Section 5A - Karrera & Kayenne Technical - Panels

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Section 5A - Karrera & Kayenne Technical - Panels

- Kayenne Panel Assembly
  - Unpacking Procedure
  - Panel Framework
  - Stripes
  - Modules
- PCU (Panel Control Unit)
  - Hardware
  - Installation / Connections
  - Menu Panel
    - Kayenne Connections
    - Karrera Connections
  - Network Addressing
- Karrera Panels
  - Hardware
  - Installation / Connections
  - Network Addressing
- Karrera Soft Panel (KSP)
  - Keyboard
- Troubleshooting / Diagnostics / Calibration
- Kayenne Panel / PCU Diagnostics
- Karrera Panel Diagnostics / Logs
- Menu Panel Calibration

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Section 5 A/B – Objectives

Section Objectives

- Understand how to assemble a Kayenne panel
- Know how to Troubleshoot Kayenne panel modules
- Understand the functionality of the PCU
- Be able to connect and configure the PCU
- Know how to check the Stripe assignment
- Know how to Calibrate the Fader arms and Joystick
- Know how to enable and run module diagnostics
- Understand how to connect the Menu and Fanless PC
- Understand the Karrera panel components and cabling
- Know how to set Panel IP numbers, Date and Time
- Be able to adjust Panel display parameters
- Know how to remotely Reset the panel and re-connect to the frame

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Control Panels – Kayenne Assembly (1)

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Control Panels – Kayenne Assembly (2)

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Control Panels – Kayenne Assembly (3)

Assembled "Curved 4 M/E Panel Support Kit

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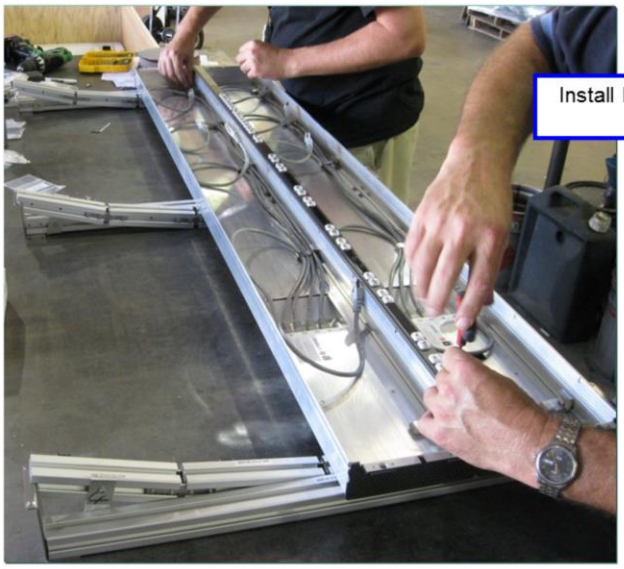
Control Panels – Kayenne Assembly (4)



Install Bottom M/E or Stripe Tray first and work up.

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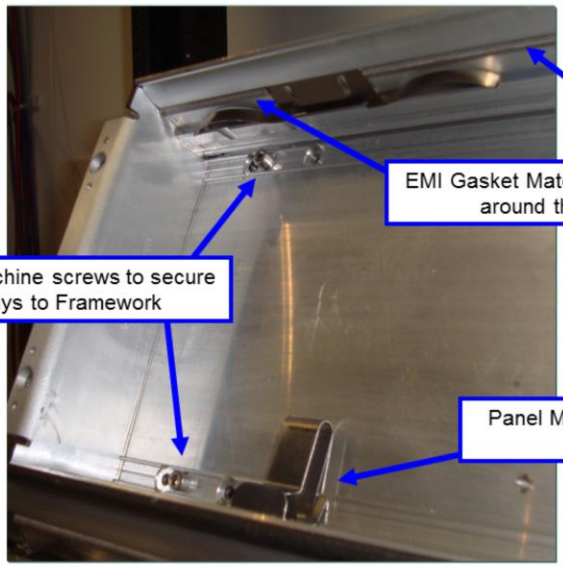
Control Panels – Kayenne Assembly (5)



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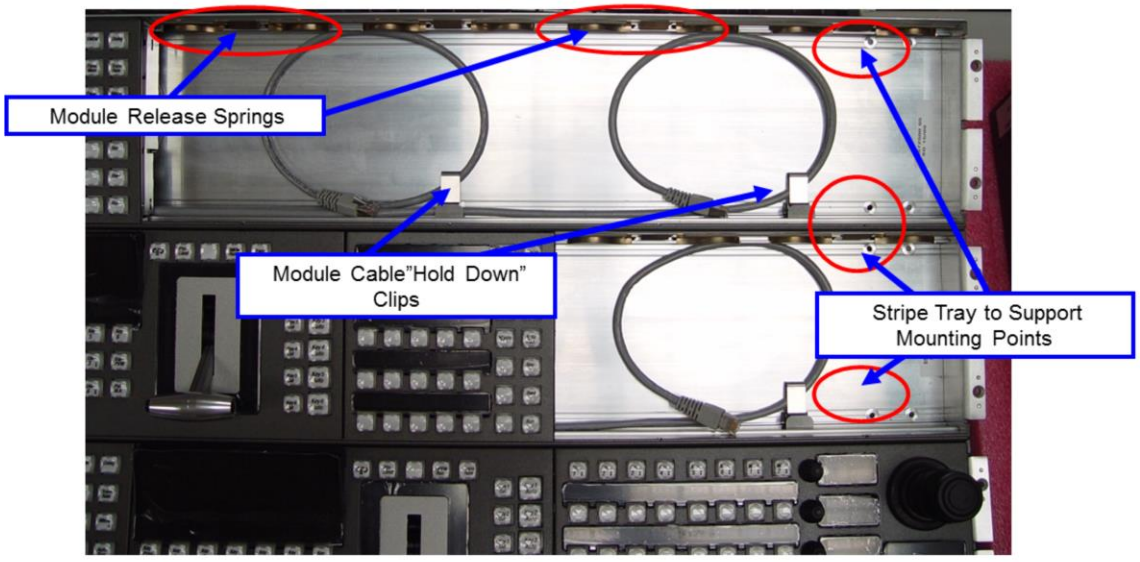
Control Panels – Kayenne Assembly (6)



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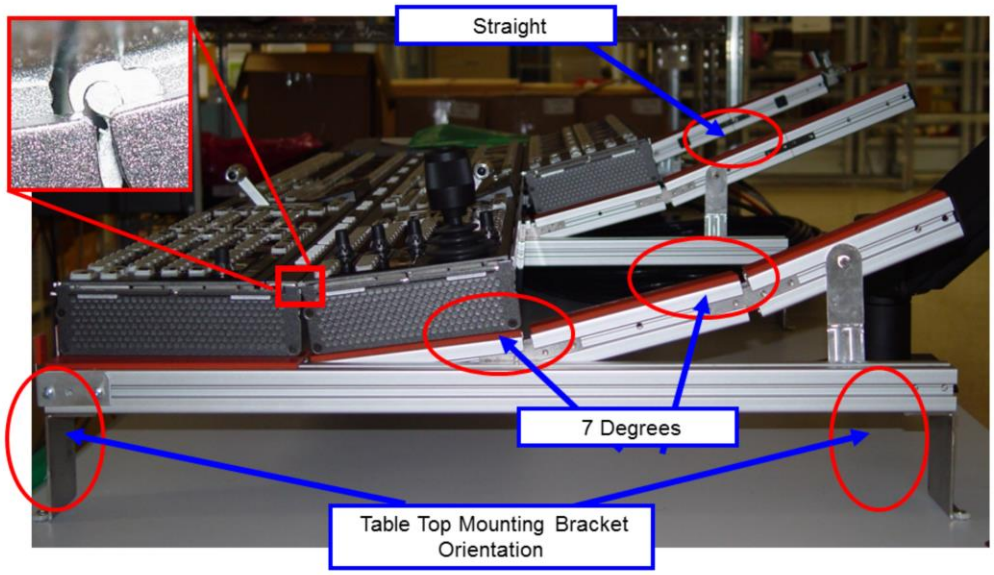
Panel Stripe Assembly

- The cable clips are needed to hold the cables to the floor to prevent them from being pinched and damaged from Module Installation.

Control Panels – Kayenne Assembly (7)



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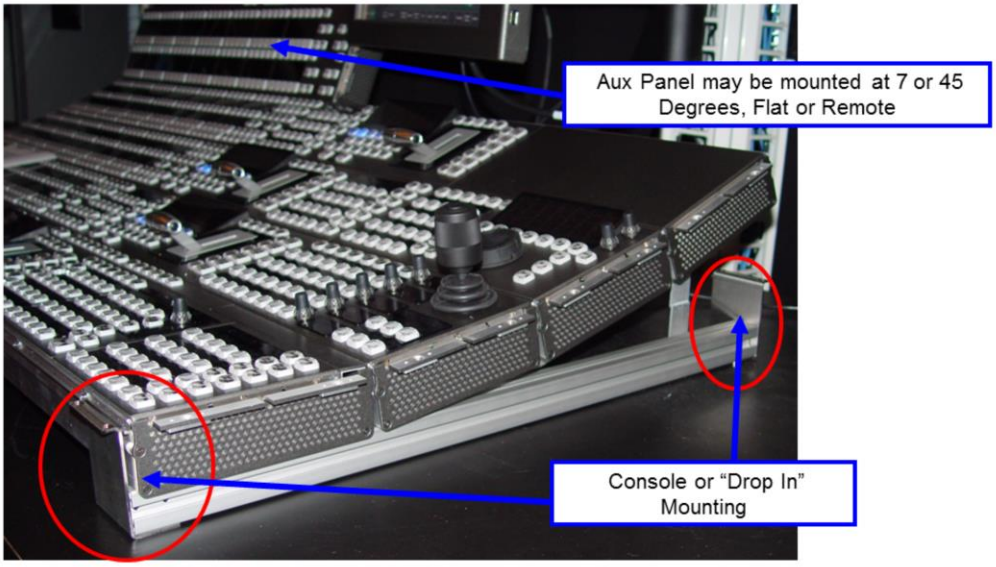
Panel Support Structure

- Two of the main frame structures are assembled in “left hand form” and one is assembled in “right hand”.
- This structure can be assembled as flat, partially flat/partially curved, totally curved or combination.

Control Panels – Kayenne Assembly (8)



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Control Panels – Kayenne Module Assembly (1)

Locate and Press Appropriate Card Straight Down to the Release "Click"

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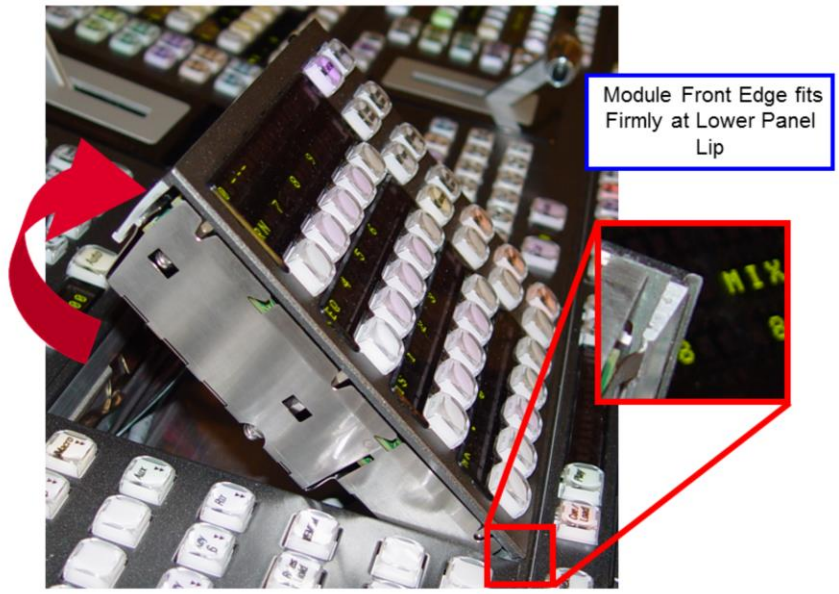
Control Panels – Kayenne Module Assembly (2)



