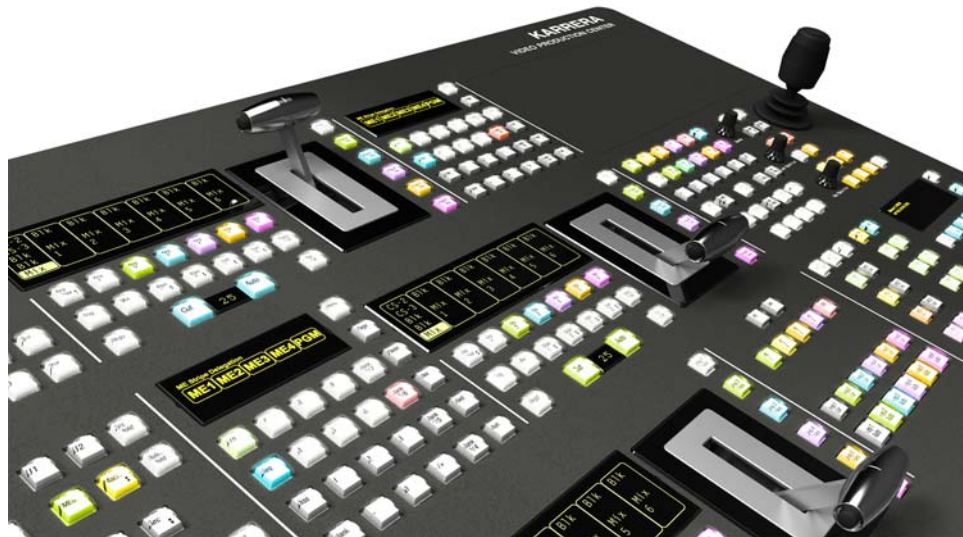# grass valley
A **BELDEN** BRAND

KARRERA K-FRAME
VIDEO PRODUCTION CENTER

Installation & Service Manual

Software Version 9.0

www.grassvalley.com

CERTIFICATE

Certificate Number: 510040.001

The Quality System of:

Grass Valley, A Belden Brand and its Grass Valley Affiliates

Headquarters: **3499 Douglas-B Floreani** **St. Laurent, Quebec H4S 2C6** **Canada**	**3030 NW Aloclek Drive** **Hillsboro, OR 97124** **United States**
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Including its implementation, meets the requirements of the standard:

ISO 9001:2008

Scope:

<u>St. Laurent HQ</u>: The design, manufacture and support of video and audio products and systems.

<u>Grass Valley and Hillsboro</u>: Design, outsource manufacture and support.

<u>Breda</u>: Design, manufacture, including outsource manufacture, and support.

This Certificate is valid until: June 14, 2018
This Certificate is valid as of: June 14, 2015
Certified for the first time: June 14, 2000

Dr. Cem O. Onus
Managing Director, Business Assurance
DEKRA Certification, Inc.

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grass valley

A **BELDEN** BRAND

KARRERA K-FRAME

VIDEO PRODUCTION CENTER

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Grass Valley Web Site

The Grass Valley Web (www.grassvalley.com) site offers the following:

Online User Documentation — Current versions of product catalogs, brochures, data sheets, ordering guides, planning guides, manuals, and release notes are available.

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

Software Downloads — Download software updates, drivers, and patches.

Grass Valley Technical Support

For technical assistance, contact our international support center, at 1-800-547-8949 (US and Canada) or +1 514 333 1772.

To obtain a local phone number for the support center nearest you, please consult the Contact Us section of Grass Valley's Web site (www.grassvalley.com).

An online form for e-mail contact is also available from the Web site.

Recycling

Visit www.grassvalley.com for recycling information.

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Preface

About This Manual

This *Karrera K-Frame Installation & Service Manual* is designed for technical personnel responsible for installing and maintaining Karrera K-Frame Video Production Center systems.

Standard Documentation Set

The standard Karrera K-Frame documentation set consists of a:

* *User Manual*,

* *Installation & Service Manual,*

* *Release Notes*,

* *Release Notes Addendum*,

The *Karrera K-Frame User Manual* contains background information about the Karrera K-Frame Video Production Center, and describes operating procedures. This manual can be used while learning about Karrera K-Frame, and for enhancing your basic knowledge of the system.

The *Karrera K-Frame Installation & Service Manual* contains information about installing, configuring, and maintaining the system.

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

The *Karrera K-Frame Release Notes Addendum* contains corrected and known issues about the system software.

Other Documentation

The *Switcher Products Protocols Manual* is available for developers and software engineers to use to design interfaces to the Karrera K-Frame system.

The K-Frame Ethernet Tally is a proprietary protocol that provides all of the switcher status information required to calculate the Tally state of the

switcher. The K-Frame Ethernet Tally Software Development Kit (SDK) is available to approved vendors who need to interface with the Ethernet Tally system of the K-Frame. Contact Grass Valley Product Management for more information on this SDK.

The *KSP Graphical User Interface Instruction Manual* provides information, requirements, and instructions for operating the 1-ME switcher Soft Panel GUI on a touch screen or regular PC, including the optional customized keyboard.

The *Switcher Concepts Manual* provides an overview of switcher operation and describes basic switcher fundamentals.

Safety Summary

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

WARNING Any instructions in this manual that require opening the equipment cover or enclosure are for use by qualified service personnel only. To reduce the risk of electric shock, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so.

Safety Terms and Symbols

Terms in This Manual

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

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

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

Terms on the Product

The following terms may appear on the product:

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

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

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

Symbols on the Product

The following symbols may appear on the product:

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

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

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

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

Identifies an external protective grounding terminal which may be connected to earth ground as a supplement to an internal grounding terminal.

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

Warnings

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

Dangerous voltage or current may be present — Disconnect power and remove battery (if applicable) before removing protective panels, soldering, or replacing components.

Do not service alone — Do not internally service this product unless another person capable of rendering first aid and resuscitation is present.

Remove jewelry — Prior to servicing, remove jewelry such as rings, watches, and other metallic objects.

Avoid exposed circuitry — Do not touch exposed connections, components or circuitry when power is present.

Use proper power cord — Use only the power cord supplied or specified for this product.

Ground product — Connect the grounding conductor of the power cord to earth ground.

Operate only with covers and enclosure panels in place — Do not operate this product when covers or enclosure panels are removed.

Use correct fuse — Use only the fuse type and rating specified for this product.

Use only in dry environment — Do not operate in wet or damp conditions.

Use only in non-explosive environment — Do not operate this product in an explosive atmosphere.

High leakage current may be present — Earth connection of product is essential before connecting power.

Dual power supplies may be present — Be certain to plug each power supply cord into a separate branch circuit employing a separate service ground. Disconnect both power supply cords prior to servicing.

Double pole neutral fusing — Disconnect mains power prior to servicing.

Use proper lift points — Do not use door latches to lift or move equipment.

Avoid mechanical hazards — Allow all rotating devices to come to a stop before servicing.

Cautions

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

Use correct power source — Do not operate this product from a power source that applies more than the voltage specified for the product.

Use correct voltage setting — If this product lacks auto-ranging power supplies, before applying power ensure that the each power supply is set to match the power source.

Provide proper ventilation — To prevent product overheating, provide equipment ventilation in accordance with installation instructions.

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

Do not operate with suspected equipment failure — If you suspect product damage or equipment failure, have the equipment inspected by qualified service personnel.

Ensure mains disconnect — If mains switch is not provided, the power cord(s) of this equipment provide the means of disconnection. The socket outlet must be installed near the equipment and must be easily accessible. Verify that all mains power is disconnected before installing or removing power supplies and/or options.

Route cable properly — Route power cords and other cables so that they ar not likely to be damaged. Properly support heavy cable bundles to avoid connector damage.

Use correct power supply cords — Power cords for this equipment, if provided, meet all North American electrical codes. Operation of this equipment at voltages exceeding 130 VAC requires power supply cords which comply with NEMA configurations. International power cords, if provided, have the approval of the country of use.

Use correct replacement battery — This product may contain batteries. To reduce the risk of explosion, check polarity and replace only with the same or equivalent type recommended by manufacturer. Dispose of used batteries according to the manufacturer's instructions.

Troubleshoot only to board level — Circuit boards in this product are densely populated with surface mount technology (SMT) components and application specific integrated circuits (ASICS). As a result, circuit board repair at the component level is very difficult in the field, if not impossible. For warranty compliance, do not troubleshoot systems beyond the board level.

Sicherheit – Überblick

Lesen und befolgen Sie die wichtigen Sicherheitsinformationen dieses Abschnitts. Beachten Sie insbesondere die Anweisungen bezüglich Brand-, Stromschlag- und Verletzungsgefahren. Weitere spezifische, hier nicht aufgeführte Warnungen finden Sie im gesamten Handbuch.

WARNUNG **Alle Anweisungen in diesem Handbuch, die das Abnehmen der Geräteabdeckung oder des Gerätegehäuses erfordern, dürfen nur von qualifiziertem Servicepersonal ausgeführt werden. Um die Stromschlaggefahr zu verringern, führen Sie keine Wartungsarbeiten außer den in den Bedienungsanleitungen genannten Arbeiten aus, es sei denn, Sie besitzen die entsprechende Qualifikationen für diese Arbeiten.**

Sicherheit – Begriffe und Symbole

In diesem Handbuch verwendete Begriffe

Sicherheitsrelevante Hinweise können in diesem Handbuch in der folgenden Form auftauchen:

WARNUNG **Warnungen weisen auf Situationen oder Vorgehensweisen hin, die Verletzungs- oder Lebensgefahr bergen.**

VORSICHT Vorsichtshinweise weisen auf Situationen oder Vorgehensweisen hin, die zu Schäden an Ausrüstungskomponenten oder anderen Gegenständen oder zum zeitweisen Ausfall wichtiger Komponenten in der Arbeitsumgebung führen können.

Hinweise am Produkt

Die folgenden Hinweise können sich am Produkt befinden:

GEFAHR — Wenn Sie diesen Begriff lesen, besteht ein unmittelbares Verletzungsrisiko.

WARNUNG — Wenn Sie diesen Begriff lesen, besteht ein mittelbares Verletzungsrisiko.

VORSICHT — Es besteht ein Risiko für Objekte in der Umgebung, den Mixer selbst oder andere Ausrüstungskomponenten.

Symbole am Produkt

Die folgenden Symbole können sich am Produkt befinden:

Weist auf eine gefährliche Hochspannung im Gerätegehäuse hin, die stark genug sein kann, um eine Stromschlaggefahr darzustellen.

Weist darauf hin, dass der Benutzer, Bediener oder Servicetechniker wichtige Bedienungs-, Wartungs- oder Serviceanweisungen in den Produkthandbüchern lesen sollte.
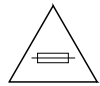
Dies ist eine Aufforderung, beim Wechsel von Sicherungen auf deren Nennwert zu achten. Die im Text angegebene Sicherung muss durch eine Sicherung ersetzt werden, die die angegebenen Nennwerte besitzt.

Weist auf eine Schutzerdungsklemme hin, die mit dem Erdungskontakt verbunden werden muss, bevor weitere Ausrüstungskomponenten angeschlossen werden.

Weist auf eine externe Schutzerdungsklemme hin, die als Ergänzung zu einem internen Erdungskontakt an die Erde angeschlossen werden kann.

Weist darauf hin, dass es statisch empfindliche Komponenten gibt, die durch eine elektrostatische Entladung beschädigt werden können. Verwenden Sie antistatische Prozeduren, Ausrüstung und Oberflächen während der Wartung.

Warnungen

Die folgenden Warnungen weisen auf Bedingungen oder Vorgehensweisen hin, die Verletzungs- oder Lebensgefahr bergen:

Gefährliche Spannungen oder Ströme — Schalten Sie den Strom ab, und entfernen Sie ggf. die Batterie, bevor sie Schutzabdeckungen abnehmen, löten oder Komponenten austauschen.

Servicearbeiten nicht alleine ausführen — Führen Sie interne Servicearbeiten nur aus, wenn eine weitere Person anwesend ist, die erste Hilfe leisten und Wiederbelebungsmaßnahmen einleiten kann.

Schmuck abnehmen — Legen Sie vor Servicearbeiten Schmuck wie Ringe, Uhren und andere metallische Objekte ab.

Keine offen liegenden Leiter berühren — Berühren Sie bei eingeschalteter Stromzufuhr keine offen liegenden Leitungen, Komponenten oder Schaltungen.

Richtiges Netzkabel verwenden — Verwenden Sie nur das mitgelieferte Netzkabel oder ein Netzkabel, das den Spezifikationen für dieses Produkt entspricht.

Gerät erden — Schließen Sie den Erdleiter des Netzkabels an den Erdungskontakt an.

Gerät nur mit angebrachten Abdeckungen und Gehäuseseiten betreiben — Schalten Sie dieses Gerät nicht ein, wenn die Abdeckungen oder Gehäuseseiten entfernt wurden.

Richtige Sicherung verwenden — Verwenden Sie nur Sicherungen, deren Typ und Nennwert den Spezifikationen für dieses Produkt entsprechen.

Gerät nur in trockener Umgebung verwenden — Betreiben Sie das Gerät nicht in nassen oder feuchten Umgebungen.

Gerät nur verwenden, wenn keine Explosionsgefahr besteht — Verwenden Sie dieses Produkt nur in Umgebungen, in denen keinerlei Explosionsgefahr besteht.

Hohe Kriechströme — Das Gerät muss vor dem Einschalten unbedingt geerdet werden.

Doppelte Spannungsversorgung kann vorhanden sein — Schließen Sie die beiden Anschlußkabel an getrennte Stromkreise an. Vor Servicearbeiten sind beide Anschlußkabel vom Netz zu trennen.

Zweipolige, neutrale Sicherung — Schalten Sie den Netzstrom ab, bevor Sie mit den Servicearbeiten beginnen.

Fassen Sie das Gerät beim Transport richtig an — Halten Sie das Gerät beim Transport nicht an Türen oder anderen beweglichen Teilen fest.

Gefahr durch mechanische Teile — Warten Sie, bis der Lüfter vollständig zum Halt gekommen ist, bevor Sie mit den Servicearbeiten beginnen.

Vorsicht

Die folgenden Vorsichtshinweise weisen auf Bedingungen oder Vorgehensweisen hin, die zu Schäden an Ausrüstungskomponenten oder anderen Gegenständen führen können:

Gerät nicht öffnen — Durch das unbefugte Öffnen wird die Garantie ungültig.

Richtige Spannungsquelle verwenden — Betreiben Sie das Gerät nicht an einer Spannungsquelle, die eine höhere Spannung liefert als in den Spezifikationen für dieses Produkt angegeben.

Gerät ausreichend belüften — Um eine Überhitzung des Geräts zu vermeiden, müssen die Ausrüstungskomponenten entsprechend den Installationsanweisungen belüftet werden. Legen Sie kein Papier unter das Gerät. Es könnte die Belüftung behindern. Platzieren Sie das Gerät auf einer ebenen Oberfläche.

Antistatische Vorkehrungen treffen — Es gibt statisch empfindliche Komponenten, die durch eine elektrostatische Entladung beschädigt werden können. Verwenden Sie antistatische Prozeduren, Ausrüstung und Oberflächen während der Wartung.

CF-Karte nicht mit einem PC verwenden — Die CF-Karte ist speziell formatiert. Die auf der CF-Karte gespeicherte Software könnte gelöscht werden.

Gerät nicht bei eventuellem Ausrüstungsfehler betreiben — Wenn Sie einen Produktschaden oder Ausrüstungsfehler vermuten, lassen Sie die Komponente von einem qualifizierten Servicetechniker untersuchen.

Kabel richtig verlegen — Verlegen Sie Netzkabel und andere Kabel so, dass Sie nicht beschädigt werden. Stützen Sie schwere Kabelbündel ordnungsgemäß ab, damit die Anschlüsse nicht beschädigt werden.

Richtige Netzkabel verwenden — Wenn Netzkabel mitgeliefert wurden, erfüllen diese alle nationalen elektrischen Normen. Der Betrieb dieses Geräts mit Spannungen über 130 V AC erfordert Netzkabel, die NEMA-Konfigurationen entsprechen. Wenn internationale Netzkabel mitgeliefert wurden, sind diese für das Verwendungsland zugelassen.

Richtige Ersatzbatterie verwenden — Dieses Gerät enthält eine Batterie. Um die Explosionsgefahr zu verringern, prüfen Sie die Polarität und tauschen die Batterie nur gegen eine Batterie desselben Typs oder eines gleichwertigen, vom Hersteller empfohlenen Typs aus. Entsorgen Sie gebrauchte Batterien entsprechend den Anweisungen des Batterieherstellers.

Das Gerät enthält keine Teile, die vom Benutzer gewartet werden können. Wenden Sie sich bei Problemen bitte an den nächsten Händler.

Consignes de sécurité

Il est recommandé de lire, de bien comprendre et surtout de respecter les informations relatives à la sécurité qui sont exposées ci-après, notamment les consignes destinées à prévenir les risques d'incendie, les décharges électriques et les blessures aux personnes. Les avertissements complémentaires, qui ne sont pas nécessairement repris ci-dessous, mais présents dans toutes les sections du manuel, sont également à prendre en considération.

AVERTISSEMENT **Toutes les instructions présentes dans ce manuel qui concernent l'ouverture des capots ou des logements de cet équipement sont destinées exclusivement à des membres qualifiés du personnel de maintenance. Afin de diminuer les risques de décharges électriques, ne procédez à aucune intervention d'entretien autre que celles contenues dans le manuel de l'utilisateur, à moins que vous ne soyez habilité pour le faire.**

Consignes et symboles de sécurité

Termes utilisés dans ce manuel

Les consignes de sécurité présentées dans ce manuel peuvent apparaître sous les formes suivantes:

AVERTISSEMENT **Les avertissements signalent des conditions ou des pratiques susceptibles d'occasionner des blessures graves, voire même fatales.**

ATTENTION Les mises en garde signalent des conditions ou des pratiques susceptibles d'occasionner un endommagement à l'équipement ou aux installations, ou de rendre l'équipement temporairement non opérationnel, ce qui peut porter préjudice à vos activités.

Signalétique apposée sur le produit

La signalétique suivante peut être apposée sur le produit:

DANGER — risque de danger imminent pour l'utilisateur.

AVERTISSEMENT — Risque de danger non imminent pour l'utilisateur.

MISE EN GARDE — Risque d'endommagement du produit, des installations ou des autres équipements.

Symboles apposés sur le produit

Les symboles suivants peut être apposés sur le produit:

Signale la présence d'une tension élevée et dangereuse dans le boîtier de l'équipement ; cette tension peut être suffisante pour constituer un risque de décharge électrique.

Signale que l'utilisateur, l'opérateur ou le technicien de maintenance doit faire référence au(x) manuel(s) pour prendre connaissance des instructions d'utilisation, de maintenance ou d'entretien.
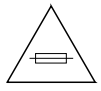
Il s'agit d'une invite à prendre note du calibre du fusible lors du remplacement de ce dernier. Le fusible auquel il est fait référence dans le texte doit être remplacé par un fusible du même calibre.

Identifie une borne de protection de mise à la masse qui doit être raccordée correctement avant de procéder au raccordement des autres équipements.

Identifie une borne de protection de mise à la masse qui peut être connectée en tant que borne de mise à la masse supplémentaire.

Signale la présence de composants sensibles à l'électricité statique et qui sont susceptibles d'être endommagés par une décharge électrostatique. Utilisez des procédures, des équipements et des surfaces antistatiques durant les interventions d'entretien.

Avertissements

Les avertissements suivants signalent des conditions ou des pratiques susceptibles d'occasionner des blessures graves, voire même fatales:

Présence possible de tensions ou de courants dangereux — Mettez hors tension, débranchez et retirez la pile (le cas échéant) avant de déposer les couvercles de protection, de défaire une soudure ou de remplacer des composants.

Ne procédez pas seul à une intervention d'entretien — Ne réalisez pas une intervention d'entretien interne sur ce produit si une personne n'est pas présente pour fournir les premiers soins en cas d'accident.

Retirez tous vos bijoux — Avant de procéder à une intervention d'entretien, retirez tous vos bijoux, notamment les bagues, la montre ou tout autre objet métallique.

Évitez tout contact avec les circuits exposés — Évitez tout contact avec les connexions, les composants ou les circuits exposés s'ils sont sous tension.

Utilisez le cordon d'alimentation approprié — Utilisez exclusivement le cordon d'alimentation fourni avec ce produit ou spécifié pour ce produit.

Raccordez le produit à la masse — Raccordez le conducteur de masse du cordon d'alimentation à la borne de masse de la prise secteur.

Utilisez le produit lorsque les couvercles et les capots sont en place — N'utilisez pas ce produit si les couvercles et les capots sont déposés.

Utilisez le bon fusible — Utilisez exclusivement un fusible du type et du calibre spécifiés pour ce produit.

Utilisez ce produit exclusivement dans un environnement sec — N'utilisez pas ce produit dans un environnement humide.

Utilisez ce produit exclusivement dans un environnement non explosible — N'utilisez pas ce produit dans un environnement dont l'atmosphère est explosible.

Présence possible de courants de fuite — Un raccordement à la masse est indispensable avant la mise sous tension.

Deux alimentations peuvent être présentes dans l'équipement — Assurez vous que chaque cordon d'alimentation est raccordé à des circuits de terre séparés. Débranchez les deux cordons d'alimentation avant toute intervention.

Fusion neutre bipolaire — Débranchez l'alimentation principale avant de procéder à une intervention d'entretien.

Utilisez les points de levage appropriés — Ne pas utiliser les verrous de la porte pour lever ou déplacer l'équipement.

Évitez les dangers mécaniques — Laissez le ventilateur s'arrêter avant de procéder à une intervention d'entretien.

Mises en garde

Les mises en garde suivantes signalent les conditions et les pratiques susceptibles d'occasionner des endommagements à l'équipement et aux installations:

N'ouvrez pas l'appareil — Toute ouverture prohibée de l'appareil aura pour effet d'annuler la garantie.

Utilisez la source d'alimentation adéquate — Ne branchez pas ce produit à une source d'alimentation qui utilise une tension supérieure à la tension nominale spécifiée pour ce produit.

Assurez une ventilation adéquate — Pour éviter toute surchauffe du produit, assurez une ventilation de l'équipement conformément aux instructions d'installation. Ne déposez aucun document sous l'appareil — ils peuvent gêner la ventilation. Placez l'appareil sur une surface plane.

Utilisez des procédures antistatiques - Les composants sensibles à l'électricité statique présents dans l'équipement sont susceptibles d'être endommagés par une décharge électrostatique. Utilisez des procédures, des équipements et des surfaces antistatiques durant les interventions d'entretien.

N'utilisez pas la carte CF avec un PC — La carte CF a été spécialement formatée. Le logiciel enregistré sur la carte CF risque d'être effacé.

N'utilisez pas l'équipement si un dysfonctionnement est suspecté — Si vous suspectez un dysfonctionnement du produit, faites inspecter celui-ci par un membre qualifié du personnel d'entretien.

