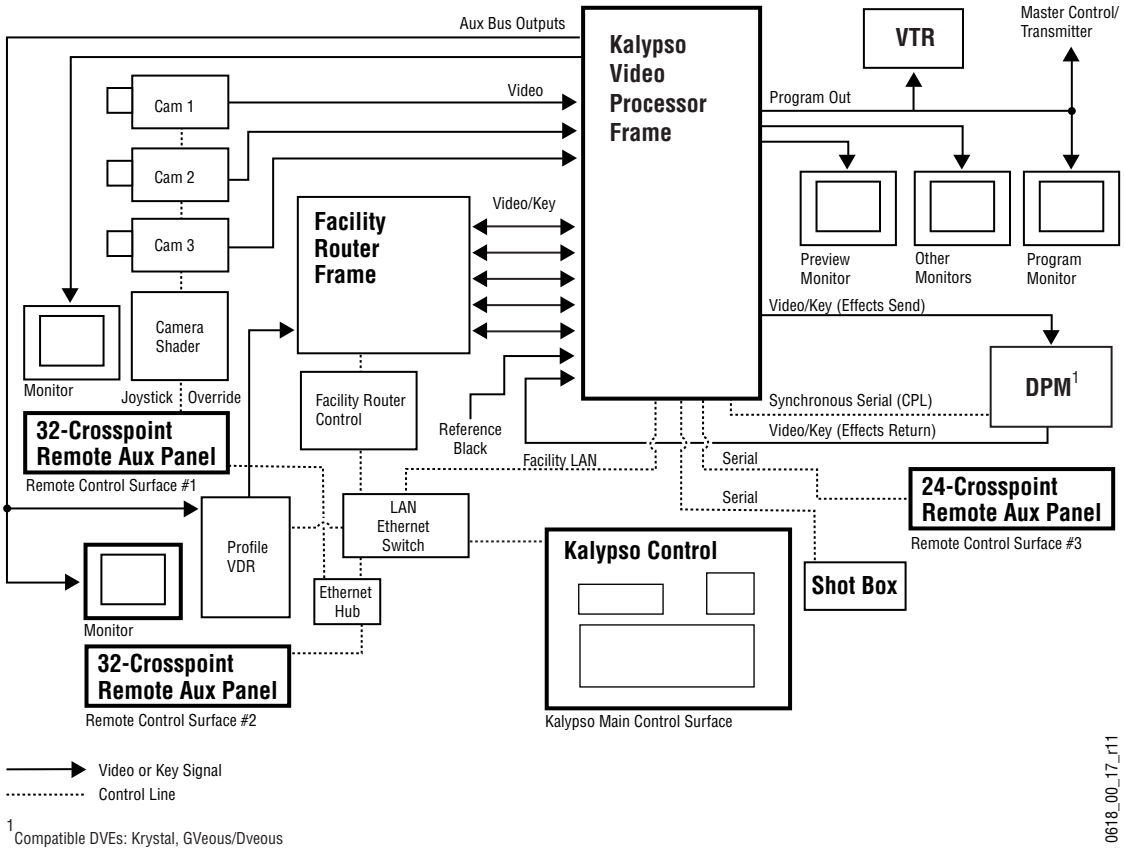
Any pair of Kalypso inputs may be used for a 4:2:2 / 0:4:4 chroma key fill/source pair, so the total number of full bandwidth chroma key inputs is limited only by the total number of Kalypso inputs available.

See the *8950ADC Analog to Component Digital Converter Instruction manual* for detailed information. Online documentation is available on the Grass Valley Group web site. The URL for the Grass Valley Group website is found on the copyright page at the front of this manual.

Typical Kalypso System Video Cabling

Typical Kalypso system connections are shown in Figure 51. Different video and control wiring configurations may be used to meet individual facility requirements. All Kalypso system video inputs and outputs are configurable. Each input can be mapped to any Kalypso panel source select button, and any Kalypso system video signal can be mapped to any pair of output connectors.