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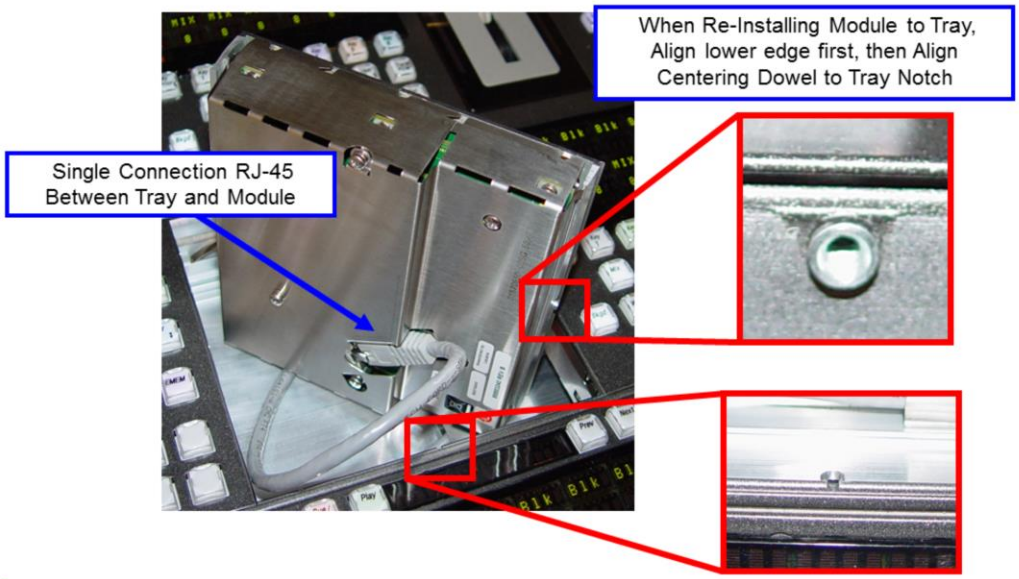
Control Panels – Kayenne Module Assembly (3)



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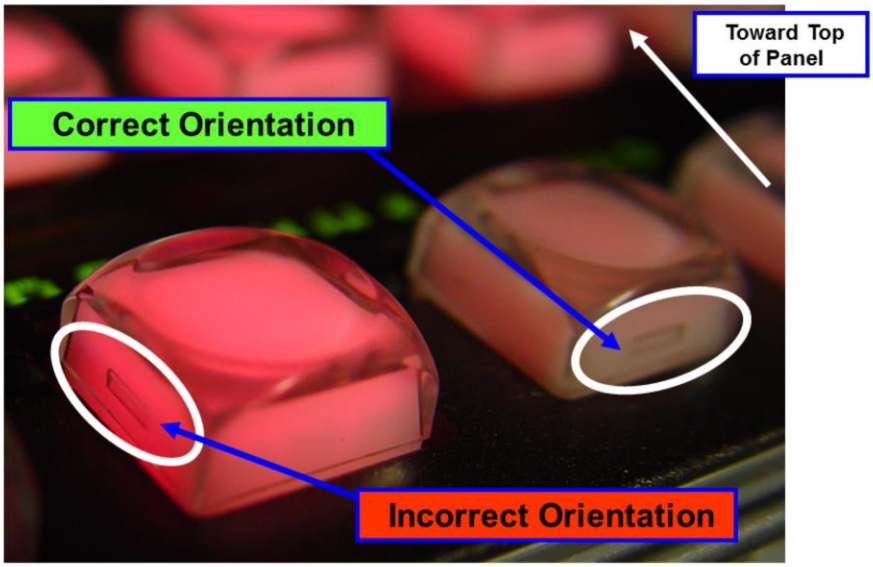
Panel module Installation

- The alignment dowel is what keeps the bottom edge of the panel locked into the stripe tray.

Control Panels – Kayenne Button Key-Cap Orientation



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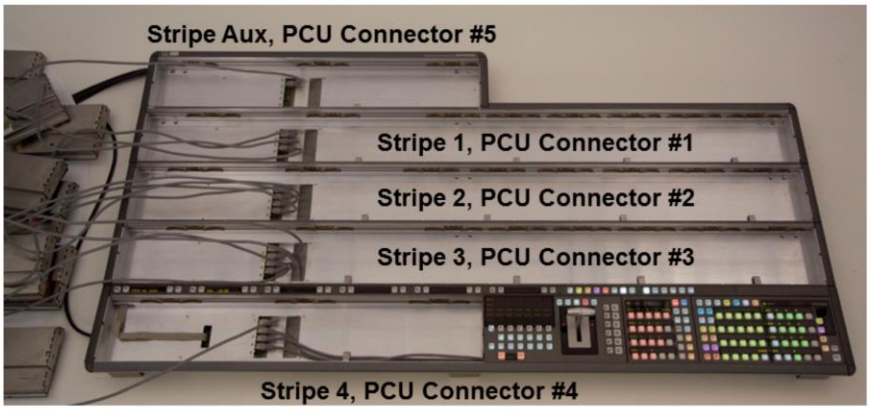
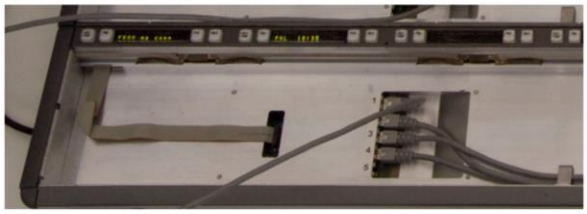
Panel Button Key-Caps

- The button Key-Caps can slip onto the buttons in any orientation. The **Correct** orientation is with the horizontal notches in the side of the cap facing the bottom and top of the panel. They will lightly snap into place.
- The Karrera button key caps have detent notches on all 4 sides and can be installed in any orientation.

Control Panels – Kayenne Panel Stripes (1)





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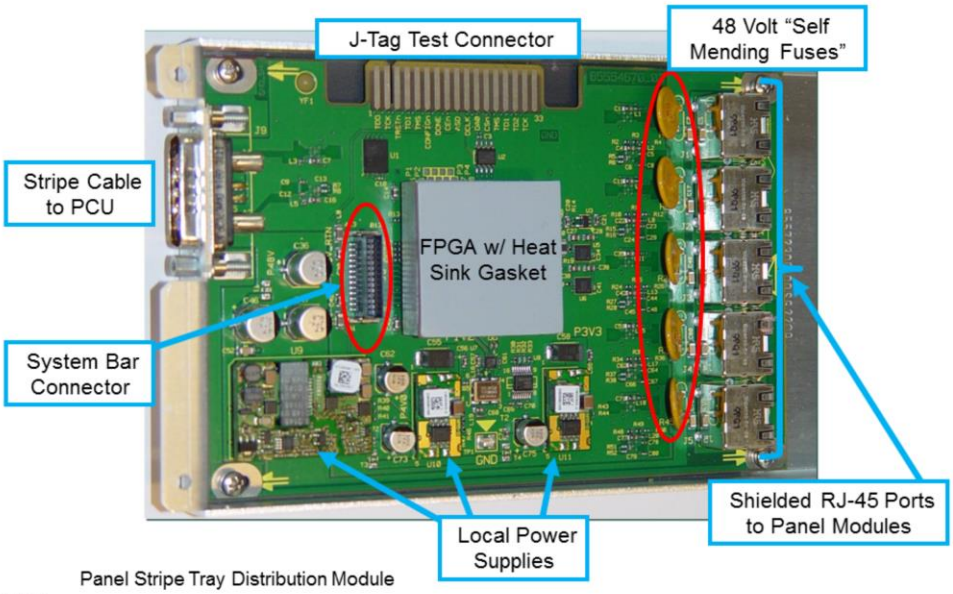
Panel Stripes

- Each Stripe Tray has a power and data distribution assembly in the bottom of the tray.
- Each Module is fed 48 V.D.C. and data from the distribution board over the proprietary CAT-6 / RJ-45 cable pinout.
- A straight pinned CAT-6 cable may be used as an extension cable for troubleshooting.
    - This cable MUST be shielded and contain the shielded connectors.
- **Do Not connect ANY other device to these cables!**
- Each power output connector is protected by a self resetting or self mending fuse.
- The bottom Stripe Tray also feeds data and power to the system bar.
- Each of the connectors in the bottom of the tray are marked 1-5. Each cable is a different length based on module position. Cable #1 feeds the far left module. The other cables increase as the modules are installed to the right.

Control Panels – Kayenne Panel Stripes (2)



Panel Stripe Tray Distribution Module

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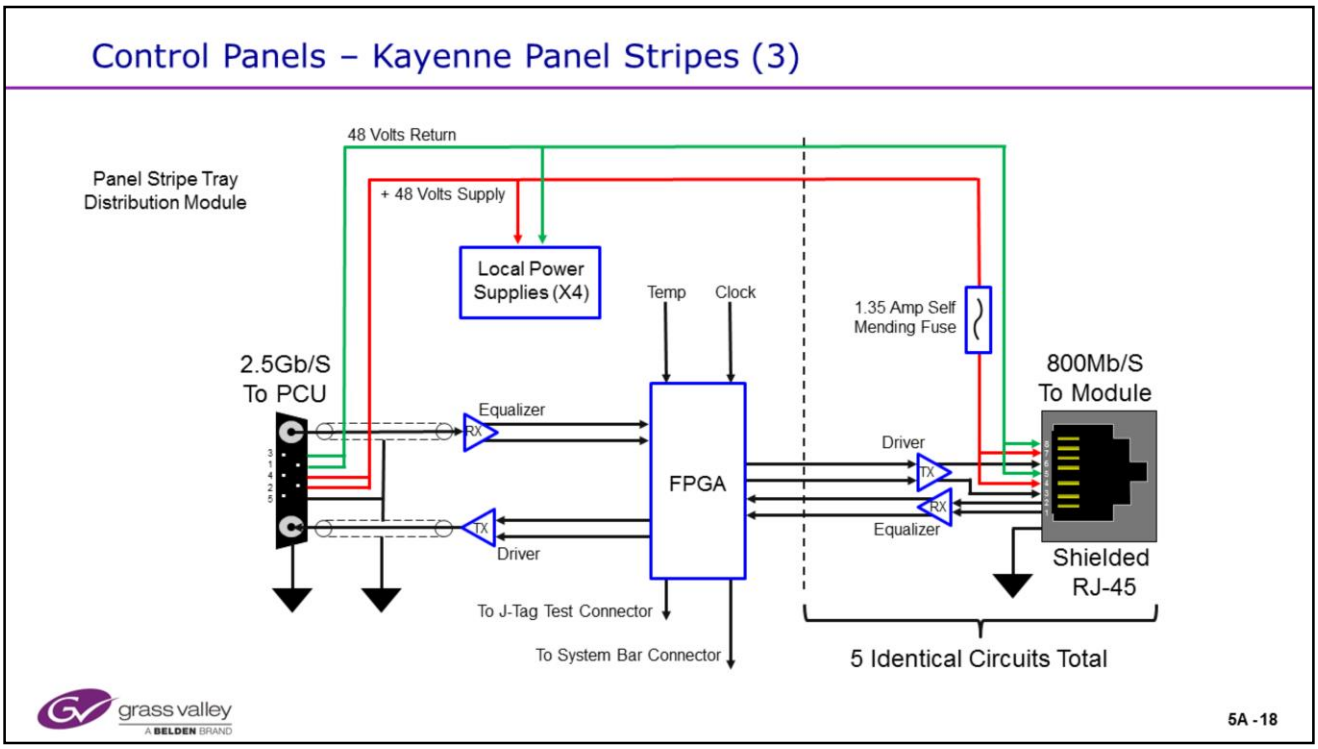
Panel Stripes Distribution Module

- The Distribution module is a data DA and a Power DA for the stripe modules.
- This module is a FRU (Field Replaceable Unit) and comes mounted on a metal sled that makes up the housing on the underside of a panel stripe tray.
- The "Self Mending Fuses" act similar to auto-resetting circuit breakers. When the over-load is removed, the component will pass power after a brief reset time.
- The 5 RJ-45 connectors are of the **shielded type** and do require the use of straight pinned CAT-6 cable with an outer shield.
- The shielded cable is for a ground connection between this board and the panel modules as well as EMI / RFI shielding.
- The RJ-45 connectors do contain 48 Volts D. C. And CANNOT be used for anything but connecting to Kayenne Panel Modules.
- The RJ-45 Pin-out does not follow the POI standard.