Acheminez les câbles correctement — Acheminez les câbles d'alimentation et les autres câbles de manière à ce qu'ils ne risquent pas d'être endommagés. Supportez correctement les enroulements de câbles afin de ne pas endommager les connecteurs.

Utilisez les cordons d'alimentation adéquats — Les cordons d'alimentation de cet équipement, s'ils sont fournis, satisfont aux exigences de toutes les réglementations régionales. L'utilisation de cet équipement à des tensions dépassant les 130 V en c.a. requiert des cordons d'alimentation qui satisfont aux exigences des configurations NEMA. Les cordons internationaux, s'ils sont fournis, ont reçu l'approbation du pays dans lequel l'équipement est utilisé.

Utilisez une pile de remplacement adéquate — Ce produit renferme une pile. Pour réduire le risque d'explosion, vérifiez la polarité et ne remplacez la pile que par une pile du même type, recommandée par le fabricant. Mettez les piles usagées au rebut conformément aux instructions du fabricant des piles.

Cette unité ne contient aucune partie qui peut faire l'objet d'un entretien par l'utilisateur. Si un problème survient, veuillez contacter votre distributeur local.

Regulatory Notices

Certifications and Compliances

FCC Emission Control

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense. Changes or modifications not expressly approved by Grass Valley Group can affect emission compliance and could void the user's authority to operate this equipment.

Canadian EMC Notice of Compliance

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numérique n'emet pas de bruits radioélectriques dépassant les limites applicables aux appareils numeriques de la classe A préscrites dans le Règlement sur le brouillage radioélectrique édicte par le ministère des Communications du Canada.

EN55022 Class A Warning

For products that comply with Class A. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Canadian Certified Power Cords

Canadian approval includes the products and power cords appropriate for use in the North America power network. All other power cords supplied are approved for the country of use.

Canadian Certified AC Adapter

Canadian approval includes the AC adapters appropriate for use in the North America power network. All other AC adapters supplied are approved for the country of use.

FCC Emission Limits

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

Certification

This product has been evaluated for Electromagnetic Compatibility under the EN 55103-1/2 standards for Emissions and Immunity and meets the requirements for E4 environment.

This product complies with Class A. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

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

Category	Standard	Designed/tested for compliance with:
Safety	UL 60950	UL 60950-1 Issue 2007/03/27 Ed. 2 Information Technology Equipment-Safety Part 1 General Requirements.
	IEC 60950	IEC 60950-1 Issue: 2005/12/08 Ed. 2 Information Technology Equipment-Safety Part 1 General Requirements; Corrigendum 1: 8/2006; Amendment 1: 2009/12/17.
	CAN C22.2, No. 60950	C22.2 #60950-1 Issue 2007/03/01 Ed. 2 Information Technology Equipment-Safety-Part 1 General Requirements.
	EN60950	Safety of Information Technology Equipment, including Electrical Business Equipment.
	2006/95/EC	Low Voltage Directive

Category	Standard	Designed/tested for compliance with:
EMC	EMC Directive 2004/108/EC via EN 55103-1 and 2	Audio, Video and Entertainment Lighting Control for the European Community.
	EN55103-1 : 2009	Electromagnetic compatibility. Product family standard for audio, video, audio-visual and entertainment lighting control apparatus for professional use. Part 1 Emissions, Environment E4 EN 55022: Class A Radiated Emissions EN 61000-3-2: Powerline Harmonic Emissions EN 61000-3-3: Voltage Fluctuations "Flicker" EN 55022: Class A Conducted Emissions Radiated Magnetic Field Emissions Peak Inrush Current
	EN55103-2 : 2009	Electromagnetic compatibility--Product family standard for audio, video, audio-visual and entertainment lighting control apparatus for professional use. Part 2 Immunity, Environment E4 EN 61000-4-3: Radiated RF Immunity EN 61000-4-2: Electrostatic Discharge "ESD" EN 61000-4-4: Electrical Fast Transients "EFT" EN 61000-4-11: Voltage Dips & Fluctuations EN 61000-4-5: Power Line Surge EN 61000-4-6: Conducted RF Immunity Radiated Magnetic Field Immunity
	US FCC Class A	CISPR Pub. 22 (1985)
	Canada FCC Industry Canada	ICES-003
	Australia & New Zealand:	AS/NZS 3548

Introduction

Overview

The Grass Valley K-Frame family of multi-format digital production switchers provides powerful, ground-breaking features designed to meet the widest range of requirements for live studio, mobile, and post-production applications.

The K-Frame Video Processor is the heart of the system, providing extensive video switching and signal processing capabilities. This functionality is controlled using:

- a Kayenne control surface,
- a Karrera control surface,
- the Soft Panel (KSP option), and/or
- the Menu application running on a PC.

In addition, a K-Frame system supports direct control of external devices (DDRs, Servers) and bi-directional control to and from routing and automation systems.

Features

General

- Fully digital 10-bit 4:2:2 video switcher including Future-Ready 4K and 1080p (level A or B) support.

- Optional smart I/O modules provide up/down/cross-conversion when licensed with SetDef and MatchDef.

- Optional IP I/O modules with support for 16 bidirectional SMPTE 2022-6 IP signals in the Compact (S-series) frame and 32 in the Standard—offering a range of options for mixing and matching IP and SDI.

- Integrated Macro Builder/Editor allows users to edit macros online or offline on a PC running the menu application.

- Optional DoubleTake™ (split M/E mode) effectively increases the number of M/Es and adds flexibility to Suites operation while FlexiKey™ programmable clean feed mode supports separately programmable configurations of keyers from four M/E outputs.

- Aux bus transitions for dissolves and wipes on aux bus outputs.

- Interfaces with Grass Valley routers and Kaleido Multiviewers and their control systems.

- Optional Integrated Image Store capable of delivering up to 32 GB storage of Stills (3,000 images) or "Movies" (a total of 50 seconds) of 1080p video.

- LDK Series and LDX Series camera control with Ethernet tally via Connect Gateway.

- Optional integrated external ClipStore provides multiple channels of video/key pairs for up to 10+ hours of nonvolatile video/key/audio clip content.

- 999 macros with many new ways to recall macros from the Control Panel.

- 1,000 E-MEM registers with Define E-MEM for fine control in creation and editing of effects.

- Optional M/E Previewer provides a method to check and monitor any input to an M/E.

- VDCP Ethernet connection for stadium applications.

- Ethernet tally connection for integration with external tally systems.

- Optional RGB color correction on M/E buses and aux bus outputs.

- Source Rules:

    - Links keyers to sources.

    - Settings for On/Off/Left Alone on every M/E.

    - Full look-ahead preview of rules.

- Hot-swappable, front/rear removable modules and power supplies.

- Optional multiple Multiviewer capability with 5 pre-configured layouts (maximum 14 panes per layout) with On-Air and Preview tally.

K-Frame Standard Frame

- Up to 192 inputs and 96 outputs.

- Up to 9 M/Es, accessible across two suites—by using DoubleTake this may be increased to 18 virtual M/Es.

- Every M/E has six keyers with standard keying modes including Chroma Key, a pool of floating 3D iDPMs, and two frame stores per keyer—the Controller M/E cannot use floating 3D iDPMs.

- 2D-DPMs (resizers) on every keyer, with 6 pairs per M/E so iDPMs can be utilized for more complex effects.

- The Controller M/E has a complement of 6 full keyers with Chroma Key and 2D-DPMs.

- Up to 16 iDPMs (Integrated Digital Picture Manipulators), assigned as either floating iDPMs or within an eDPM at user's discretion.

K-Frame Compact Frame

- Up to 80 inputs and 48 outputs.

- Up to 5 M/Es, accessible across two suites, increased to 10 virtual M/Es by using DoubleTake.

- Every M/E has six keyers with standard keying modes including Chroma Key, two frame stores per keyer—every keyer except for Controller M/E can use the pool of floating 3D iDPMs.

- 2D-DPMs (resizers) on every keyer.

- The Controller M/E has a complement of 6 full keyers with Chroma Key and 2D-DPMs.

- Up to 8 iDPMs (Integrated Digital Picture Manipulators), assigned as either floating iDPMs or within an eDPM at user's discretion.

K-Frame Compact S-series Frame (Differences)

- Up to 6 M/Es, accessible across two suites, increased to 12 virtual M/Es by using DoubleTake.

- Every M/E has four keyers with standard keying modes including Chroma Key and every keyer can use the pool of floating 3D iDPMs (Key Stores are not available).

- 2D-DPMs (resizers) on every keyer.

- Controller M/E replaced by a pair of Multiviewers with pre-configured layouts and On-Air/Preview tally.

K-Frame Video Processor

The K-Frame Video Processor is available in two sizes, the 13RU Standard and the 6RU Compact. The number of licensed boards present in the frame determines the number of MEs available, as well as the number of video inputs, outputs, GPIOs and Relay Tallies.

Figure 1. K-Frame Video Processors

K-Frame 13-RU
Video Processor

K-Frame 6-RU
Video Processor

Integrated Power Supplies

Frame Power Supply 1-RU
(For Standard K-Frame only)

8875_01r1
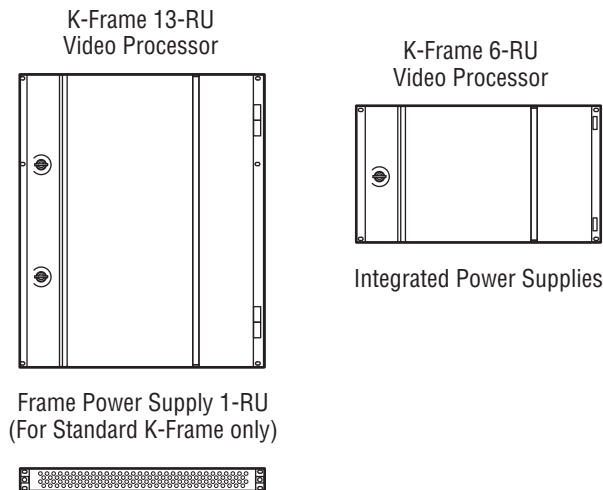
K-Frame Control Surfaces

Karrera

A Karrera control surface typically consists of a Control Panel and a Menu application. Representative Karrera control surfaces are shown in the following illustrations.

Figure 2. Karrera 3-ME 35 Control Surface

Karrera 3-ME 35 Control Panel

Menu Panel
Articulated
Arm

Optional Touch Screen
Karrera Menu Panel with
Fanless PC
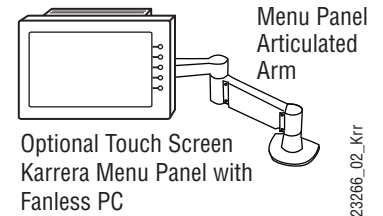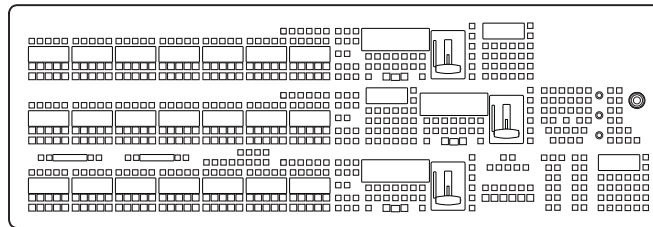
8623266_02_Krr

Figure 3. Karrera 2-ME 25 Control Surface

Karrera 2-ME 25 Control Panel
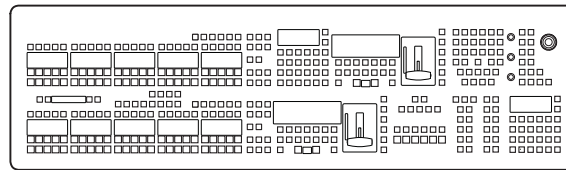
Karrera Menu on PC

(Customer Supplied PC)

8623266_03_Krr

Touch Screen Menu Panel Option

A hardware Karrera Menu Panel is available as an option, which features a wide format 15 in. touch screen display. An articulated arm is also included, offering a wide variety of installation options.

Figure 4. Menu Panel with Articulated Arm
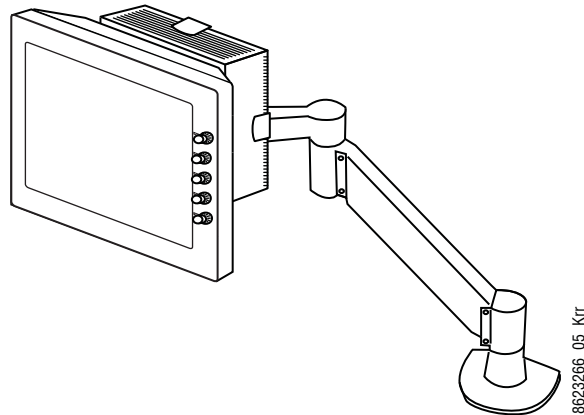
The Menu Panel has a standard VESA-75 hole pattern and M4 threads, compatible with this and many other mounting devices. The Menu Panel also has four USB ports, two on the right side edge of the panel and two on the back for keyboard and mouse (wired or wireless are supported).

A fanless PC, running Windows OS, is available which mounts behind the Menu Panel.

Soft Panel (KSP) Option

Figure 5. Soft Panel Application

The KSP is an optional 1-ME Soft Panel GUI which provides direct control of switching crosspoints, recalling effects and macros together with an integrated version of the Menu application. A customized PC keyboard is included with the option for users who like quick cut and mix action from a hard-button interface. The KSP can be used as an adjunct to a main panel, providing a second seat (second control surface) in a Suite, or as the only control surface for a second Suite.

The KSP GUI application is designed to run on a PC platform. The screen must be 1920x1080 resolution or better (which is common in professional video environments). A touchscreen is not required, but can be very useful.

The KSP software is included with the switcher application software. Purchasing the option provides a software license that enables the interface for the selected switcher, and includes a customized PC keyboard. The license activates an unlimited number of KSP applications associated with the licensed video processor frame. Additional customized PC keyboards are also available for purchase.

Menu Application

The Menu application software provided with every K-Frame system can be run on a standard PC. This software accesses all the system's functionality, permitting mouse and keyboard control from a laptop, or remote control from any location on the network.

Karrera K-Frame System Examples

Basic Single Suite Karrera Panel System

A basic K-Frame system consists of a Control Panel, a Menu application running on a PC, and a Video Processor Frame. The Control Panel and Menu application make up a control surface associated with that frame.

Figure 6. Karrera Single Suite Compact Frame Example

Karrera 2-ME 25 Control Panel   Karrera Menu on PC   Compact 6-RU K-Frame

8875_19

(Customer Supplied PC)
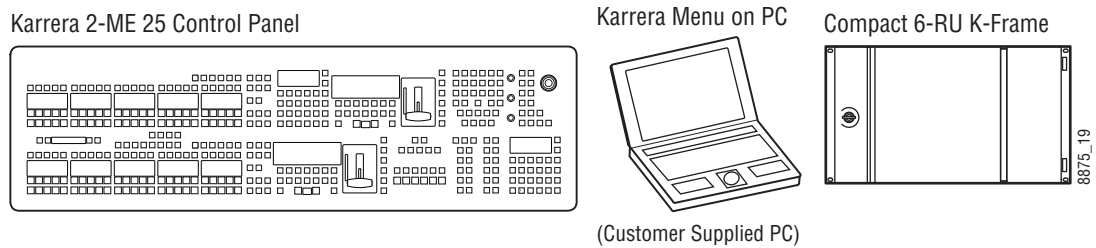
Multiple Suites and Control Surfaces

A K-Frame system can be subdivided into two suites, if desired, each of which can have two control surfaces. Hardware resources in the Video Processor Frame can be assigned to an individual suite during configuration, essentially creating two separate switchers sharing one K-Frame.

Figure 7. Karrera Multi-Suite Standard Frame Example

Suite 1

Karrera 3-ME 35 Control Panel

Optional Touch Screen
Karrera Menu Panel with
with Fanless PC and
Articulated Arm

KSP 1-ME
Soft Panel Option
(Keyboard Included)

Standard 13-RU
K-Frame

(Customer Supplied PC)

8878_01

Suite 2

Karrera 2-ME 25 Control Panel

Karrera Menu on PC

(Customer Supplied PC)
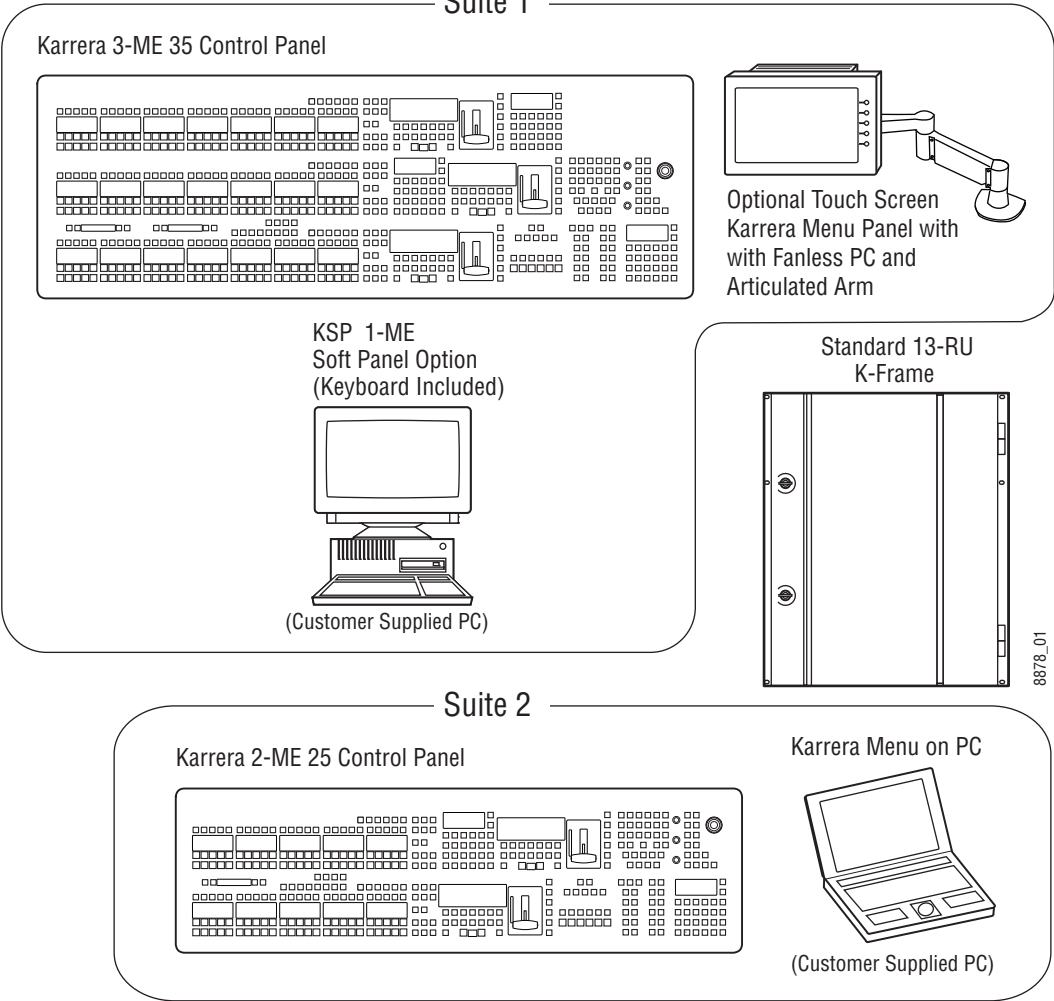
Supported Control Protocols

- PBus II

- GPI Inputs and Outputs

- Serial BVW-75 for VTR control

- Odetics protocol for VTR control

- AMP (advanced media protocol) for Profile PVS, Profile XP Media Platform, K2, M-Series, Turbo iDDR, and T2 iDDR systems over Ethernet

- Grass Valley Native Protocol for routers/routing control systems (Trinix/Trinix NXT, Venus™, Triton™, and third-party routers; Jupiter and Encore router control systems)

- Tally (contact closure)

- K-Frame Ethernet Tally protocol

- Ethernet CPL to control Grass Valley external remote AUX Panels

- Grass Valley Editor protocol

- SNMP system monitoring

- Serial and Ethernet VDCP

- LDK Series & LDX Series™ camera control with Ethernet tally via Connect Gateway

Control Surface Installation

Overview

A typical Karrera control surface has a Control Panel and a Karrera Menu on PC or Menu Panel option.

3-ME Karrera Control Panel Installation

Figure 8. 3-ME Karrera Control Panel Dimensions
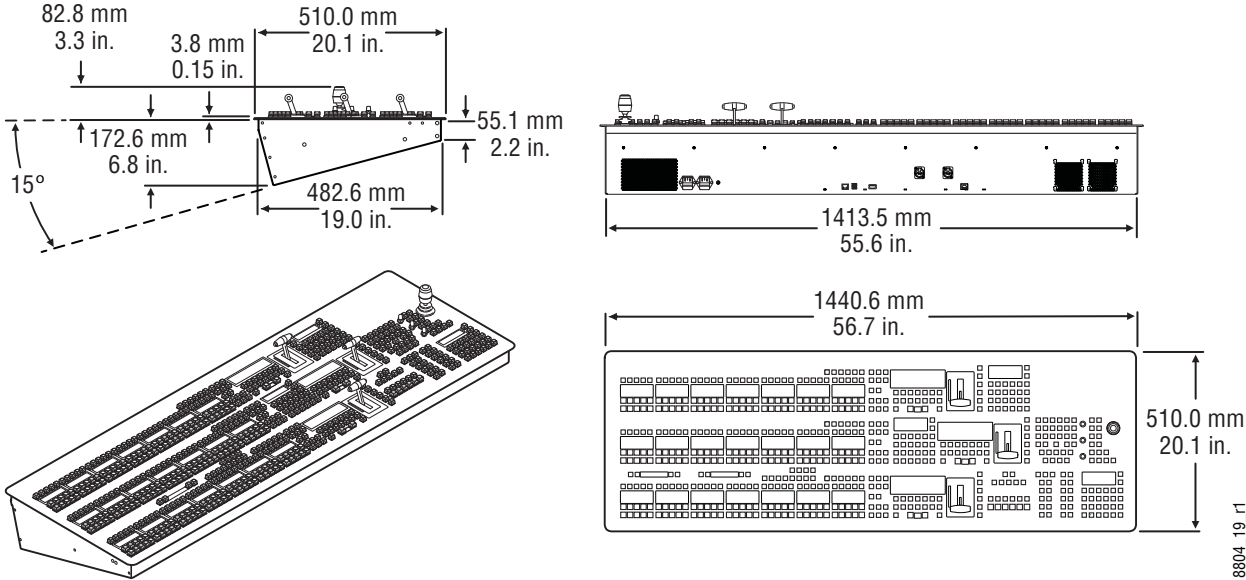
Figure 9. 3-ME Karrera Control Panel Cutout Dimensions

13.5 mm
0 13.6 mm
0.53 in.

13.5 mm

13.6 mm
0.53 in.

44.5 mm
1.7 in.

198.0 mm
7.8 in.

223.0 mm
8.8 in.