Figure 51. Typical Kalypso System

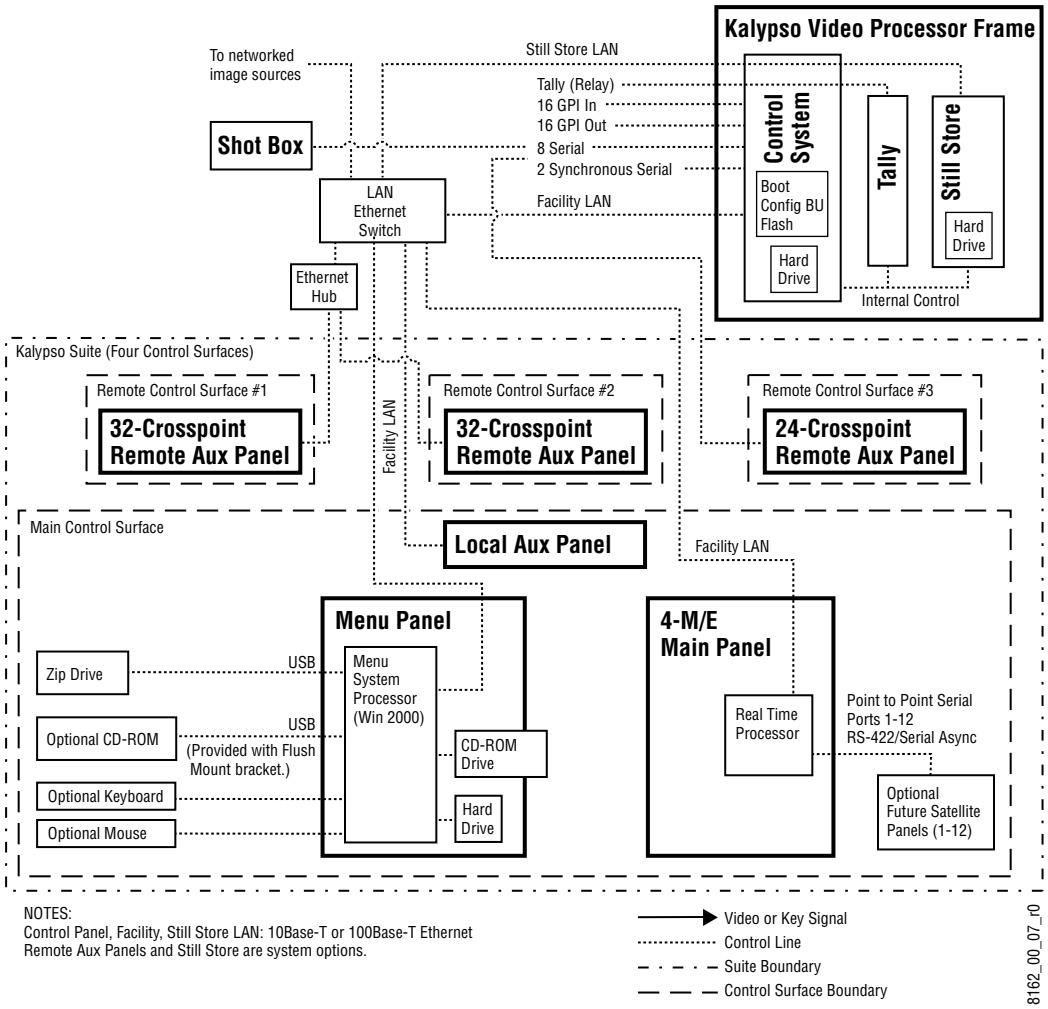


Kalypso System Control Cabling

The Kalypso system uses Ethernet, serial, parallel, and SCSI control. Tally and GPI control are also available (see Figure 52 and Figure 53). Refer to Table 5 on page 44 for a list of supplied cables.

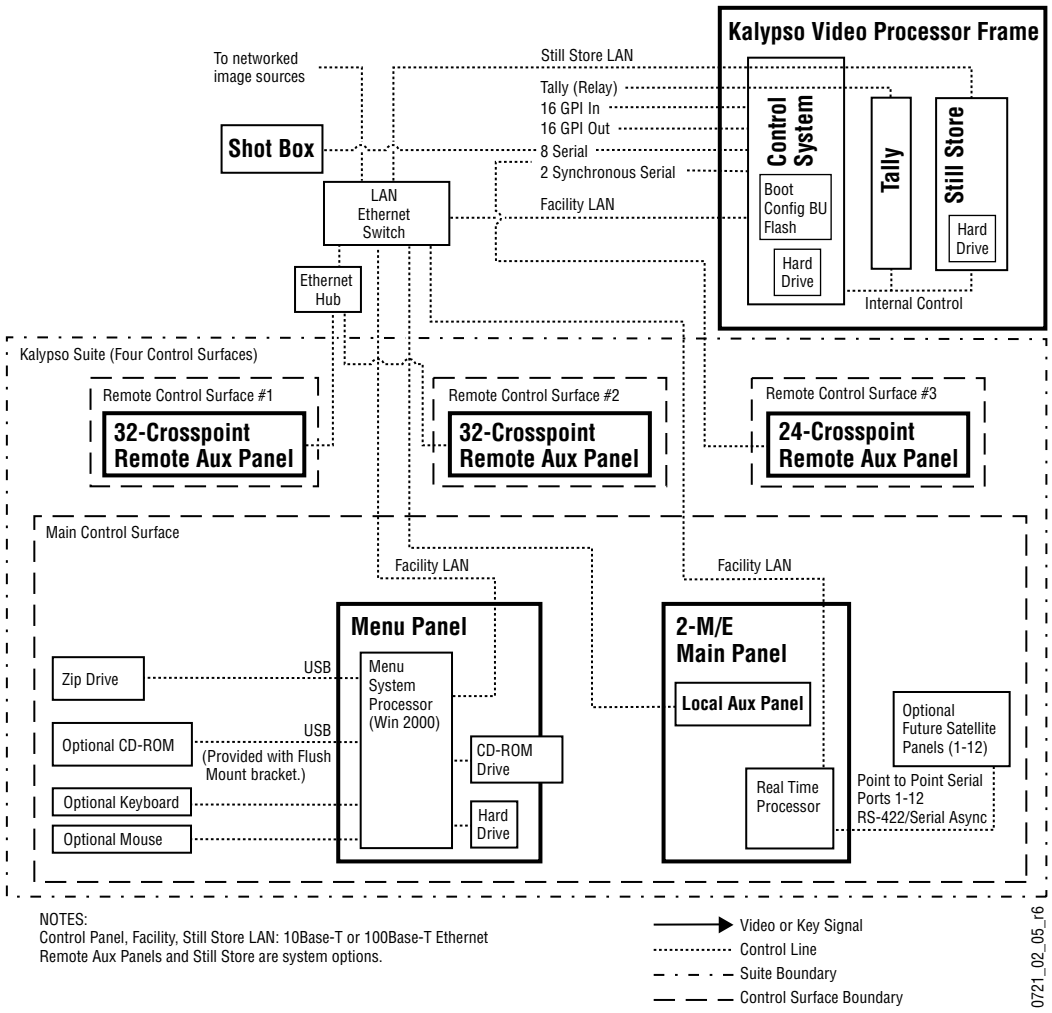
4-M/E Kalypso System

Figure 52. Typical 4-M/E Kalypso System Control



2-M/E Kalypso System

Figure 53. Typical 2-M/E Kalypso System Control



Cables Provided

The following cables are provided with a standard 4-M/E system. All Ethernet components must be supplied by the customer.