Panel Stripes Distribution Module

- This module performs the following:
  - Distributes and protects 48 Volts D. C. to the panel modules.
  - Has a data path from the PCU running at 2.5 Gb/S. This contains all of the data communications for a single stripe, all of its modules and a System Bar. This connection has the ability to pass one channel of video for possible future use.
  - Connects and registers up to 5 panel modules with the PCU processor via an 800 Mb/S link. This link includes the 48 Volts D. C. power.
- The 1.35 Amp “Self Mending Fuses” act similar to auto-resetting circuit breakers. When the over-load is removed, the component will pass power after a brief reset time.
- The 5 RJ-45 connectors are of the **shielded type** and do require the use of straight pinned CAT-6 cable with an outer shield.
- The **shielded cable** is for a ground connection between this board and the panel modules as well as EMI / RFI shielding.
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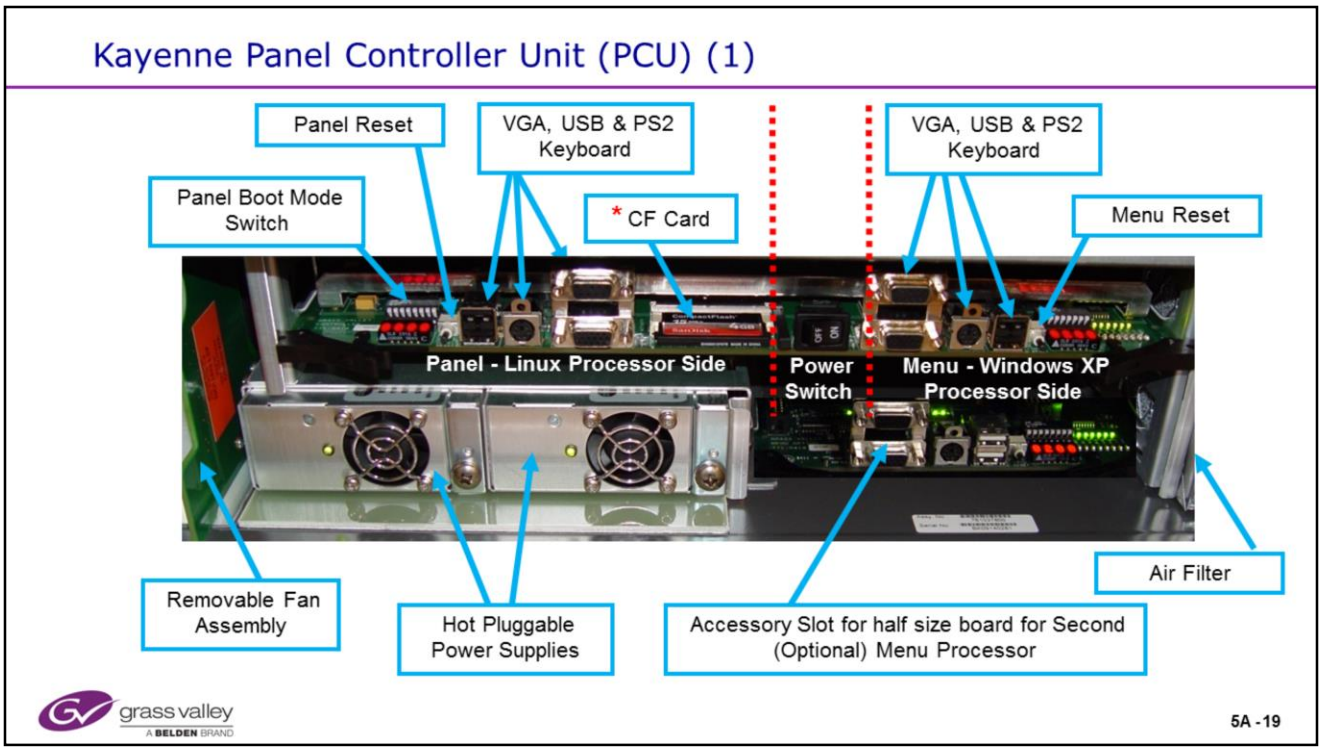
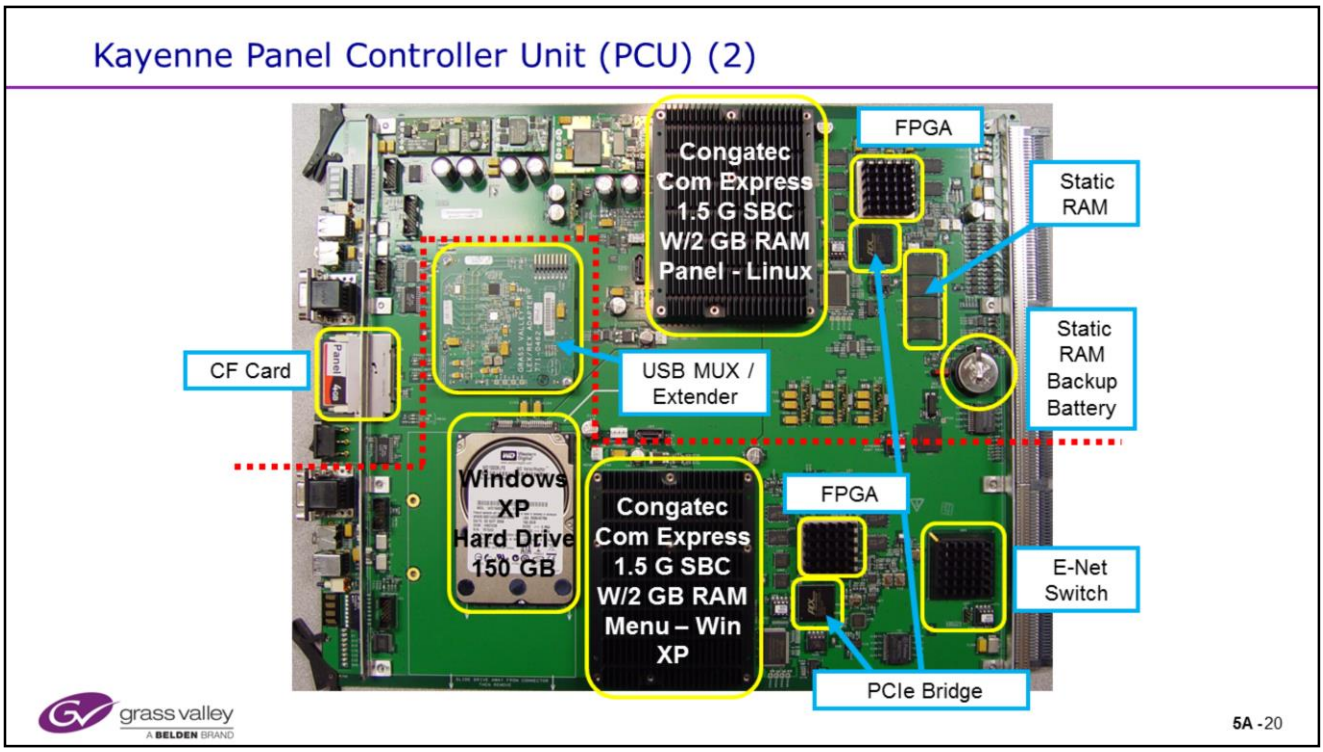


PCU Board

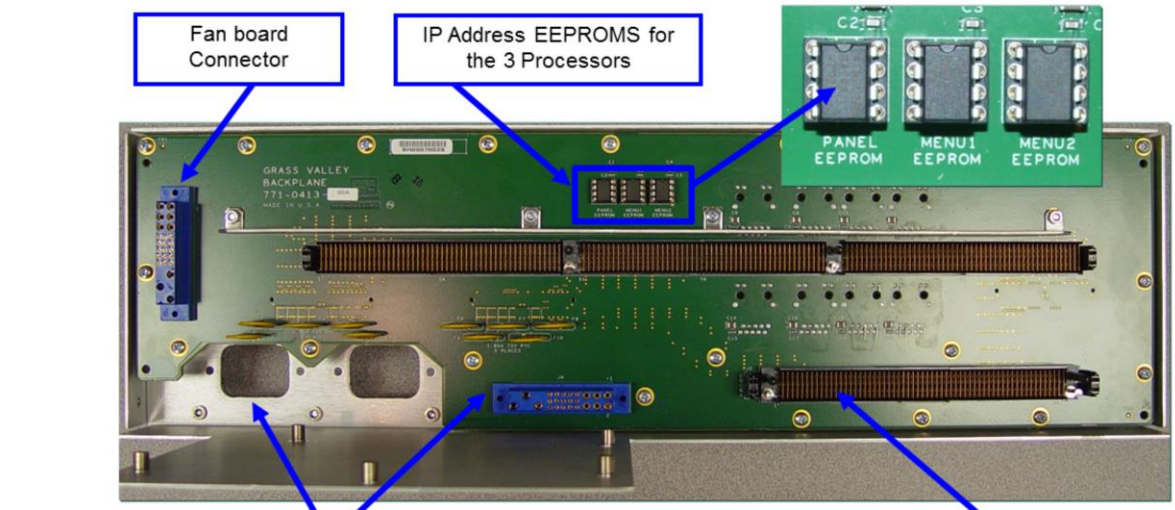
- The Frame Controller card has a VGA and PS-2 Keyboard connection for basic diagnostics and setting the ROM Bios.
- The VGA port may be needed for certain diagnostic function if performed by a Telnet session. Not all terminal functions report to the Telnet session even though controllable by Telnet. They are all seen on the VGA port.
- The Frame Controller card has a RS-232 (DB-9) connector to be used for a terminal Session. This is configured for a straight serial connection at 9600, 8, N, 1. This is currently not supported.
- PCU will run on one power supply but not recommended.
- * The CF card started as a 4 GB size and starting in late 2011 has changed to 16GB.
- The normal operating mode for the boot displays are “FF00” for the Panel Processor and “0200” for the Windows side. During startup, the left display should briefly read “BRET” and “NEIL” for the right. This indicates normal health.



PCU Board

- The PCU Controller card consists of two separate Processors:
  - One (top above) is the Embedded Linux processor for control of all of the Panel Stripes. This uses the 4 GB Compact Flash for Boot and NV RAM.
  - The second (lower in picture) processor is running Windows XP, uses the 150GB Hard Drive and is running the Touch Menu application.
  - This Hard Drive is also the storage location for the Image Store located in the Video Frame. As an operator will be using network or the Menu Panel USB for clip and still maintenance, having the hard drive close to the I/O will improve access speed and not slow the Video Frame Processor.

Kayenne Panel Controller Unit (PCU) (3)



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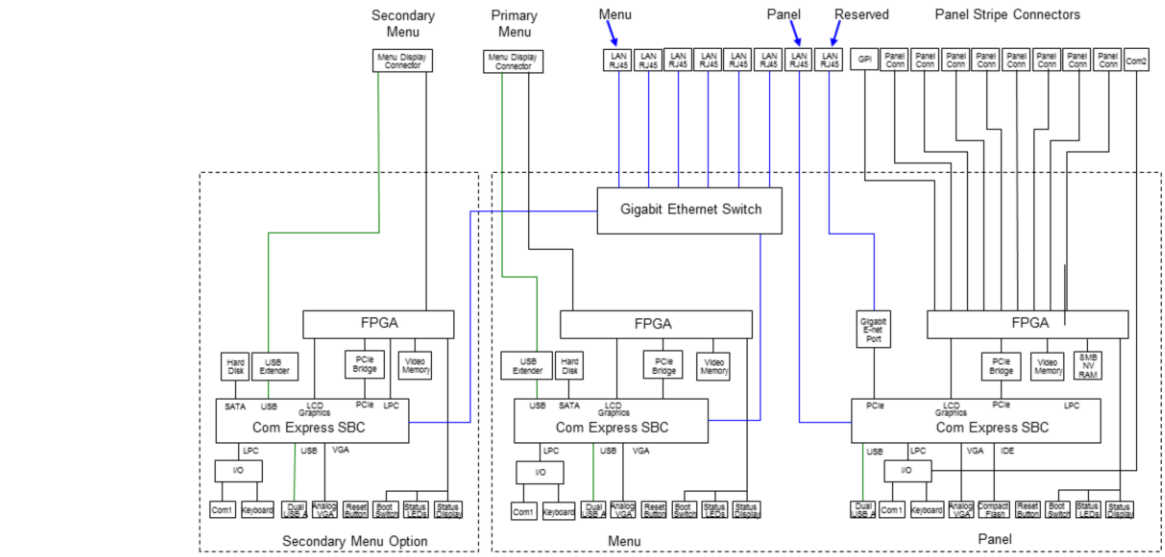
PCU Frame

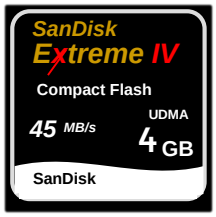
- The PCU frame can contain a second half width menu processor board.
- The Power supplies (not shown) are load sharing.
- The discs that look like capacitors above the power supply area are thermally operated resetting fuses. Each stripe and menu cable is protected by these devices.
- The 3 EEPROMS are for holding network address information for each of the 3 processors.