287.0 mm
11.3 in.

455.5 mm
17.9 in.

625.5 mm
24.6 in.

495.4 mm
19.5 in.

715.4 mm
28.2 in.

596.6 mm
23.5 in.

1413.5 mm
55.6 in.

484.6 mm
19.1 in.

3ME Cutout Dimensions

1415.5 mm
55.7 in.
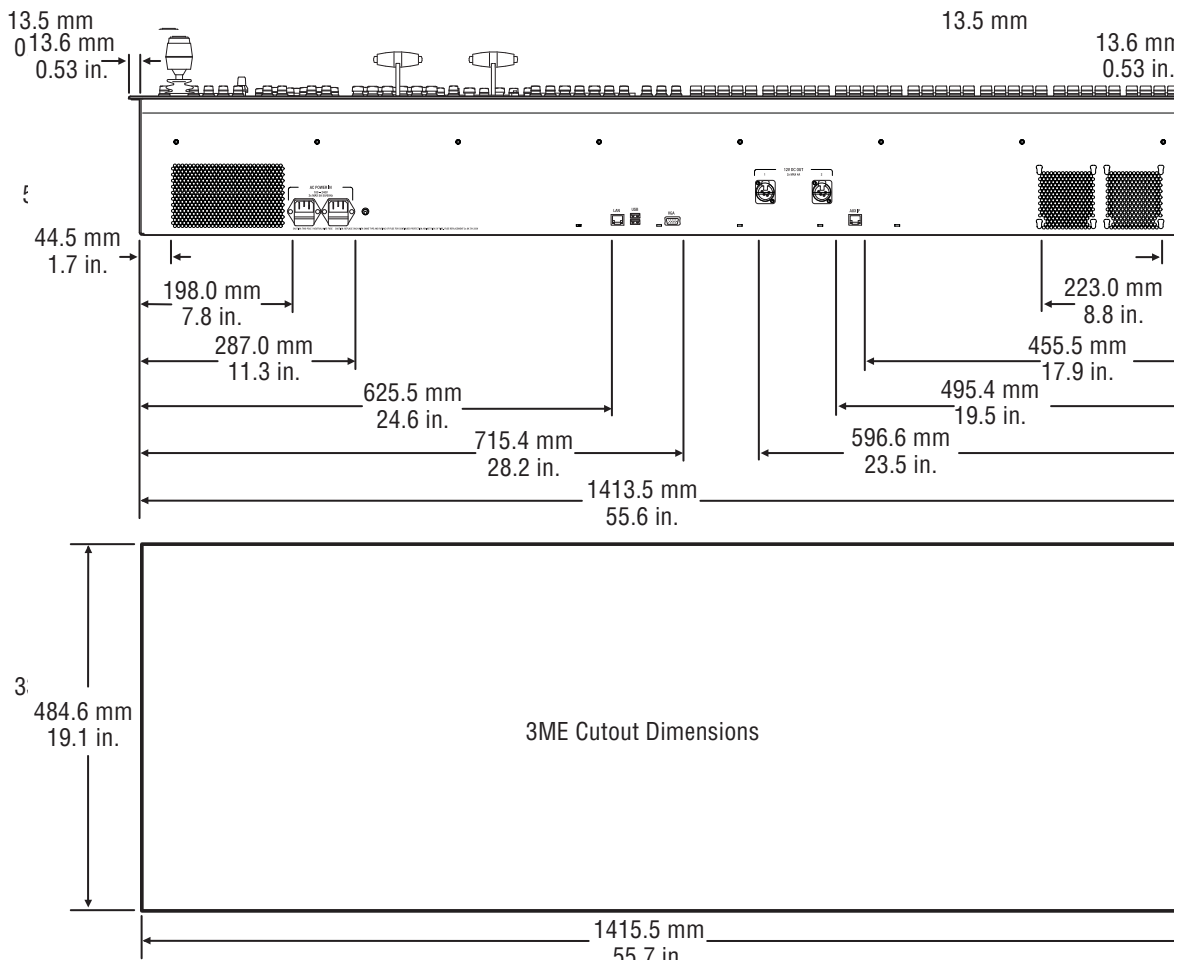
Figure 10. 3-ME Karrera Control Panel Rear Connections

12 Volt DC Out
(2)

8804_23

Air Exhaust   AC Power   Ethernet   USB*   VGA*   Aux Panel Control   Cooling Fan
(2)   (2)   (not Ethernet)   Air Intake

* Reserved for maintenance use.
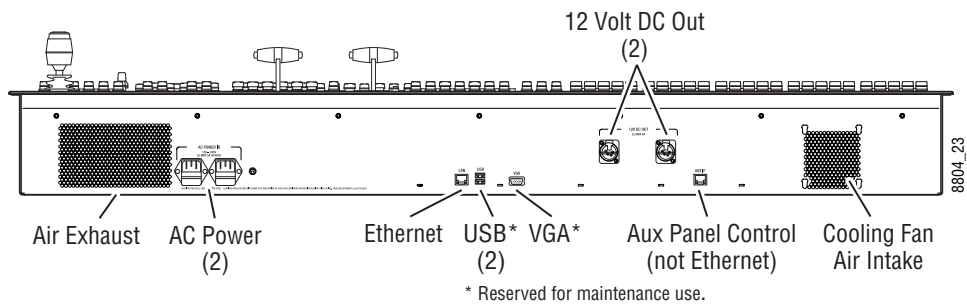
2-ME Karrera Control Panel Installation

Figure 11. 2-ME Karrera Control Panel Dimensions

84.5 mm
3.3 in.

362.0 mm
14.3 in.

4.5 mm
0.18 in.

134.4 mm
5.3 in.

55.1 mm
2.2 in.

15°

333.3 mm
13.1 in.

1221.7 mm
48.1 in.

1248.6 mm
49.2 in.

362.0 mm
14.3 in.

8804_18_r1
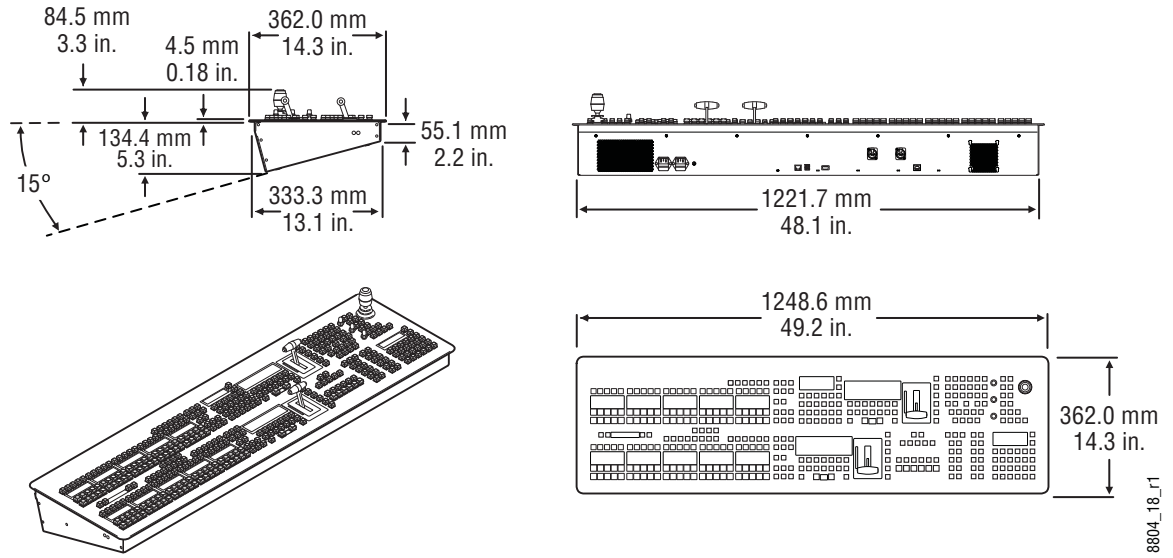
Figure 12. 2-ME Karrera Control Panel Cutout Dimensions

13.5 mm
0.53 in.

13.5 mm
0.53 in.

52.5 mm
2.1 in.

107.7 mm
4.2 in.

205.5 mm
8.1 in.

185.2 mm
7.3 in.

294.0 mm
11.6 in.

313.7 mm
12.4 in.

575.0 mm
22.7 in.

313.7 mm
13.9 in.

665.1 mm
26.2 in.

454.8 mm
17.9 in.

1221.7 mm
48.1 in.

335.3 mm
13.2 in.

2ME Cutout Dimensions

1223.7 mm
48.2 in.

8804_20r1
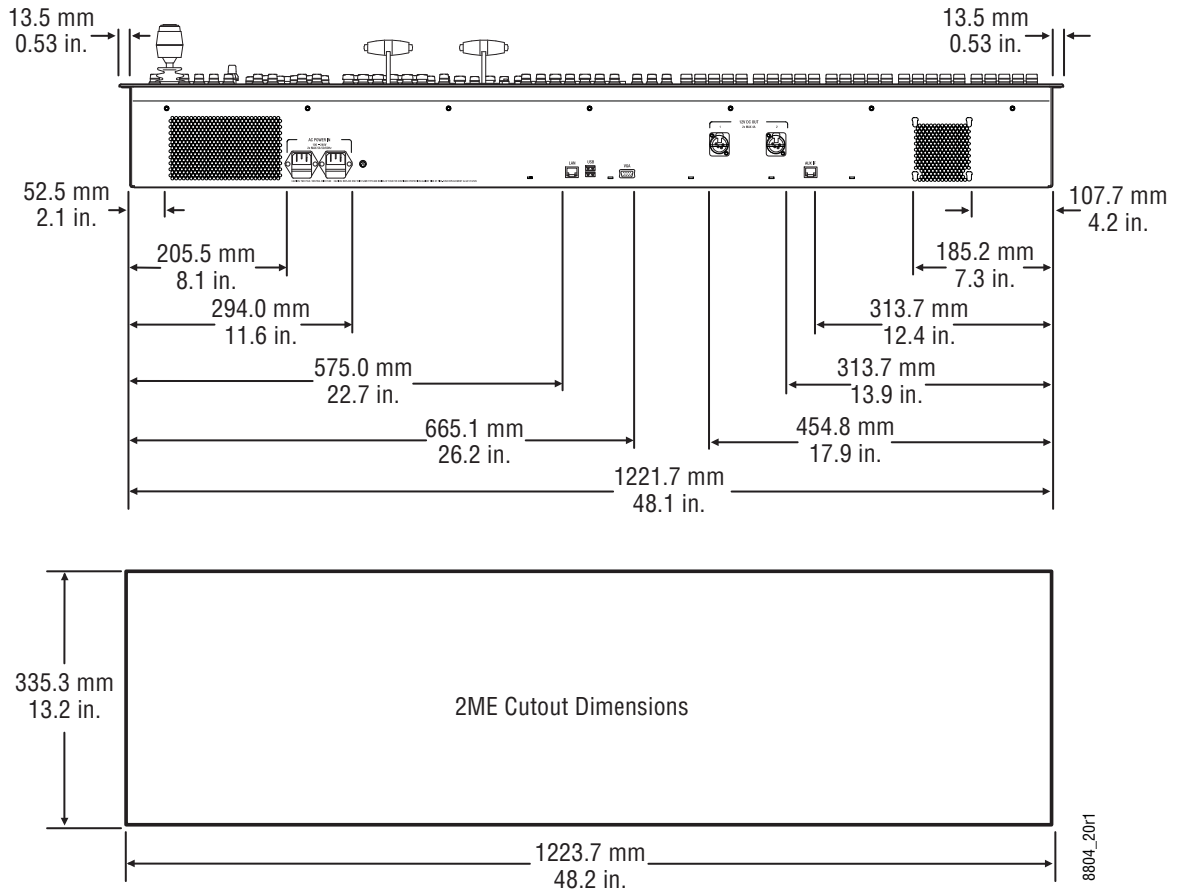
Figure 13. 2-ME Karrera Control Panel Rear Connections
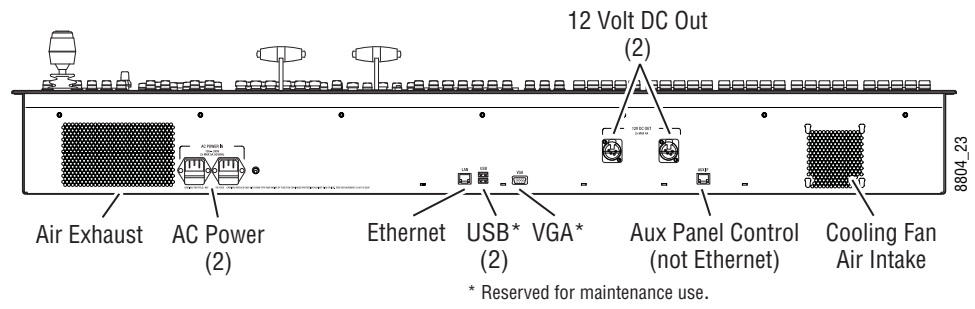
2-ME Compact Karrera Control Panel Installation
===

Figure 14. 2-ME Compact Karrera Control Panel Dimensions
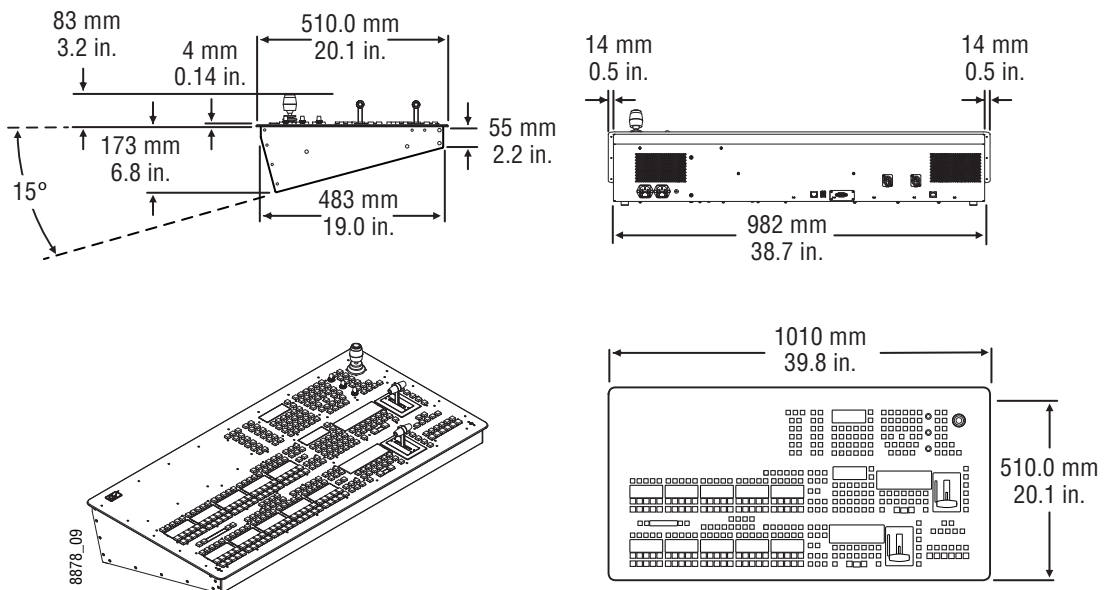
Figure 15. 2-ME Compact Karrera Control Panel Cutout Dimensions
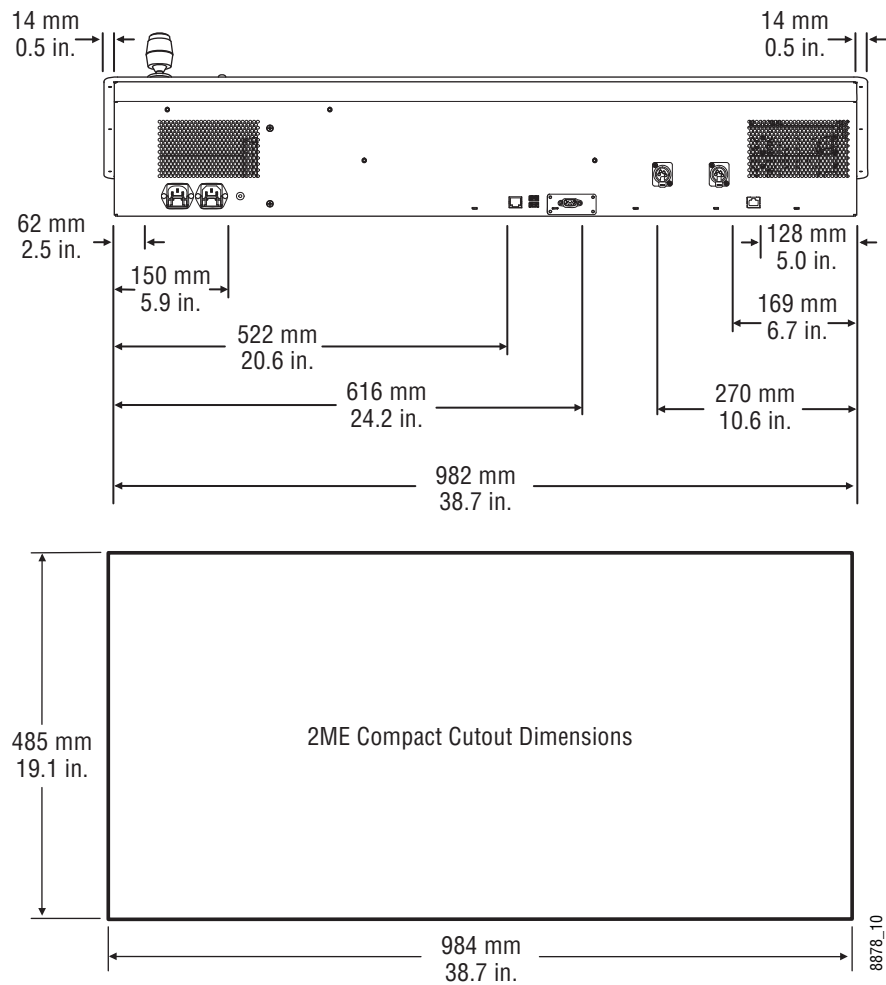
Figure 16. 2-ME Compact Karrera Control Panel Rear Connections

12 Volt DC Out
(2)

Air Exhaust   AC Power   Ethernet   USB* VGA*   Aux Panel Control   Cooling Fan
(2)   (2)   (not Ethernet)   Air Intake

* Reserved for maintenance use.
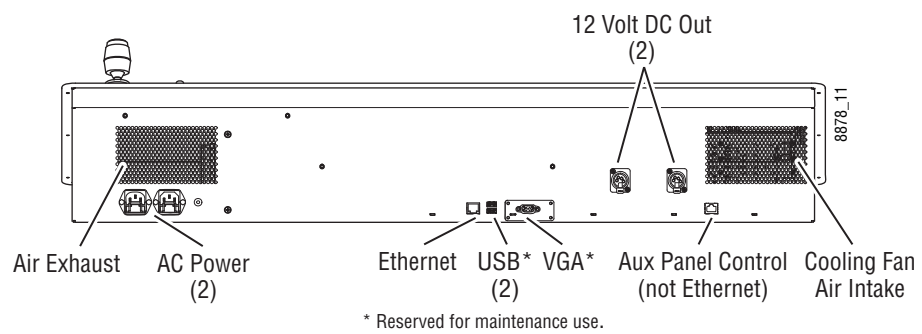
Karrera Menu on User PC Installation

The Karrera Menu application can be installed on a user PC, which can be configured with the Karrera network to provide a primary or additional control point to the Karrera system.

CAUTION Access to the user PC should be controlled when the Karrera system is in use, to prevent accidental changes to Karrera system operations.

PC Requirements

The PC running the Karrera Menu application should have at least 2 GB RAM, a 2 GHz processor, 500 MB available hard disk space, 1280 x 1024 minimum screen resolution, and be running Windows XP with Service Pack 3 or Windows 7. The PC must also support 10Base-T or 100Base-T Ethernet and high-speed USB.

Macintosh Computer Operation

Macintosh computers with Intel processors can run Windows programs (including the Karrera Menu application), using the Apple computer Boot Camp mechanism (booting into the Windows OS partition), or by running a Virtual Machine (VM). VM operation allows running two different operating systems on the same computer simultaneously, with instantaneous switching between the two environments. Parallels and VMWare are two commercially available VM solutions for Mac. The Mac hardware and VM created must meet the PC requirements listed above.

In all cases, a Windows OS will need to be installed on the Mac (into the Boot Camp partition or as a VM), and the Windows environment will need to be configured (including I/O device access, IP addresses, etc.). When a working Windows environment exists on the Mac, the Grass Valley Switcher Installer program can be used to install the Karrera Menu application into the Mac's Windows environment, and the application can operate with a Karrera system the same as if it was running on a Windows PC.

Hardware Installation

Connect a Category 5 Ethernet cable from the user PC to the Karrera network, either directly into an available port on the Karrera frame, or with a customer provided Ethernet switch, or indirectly via a properly configured network gateway. The PC's IP address must be compatible with the Karrera system network.

Menu on User PC Software Installation

Karrera Menu Panel software is included on the Karrera Software USB stick, and is installed using the standard Grass Valley Switcher software installation process. The Karrera Menu application requires Microsoft .NET Framework software, which is also included on the USB stick.

If the correct version of the Microsoft .NET Framework software is already present on your PC, the Karrera Menu application can be installed using the standard software update process.

If .NET Framework software is not present, it can be installed by running the executable file located in the DotNet folder on the Karrera Software USB stick.

Refer to the separate *Karrera Release Notes* for specific software installation information.

User PC Configuration

Windows Firewall, and any other firewall security software (e.g. Officescan Personal Firewall), must be disabled to use the Switcher Installer program or NetConfig on a user PC.

Optional Touch Screen Menu Panel Installation

The Touch Screen Menu Option consists of:

- Touch Screen Menu,
- Fanless PC,
- Articulated arm support,
- Two mounting brackets ("U" and "T" shaped),
- Two power supply bricks, and
- associated cables and screws.

Menu Panel Dimensions

Figure 17. Menu Panel Dimensions

Front View

Side View, Right

417.8 mm
16.45 in.

64.1 mm
2.52 in.

270.0 mm
10.63 in.

76.2 mm
3.00 in.

19.1 mm
.79 in.

12.7 mm
5.0 in.

8.4 mm
.33 in.

17.3 mm
.68 in.

Rear View

97.5 mm
3.84 in.

Bottom View

128.4 mm
5.06 in.

129.4 mm
5.09 in.

70.6 mm
2.78 in.

97.5 mm
3.84 in.

40.6 mm
1.60 in.

170.9 mm
6.73 in.

171.9 mm
6.77 in.