Table 5. Supplied Cables

Cable	Description	Quantity	Part Number
Power Supply AC line cord	AC line cord kit	1	
Power Supply to Frame DC supply cable	DC power cable	1	
Main Panel AC line cord	AC line cord kit	1	650-4175-XX
Main Panel to Local Aux Panel DC power[1]	8-pin DIN, male-to-male, 2 ft. (0.6 m)	1	174-4447-00
Main Panel to Menu Panel DC power	8-pin DIN, male-to-male, 10 ft. (3 m)	1	174-4447-10
Menu Panel to ZIP 250 USB	USB A to B, 6 ft. (1.8 m)	1	174-8160-00
Menu Panel to External CD-ROM USB[2]	USB extension male A to female A (1.8 m)	1	174-8168-00

[1] Pre-installed inside each 2-M/E Main panel

[2] Included only with Flush Mount Bracket kit.

Cables provided with the 2-M/E Kalypso system are identical to those supplied with the 4-M/E system, except Local Aux cabling is pre-installed inside the 2-M/E Main panel tub. Local Aux cable connections are located on the rear of the 2-M/E Main panel.

LAN Requirements

The Kalypso system requires an Ethernet Local Area Network (LAN). The Video Processor frame, Main panel, Local Aux and Menu panels, Still Store option, 32-Crosspoint Remote Aux panels and external Machine Control devices are all connected via an appropriately sized Ethernet switch (refer to Figure 54, Figure 55 and Figure 56).

CAUTION Ethernet hubs are not acceptable for the main Kalypso Ethernet interconnect. Use of a hub instead of a switch may cause sluggish responses to panel button presses and erratic lever arm motion. Connect all Kalypso nodes to the same switch to avoid sluggish or erratic response. An existing facility Ethernet switch (not hub) can support Kalypso if an adequate number of ports are available. Keep your facility network and technical network separate in order to avoid network traffic negatively affecting Kalypso system operation.

Refer to Table 6 for Ethernet specifications. All Ethernet components are supplied by the customer.

Table 6. Ethernet Specifications

Cables	**Type**[1]	100Base-T and 10Base-T compatible. Category 5 or 6 cable, 8 conductor twisted pair.
	Connectors	RJ-45 male connector at each end of cable.
	Length[2]	100Base-T: 100 m (328 ft) maximum. 10Base-T: 300 m (984 ft) maximum.
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 is not required, but does not provide remote monitoring capability.
	Managed	May be used. Requires configuration, but offers remote monitoring capability.

[1] 100Base-T required for core Kalypso system operation. 10Base-T used for 32-Crosspoint Remote Aux panels.

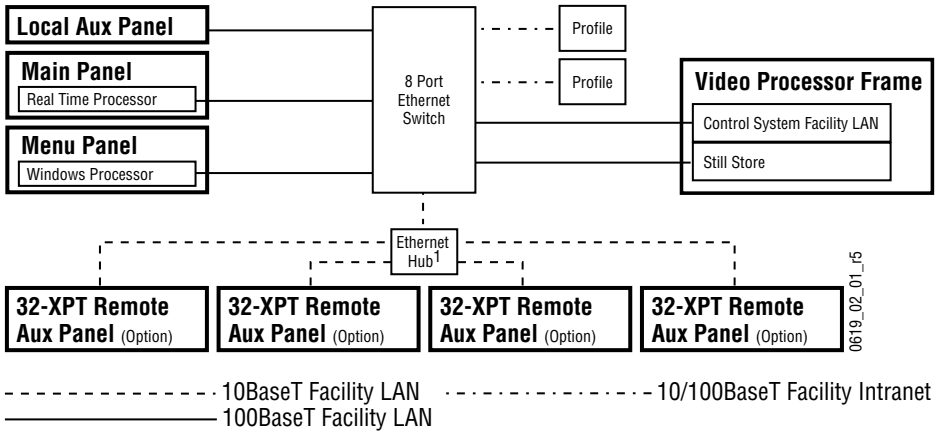
[2] Use a hub when necessary to exceed maximum cable runs.

Ethernet Switches and Hubs

Kalypso components rely primarily on Ethernet switches for LAN interconnects. Remote Auxiliary panels may be connected directly to the Kalypso switch, or through an Ethernet hub. A hub is required only if there is a need to exceed 100 m (328 ft) between the Main panel and Video Processor frame (refer to Figure 55 and Figure 56). If a hub is used, connect hub to switch via the Uplink port, or through a peer-to-peer (crossover) cable. Reserve a port on Kalypso's Ethernet switch if you will be utilizing an existing hub or switch (e.g., Omnibus LAN) (see Figure 55).