Kayenne Panel Controller Unit (PCU) (4)

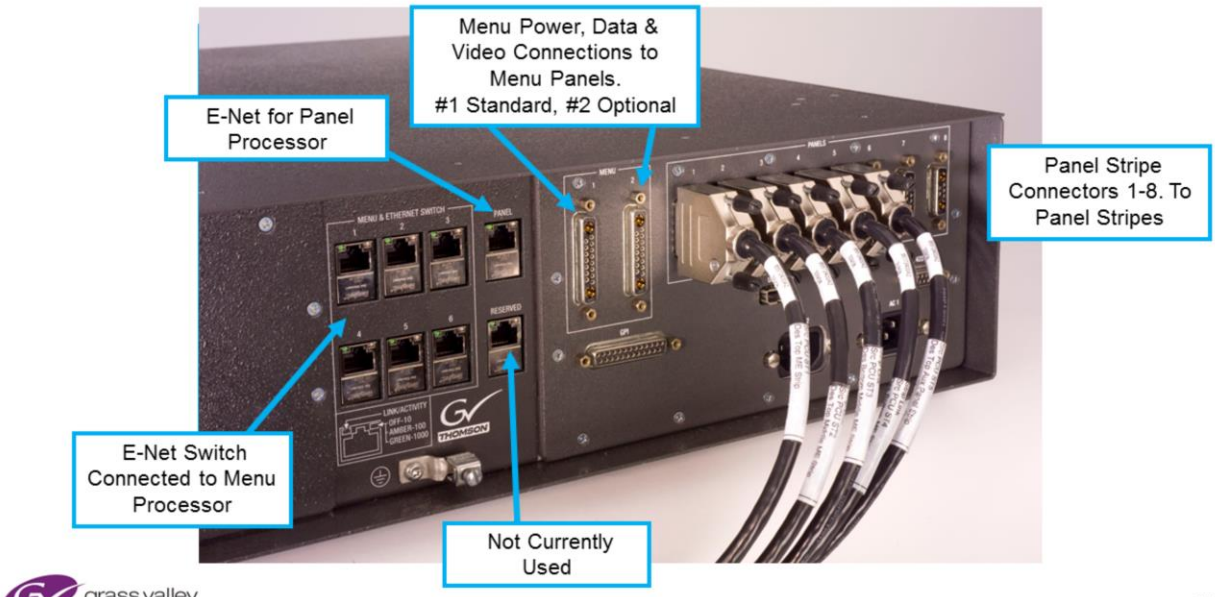


PCU CF Card

- The Compact Flash currently qualified by Engineering for both the PCU and Frame Controller is a 4 GB 300X Speed, 45MB/S UDMA (Ultra Direct Memory Access) enabled card.
- Currently the only brand qualified is SanDisk Extreme IV.
- This same part is used in both the PCU and Video Frame processor.
- The PCU uses GV programmed part number 163-8438-00 while the frame uses 163-8444-00.
- Even though the Kayak HD-XL uses the same PCU Processor and Frame Processor boards as the Kayenne the Kayak versions use a different part number for the CF cards. The PCU CF card is 163-8439-00 and the Frame uses a 163-8419-03 CF card.
- The latest CF card to be approved by Engineering is the Lexar Professional 16 GB card shown at right.



Kayenne Panel / Controller Unit (PCU) Connections (1)



PCU Frame Connections

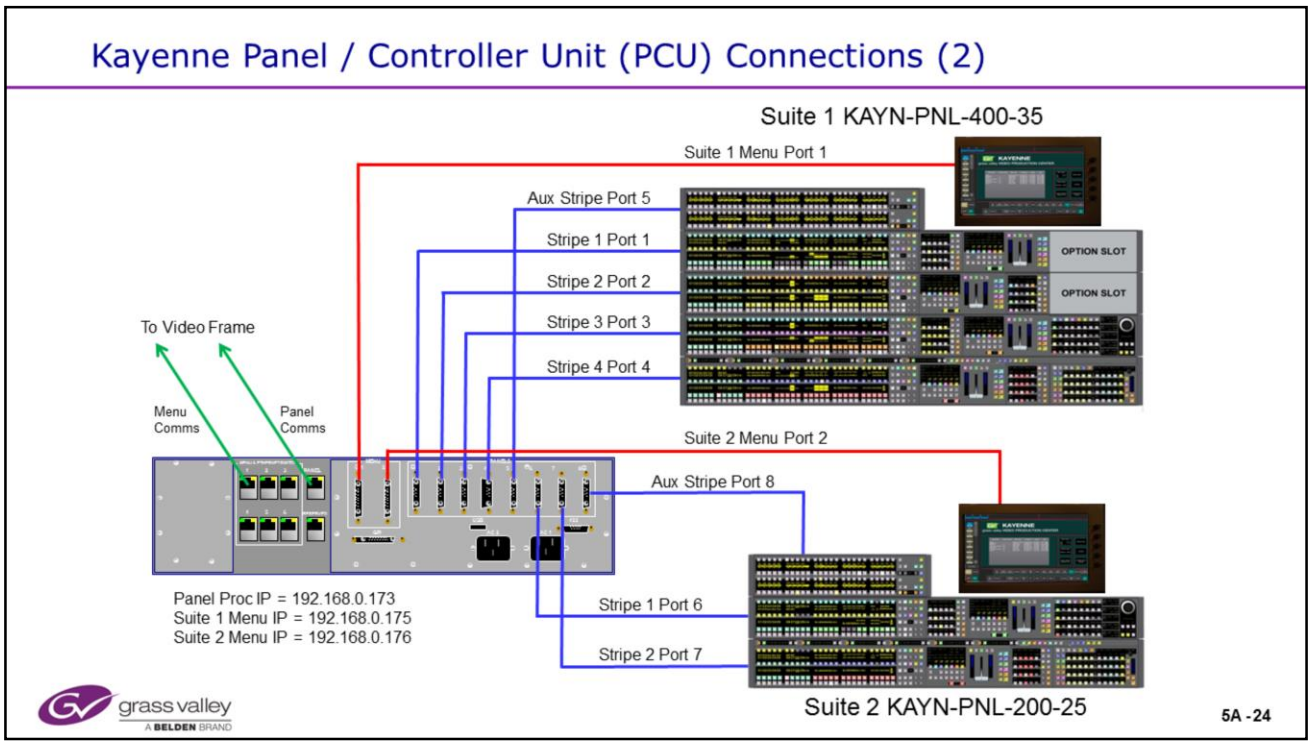
• The panel Stripe connectors can support up to 8 stripes. A normal 4 M/E panel will use 5 connectors.

• The current cable mapping calls out for connector #1 to go to the Top M/E stripe on the panel or what would “normally” be M/E 1. #2 to the second stripe or next down from M/E 1, #3 to the next stripe and # 4 to the bottom stripe. # 5 is then connected to the Aux stripe at the very top.

• There is one USB and one RS-422 connector on the rear of the chassis. These connectors are currently not supported.

• Stripe and Menu cables are available in both 7.5 and 15 meter lengths.

• **Stripe Control Cables and the Menu Cable are NOT Hot Swappable. Power PCU down before making cable connections or changes!**



PCU Frame Connections

• Each menu has its own Windows PC. Each requires a separate IP address. The default addresses are shown above.

• When a single or multiple panels are connected to a single PCU frame, A single IP address is used, as there is only one physical panel processor. The default address is shown above.

• Aux Stripes will always connect to the next port above the last M/E stripe.

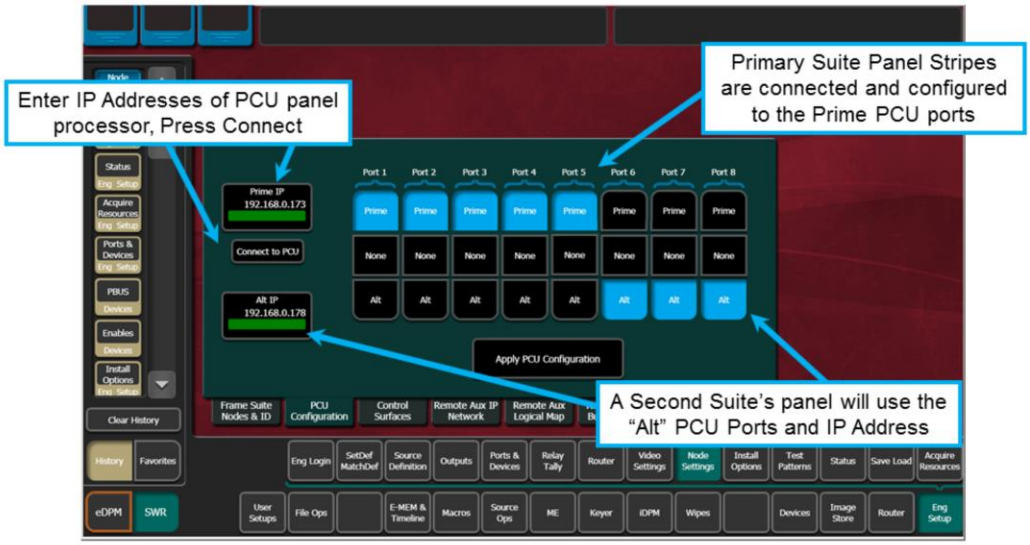
• When using a second panel, regardless if it is in a separate suite or not, the cable mapping calls out for connector # 6 to go to the Top M/E stripe on the 2nd panel or what would “normally” be M/E 1. Port #7 to the second stripe or next down from M/E 1. Port # 8 is then connected to the Aux stripe at the top of the 2nd panel.

• When a 2nd Menu is needed with a single PCU frame, a second PC board with a Windows Menu PC is available and is inserted into the lower PCU frame slot. It is internally connected to the 6 port network level 2 switch in the PCU frame.

• A laptop PC running the Kayenne Menu application, remote storage devices or Remote Aux Panels may be connected to any of the 6 ports of the rear PCU network level 2 switch.

• **Stripe Control Cables and the Menu Cable are NOT Hot Swappable. Power PCU down before making cable connections or changes!**

Kayenne Panel / Controller Unit (PCU) Configuration



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PCU Frame Connections

• Eng Setup menu showing PCU configuration for a standard 4 M/E panel (+ Aux) in one suite.

• The Alt ports are configured for a 2 M/E Panel with Aux When used in a 2 suite mode.

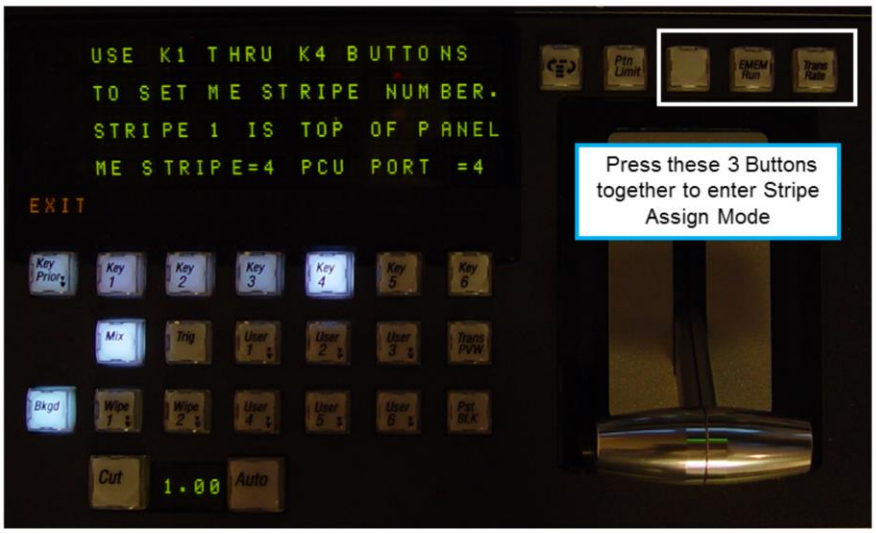
• A second panel (or just additional stripes) may be configured in the same suite as the main panel. When this is done, the additional stripes are usually connected and configured as "Prime" ports and not "Alt".