245.9 mm
9.68 in.
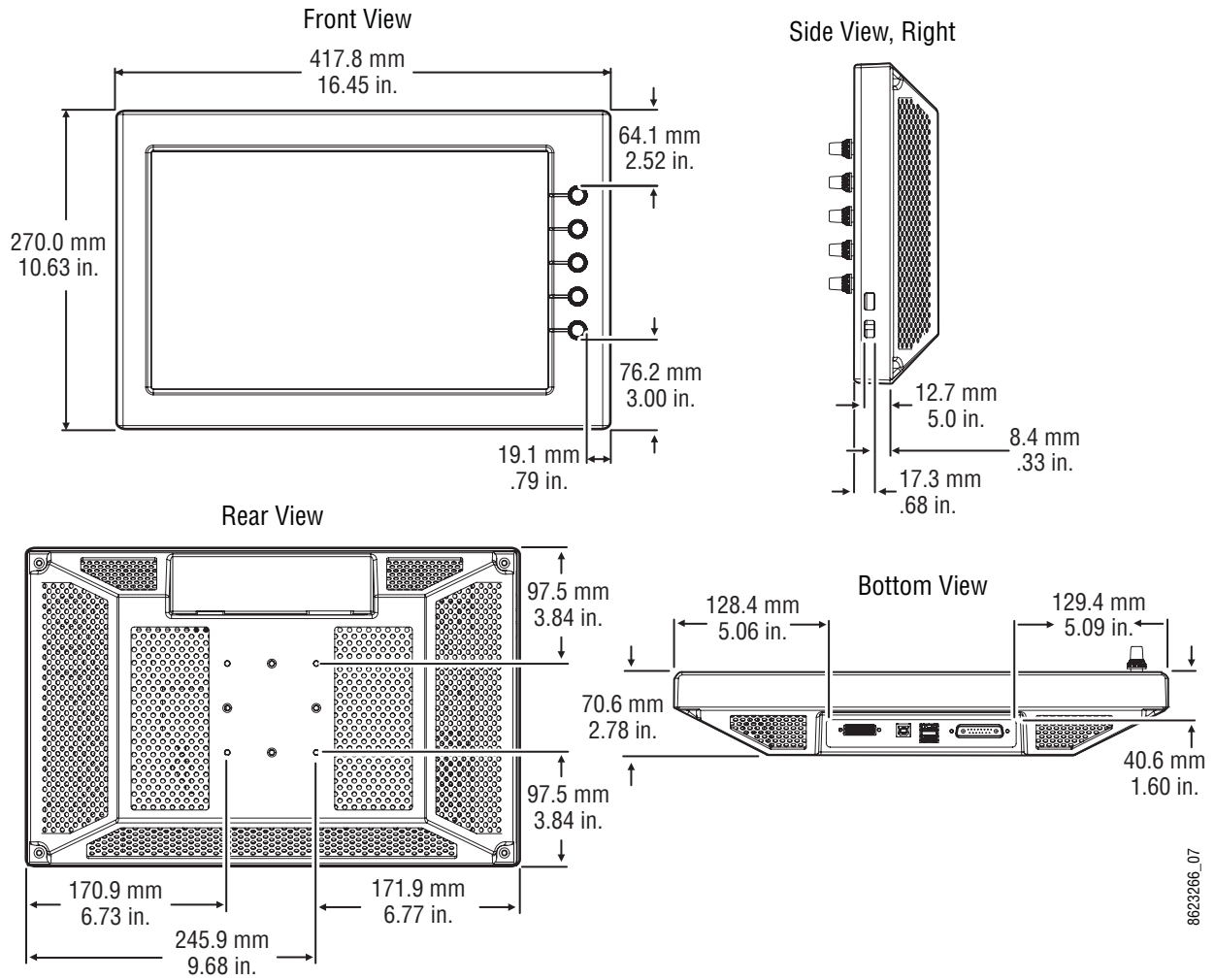
8623266_07

Menu Panel Connectors

Figure 18. Menu Panel Connections

Bottom View

Side View, Right

DVI-D   USB Type B

Used with PC.

USB (2)

PCU Connector

Used with Kayenne PCU,
and provides power with PC.

USB (2)
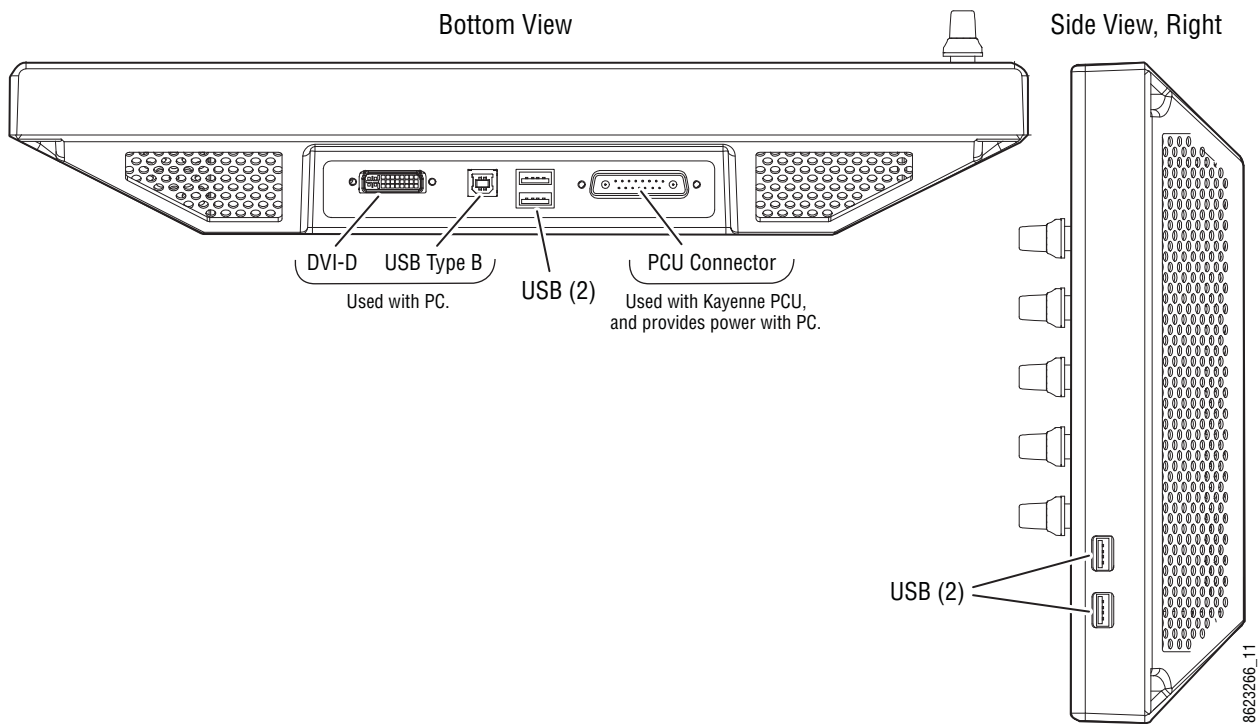
Menu Panel Cooling

CAUTION Do not install the Menu Panel into an enclosed space. Passive air movement
is required for cooling.

The Menu Panel is externally powered and does not have internal cooling
fans. The electronics are convection cooled through perforations in the rear
of the Menu Panel chassis. Mounting the panel free-standing with the artic-
ulated arm allows maximum air movement, and is the preferred installa-
tion method. If an alternative method is used, ensure that all vents are
unobstructed and adequate airflow is available.

Fanless PC Dimensions and Connectors

Figure 19. Fanless PC Dimensions

254 mm
10.0 in.

56 mm
2.2 in.

157 mm
6.2 in.

8804_27

Figure 20. Fanless PC Front Connectors

8804_25

Firewire 1394 Port   USB 2.0 Port   Headphone   Power LED   Hard Disk LED   Reset   Power On/Off   Mic Input

Figure 21. Fanless PC Rear Connectors

8804_26

DVI-D   Audio Line Out   Power Input   VGA Port   Serial Port   PS/2 Ports (2)   USB 2.0 (2)   Gb Ethernet

Menu Panel Articulated Arm Installation

The Menu Panel has VESA 75 threads on the back that can be used to mount the Menu Panel to the supplied articulated arm, or any VESA compliant mounting system.

Figure 22. Articulated Arm Range of Motion Dimensions
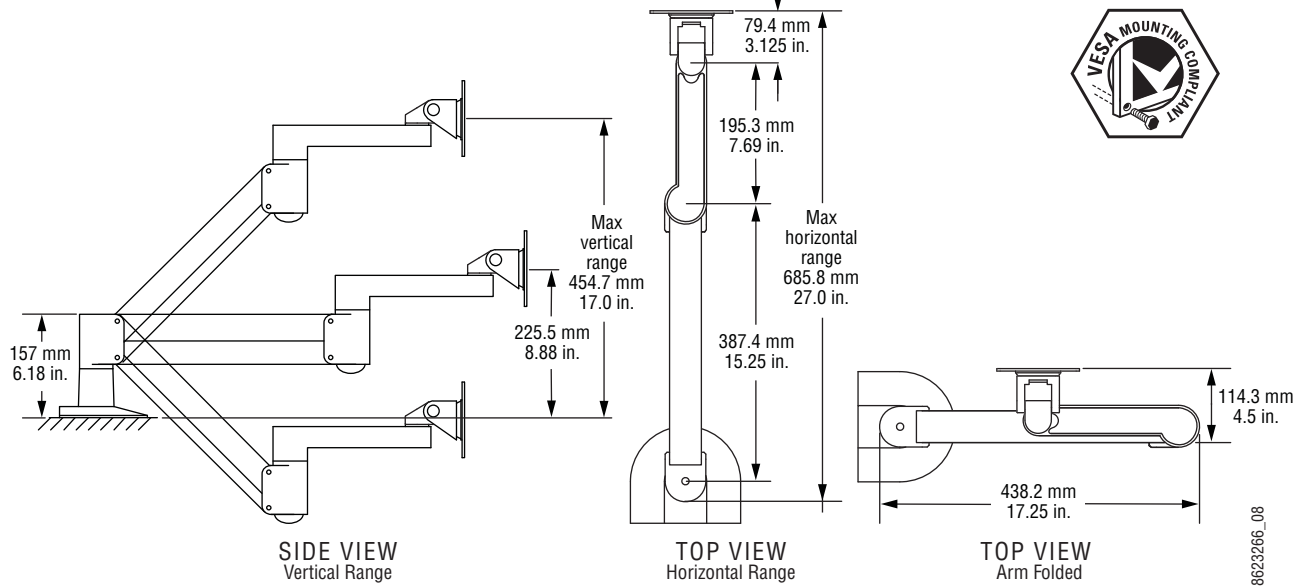
The supplied articulated arm is equipped with a flex-mount system, permitting a variety of mounting options (table-top, wall mount, etc.). See the documentation provided with the articulated arm for specific installation instructions.

Menu Panel Hardware Installation With Articulated Arm

Figure 23. Fanless PC Mounting Bracket Assembly
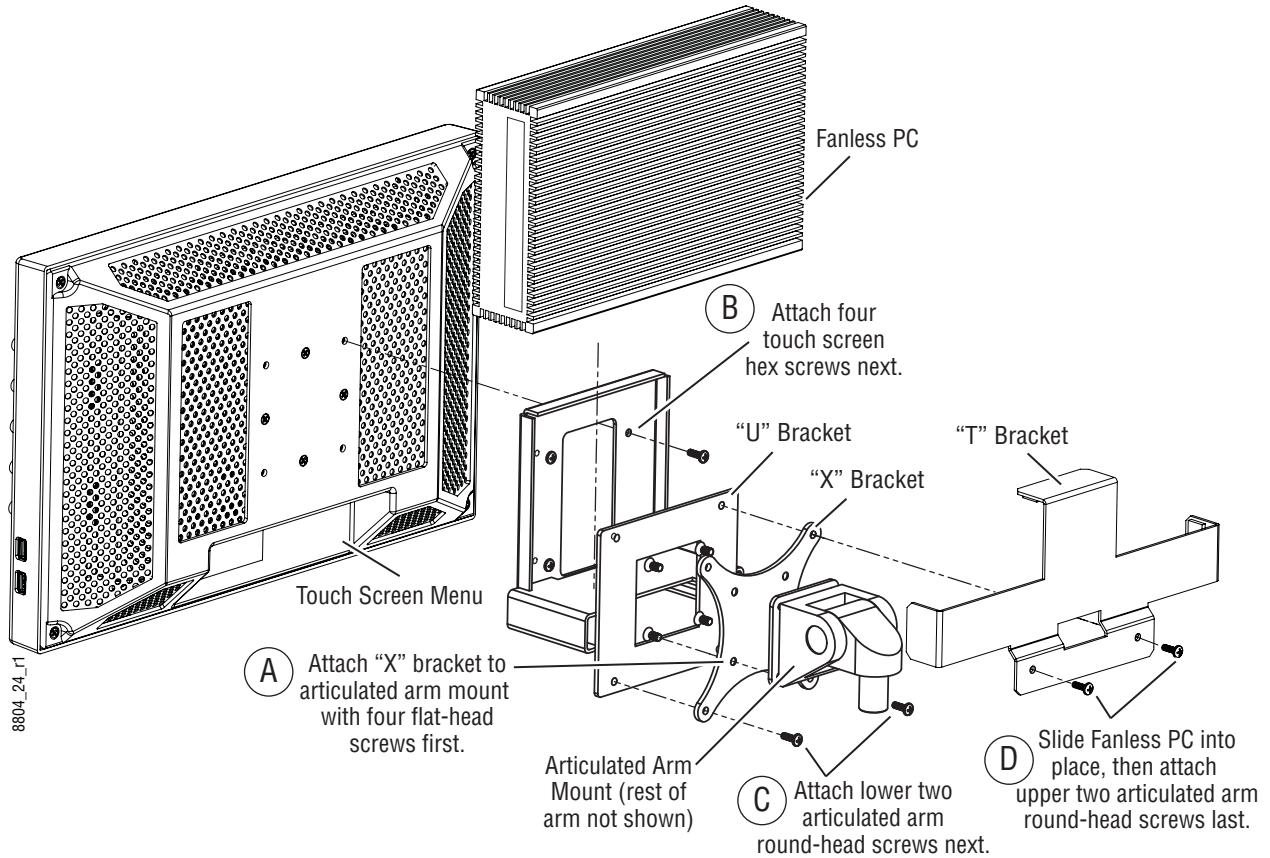
Wall Mounting Without Articulated Arm

For flat mounting directly to a vertical surface without using the articulated arm, two #10 screw sized washers (2.5 mm/0.10 in. thick) can be used at the lower two "U" bracket screw locations.

Optional Local Aux Panel Installation

Local Aux 35 Panel Dimensions

Figure 24. Local Aux 35 Panel Dimensions
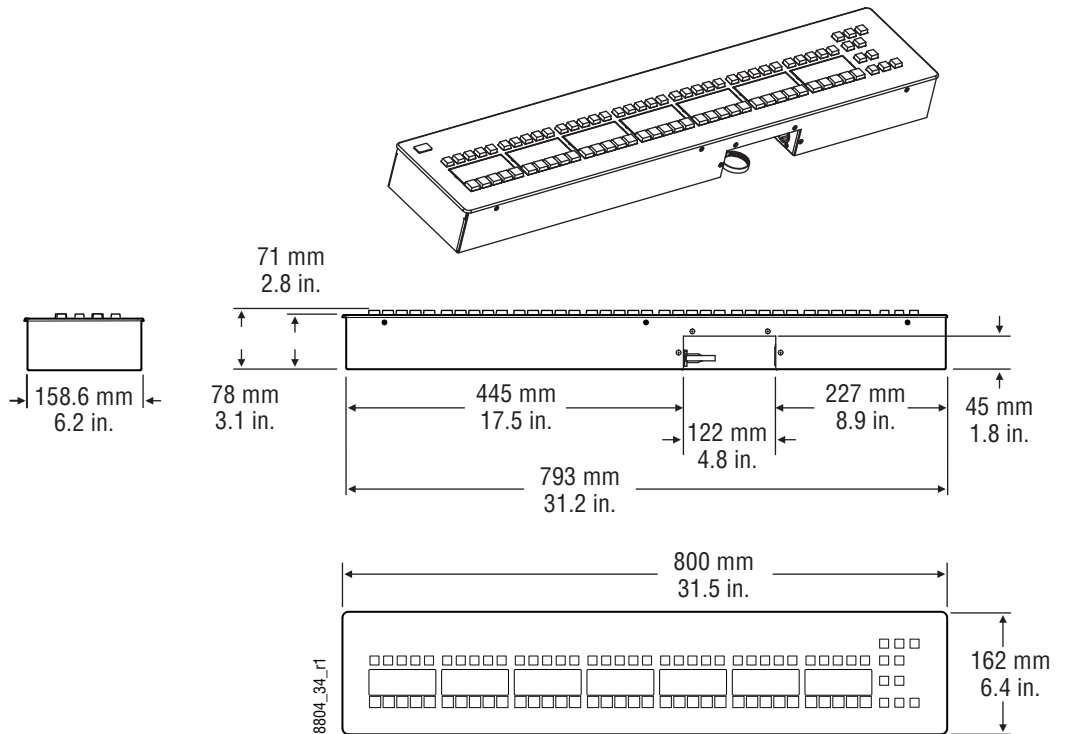
Local Aux 25 Panel Dimensions

Figure 25. Local Aux 25 Panel Dimensions
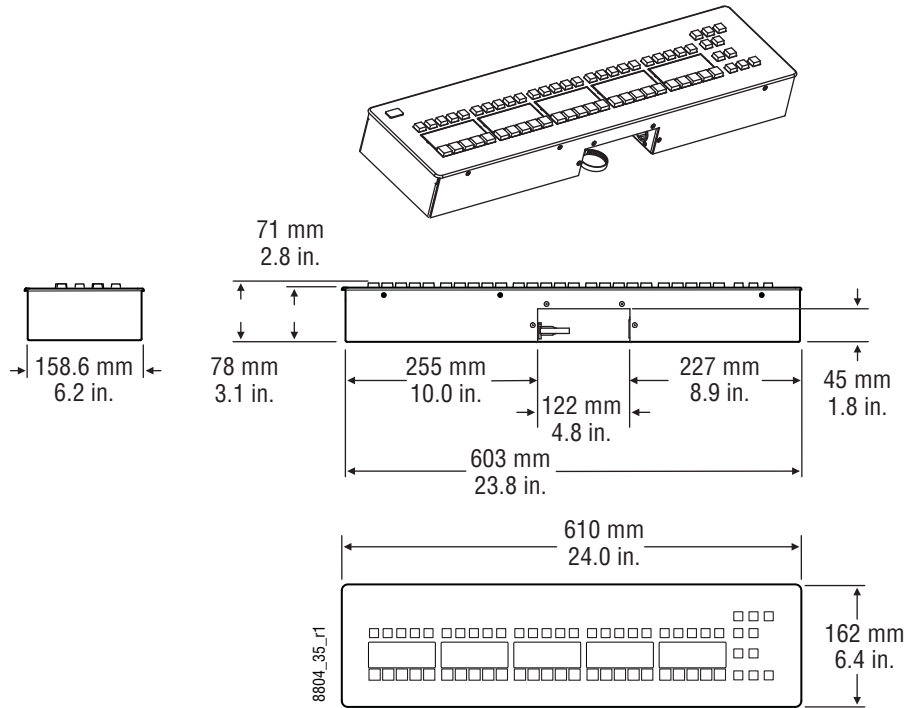
Local Aux Panel Installation Options

Rear Screw Hole Dimensions

Two sets of brackets are provided with the Local Aux Panel, one intended for use in mounting into a tabletop cutout, and the other for mounting on a tabletop surface. Both brackets connect to threaded holes located on the rear of the Local Aux Panel.

Figure 26. Local Aux Panel Rear Dimensions
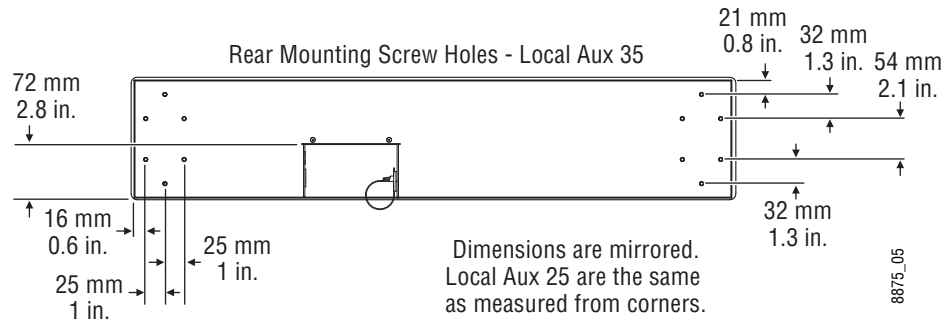
Tabletop/Backsplash Cutout Installation

Figure 27. Local Aux Panel Cutout Dimensions
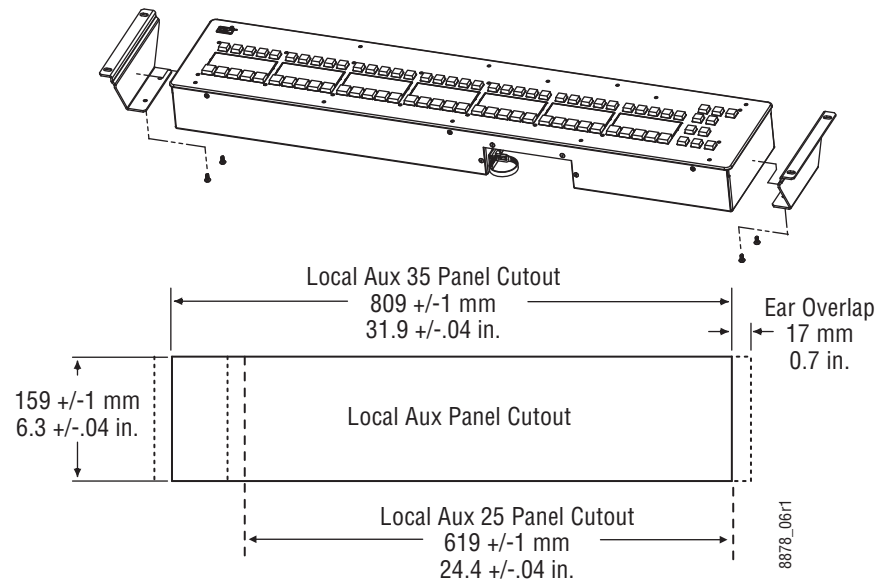
Tabletop Bracket Installation: 2-ME and 3-ME Main Panels

The following suggested angle bracket mounting locations will orient the Local Aux panel with the buttons on the Main Panel, and leaves vertical clearance for removing the Main Panel from its cutout.

Figure 28. Local Aux Panel Surface Mount Dimensions

55°
Viewing Angle

This placement provides 18 mm (0.7 in.) clearance between Local Aux Panel front and Main Panel upper edge.

165 mm
6.5 in.

5 mm
0.2 in. (left of cutout)

25 Button Aux Base

35 Button Aux Base

514 mm
20.2 in.

705 mm
27.8

335 mm
13.2 in.

485 mm
19.1 in.

1224 mm
48.2 in.

2-ME Main Panel Cutout Dimensions

8878_07

1416 mm
55.7 in.