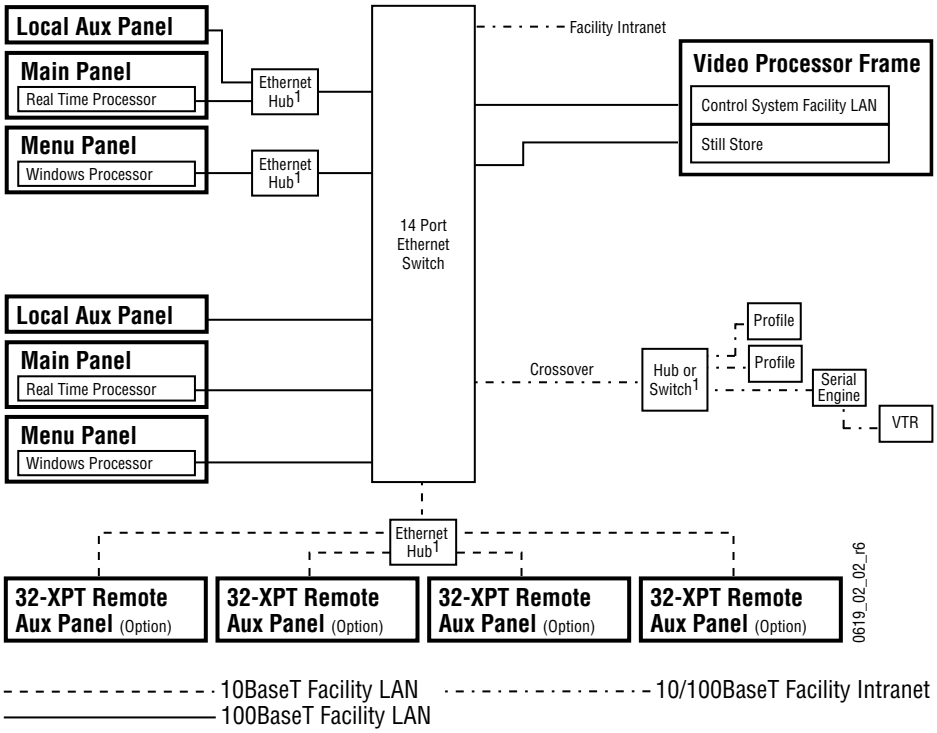
Note The number and type of components in your Kalypso system determines the size of the switch (number of ports) required. Refer to the following examples of system topography and the accompanying worksheet to determine the number of ports required for your system.

Figure 54. Example Topography Requiring an Eight Port Ethernet Switch



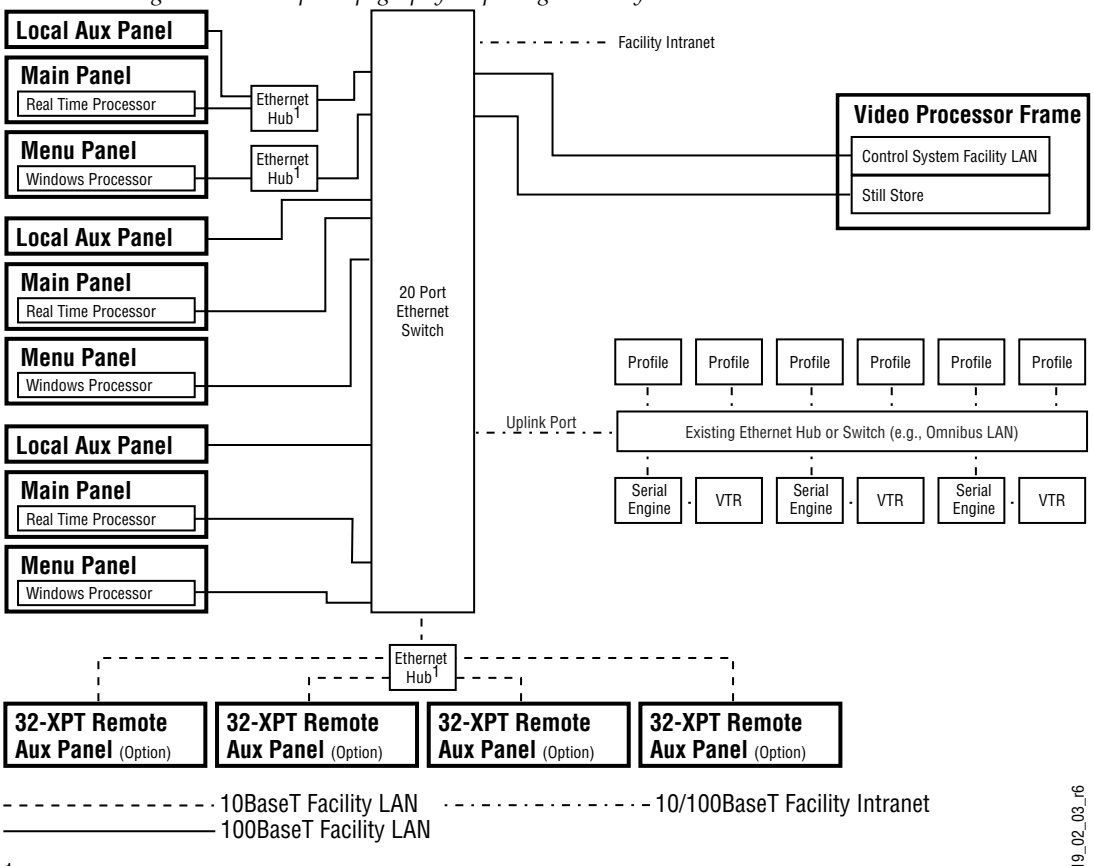
[1] Use hubs to exceed 100 m (328 ft.) cable limitations.