• The second panel is usually considered as a separate operation, often looked at as a separate switcher. When operating like this, the "Alt IP" address is used just as if it were a separate switcher and control system, but:

- Only one panel control proc is used but does control both panels.
- Thus only one actual physical IP address is used. This is the address of the PCU frame proc and is entered into the "Prime IP" address on the above menu.
- This single IP address will be configured or displayed on BOTH panels.

• The "Alt IP" address is a "spoofed" IP. This allows the Video frame proc to treat the second Suite or second panel as if it were a separate unit. The "Alt IP" address is entered here and in the nodes menu (for suite 2), BUT NOT ON THE 2nd OR ANY PHYSICAL PANEL.

Control Panels – Kayenne Panel Stripes Assign (1)



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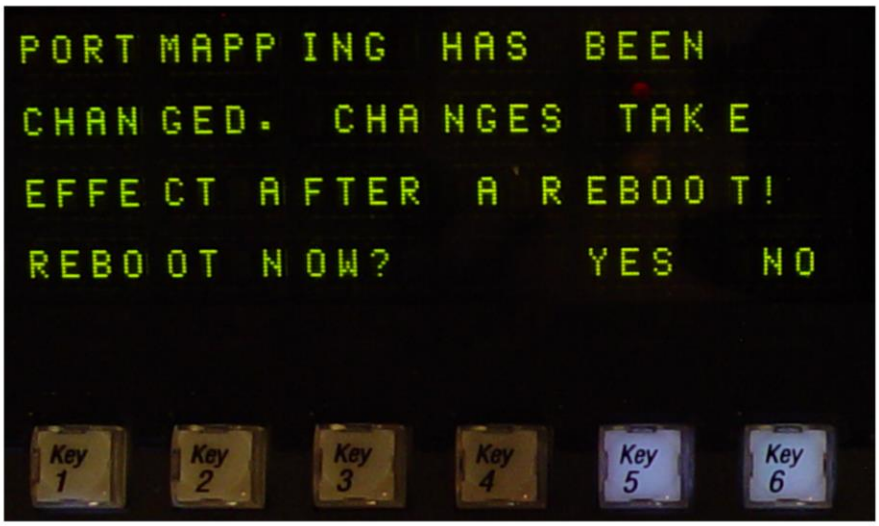
Panel Stripe Assignment

- The Stripe Trays need to align with the software of the PCU and the cable configuration.
- Tray to PCU connectors are identified on the previous page.
- This menu allows the changing of stripe purpose.

Control Panels – Kayenne Panel Stripes Assign (2)



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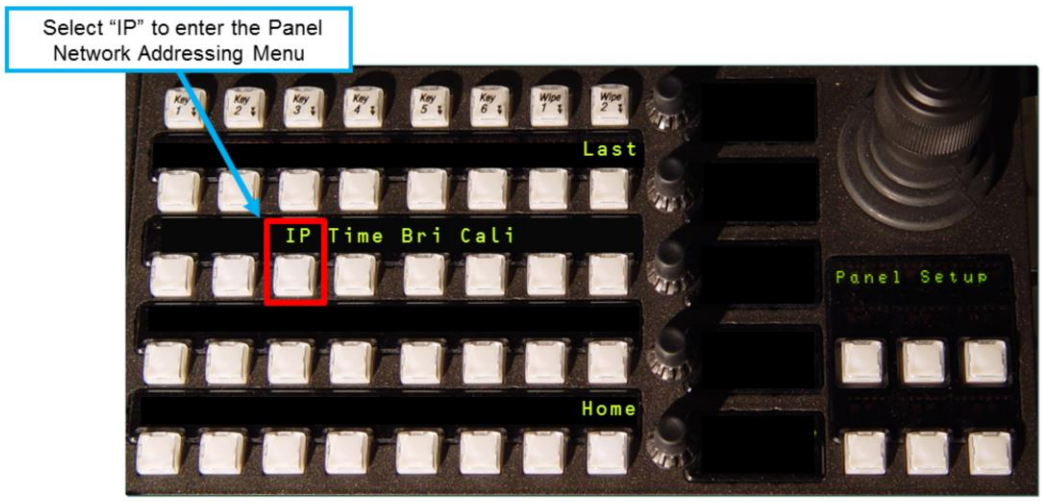
Network Addressing – Kayenne Panel (1)



Press “Panl” from ‘Home’ page if not in this mode.

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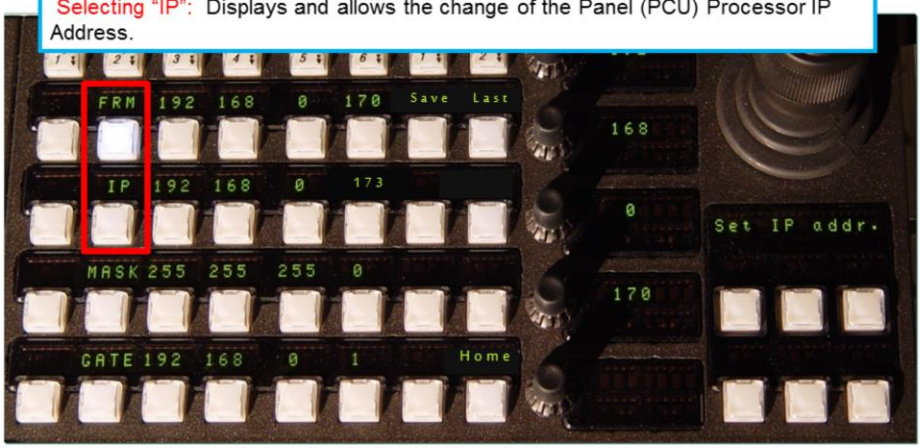
PCU Addressing

- The PCU (Panel Control Unit) processor can have its E-Net addresses set from the MFM (Multi Function Module) on the Panel.
- The menus may be accessed by pressing the “Panl” button from the “Home” menu.
- Note that this menu will also allow you to adjust the brightness of: the High and Low tally states of all panel buttons, OLED (Organic Light Emitting Diodes) or Source displays and the Panel or status displays.
- This menu will also allow for the setting of date and time in the PCU.

Network Addressing – Kayenne Panel (2)

Selecting: "FRM": Displays and allows the change of the Target Address that the Panel (PCU) Processor uses to connect to the frame with. This needs be the Video Frame IP address.

Selecting "IP": Displays and allows the change of the Panel (PCU) Processor IP Address.



Press "Panl" & "IP" if not in this mode.

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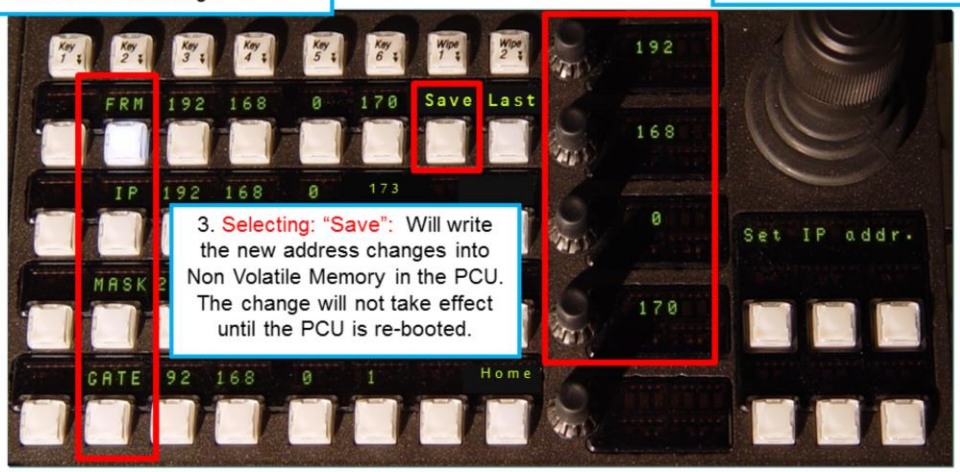
Network Addressing – Kayenne Panel (3)

1. Select either Frame Target, PCU, IP, PCU Subnet Mask or PCU Gateway addresses to change

2. Use the Shaft encoders to change each octet of the displayed Address



3. Selecting: "Save": Will write the new address changes into Non Volatile Memory in the PCU. The change will not take effect until the PCU is re-booted.

Press "Panl" & "IP" if not in this mode.

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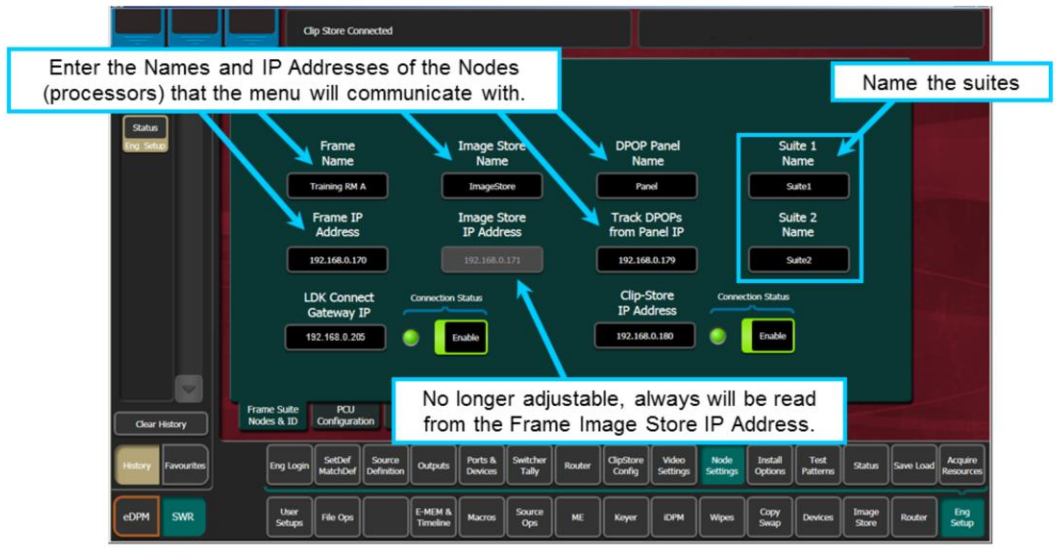
PCU Addressing

- Save writes the new address to a safe memory. The processor will get the address information upon boot up. Until the processor is rebooted (to activate the new addresses) the old information is still valid and operating.