3-ME Main Panel Cutout Dimensions
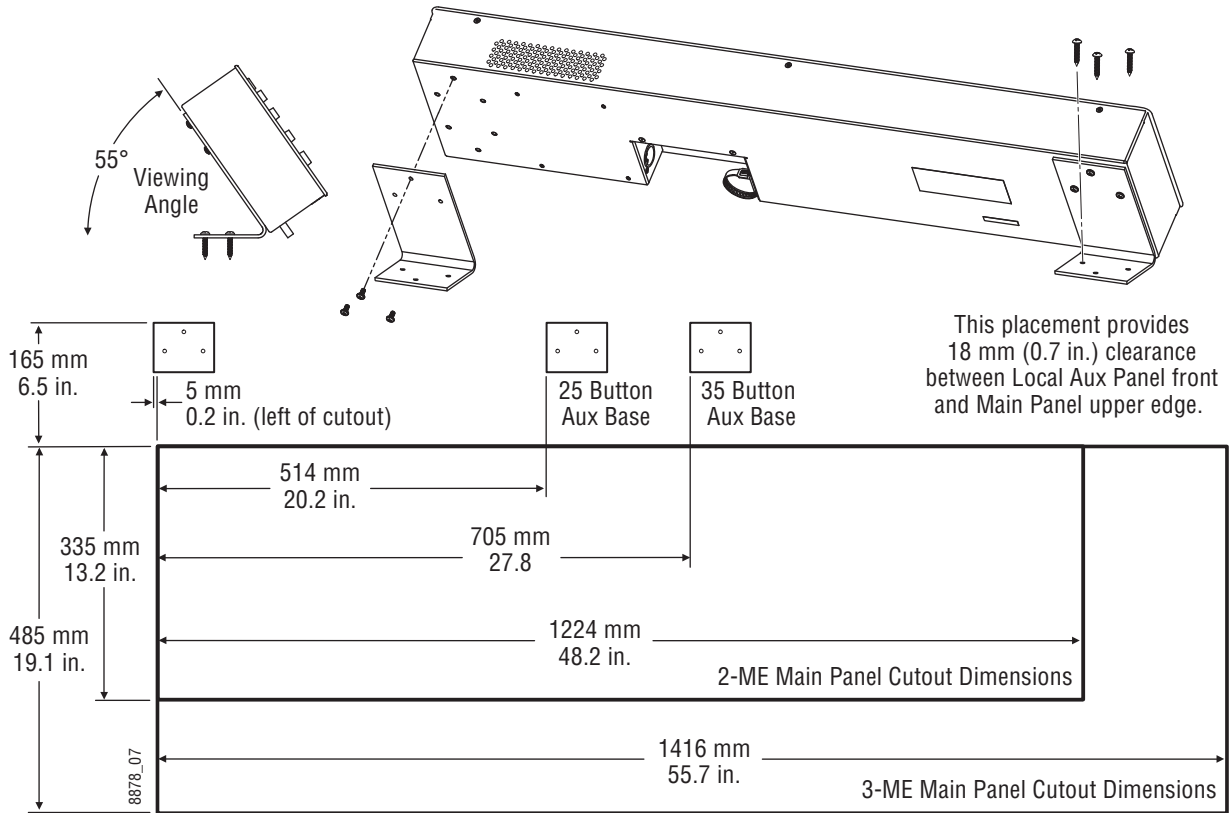
Tabletop Bracket Installation: 2-ME Compact Panel

The suggested bracket placement is different when mounting the Local Aux panel with a 2-ME Compact Control Panel.

Figure 29. Local Aux Panel Surface Mount Dimensions

55°
Viewing
Angle

165 mm
6.5 in.

2 mm
0.1 in. (right of cutout)

25 Button Aux Bases

This placement provides
18 mm (0.7 in.) clearance
between Local Aux Panel front
and Main Panel upper edge.

521 mm
20.5 in.

485 mm
19.1 in.

8878_08

984 mm
38.7 in.

2ME Compact Main Panel Cutout Dimensions
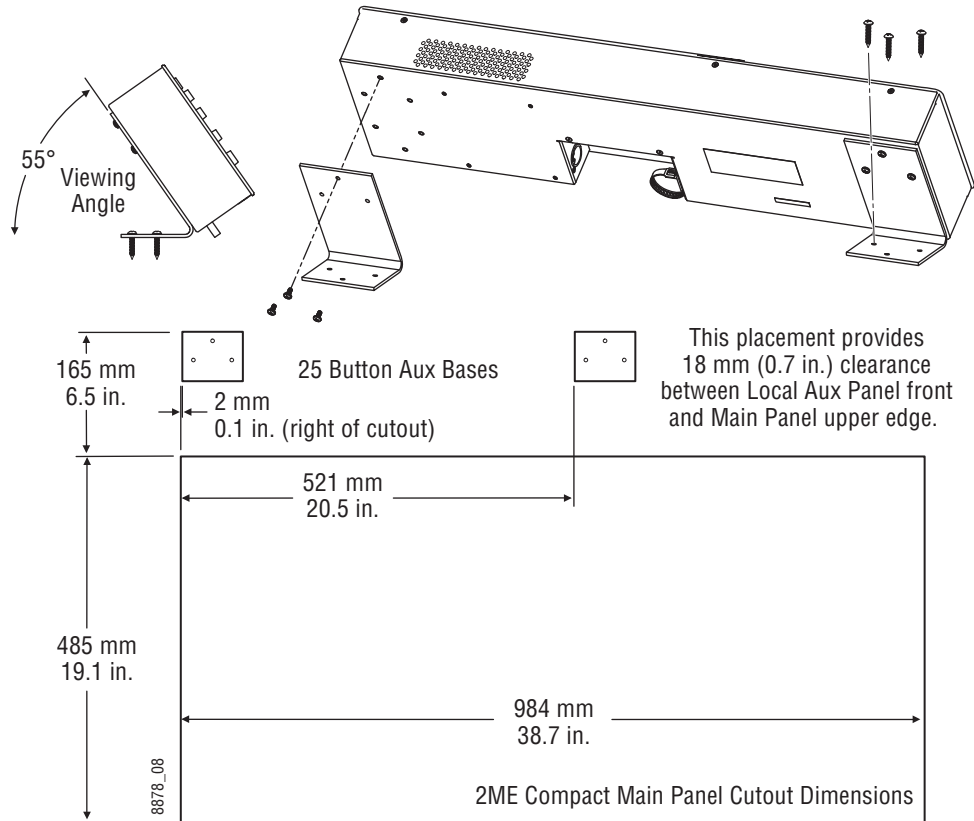
Figure 30.

Frames Installation

General Rack Mounting Instructions

Weight Distribution

Make sure that you mount the unit in the rack so that it is evenly balanced to prevent damage to the frame and to avoid creating a hazardous condition. K-Frame Video Processors require rear rack support.

Cooling Requirements

The maximum ambient temperature for a Karrera K-Frame chassis is 40-degrees C (104-degrees F) monitored at the air intake. Installing the frame in a closed or multi-unit rack assembly together with other units could increase the maximum ambient temperature for this unit.

Make sure you install the frame to allow for cooling airflow. When the unit is installed in a rack, ventilation openings should not be blocked or otherwise covered. Air intake holes exist on the right side of the K-Frame Video Processor (as you face the frame front) and air exhaust holes are on the left.

Power Connections

When connecting the unit to the supply circuit be sure that the supply circuit of the rack is not overloaded. The unit must be well-grounded. The safety ground is accomplished via the third wire in the AC line cord(s). The rear panel ground lug is available for an optional ground.

All K-Frame Video Processor power supplies are 100V-240V AC +/-10% autorange, power factor corrected. Each power supply has its own line IEC line cord. Connecting each line cord to a separate AC circuit is recommended.

13-RU Standard Video Processor

Figure 31. K-Frame 13-RU Dimensions (Front View)
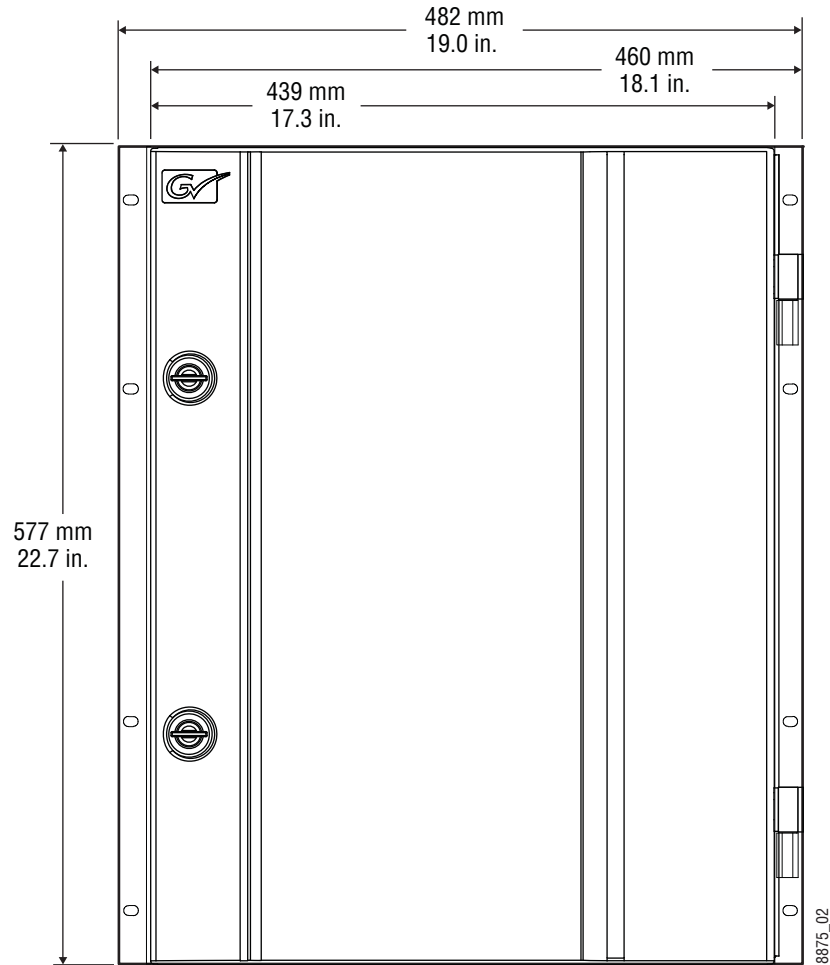
Note   Mounting a K-Frame in a rack immediately below equipment that extends forward from the rack may not provide enough clearance to completely remove the K-Frame door. See *13-RU Standard Video Processor *.

Figure 32. K-Frame 13-RU Dimensions (Top View)

442 mm
17.4 in.

566 mm
22.3 In.

602 mm
23.7 in.

37 mm
1.5 in.

483 mm
19.0 in.

8875_05
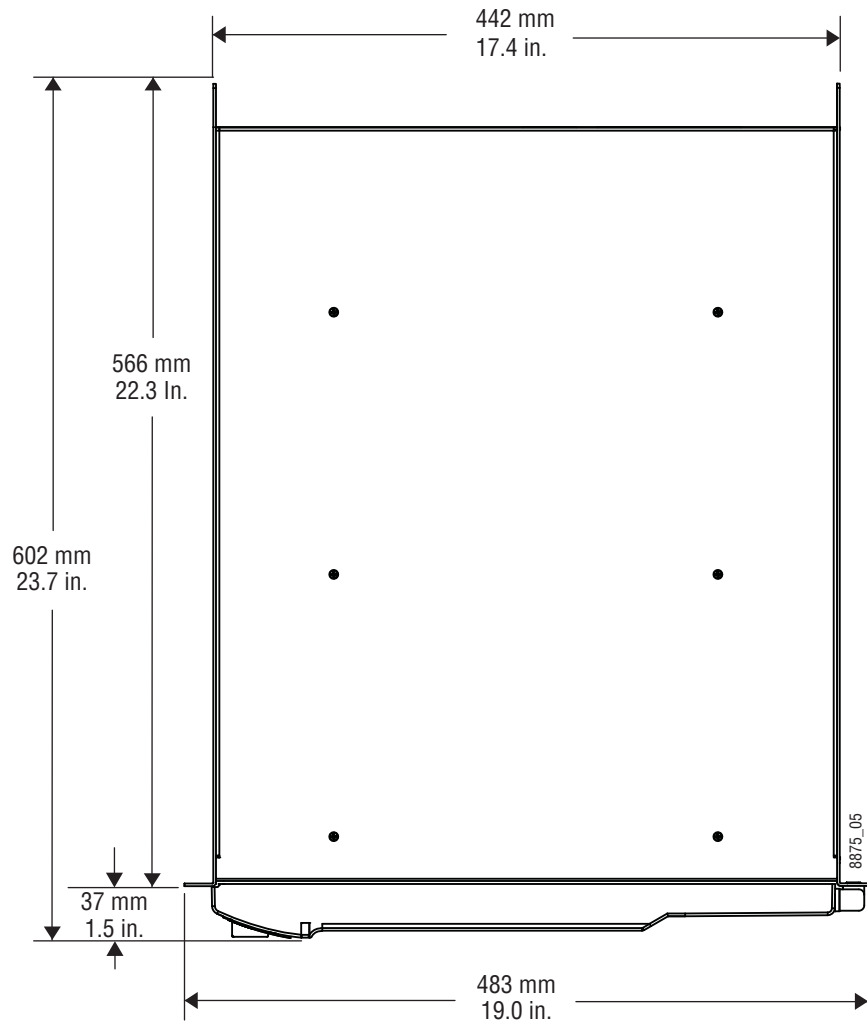
Figure 33. K-Frame 13-RU Rack Mounting and Cooling Airflow

Rear Rack
Support

Air Exhaust
(Chassis Top)

Air
Intake
(Chassis
Bottom)

Rear Rack
Support

8875_14

Air
Intake
(Chassis
Bottom)
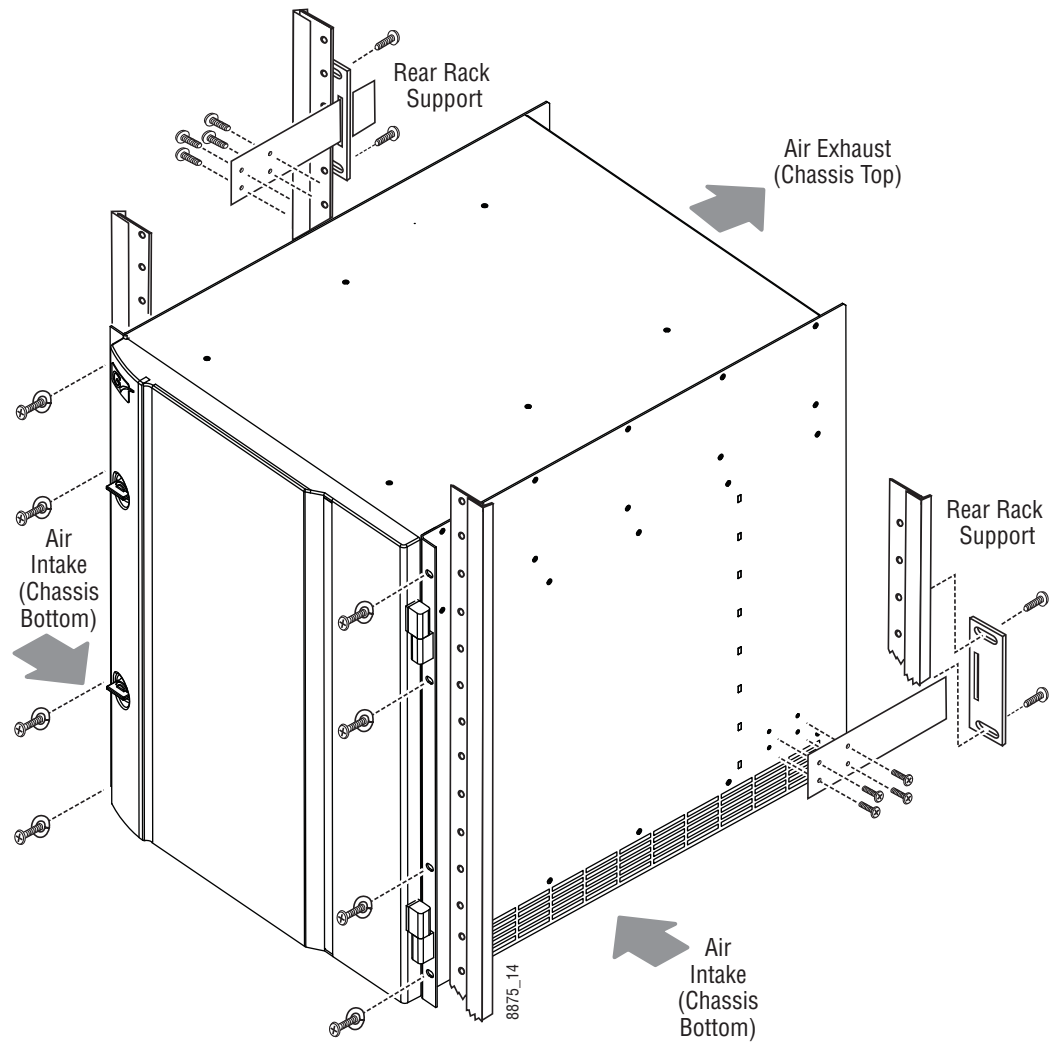
CAUTION K-Frame installations require the use of the provided rear rack supports.

Figure 34. K-Frame 13-RU, Front View with Door Removed
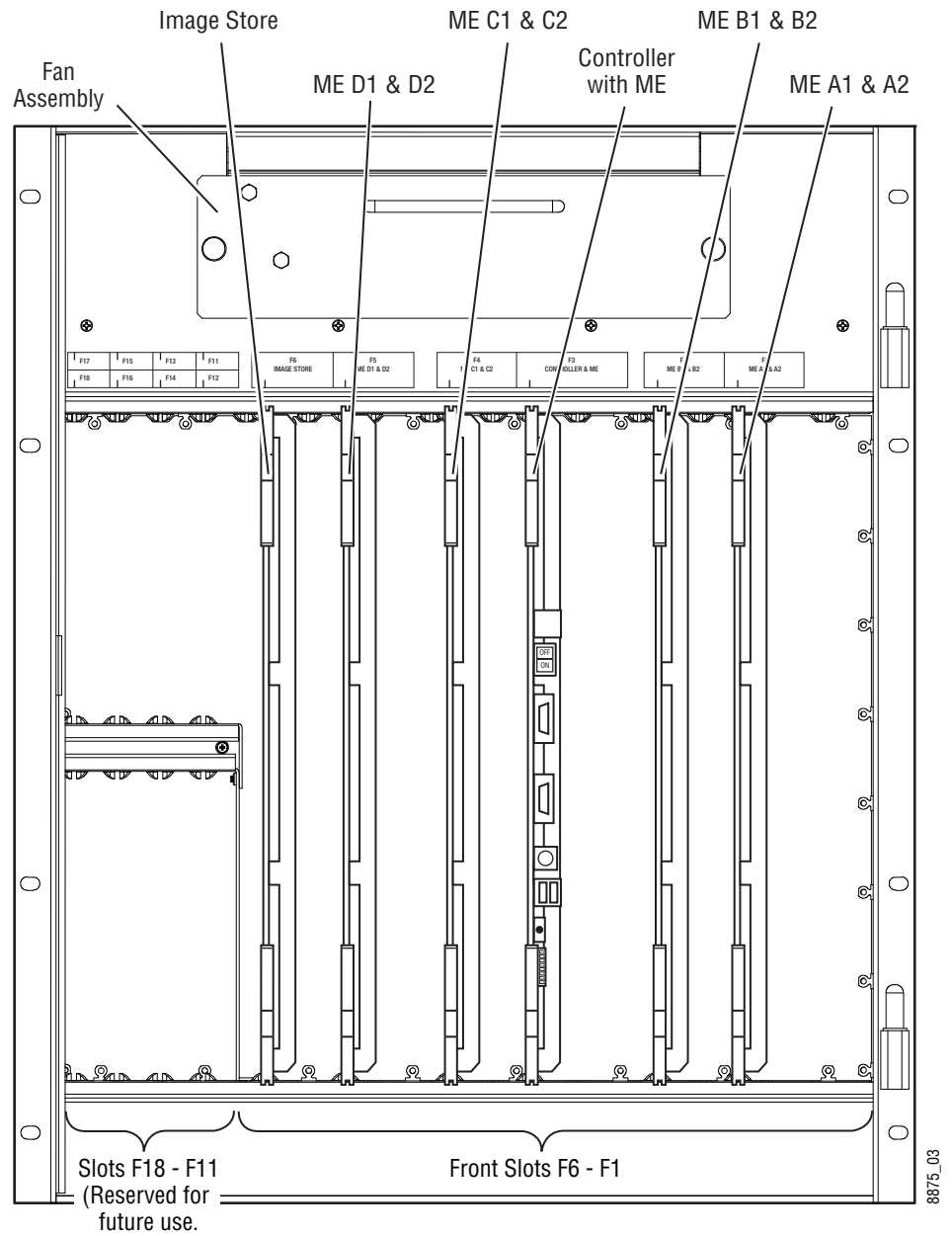
CAUTION The Video Processor front door must remain in place and closed during normal system operation to maintain maximum cooling efficiency.