Figure 55. Example Topography Requiring a Fourteen Port Ethernet Switch



1 Use hubs to exceed 100 m (328 ft.) cable limitations.

Figure 56. Example Topography Requiring a Twenty Port Ethernet Switch



0619_02_03_r6

1 Use hubs to exceed 100 m (328 ft.) cable limitations.

Standard System Components	Ports Required		Number of Components		
Frame	3	x		=	
Main Control Panel	1	x		=	
Local Auxiliary Panel	1	x		=	
Menu Panel	1	x		=	
Kalypso Options					
Facility Intranet	1[1]	x		=	
32-Crosspoint Remote Aux Panel Hub	1[1]	x	(# of Hubs)	=	
Kalypso Machine Control Option					
Profiles (Direct to Switch)[2]	1[1]	x		=	
Profiles (Hub or Switch)[3]	1[1]			=	
Existing Omnibus System (Hub or Switch)[3]	1[1]			=	
			Total Number of Ports Required:		

1 No port required if option not installed.

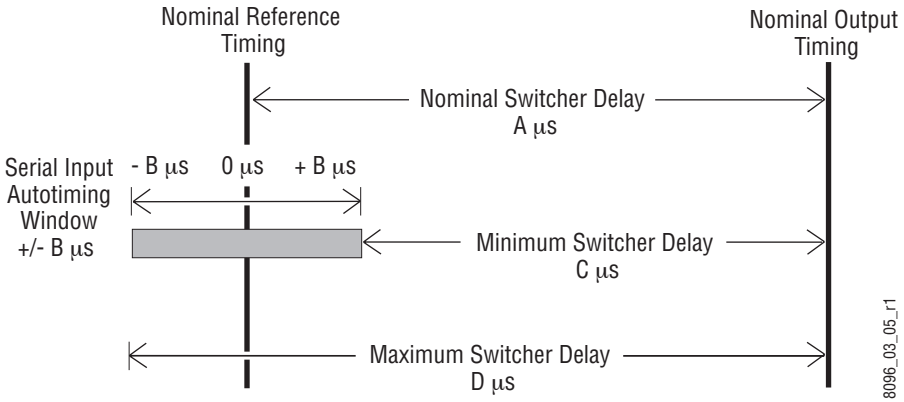
2 Connect devices directly to the Kalypso switch in small systems which have no other Omnibus components (Figure 54).

3 An existing system will typically have a switch or hub which connects all Serial Engines, Profiles and Machine Control system control panels and managers. Use an Uplink port on the Machine Control switch to make the switch-to-switch or switch-to-hub connection. Alternatively, one port on the switch can be connected to the Kalypso switch via a peer to peer (crossover) cable (Figure 56).

Kalypso 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 automatically autotime inputs that fall within an autotiming window (± B µs). Inputs must be within this range to be properly timed at the output. The calculation of the actual video delay of a specific input is the Nominal Switcher Delay minus the input time location within the autotiming window (the time location value can be zero, positive, or negative). A timing diagram of the input autotiming window and various switcher delay values is provided in Figure 57.

Figure 57. Switcher Timing Diagram



Note For both 525 and 625 switcher operation, the approximate maximum switcher delay is one line of video.

- For inputs entering the switcher in zero time with the reference, the total delay through the switcher is 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 time required for switcher processing. This value is the Minimum Switcher Delay (C µs).
- Inputs that reach the switcher at the earliest point in the autotiming window (-B µs) will have a total delay equal to the Nominal Switcher Delay (A µs) plus the autotiming window range. This value is the Maximum Switcher Delay value (D µs).

Delay values for a Kalypso system are given in Table 1.

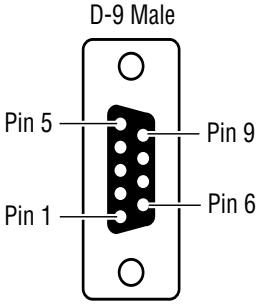
Table 7. Kalypso System Video Delay Values

Nominal Switcher Delay	A	53 µs
Serial Input Autotiming	B	+/- 10 µs
Minimum Switcher Delay	C	43 µs
Maximum Switcher Delay	D	63 µs

Pinouts

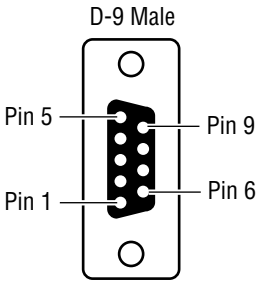
Main Control Panel

Table 8. Console Ports

Console Ports	Pin	Menu Proc. Com 1, Menu Proc. Com 2, Menu Proc. Com 3, Real Time Proc. Com 2
	1	DSD
	2	RXD
	3	TXD
	4	DTR
	5	Chassis Ground
	6	DSR
	7	RTS
	8	CTS
	9	Reserved

Menu Panel

Table 9. Menu Panel Serial Ports

Serial Ports RS-232	Pin	Menu Proc. COM 3	Menu Proc. COM 4
	1	DSD	DSD
	2	RXD	RXD
	3	TXD	TXD
	4	DTR	DTR
	5	Chassis GND	Chassis GND
	6	DSR	DSR
	7	RTS	RTS
	8	CTS	CTS
	9	Menu Reset[1]	RI (Ring Indicator)

[1] Open circuit or Mark (-5 to -15 volts) is run. Space (+5 to +15 volts) is reset.