Network Addressing – Menu (1)



Path: Eng Setup - Node Settings – Frame Suite Nodes & ID

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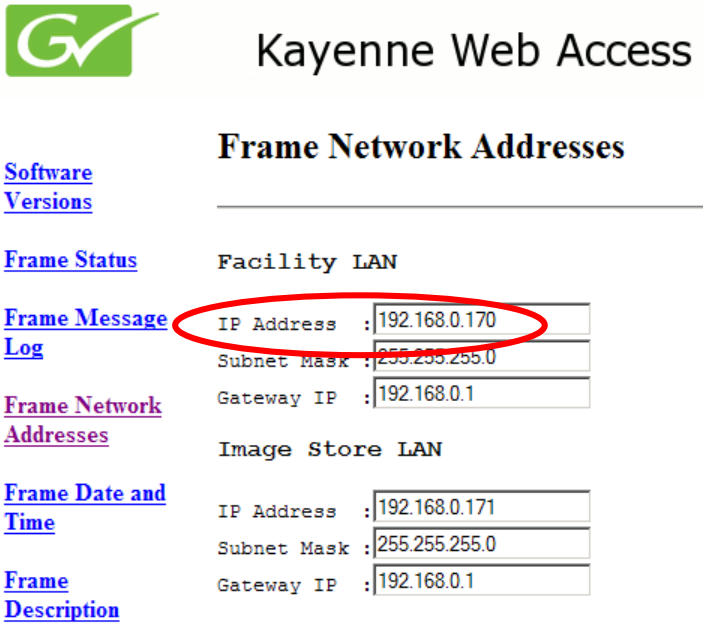
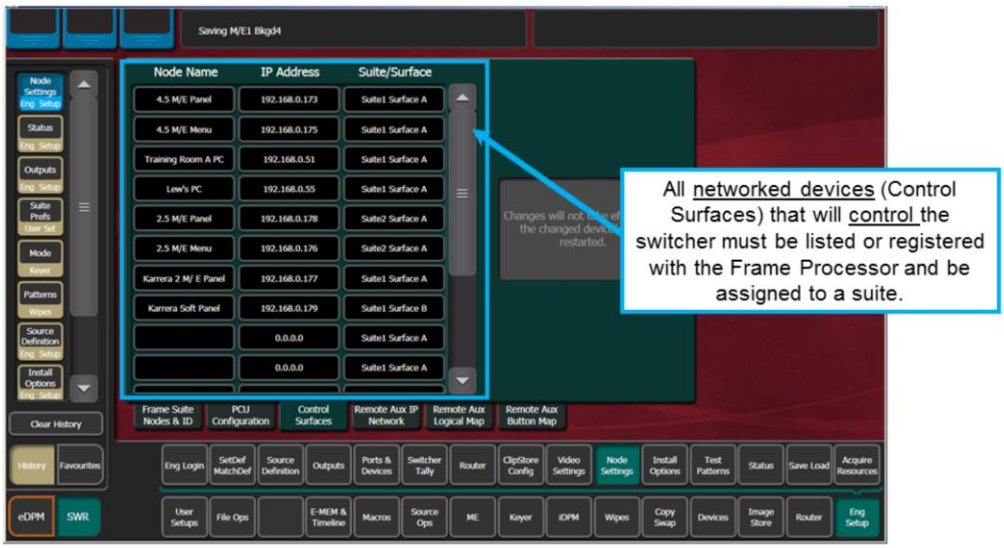
- Eng Setup menu showing Node settings for each suite and Suite names.
- Frame Proc and Image Store IP addresses are set using a web browser below. These may be set to any legal address upon the same network.

- Entering the “Frame IP Address” into the above window tells the menu processor how to communicate with the frame.
- The displayed Image Store IP address (shown in grey) will be read automatically from the frame. This, again tells the menu how to communicate with the Image Store Processor.



Network Addressing – Menu (2)



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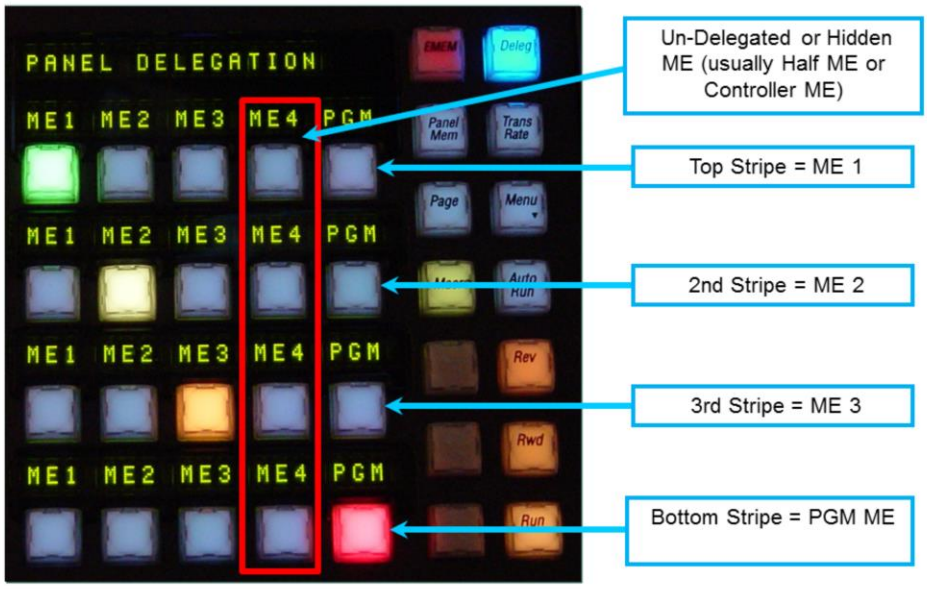
- Eng Setup menu showing Node settings for each control surface.
- These are the devices that are allowed communication with the Frame Processor. Only devices that originate control or commands are entered here.
- This table may be accessed and modified by any computer running the menu application.
- These devices are stored on the Frame Processor in the Compact Flash Card as part of our NV RAM.
- When Clearing NV RAM, this table will be deleted. Ensure you have this information backed up.
- A PC running the Menu Application may connect to the frame processor without being in this table. Enter the PC name and IP address and reset the Menu Application in order to operate the system from this PC.

Kayenne Panel M/E Delegation



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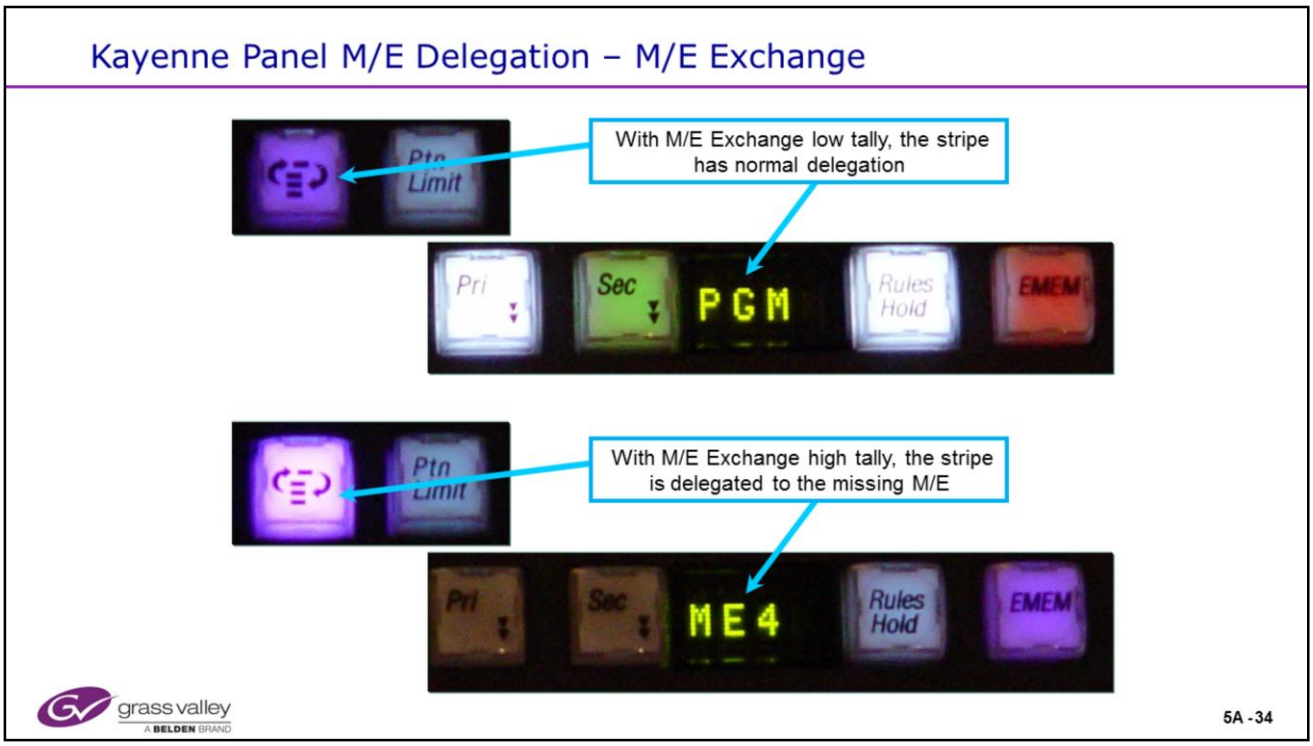
M/E Delegation

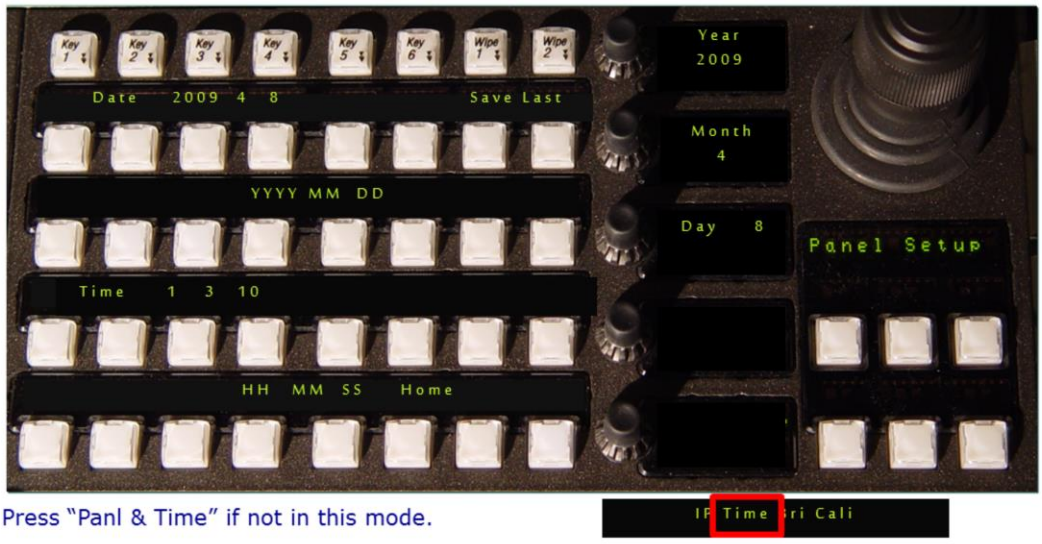
- Each “Local E-Mem” panel will allow the stripes to have the Logical M/Es assigned.
- There is a second page (Select the Page button) to access delegation for additional stripes on a second panel.
- A Missing M/E (usually M/E 50, the half M/E) can be delegated by pressing and holding the “M/E Swap” button on any of the Transition panels.



M/E Swap Functions

- Pressing and holding the M/E Exchange button will allow the Exchange button to delegate the selected (missing) M/E. It does not have to be the Half M/E, but usually will be.
- A single press of this button will toggle the M/E on this current stripe, thus replacing the normally delegated logical M/E bank with the alternate.

Kayenne Panel - Date & Time



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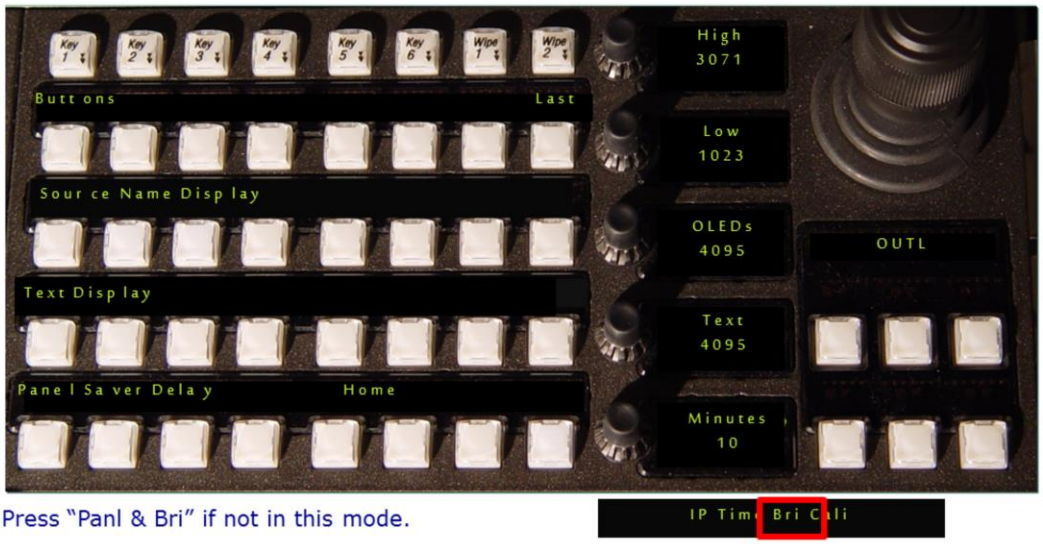
PCU Date & time

- The PCU (Panel Control Unit) processor needs to keep track of the correct date and time to ensure that the logs will be useful for diagnostics and troubleshooting.
- The date and time will also need to be set in the Windows Menu Processor.