Figure 35. K-Frame 13-RU, Rear View

Input Video
(32 inputs with
1 Tally/GPI each)
Up to 5 modules

Output Video
(16 pairs of identical
outputs each)
Up to 4 modules

Control I/O
(DC power in,
Reference,
Ethernet and
Serial ports)

Modular I/O
Up to 8 modules

Module 1

Module 8

Rear Slots R1 - R10

Slots R11 - R18
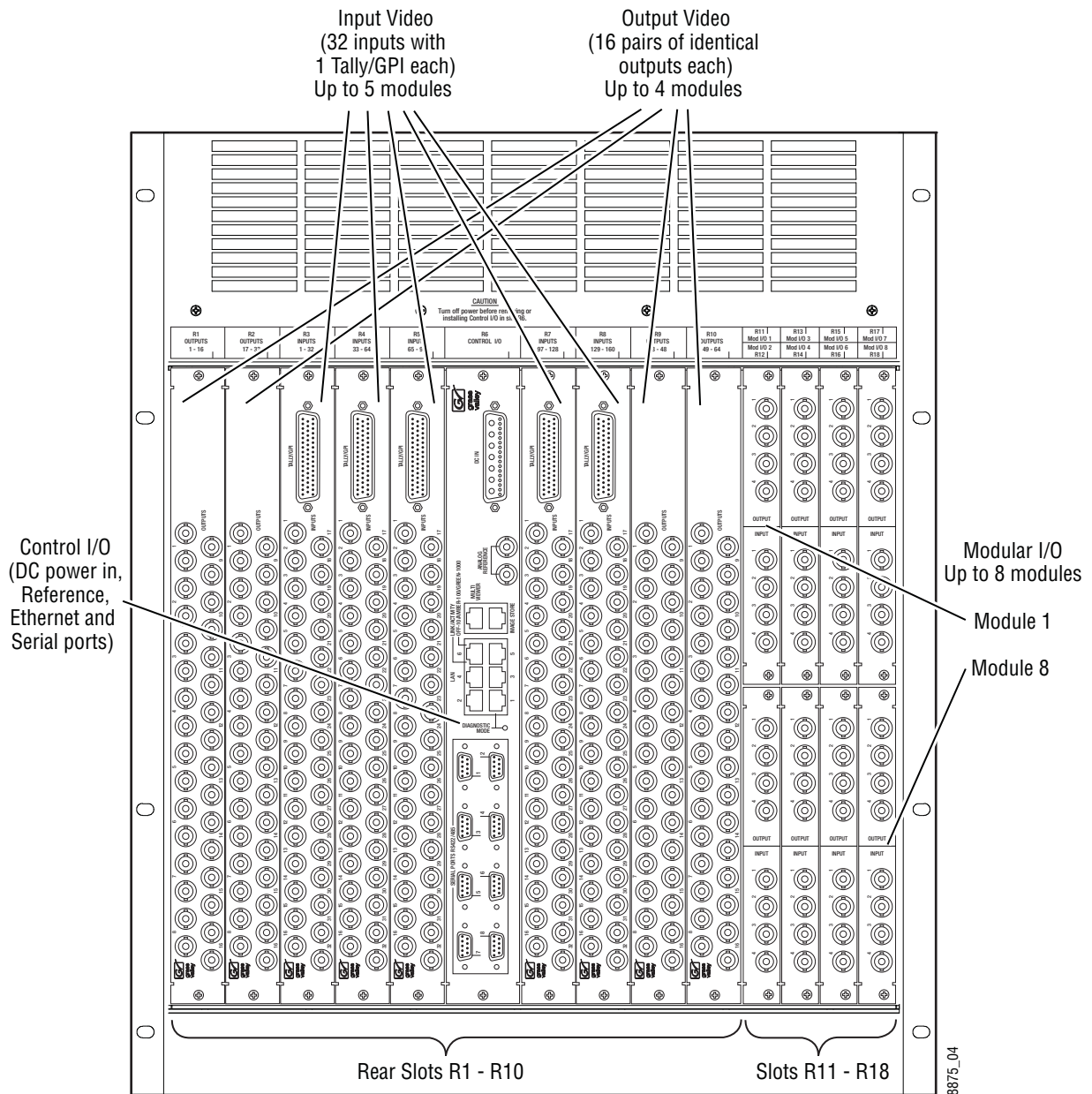
6-RU Compact Video Processor

Figure 36. K-Frame 6-RU Dimensions (Front View)
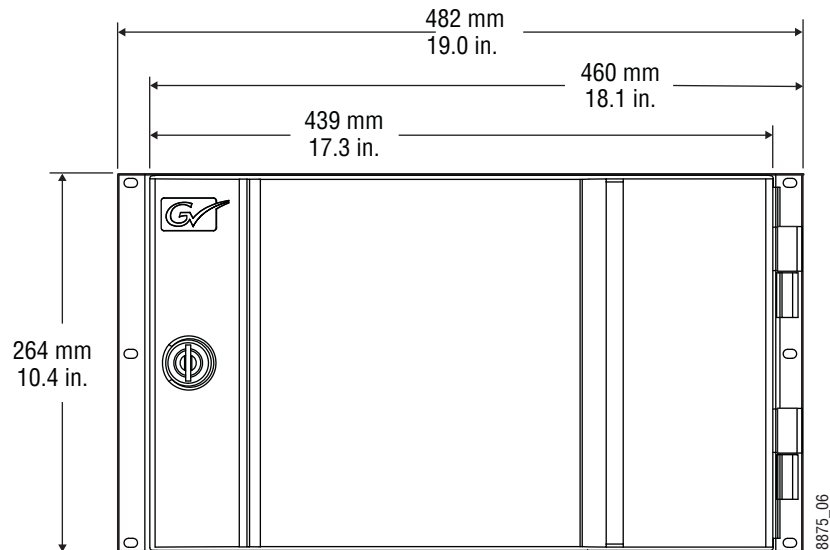
Note   Mounting a K-Frame in a rack immediately below equipment that extends forward from the rack may not provide enough clearance to completely remove the K-Frame door. See *13-RU Standard Video Processor *.

Figure 37. K-Frame 6-RU Dimensions (Top View
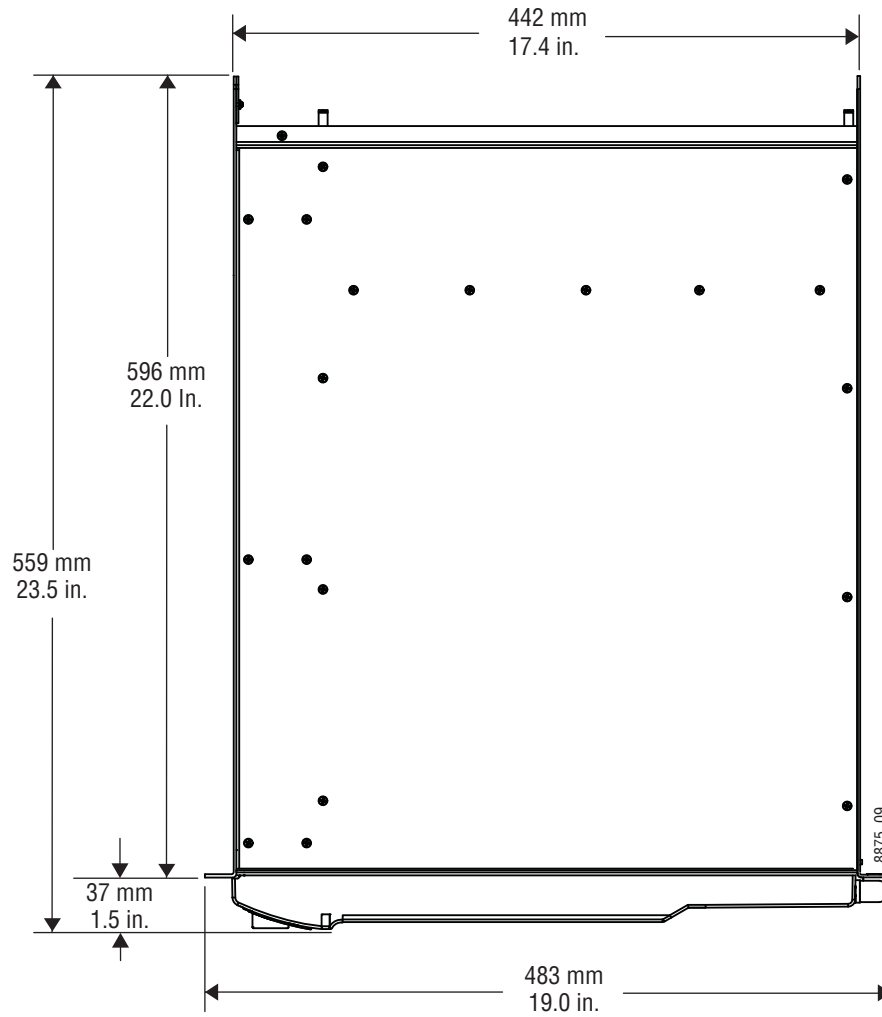
Figure 38. K-Frame 6-RU Rack Installation and Cooling Airflow
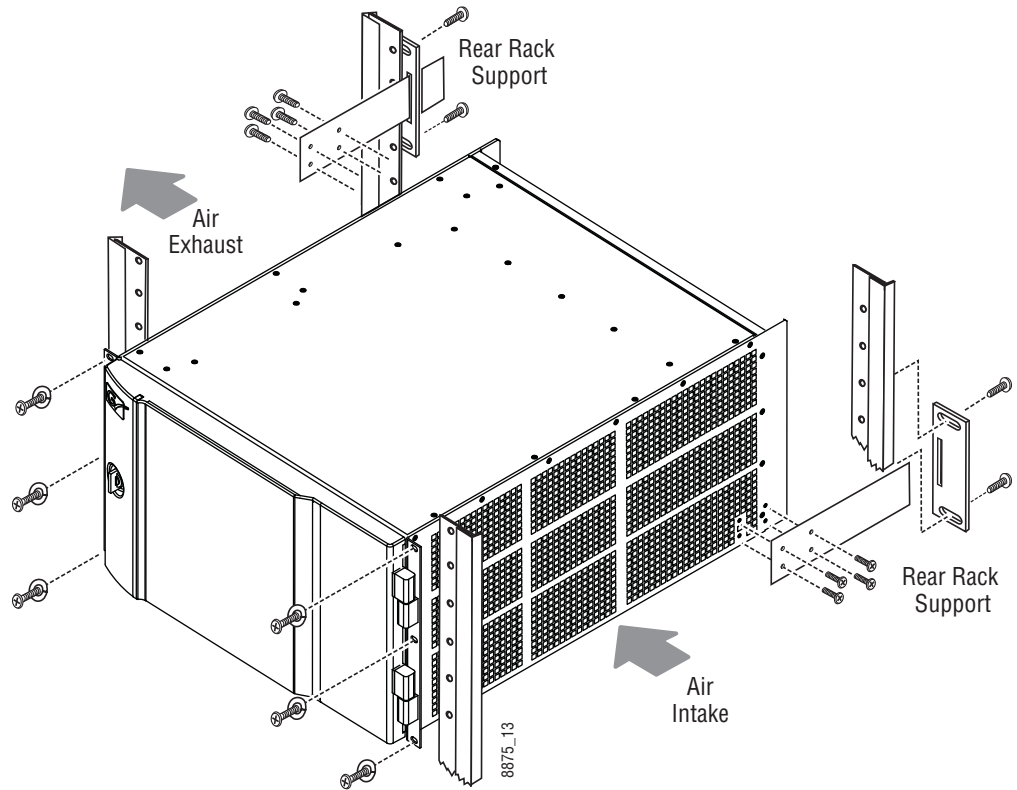
CAUTION   K-Frame installations require the use of the provided rear rack supports.

6RU Compact S-series Front Views with Doors Removed

The Compact S-series Frame includes four keyers per ME and two Multiviewers on the Controller board.

Figure 39. K-Frame Compact S-series 6-RU, Front View with Door Removed
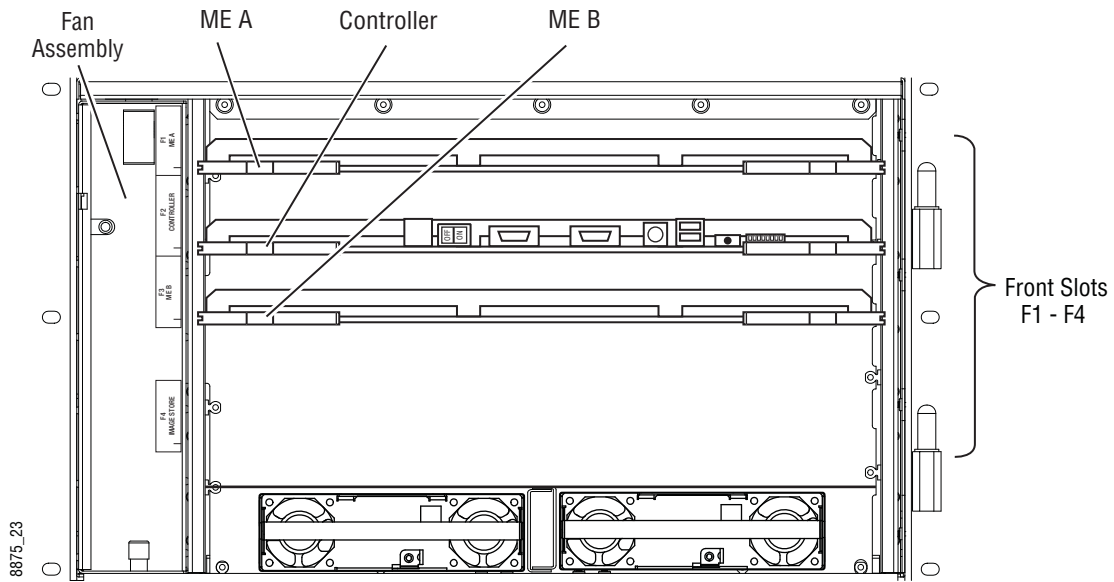
6RU Compact Front Views with Doors Removed

The Compact Frame includes optionally, an Image Store board and six keyers per ME.

Figure 40. K-Frame Compact Performance Frame 6-RU, Front View with Door Removed
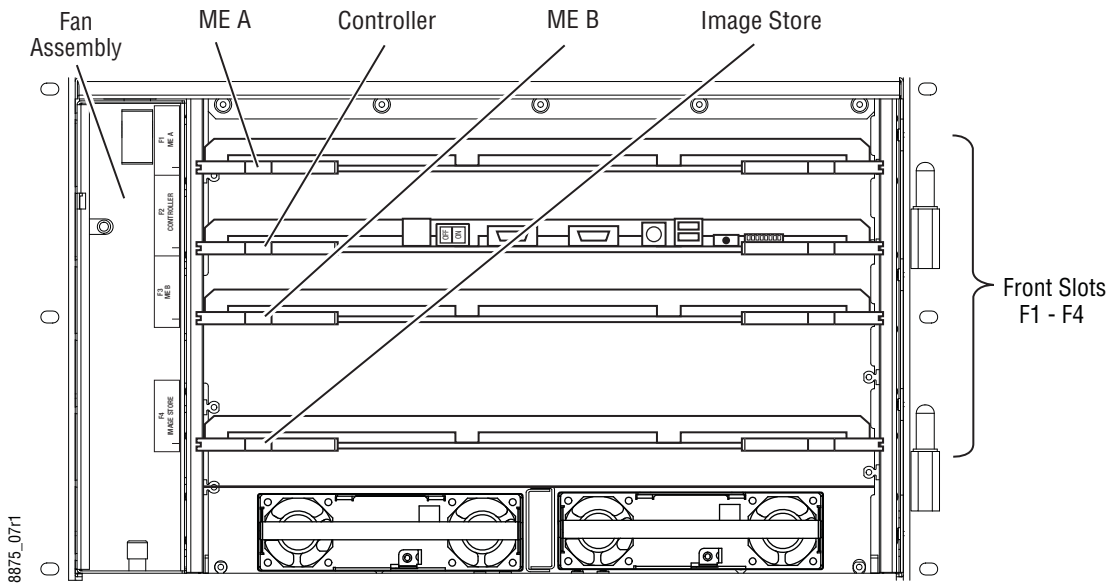
CAUTION The Video Processor front door must remain in place and closed during normal system operation to maintain maximum cooling efficiency.

6RU Rear View

Output Video
(16 outputs)
Up to 2 modules

Control I/O
(Reference,Ethernet
and Serial ports)

Input Video
(32 inputs,
8 GPI in/out, and 24 Tally)
Up to 2 modules

Modular I/O
Up to 4 modules
Module 4   Module 1

Power Supply
AC
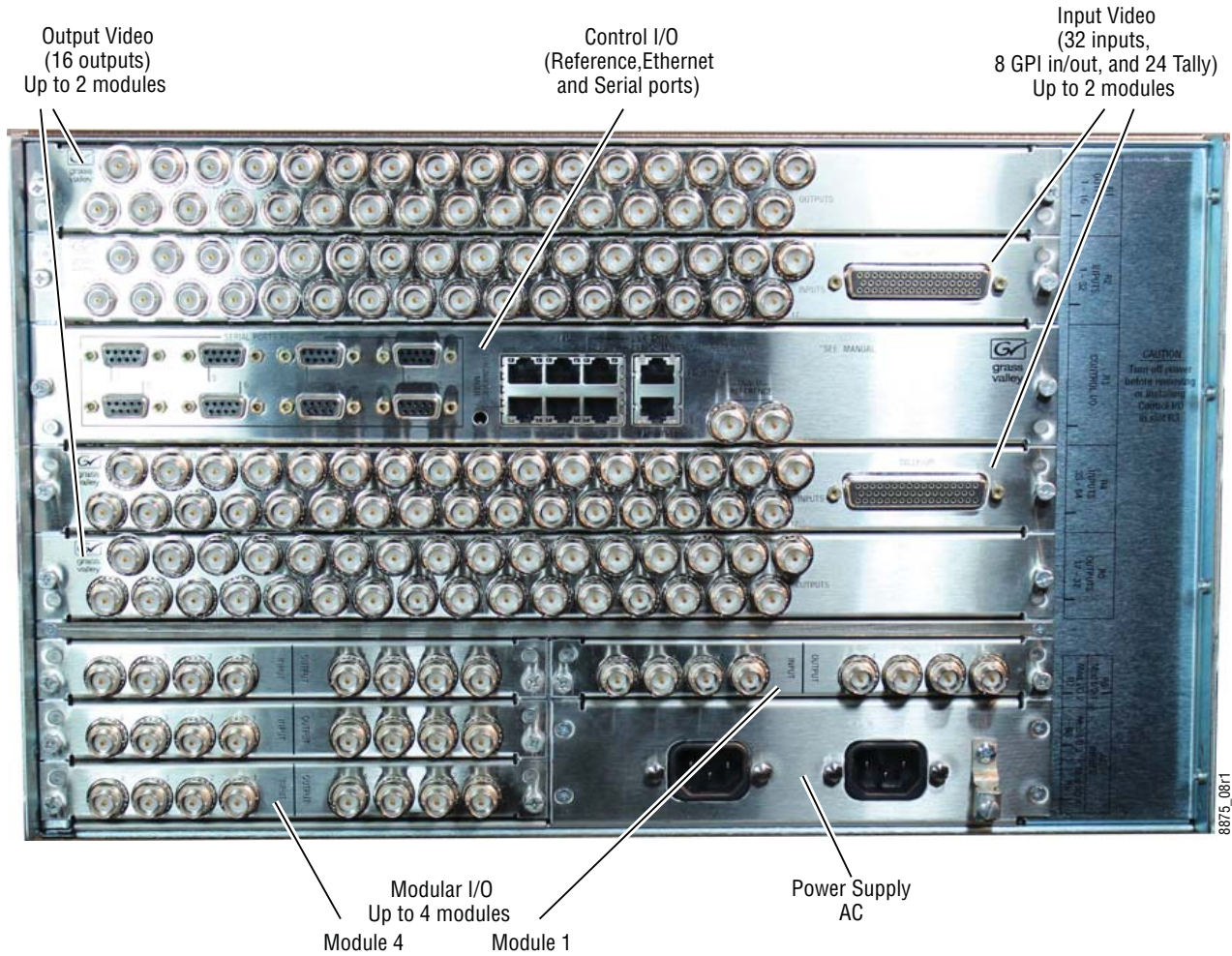
K-Frame Controller Connections

Figure 42. K-Frame Controller Board, Inside Chassis

LEDs (15)

USB
(two ports, usable
with door closed)

Power
Switch

RS-232

VGA

PS2
Keyboard

USB
(two ports)

Reset
Button

Boot Mode
DIP Switch

Test Points
with LEDs (9)
and Text Display
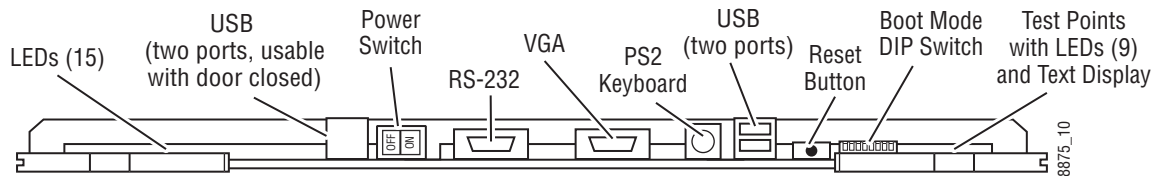
NOTE: Ports and indicators here are intended only for diagnostic and service procedures.

Figure 43. Controller I/O Connections, Rear of Chassis
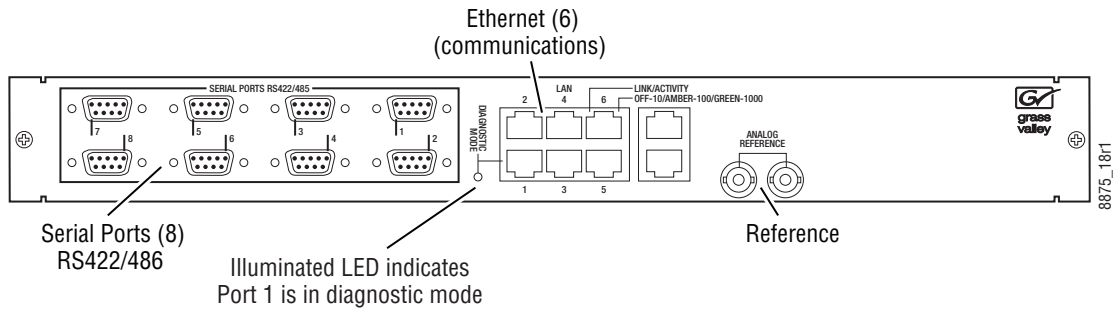
K-Frame Standard Power Supply Frame Installation

A 1-RU Power Supply Frame provides DC power for the Standard, 13RU K-Frame Video Processor.