Video Processor Frame

Control I/O Module

Table 10. RS-232 Port

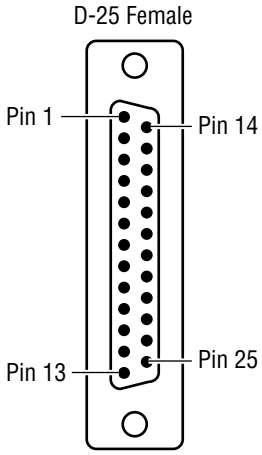
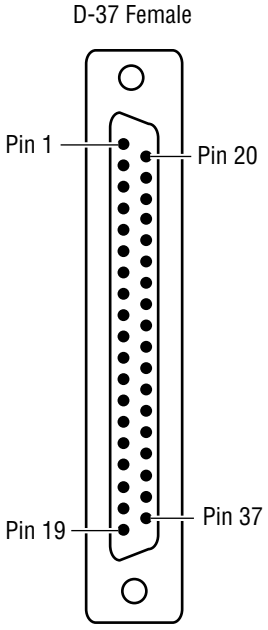
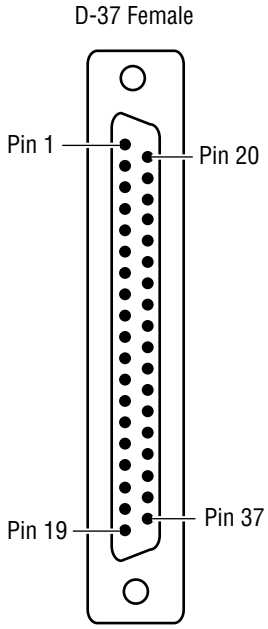
COM1 Port - J4	Pin	Function	Pin	Function
	1	Chassis Ground	14	Not Used
	2	RXD	15	Not Used
	3	TXD	16	Not Used
	4	RTS	17	Not Used
	5	CTS	18	Not Used
	6	DSR	19	Not Used
	7	Chassis Ground	20	DTR
	8	DCD	21	Not Used
	9	Not Used	22	Not Used
	10	Not Used	23	Not Used
	11	Not Used	24	Not Used
	12	Not Used	25	Not Used
	13	Not Used		

Table 11. GPI Inputs

GPI Inputs Port – J5	Pin	Function	Pin	Function
	1	Chassis Ground	20	IN 1 B
	2	IN 1 A	21	IN 2 B
	3	IN 2 A	22	IN 3 B
	4	IN 3 A	23	IN 4 B
	5	IN 4 A	24	Chassis Ground
	6	IN 5 A	25	IN 5 B
	7	IN 6 A	26	IN 6 B
	8	IN 7 A	27	IN 7 B
	9	IN 8 A	28	IN 8 B
	10	Chassis Ground	29	IN 9 B
	11	IN 9 A	30	IN 10 B
	12	IN 10 A	31	IN 11 B
	13	IN 11 A	32	IN 12 B
	14	IN 12 A	33	Chassis Ground
	15	IN 13 A	34	IN 13 B
	16	IN 14 A	35	IN 14 B
	17	IN 15 A	36	IN 15 B
	18	IN 16 A	37	IN 16 B
	19	Chassis Ground		

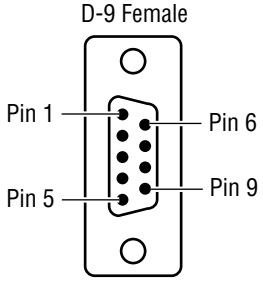
Notes:
Inputs are opto-isolated.
A and B are polarity independent.
Apply from 5 to 24 volts to A and B to turn on.

Table 12. GPI Outputs

GPI Outputs Port – J6	Pin	Function	Pin	Function
	1	Chassis Ground	20	Out 1 B
	2	Out 1 A	21	Out 2 B
	3	Out 2 A	22	Out 3 B
	4	Out 3 A	23	Out 4 B
	5	Out 4 A	24	Chassis Ground
	6	Out 5 A	25	Out 5 B
	7	Out 6 A	26	Out 6 B
	8	Out 7 A	27	Out 7 B
	9	Out 8 A	28	Out 8 B
	10	Chassis Ground	29	Out 9 B
	11	Out 9 A	30	Out 10 B
	12	Out 10 A	31	Out 11 B
	13	Out 11 A	32	Out 12 B
	14	Out 12 A	33	Chassis Ground
	15	Out 13 A	34	Out 13 B
	16	Out 14 A	35	Out 14 B
	17	Out 15 A	36	Out 15 B
	18	Out 16 A	37	Out 16 B
	19	Chassis Ground		

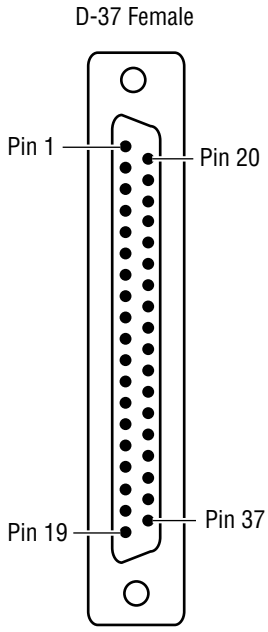
Notes:
Outputs are normally open relay closures between A and B.
30 volts maximum open circuit between A and B.
1 amp maximum.

Table 13. Serial Ports

RS-422 Ports	Pin	CPL Ports - J7, J8	J9, J10, J11, J12, J13, J14, J15, J16 Serial Ports
	1	Chassis Ground	Chassis Ground
	2	RX -	RX -
	3	TX +	TX +
	4	Chassis Ground	Chassis Ground
	5	Not Used	Not Used
	6	Common (Ground)	Common (Ground)
	7	RX +	RX +
	8	TX -	TX -
	9	Chassis Ground	Chassis Ground

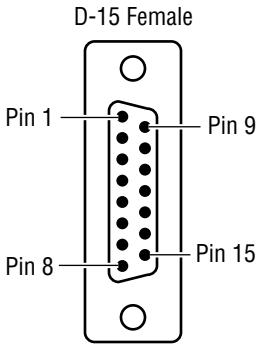
Notes:
For Ports J9 – J16 only: The data directions specified on pins 2&3 and 7&8 as RX and TX may be reversed in software configuration.