Kayenne Panel - Brightness



Press "Panl & Bri" if not in this mode.

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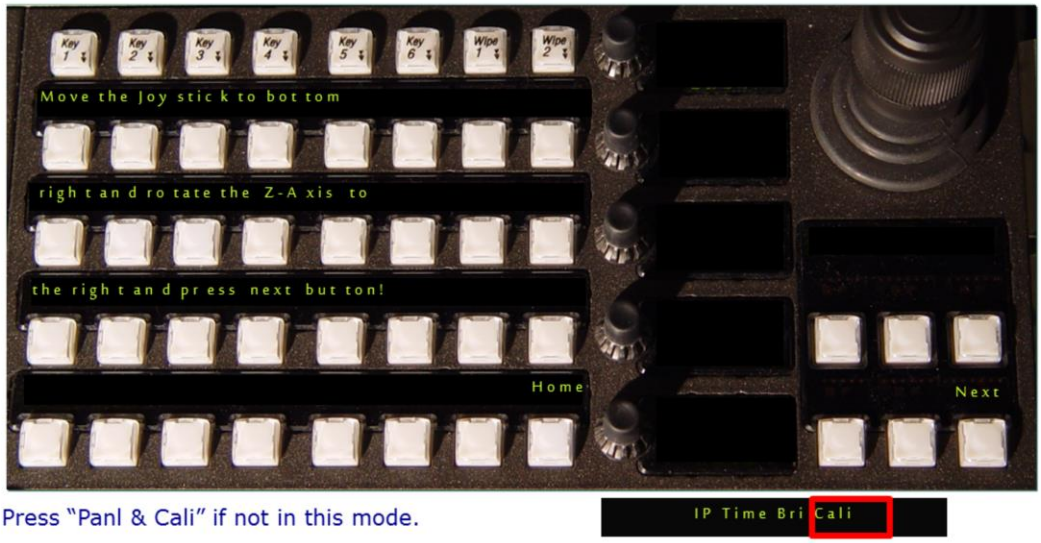
Panel Brightness

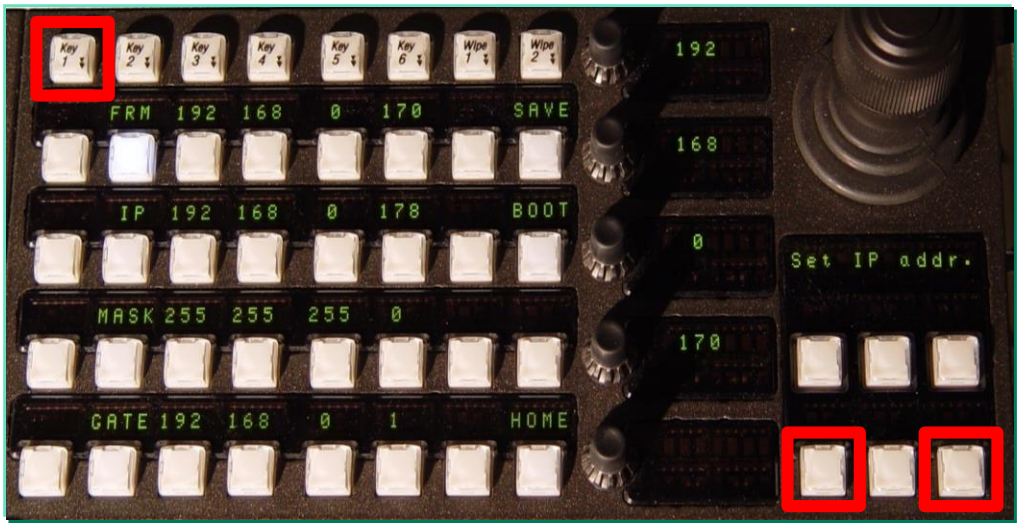
- Panel may now have all of the display intensities set locally with this panel.
- The panel "Go to Sleep" or "Saver" time may now be set.

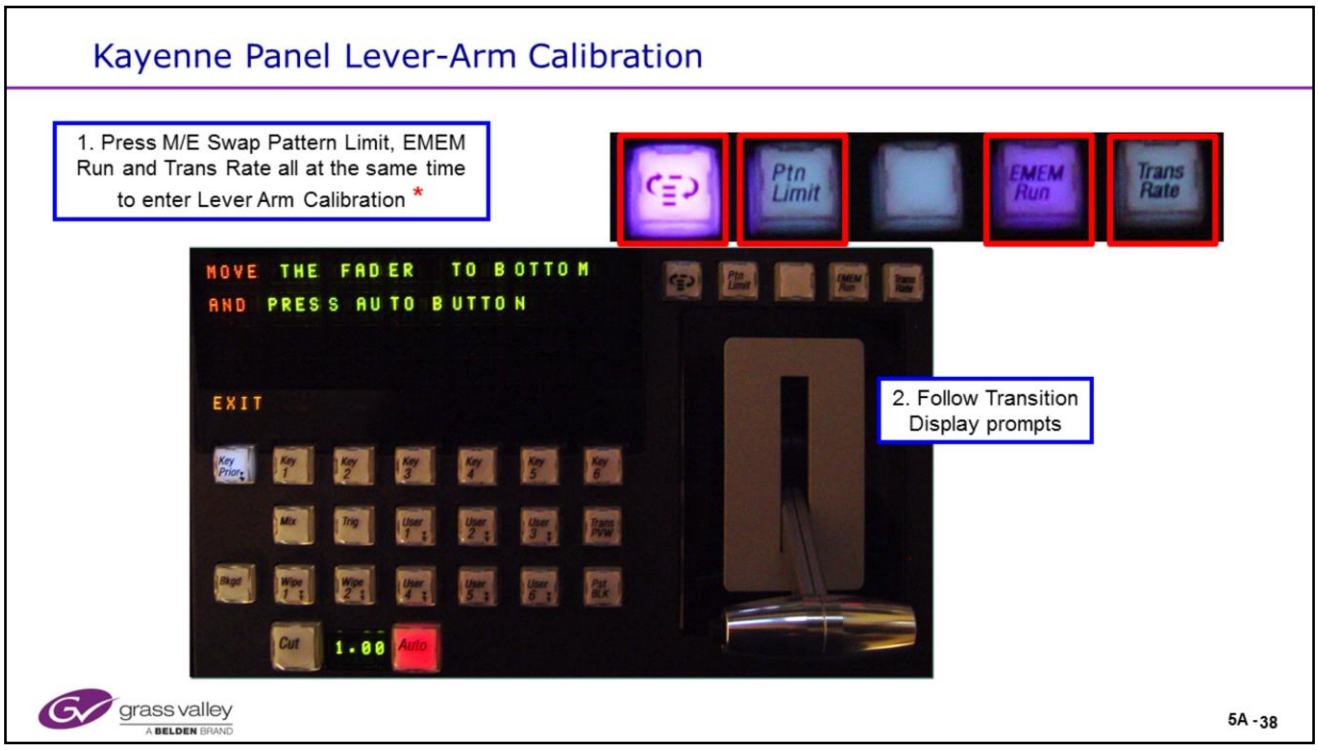
Kayenne Panel – Calibration



Panel Joy Stick Calibration:

- The Joy stick can now be calibrated for all axis by following the on screen prompts on the MFM.
- For Pre – Version 2 Software: For Joy Stick calibration, press the 3 button shown below at the same time to enter the routine. Follow the instruction shown on the MFM displays.

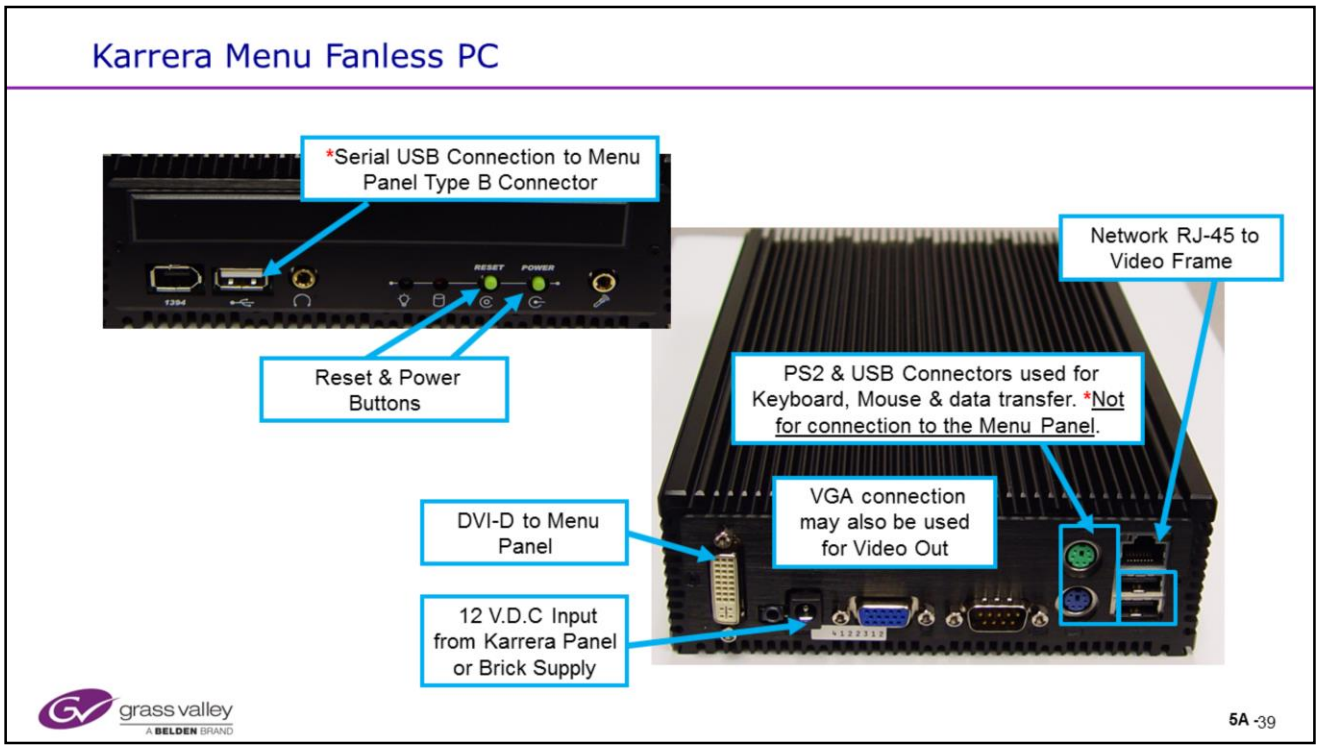




Lever Arm Calibration:

- If you seem to have difficulty entering this mode, please try this slight modification for accessing the Calibration Routine.

*
- Press and Hold the two Outside Buttons (M/E Exchange and Trans Rate).
- While holding those two buttons, also press “Ptn Limit and EMEM Run”.
- Release all 4 Buttons at the same time. The display should look like the slide above, follow the prompts.
- At the end of each action, the Red Button will be pressed to move to the next step in the sequence.
- The “Exit” button may be pressed at any time to exit the routine and not save any of the data.