Figure 44. K-Frame 13RU Power Supply Frame Dimensions (Front and Rear Views)
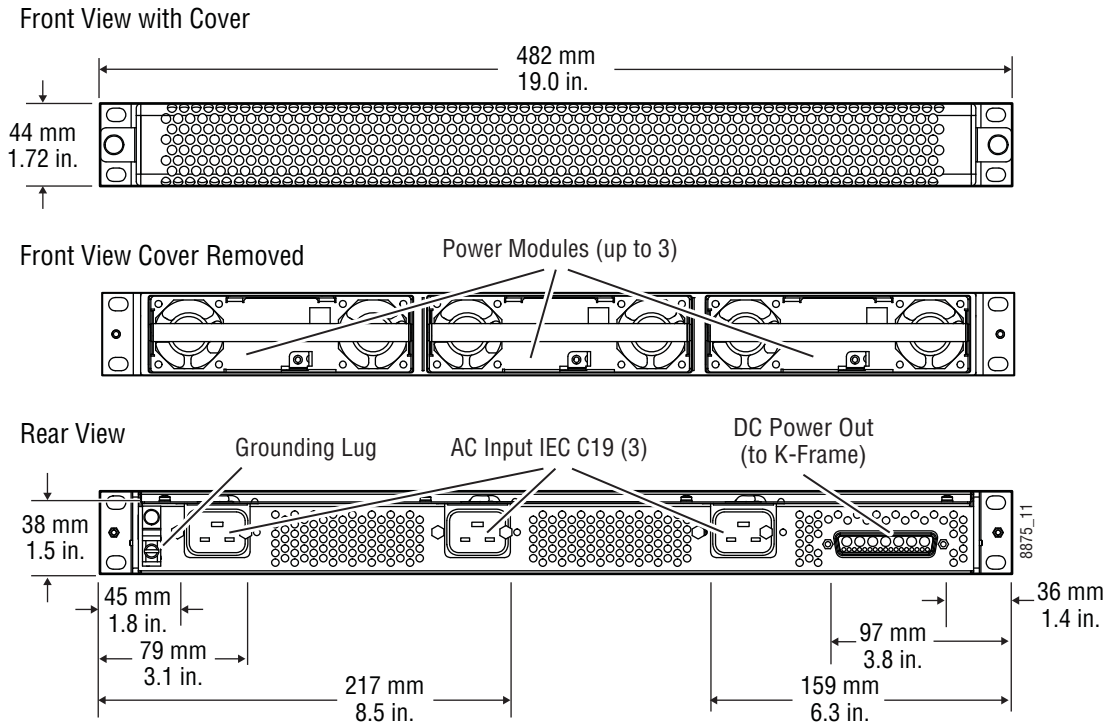
Figure 45. K-Frame 13RU Power Supply Frame Dimensions (Top View)
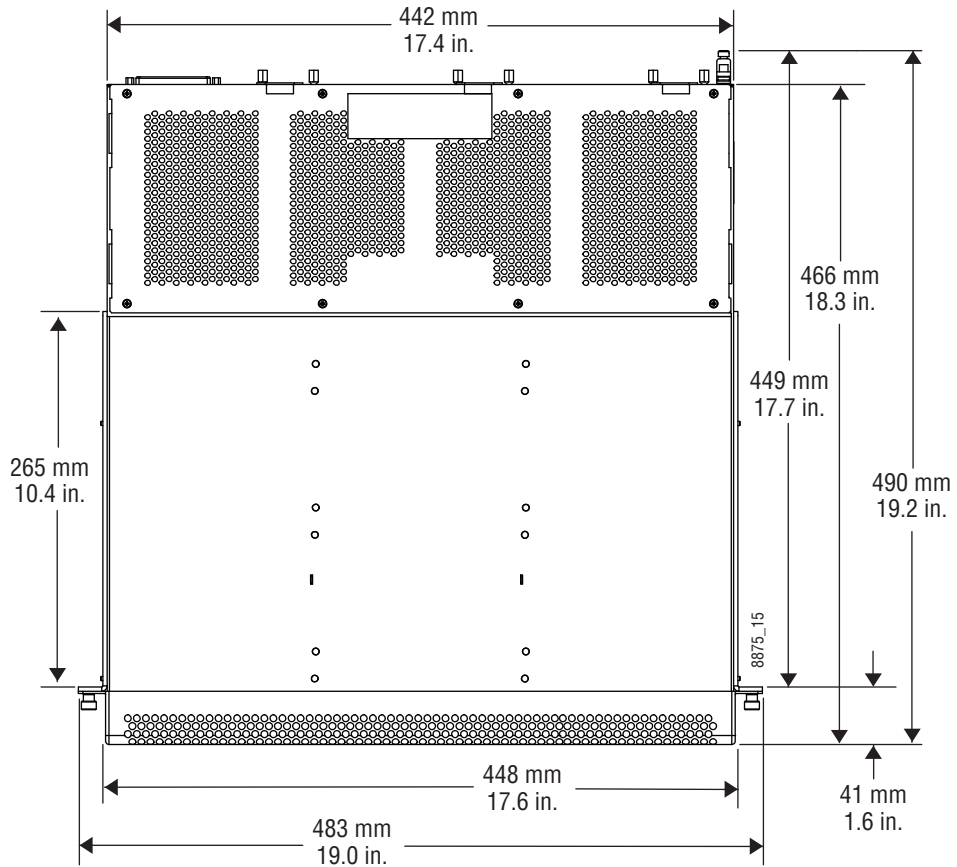
K-Frame Standard Power Supply Frame Rack Placement

The K-Frame power supply frame is ideally rack mounted immediately above the Standard Video Processor chassis. The power supply frame is then supported by the lower chassis and eliminates the need for power supply rear rack supports.

Figure 46. Standard K-Frame Power Supply Rack Installation and Cooling Airflow
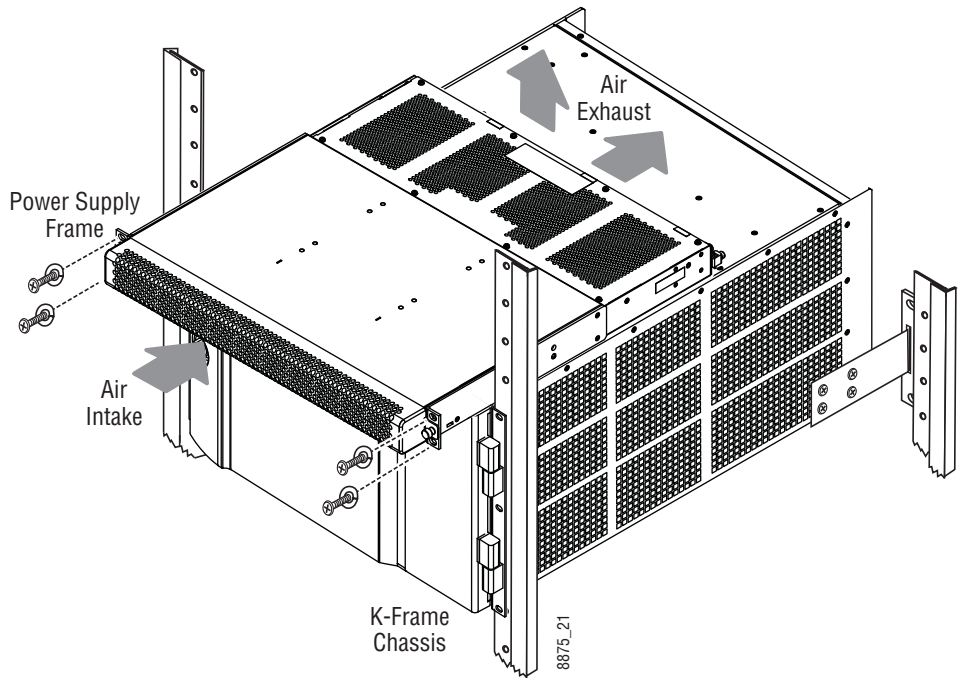
In addition, this placement allows removal of the front door of the K-Frame (see *13-RU Standard Video Processor *).

If the power supply frame is not mounted above the K-Frame chassis, rear rack supports are required. If mounting in an alternative location, allow for the 34″ DC interconnect cable length.

Figure 47. Isolated K-Frame Standard Power Supply Rack Installation
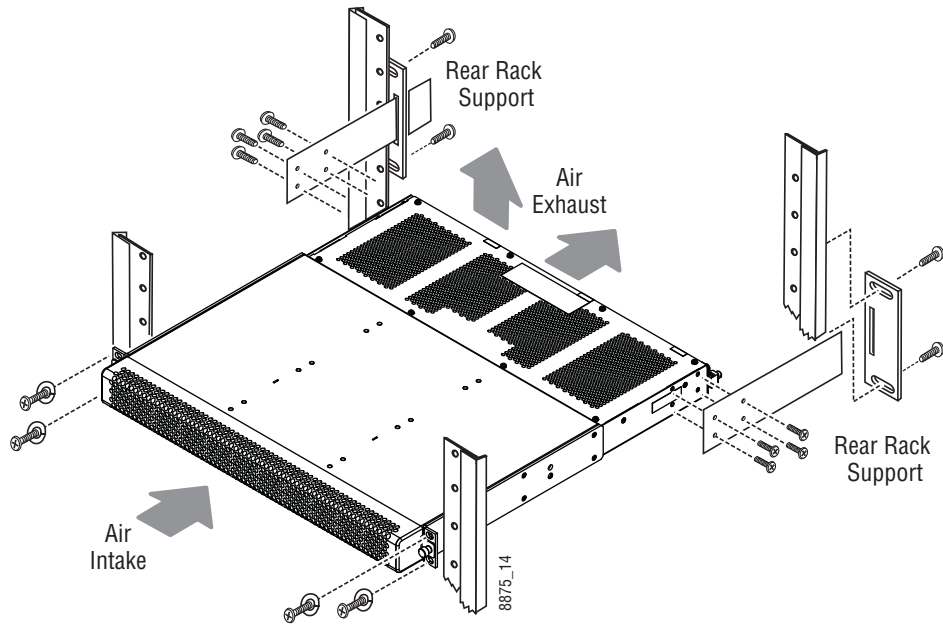
K-Frame Standard Power Supply Cooling

The top surface of the rear of the K-Frame Power Supply Frame has air holes and is slightly recessed, which permits air flow even if equipment is mounted in the rack directly above. These top recessed air holes must remain open for proper cooling. Ensure paper or other obstructions do not block these air holes.

K-Frame Standard Power Supply AC Requirements

The K-Frame Power Supply Frame has provision to support up to three hot swappable power modules. These convert the AC line input to 48V DC for the Video Processor Frame. The cells for the three modules (referred to as left, center, right) are identical and any or all cells can have a module installed. Each cell has its own AC line cord. The supplies are power factor corrected and automatically accommodate low line (120V nominal) or high line (240V nominal). The power supply frame has a rating of 100 – 240 volts, although it is designed and tested for a range of 90 to 264 volts to accommodate under and over voltage conditions. A Compact K-Frame is supplied with one power module. A second power module can be fitted as a redundant power supply option. A Standard K-Frame is supplied with two power modules. A third power module can be fitted as a redundant (n+1) power supply option.

Supplied Power Cables for Standard K-Frame

The K-Frame Power Supply Frame has IEC C19 sockets, instead of the more common C13 style, to accommodate potentially higher currents. Cables provided with K-Frame systems are matched to the destination country's standard. For example, in the USA C19 to NEMA 5-20P cables are provided.

Figure 48. USA Power Cable Example

8875_22

About Low Line (120V) Operational Considerations

If low line (120V) operation is used (mostly in North America) three characteristics of the switcher should be kept in mind when provisioning AC power for the system, which will result in the most reliable system possible:

- Consider brown-out—Modern switching power supplies are constant power devices and as such, unlike resistive loads, the input current increases as the input voltage decreases.

- Consider power supply failure—If two or three power modules are present, they will load share. For instance, if two modules are fitted and the total AC line current is 10 amps, each of the two line cords will draw about 5 amps. If one supply fails, the other supply takes up the entire load. At this point, one line cord will draw 0 amps and the other cord will draw 10 amps.

- Consider future options—The total AC power consumption is significantly influenced by the number and type of hardware options installed. This includes the number of MEs, Inputs, Outputs, and Modular I/Os.

About High Line (208V-240V) Verses Low Line (120V) Operations

North American users usually have a choice to use low line (120 volts) or high line (208-240 volts) as the AC source. If Lo line is used, a Standard (13RU) K-Frame with all options installed and running at 120 volts will draw a total of approximately 12 amps from the line cords. At 100 volts, this increases to approximately 14 amps. This load will be evenly distributed among the line cords. However, if one or more power supplies go offline, it is possible for the entire 12 – 14 amps to be drawn by one line cord. For this reason, it is recommended that each line cord be serviced by a dedicated 20 amp circuit. If this circuit is shared by other loads, consider what will happen if the switcher line cord suddenly doubles (or triples) its current consumption.

One 20 amp circuit is adequate to service the two or three K-Frame line cords since the total current never exceeds 14 amps. The only disadvantage is the reduced redundancy using one branch circuit instead of multiple circuits. In a three phase WYE distribution system, additional protection can be achieved by using different phases for each of these circuits.

The possibility of drawing as much as 14 amps from a line cord explains the 20 amp (NEMA 5-20P) plug on the line cords supplied. The NEC in the US specifies that the ubiquitous 15 amp outlet be de-rated to 12 amps for continuous loads. A 20 amp outlet is needed for the rare case of a 14 amp load experienced during a fault condition.

Most of the above is not an issue if high line (240V) operation is used. Since AC line currents are approximately half of those at low line, exceeding the current rating of a circuit should not be a problem. In areas where there is

a choice between high line or low line operation, the user should consider the advantages and disadvantages of each power sourcing scheme.

K-Frame Compact Power Supply AC Requirements

The K-Frame chassis has provision to support up to two hot swappable power modules. These convert the AC line input to 48V DC for the Video Processor Frame. The cells for the two modules (referred to as left and right) are iden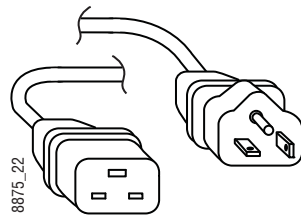tical and either or both cells can have a module installed. Each cell has its own AC line cord. The supplies are power factor corrected and automatically accommodate low line (120V nominal) or high line (240V nominal). The power supplies have a rating of 100 – 240 volts, although it is designed and tested for a range of 90 to 264 volts to accommodate under and over voltage conditions. A Compact K-Frame is supplied with one power module. A second power module can be fitted as a redundant power supply option.

About Low Line (120V) Operational Considerations

If low line (120V) operation is used (mostly in North America) three characteristics of the switcher should be kept in mind when provisioning AC power for the system, which will result in the most reliable system possible:

• Consider brown-out—Modern switching power supplies are constant power devices and as such, unlike resistive loads, the input current increases as the input voltage decreases.

• Consider power supply failure—If two or three power modules are present, they will load share. For instance, if two modules are fitted and the total AC line current is 10 amps, each of the two line cords will draw about 5 amps. If one supply fails, the other supply takes up the entire load. At this point, one line cord will draw 0 amps and the other cord will draw 10 amps.

• Consider future options—The total AC power consumption is significantly influenced by the number and type of hardware options installed. This includes the number of MEs, Inputs, Outputs, and Modular I/Os.

About High Line (208V-240V) Verses Low Line (120V) Operations

North American users usually have a choice to use low line (120 volts) or high line (208-240 volts) as the AC source. If Lo line is used, a Compact K-Frame with all options installed and running at 120 volts will draw a total of approximately 9 amps from the line cords. At 100 volts, this increases to approximately 10 amps. This load will be evenly distributed

among the line cords. However, if one or more power supplies go offline, it is possible for the entire 10 amps to be drawn by one line cord. For this reason, it is recommended that each line cord be serviced by a dedicated 20 amp circuit. If this circuit is shared by other loads, consider what will happen if the switcher line cord suddenly doubles its current consumption.

One 20 amp circuit is adequate to service the two K-Frame line cords since the total current never exceeds 10 amps. The only disadvantage is the reduced redundancy using one branch circuit instead of multiple circuits.

Most of the above is not an issue if high line (240V) operation is used. Since AC line currents are approximately half of those at low line, exceeding the current rating of a circuit should not be a problem. In areas where there is a choice between high line or low line operation, the user should consider the advantages and disadvantages of each power sourcing scheme.

Replacing Compact Power Supplies

Compact K-Frame Video Processors come with one power supply with the option of a second, located in the front of the chassis. Power supplies are hot swappable in systems containing two power supplies.

CAUTION   ESD equipment and procedures should be used when servicing electronic components.

Remove the power supply.

1. Open the front door of the Compact K-Frame.

2. Locate the lock and lock screw, located in the front, lower middle of the power supply labeled OPEN and LOCKED.

Figure 49. Compact Frame Power Supply Lock Screw

Lock Screw   Power Supply
                         Lock
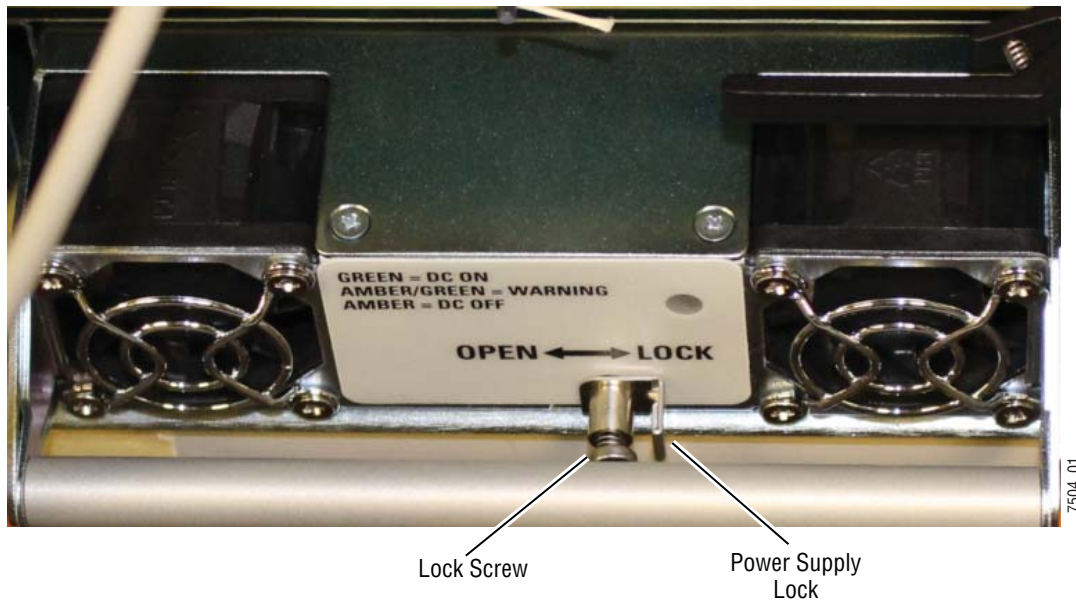
3. Loosen the lock screw a few turns to the left, using a Phillips head screwdriver.

4. Slide the lock toward the OPEN label (left) and pull the power supply straight out of the chassis.

Replace the power supply.

1. Slide the replacement power supply straight in and make sure the lock is in the LOCKED position.

2. Tighten the lock screw to the right, just until tight.

3. Close the Compact K-Frame door, making sure that it latches in the closed position.

Video Processor Door Removal Clearance

CAUTION The Video Processor front door must remain in place and closed during normal system operation to maintain maximum cooling efficiency.

The K-Frame Video Processor door can be completely removed when installed in a rack immediately below conventional flush mounted rack-ear only equipment. If the K-Frame power supply is mounted directly above the K-Frame chassis, the chassis door can be completely removed after removing the power supply's front screen. However, mounting a K-Frame in a rack immediately below other equipment that extends forward from

the rack (for example, under another K-Frame chassis) may not provide enough clearance to remove the K-Frame door.

If mounted below equipment that extends forward from the rack, allow at least 24 mm (0.94 in.) of vertical clearance above the K-Frame to permit door removal. A flush design 1 RU blank filler panel can be used for clearance, if required.

System Cabling

Overview

The K-Frame system uses Ethernet, serial, DVI, and USB connections. The K-Frame Video Processor has a built-in Ethernet switch. Tally outputs and GPI I/O (General Purpose Interface Input/Output) control are also available on the K-Frame.

Figure 50. K-Frame System Communications Overview
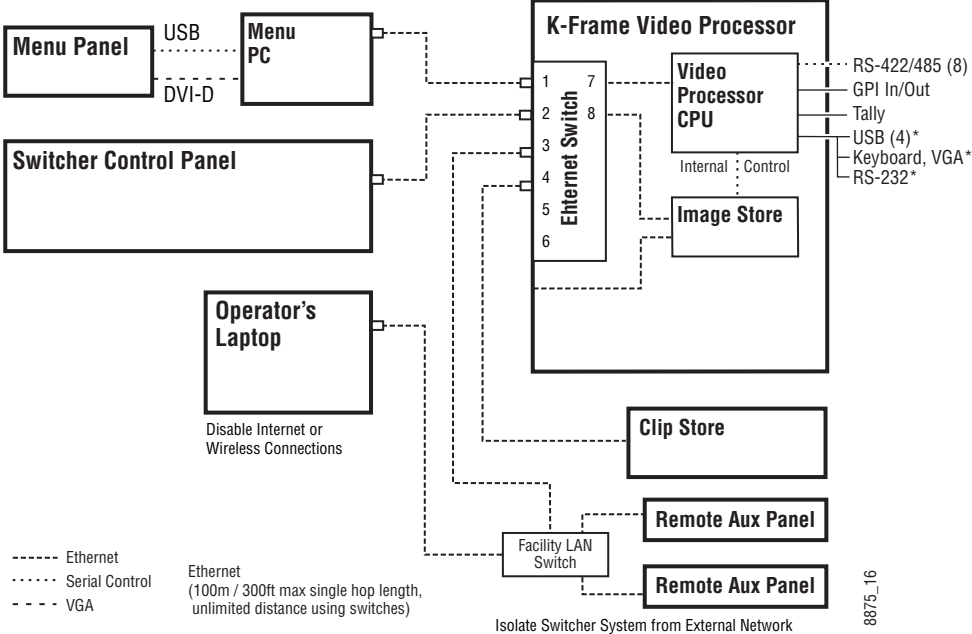
CAUTION The facility network used for your K-Frame system (and other video production equipment) should be kept separate from any external network, to prevent network traffic from adversely affecting K-Frame system operation.

K-Frame Network Cabling

Network connections are required between the Karrera K-Frame Video Processor, Control Panel, and optional Menu Panel PC.

K-Frame Ethernet Switch

The Ethernet switch built into the K-Frame auto-detects speed and polarity, and is 10/100/1000 Mbps capable. Either straight-through or crossover Ethernet cabling can be used. Available Ethernet connectors may be connected to the Facility LAN or other devices, as needed. However, should the K-Frame power down, the internal Ethernet switch will also power down, interrupting communication to devices connected to that Frame's internal Ethernet switch. Only connect devices that are system related.

Suites and Control Surfaces

A K-Frame system can be divided into two suites. System resources (MEs, eDPMs, external devices, etc.) can be assigned to each suite, creating two switchers with one system. Each suite can be subdivided into two control surfaces. These control surfaces can be located anywhere on the network, permitting system control from different rooms, floors, or even different buildings. Two dedicated, customer supplied Ethernet switches may be required when multiple suites are being used.

Figure 51. Two Suite K-Frame System
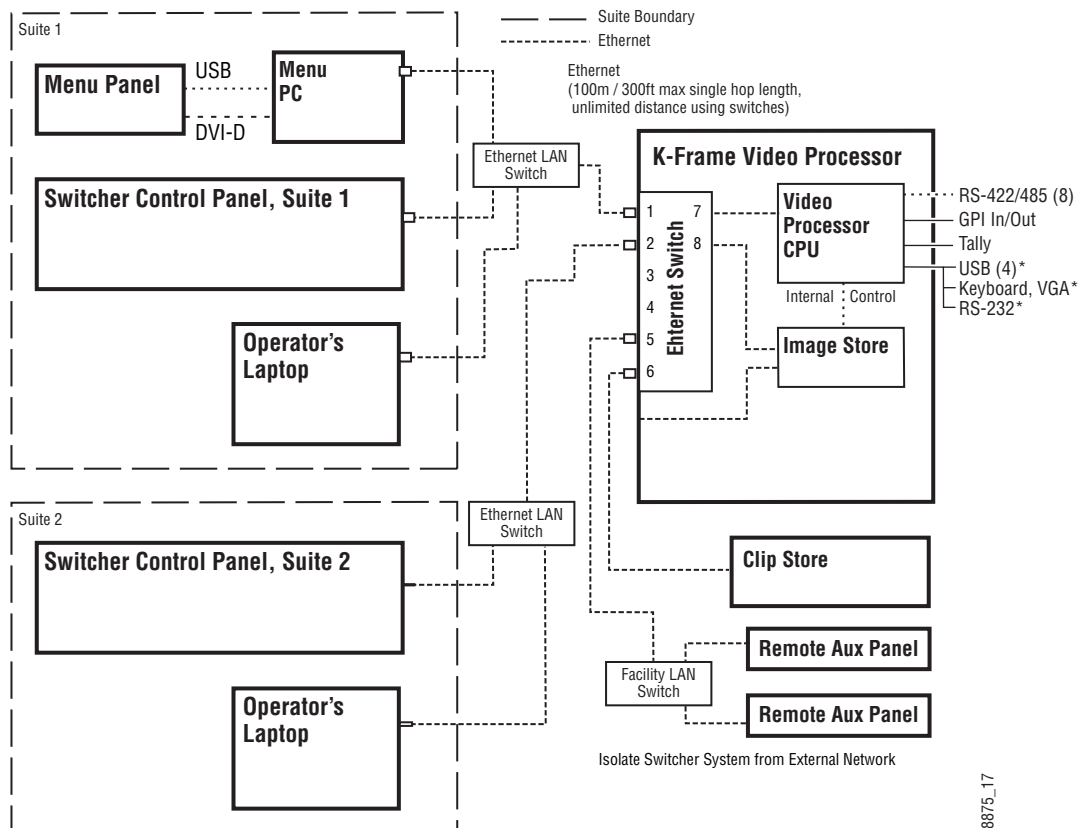
Control Panel Network Cabling

Network connections are required between the K-Frame Video Processor, Control Panel, and optional Menu Panel PC.