Table 14. Tally Ports

Tally Ports	Pin	Tally Module 1 Tally 1-32, J1	Tally Module 1 Tally 33-64, J2	Tally Module 2 Tally 65-96, J1	Tally Module 2 Tally 97-128, J2
	1	Tally 1	Tally 33	Tally 65	Tally 97
	2	Tally 2	Tally 34	Tally 66	Tally 98
	3	Tally 3	Tally 35	Tally 67	Tally 99
	4	Tally 4	Tally 36	Tally 68	Tally 100
	5	Tally 5	Tally 37	Tally 69	Tally 101
	6	Tally 6	Tally 38	Tally 70	Tally 102
	7	Tally 7	Tally 39	Tally 71	Tally 103
	8	Tally 8	Tally 40	Tally 72	Tally 104
	9	Tally 9	Tally 41	Tally 73	Tally 105
	10	Tally 1 0	Tally 42	Tally 74	Tally 106
	11	Tally 11	Tally 43	Tally 75	Tally 107
	12	Tally 12	Tally 44	Tally 76	Tally 108
	13	Tally 13	Tally 45	Tally 77	Tally 109
	14	Tally 14	Tally 46	Tally 78	Tally 110
	15	Tally 15	Tally 47	Tally 79	Tally 111
	16	Tally 16	Tally 48	Tally 80	Tally 112
	17	Tally 17	Tally 49	Tally 81	Tally 113
	18	Tally 18	Tally 50	Tally 82	Tally 114
	19	Tally 19	Tally 51	Tally 83	Tally 115
	20	Tally 20	Tally 52	Tally 84	Tally 116
	21	Tally 21	Tally 53	Tally 85	Tally 117
	22	Tally 22	Tally 54	Tally 86	Tally 118
	23	Tally 23	Tally 55	Tally 87	Tally 119
	24	Tally 24	Tally 56	Tally 88	Tally 120
	25	Tally 25	Tally 57	Tally 89	Tally 121
	26	Tally 26	Tally 58	Tally 90	Tally 122
	27	Tally 27	Tally 59	Tally 91	Tally 123
	28	Tally 28	Tally 60	Tally 92	Tally 124
	29	Tally 29	Tally 61	Tally 93	Tally 125
	30	Tally 3 0	Tally 62	Tally 94	Tally 126
	31	Tally 31	Tally 63	Tally 95	Tally 127
	32	Tally 32	Tally 64	Tally 96	Tally 128
	33	Not Used	Not Used	Not Used	Not Used
	34	Not Used	Not Used	Not Used	Not Used
	35	Not Used	Not Used	Not Used	Not Used
	36	Tally Common Tally 1-32	Tally Common Tally 33-64	Tally Common Tally 65-96	Tally Common Tally 97-128
	37	Chassis Ground	Chassis Ground	Chassis Ground	Chassis Ground

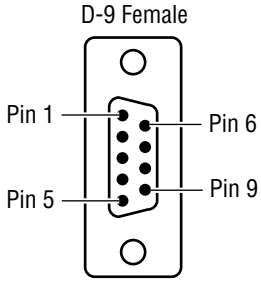
Reference In Module

Table 15. Alarms

Alarms Port - J4	Pin	Function	Alarm Status		
			Pins	Normal	Alarm
	1	Normally Closed A	1, 3	Closed	Open
	2	Normally Open A	2, 3	Open	Closed
	3	COM A	4, 6	Closed	Open
	4	Normally Closed B	5, 6	Open	Closed
	5	Normally Open B			
	6	COM B			
	7	Not Used			
	8	Not Used			
	9	Not Used			
	10	Not Used			
	11	Not Used			
	12	Not Used			
	13	Not Used			
	14	Not Used			
	15	Chassis Ground			

Notes:
Relay contacts A and B are totally isolated from each other.

Table 16. Linear Timecode

Linear Timecode Port - J3	Pin	Function
	1	Not Used
	2	Not Used
	3	Not Used
	4	Chassis Ground
	5	LTC +
	6	Not Used
	7	Chassis Ground
	8	Not Used
	9	LTC –

Notes:
Currently unused. A time code reference may be supplied as VITC on the reference input or as LTC to this DB-9.