Karrera Fanless PC Connections

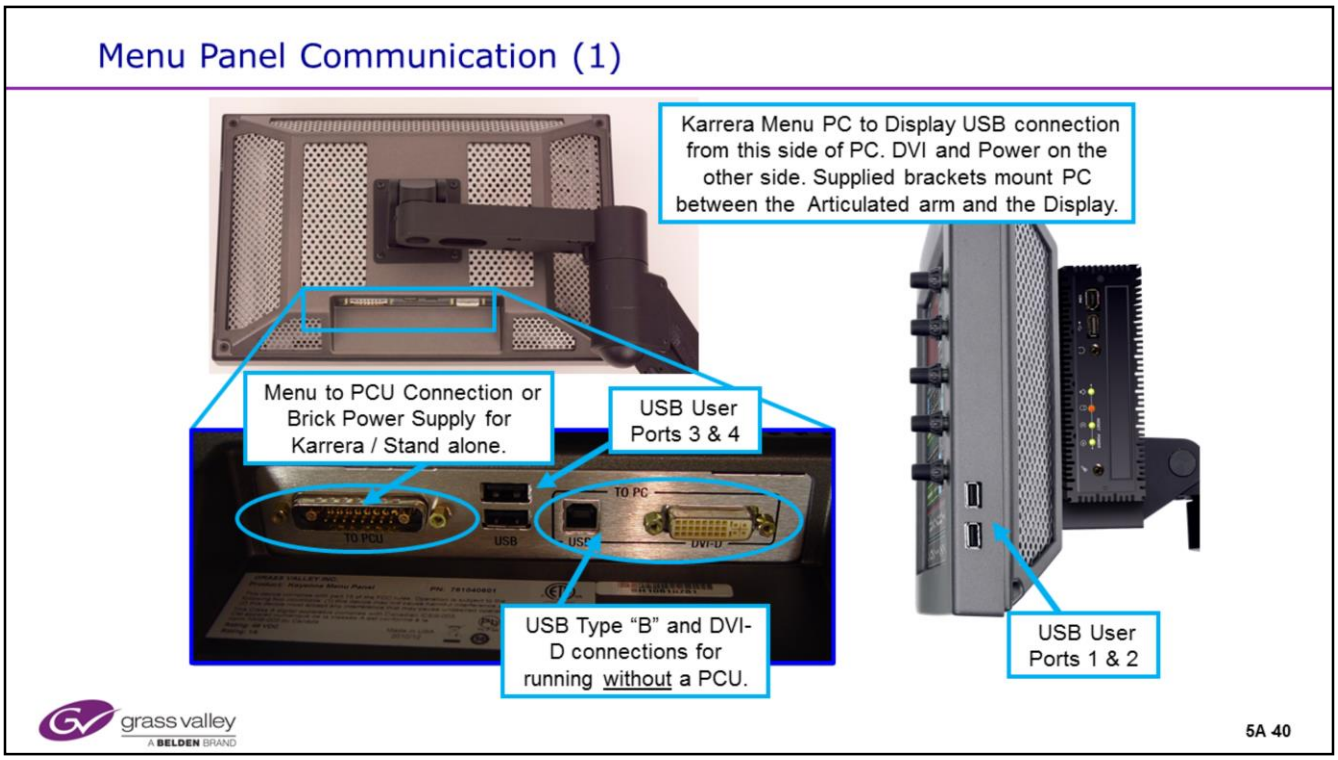
• The Menu is an option on the Karrera System. Most any Windows XP or Windows 7 PC will run the Menu Application. The above PC is an option supplied from Grass Valley with an articulated arm and the Touch Panel.

• The Fanless PC mounts to provided brackets between the VESA mounts of the arm and display panel. The DVI and USB cables in the kit are tailored for the correct lengths.

• Power may be provided by either a cable to the 12 V.D.C. connector on the rear of the Karrera Panels or from a Brick type Power Supply provided with the PC.

• The Touch Screen and Shaft Encoder drivers are included in the 4.0 Kayenne / Karrera software.

• * The Single USB connector next to the 1394 port is the ONLY USB port that may be connected to the menu panel USB “B” connector. If you connect either of the 2 USB connectors on the other end of the Fanless PC, the Touch screen and Shaft Encoders will not work.



Menu Panel Connections

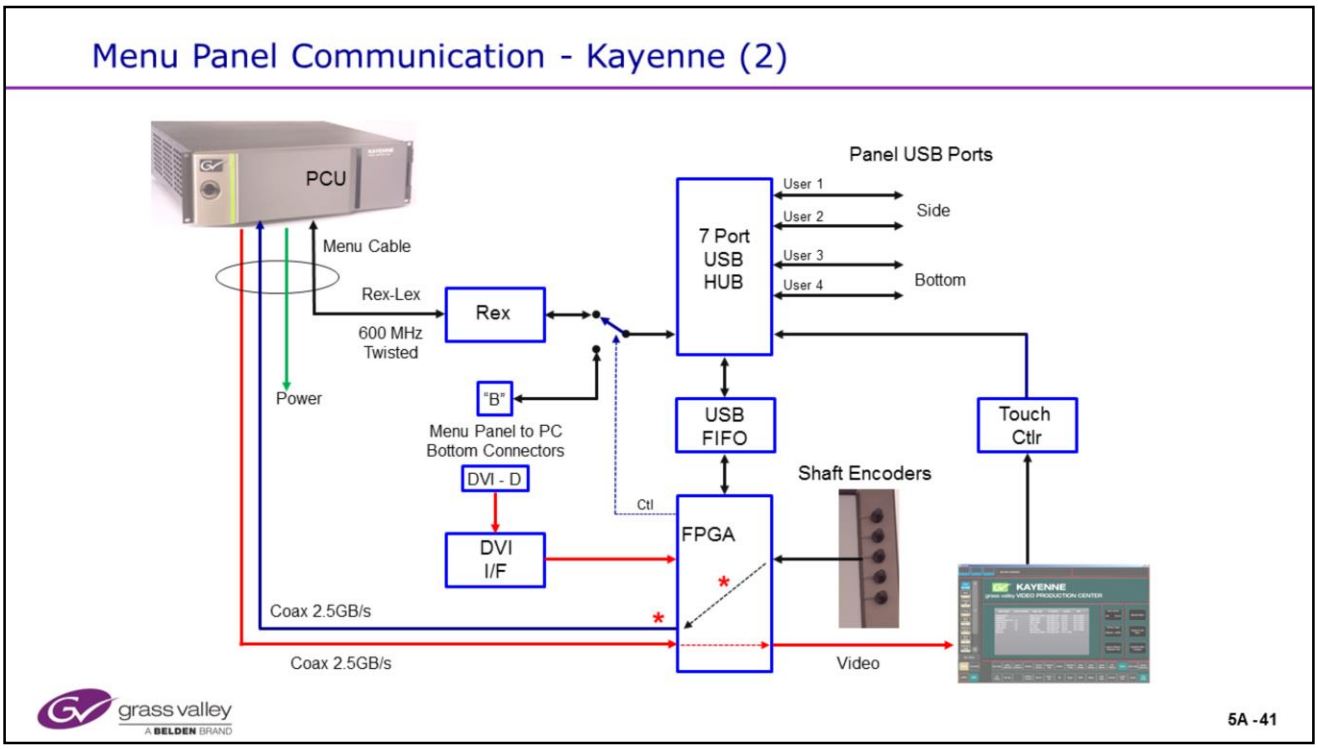
• The Touch Screen Menu resolution is 1280 x 768

• The Menu Panel has 4 usable USB 2 ports. All 4 of the ports are usable by the Windows XP (or Win 7 Menu) processor. Clips and still may be stored to the hard drive for use with the Image Store via USB.

• The menu panel may also display video from an external DVI–D source when connected to the bottom of the panel.

• When a DVI–D source is used in place of a PCU, the Type "B" USB connector will be activated and connected to the Touch Screen controller / drivers, Shaft Encoders and the 4 USB ports.

• When used with Karrera, the menu display and PC are an option. If purchased, the Fanless Windows 7 Menu PC mounts between the articulated arm and the menu display panel on a set of supplied brackets. Appropriate USB, DVI and power cables are supplied. Power (12 V.D.C.) for the PC is supplied from the Karrera Panel. Power for the Display panel (48 V.D.C.) is supplied from a brick supply provided in the kit.



Menu Panel Communications

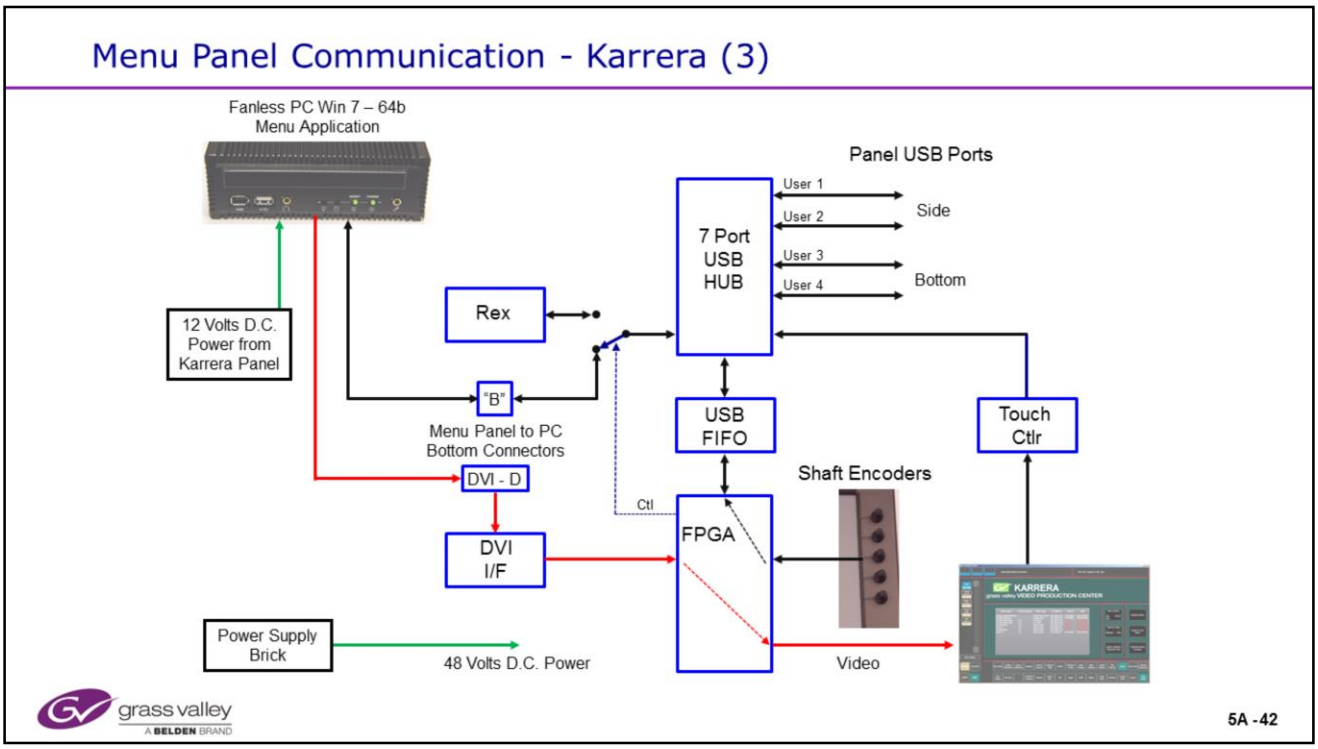
• The Menu Panel cable consists of 2 High Speed (2.5GB/s) coaxial cables, power wires and data twisted pairs for serial communication.

• The Rex-Lex hardware is a proprietary USB Data Extender. This connects the normal USB 2 data between the Windows processor in the PCU frame and the 7 port hub in the menu panel. It operates at 600 MHz and **cannot** be viewed as a conventional serial signal for troubleshooting.

• On Kayenne, the Shaft Encoder data is processed by the FPGA and sent to the PCU by the return data coaxial connection and NOT by the USB and Rex-Lex hardware. * Thus, if a coax failure in the menu cable in the return direction exists, USB ports and Touch Screen *may* work but the Shaft Encoders will not. This return coax is also used for data handshaking back to the PCU.

•The Red lines indicate Video Data paths from the PCU via the forward coaxial cable in the menu cable. The DVI-D connection may also supply video to the display in the case of a standalone menu connected directly to a PC. The connector is a DVI-I type but only supports digital data (DVI-D).

• If video data is not sensed in the FPGA from the PCU connection, the FPGA will select the DVI-D connection for a video source and toggle the serial switch from the Rex circuit to the USB Type B connector on the bottom of the menu panel.



Menu Panel Communications

• The Menu PC and display are options for the Karrera system. They may be used on the Kayenne system in this configuration.

• The Rex-Lex hardware is not used in this configuration. All serial communication from the shaft encoders, touch driver and 4 USB ports are internally multiplexed and switched to the USB type 2 connector on the bottom of the display panel to be connected to the PC.

•The Red lines indicate Video Data paths from the PC via a DVI cable provided in the kit. The DVI-D connection supplies video to the display in the case of this Karrera application or a standalone menu connected directly to a customer provided PC. The connector is a DVI-I type but only supports digital data (DVI-D).

• When video data is not sensed in the FPGA from the PCU connection (not shown on this drawing), the FPGA will select the DVI-D connection for a video source and also toggle the serial switch from the Rex circuit to the USB Type B connector on the bottom of the menu panel.