Specifications

Table 17. Kalypso System Specifications

Power		
Video Processor Frame Power Supply	Power Consumption	100-125 VAC or 200-250 VAC autorange, 50-60 Hz power factor corrected
		700 W (no options), 850 W (typical), 1200 W (maximum)
Main Panel Power Supply	Power Consumption	100-125 VAC or 200-250 VAC autorange 50-60 Hz power factor corrected
		4-M/E: 600 W (typical), 800 W (Maximum) 2-M/E: 600 W (Maximum)
Remote Aux Panel Power Supply	Power Consumption	100-125 VAC or 200-250 VAC
Environmental		
Temperature Range	Frame, Local Aux Panel, Menu Panel	Ambient temperature for specifications: 20º to 30º C (68º to 86º F) Ambient temperature for operation: 0º to 40º C (32º to 104º F)
	Main Control Panel	Specification: 20º to 30º C (68º to 86º F) Operational: 0º to 35º C (32º to 95º F)
Relative Humidity		Up to 95% (non-condensing)
Serial Digital Video Inputs		
Number		16 standard, 64 optional, 80 total (non-looping)
Type of Connectors		75 ohm BNC, (SMPTE 259M)
Nominal Amplitude		800 mV peak-to-peak terminated
Return Loss		> 15 dB, 5 MHz to 270 MHz
Channel Coding		Conforms to SMPTE RP-259M
Ancillary Data		Ancillary Data is blanked or passed from A background to M/E outputs (includes reentries)
Input Impedance		75 ohm
Autotiming Range		± 10 microsecond
Maximum Cable Length Equalized (Belden 8281 type cable)		225 m (738 ft)
Number of Bits		10
Serial Digital Video Outputs		
Number		8 standard video (2 connectors each), or up to 4 video/key pairs of Effects Send. 4-M/E: An additional 40 standard video (2 connectors each) are optional (32 standard video for 2-M/E)
Type of Connectors		75 ohm BNC, self terminating (SMPTE 259M)
Amplitude		800 mV peak-to-peak across 75 ohm ± 10% (SMPTE 259M)
Return Loss		> 15 dB, 5 MHz to 270 MHz
Rise and Fall Times (between 20% and 80% amplitude points)		Between 400 picosecond and 1.5 nanosecond across 75 ohm termination
Timing Jitter		0.2 UI (SMPTE RP184-1996 method)
Channel Coding		Conforms to SMPTE RP-259M
Output Impedance		75 ohm
DC Offset on Output		< 50 mV across 75 ohm termination
Number of Bits		10
Number of Connectors per Output		2 BNC connectors per channel
ANC Data		Included on the A program output of each M/E

Table 17. Kalypso System Specifications - (continued)

Analog Reference Input	
Black	525 (60 Hz) or 625 (50 Hz)
Connectors	2 BNC
Return Loss	> 40 dB to 5 MHz
Impedance	75 ohm loop through
System Timing	
Switcher Output Delay	53 microsecond

Table 18. Kalypso Mechanical Specifications

Component	Depth	Width	Height	Weight [1]	Rack Units
Standard					
Video Processor Frame	562 mm / 22.13 in.[2]	483 mm / 19 in.	578 mm / 22.75 in.	75.75 kg / 167 lb	13
4-M/E Main Control Panel	624 mm / 24.58 in.[3, 4]	1410 mm / 55.5 in.[4]	189 mm / 7.44 in.[5]	86 kg / 189 lb	N/A
2-M/E Main Control Panel	483 mm / 19.0 in.[3, 4]	1252 mm / 49.31in.[4]	207 mm / 8.3 in.[5]	63 kg / 138 lb	N/A
Local Aux Panel	99 mm / 3.9 in.	668 mm / 26.3 in.	183 mm / 7.2 in.	15.88 kg / 35 lb	N/A
Menu Panel	109 mm / 4.30 in.	375 mm / 14.75 in.[6]	257 mm / 10.1 in.	7.7 kg / 17 lb	7[7]
Video Processor Power Supply Frame	406 mm / 16.0 in.	483 mm / 19.0 in.	89 mm / 3.5 in.[8]	15 kg / 33 lb[9]	2[8]
Options					
KAL-24AUX1 Remote Aux Panel	51 mm / 2.0 in.	483 mm / 19.0 in.	45 mm / 1.75 in.	1.02 kg / 2.25 lb	1
KAL-24AUX2 Remote Aux Panel	64 mm / 2.5 in.	483 mm / 19.0 in.	89 mm / 3.5 in.	2.04 kg / 4.5 lb	2
KAL-24AUX3 Remote Aux Panel	64 mm / 2.5 in.	483 mm / 19.0 in.	133 mm / 5.25 in.	3.06 kg / 6.75 lb	3
KAL-32AUX1 Remote Aux Panel	133 mm / 5.25 in.	483 mm / 19.0 in.	44 mm / 1.75 in.	0.93 kg / 2.06 lb	1
KAL-32AUX2 Remote Aux Panel	108 mm / 4.25 in.	483 mm / 19.0 in.	89 mm / 3.5 in.	1.02 kg / 2.25 lb	2
Emergency Bypass Frame	356 mm / 14 in.	483mm / 19.0 in.	89 mm / 3.5 in.	5.17 kg / 11.4 lb[10]	2
Shot Box	172 mm/ 6.75 in.	216 mm / 8.5 in.	51 mm/ 2 in.	1.22 kg/2.7 lb	N/A

[1] All weights approximate.

[2] Allow an extra 102 mm (4 in.) for cable.

[3] Allow a minimum of 152 mm (6 in.) of clear space at the rear of the Main panel below the mounting surface for proper cable clearance and air flow. Allow an extra 203 mm (8 in.) to 254 mm (10 in.) of mounting surface behind the Main panel for peripheral components (e.g., Local Aux panel).

[4] Indicated measurement is for lid. Refer to installation detail for tub measurements.

[5] Add 13 mm (0.5 in.) for rubber feet on bottom of tub if required. Indicated measurement is from bottom surface of tub to top surface of lid.

[6] Allow an extra 147 mm (5.8 in.) clearance for the CD-ROM and fan exhaust.

[7] Optional Flush Mount kit.

[8] Allow for additional height of 133 mm (5.25 in.), in the event that a 3 RU replacement Video Processor Power Supply frame is required.

[9] Includes optional redundant power supply module.

[10] Weight with no modules, 1 power supply. 5.71 kg/12.6 lb with no modules, 2 power supplies.