The Ethernet switches built into the K-Frame Video Processor and PCU auto-detect speed and polarity, and are 10/100/1000 Mbps capable. Either straight-through or crossover Ethernet cabling can be used. Available Ethernet connectors may be connected to the Facility LAN or other devices, as needed. However, should the Video Processor or PCU power down, the internal Ethernet switches will also power down, interrupting communication to devices connected to that K-Frame's or PCU's internal Ethernet switches. Only connect devices that are system related.

Suites and Control Surfaces

A K-Frame system can be divided into two suites. K-Frame Video Processor resources (MEs, eDPMs, external devices, etc.) can be assigned to each suite, creating two switchers with one K-Frame. Each suite can be subdivided into two control surfaces. Each control surface is intended for use

by a single operator. The GV Switcher Control Panel system flexibility permits locating these control surfaces in physically separate locations.

Two dedicated, customer supplied Ethernet switches may be required when multiple suites are being used.

Figure 52. Two Suite K-Frame System
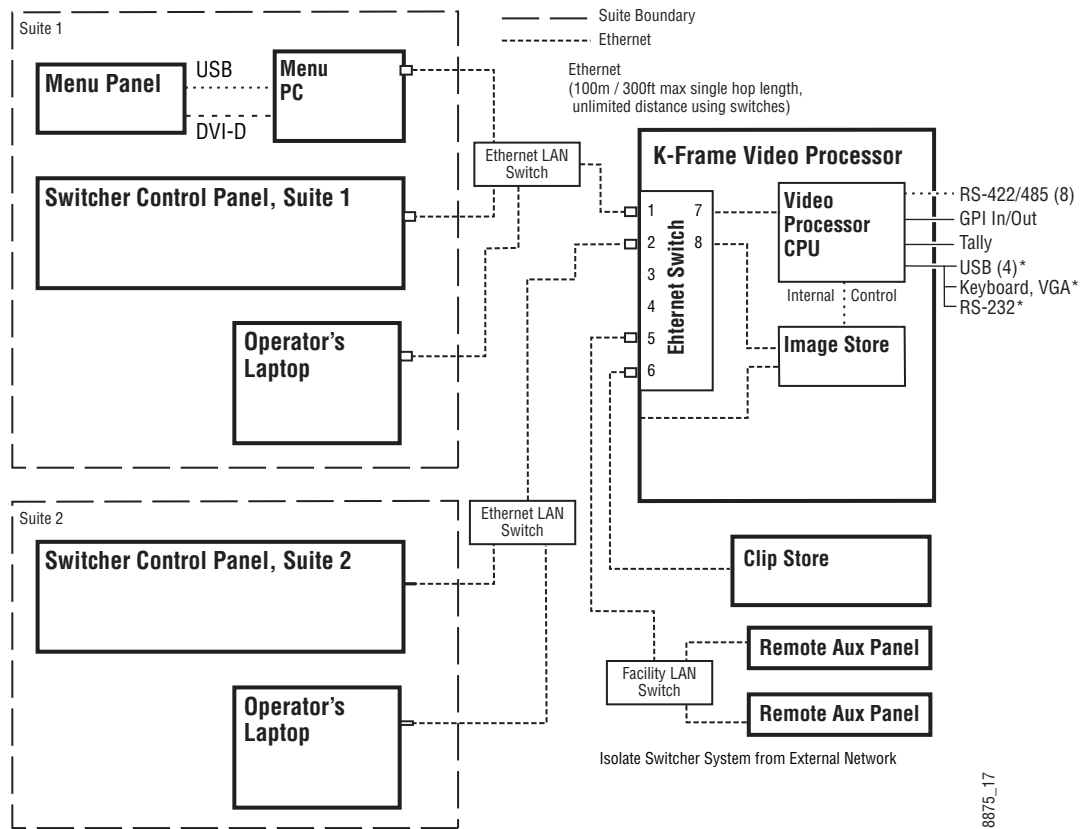
Customer Supplied Ethernet Routers and Switches

Existing facility Ethernet switches can be used in conjunction with a K-Frame system. If connecting to a network area outside that used by the K-Frame system, use of an appropriately configured Ethernet Router is strongly advised. This reduces network traffic on the K-Frame network and keeps it isolated. Any Ethernet switches added specifically for use with the K-Frame system should be 1000 Mbps capable for the most efficient operation (see Table 1).

Table 1. Customer Provided Equipment Ethernet Specifications

Cables	**Type**	10BaseT, 100BaseT, 1000BaseT compatible. Category 5 cable, 8 conductor twisted pair. The system will work at lower ratings with reduced performance. 1000BaseT components are highly recommended.
	Connectors	RJ-45 male connector at each end of cable.
	Length	10BaseT, 100BaseT, 1000BaseT: 328 ft. (100 m) maximum. Use additional switches to exceed maximum cable runs.
Switch	**Speed**	10/100/1000 Mbps
	Ports	RJ-45 auto-negotiating 10/100/1000 Mbps; number of ports required is dependent upon system size. Frame ports are capable of 1000 Mbps. Using a 1000 Mbps Ethernet switch enhances Image Store transfer speeds.
	Unmanaged	Recommended. Configuration not required, but does not provide remote monitoring capability.
	Managed	May be used. Requires configuration, but offers remote monitoring capability.

Factory Default Network Settings

Table 2. K-Frame System Default IP Addresses

Device	IP Address
K-Frame Video Processor CPU	192.168.0.170
Image Store	192.168.0.171
Control Panel Surface 1A	192.168.0.173
Touch Screen Menu Panel 1	192.168.0.175
Touch Screen Menu Panel 2	192.168.0.176
Control Panel Surface 1B	192.168.0.177
Control Panel Surface 2A	192.168.0.178
Control Panel Surface 2B	192.168.0.179
32-Crosspoint Remote Aux Panels V1.6.5 and higher software: (hard reset with the front panel buttons)	IP Address: 192.168.1.2 Frame IP: 192.168.1.1 Gateway IP: 192.168.1.1 Subnet Mask 255.255.255.0 **Note** 32-Crosspoint Remote Aux Panel default settings must be changed to operate with other system components that are configured with their default IP addresses.
All Subnet Masks)	255.255.255.0
All Gateways (except V1.6.5 software Remote Aux panel)	192.168.0.1
Reserved For Future Use	**CAUTION** Do not connect any devices configured with the following IP addresses to a K-Frame network.
Video Processor Frame Gigabit Ethernet	**192.168.0.172**
Reserved LAN Port	**192.168.0.174**

Note   Customer orders with multiple Control Panels will be pre-configured to the listed IP addresses. However, if one of these additional Control Panels is reset to factory defaults, it will be given the standard 1A default 192.168.0.173 address.

To integrate K-Frame system devices into an existing network, ask the local network administrator for that network's subnet mask. Before changing IP addresses always set the subnet masks of the devices to the mask of the local network.

Optional Touch Screen Menu Panel Cabling

Five connections are required for the Touch Screen Menu option. If the articulated arm is used, some of these cables can be routed through channels in the arm that have covers that click into place.

Figure 53. Menu Panel Cabling

Touch Screen Menu Panel Bottom View

Power Supply (80 watts)

AC Power Source

Fanless PC

USB 2.0 Port (front side 90 deg.)

Gb Ethernet

To Switcher Network

PC Power Input

OR

DVI-D (straight)

USB Type B

PCU Connector

DVI-D (rear side 90 deg.)

Karrera Control Panel (rear)

8804_28

Redundant AC Power Sources (2)

12 Volt DC Out

Power Supply (60 watts)

AC Power Source
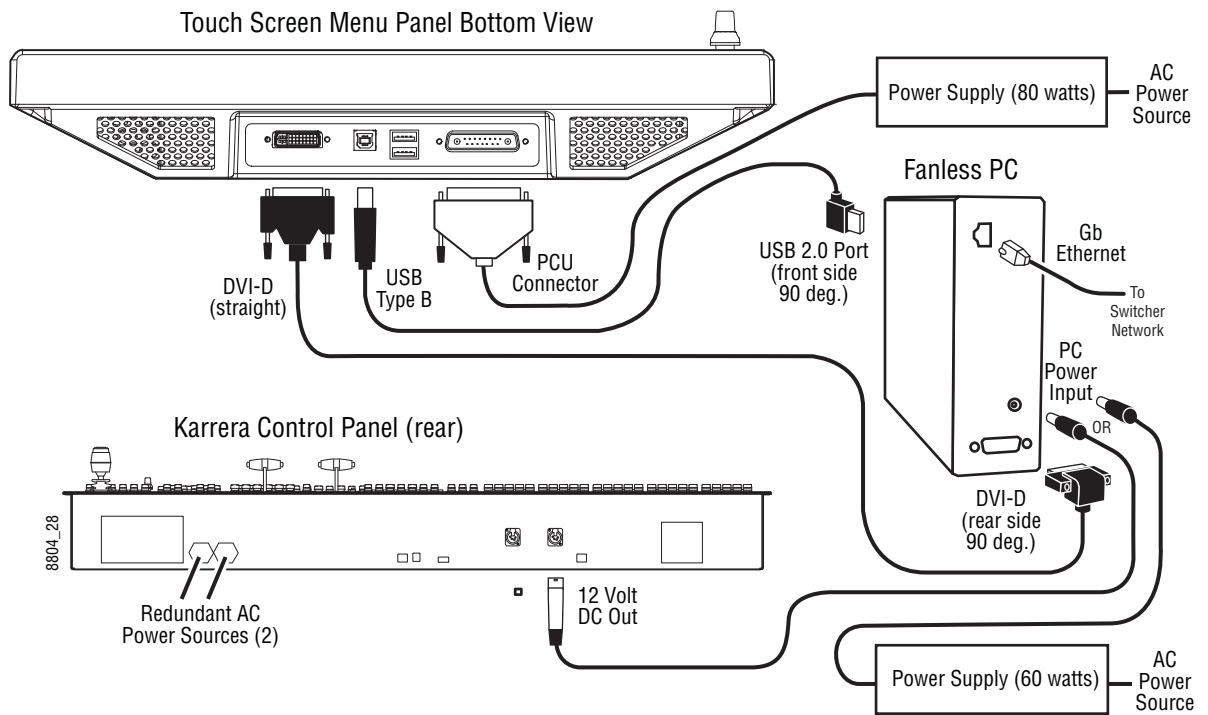
CAUTION Connect the USB port on the front of the Fanless PC (next to the firewire 1394 port) to the Menu Panel. The default PC settings enable knob control by mapping Com 3 to that front USB port.

Optional Local Aux Panel Cabling

The Karrera K-Frame Local Aux Panel is powered from the Karrera K-Frame Panel, using a 4-pin XLR cable. System control is provided using a RJ-45 connecting cable, which uses a proprietary communications protocol (not Ethernet).

Figure 54. Local Aux Panel Cabling
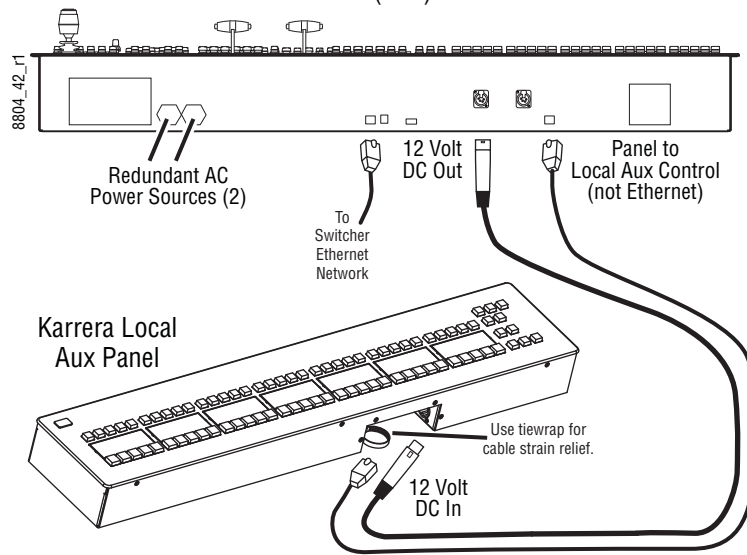
Video Cabling

All K-Frame system video inputs and outputs are configurable. For cabling configuration flexibility, each external primary input can be mapped to any control panel source select button, as can each internal video system source. Any K-Frame system video signal, such as ME program, preview, clean feed, or PGM/PST, can be mapped to any output bus to be sent to any output connector, or an output bus can act as an auxiliary bus.

Inputs

Non-looping video inputs on the back of the Video Processor Frame are numbered 1 through 32 on each input module. Each accepts a 270 MHz, 1.485 Gb, or 3 Gb serial digital video signal. The number of inputs that are active depends on the number of ME boards installed in the chassis. Twenty four inputs are active for every board installed.

Outputs

Paired outputs on the back of the Video Processor Frame are numbered 1 through 16 on each output module. Identical signals are present on each of the paired output connectors. All of the outputs carry the same video format, as determined by the standard selected and by the reference signals connected.

MatchDef and SetDef Format Conversion

K-Frame Video Processor modular I/O is available for MatchDef and SetDef signal conversion, or to increase the number of standard video inputs and outputs. This functionality is configurable in software. The 13-RU Standard K-Frame can hold up to eight modules, and the 6-RU can hold up to four.

Each modular I/O module has four pairs of connectors, labeled IN 1-4 and OUT 1-4. The connectors with the same number on that module constitutes a configurable pair. Three different software settings are available for each pair of modular I/O connectors:

Table 3.

Setting	Connector Function
Bypass	Input connector receives normal video.
	Output connector is a normal Aux bus.
MatchDef	Input connector has a configurable MatchDef scaler
	Output connector is a normal Aux bus.
SetDef	Input connector receives normal video.
	Output connector has a configurable SetDef scaler

Reference Input

The K-Frame Video Processor has one analog looping reference input, which can be used with any SD/HD/3G standard. This reference input signal must have the same frame rate as the native operating standard of the K-Frame.

75-ohm termination of the looping input is required, either directly on the adjacent connector or at the end of a daisy chain looping to other equipment.

Alternatively, any one of the K-Frame video inputs can also be used as reference in the respective standard.

K-Frame System 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. 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).

Table 4. K-Frame System Timing, 4.5 ME System

Frame Operating Mode	A Nominal Switcher Delay	B Autotiming Window	C Minimum Switcher Delay	D Maximum Switcher Delay
525i/29.97	54.91 us	+/- 8.69 µs	46.22 µs	63.56 µs
625i/25	55.10 µs	+/- 8.88 µs	46.22 µs	64.00 µs
720p/59.94/60	20.22 µs	+/- 2.02 µs	18.20 µs	22.24 µs
720p/50	22.43 µs	+/- 4.23 µs	18.20 µs	26.67 µs
1080i-1080psf/29.97/30	23.93 µs	+/- 5.73 µs	18.20 µs	29.66 µs
1080i-1080psf/25	26.88 µs	+/- 8.68 µs	18.20 µs	35.56 µs
1080psf 23.98/24	27.63 µs	+/- 9.43 µs	18.20 µs	37.04 µs
1080pA 59.94/60	11.97 µs	+/- 2.87 µs	9.1 µs	14.83 µs
1080pA 50	13.44 µs	+/- 4.34 µs	9.1 µs	17.78 µs
1080pB 59.94/60	20.23 µs	+/- 9.44 µs	10.79 µs	29.66 µs
1080pB 50	23.18 µs	+/- 12.39 µs	10.79 µs	35.56 µs

A timing diagram of the input autotiming window and various switcher delay values is provided in Figure 55.

Figure 55. Switcher Timing Diagram
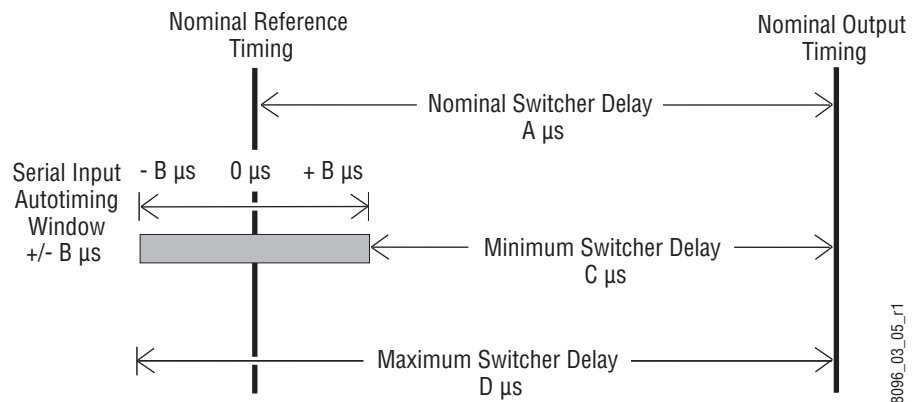
- For inputs entering the switcher in zero time with the reference, the total delay through the switcher is the Nominal Switcher Delay (A µs).

- 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).

On K-Frame systems the autotiming window varies depending on the operating mode. The Timing Analyzer in the Video Settings Menu displays this autotiming information.

Note The maximum switcher delay is approximately one line of video.

Timing Analyzer

The Sync/Timing menu on Karrera K-Frame systems (accessed via **Eng Setup**, **Video Settings**) has a Timing Analyzer pane, which can help when timing the system.

Figure 56. Video Settings Menu,
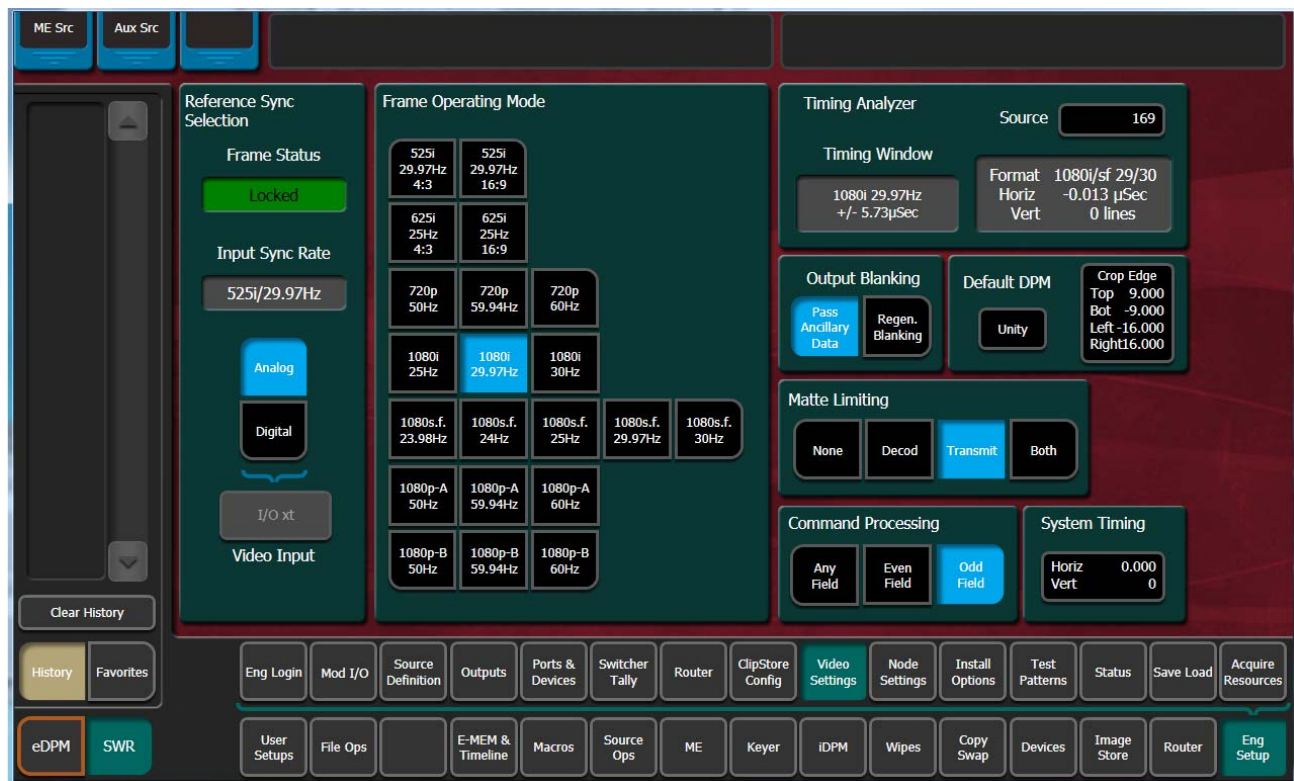
This analyzer reports the timing position of a selected source relative to the Karrera K-Frame internal sync generator. The source is selected with the upper right **Analyzer Source** soft knob and data pad. The relative position of that source is reported in lines and μs. Positive values indicate the source is later in time than the internal sync generator, and negative values indicate the source is earlier.

Karrera K-Frame systems have an autotiming window. Sources that fall within that window will be properly timed throughout the Karrera K-Frame system, even if the signal is cascaded through multiple MEs.

The **Switcher Horizontal** and **Switcher Vertical** soft knobs adjust the timing of the Karrera K-Framesystem relative to the incoming reference. These values are generally best left at zero.

Time Zones and the Autotiming Window

Each ME has a fixed amount of delay from its input to output. To allow reentries to remain in time, ME timings are staggered such that the up stream ME outputs are earlier in time than down stream ME inputs. A 5 ME production switcher has six time zones to accommodate reentry through all the MEs to any output. When all MEs are cascaded into each other, the most up stream ME is in the earliest time zone. Aux buses and other outputs are always in the latest time zone. The overlapping range of all the autotimers is the published autotiming window for the switcher.

Figure 57. Production Switcher Time Zones
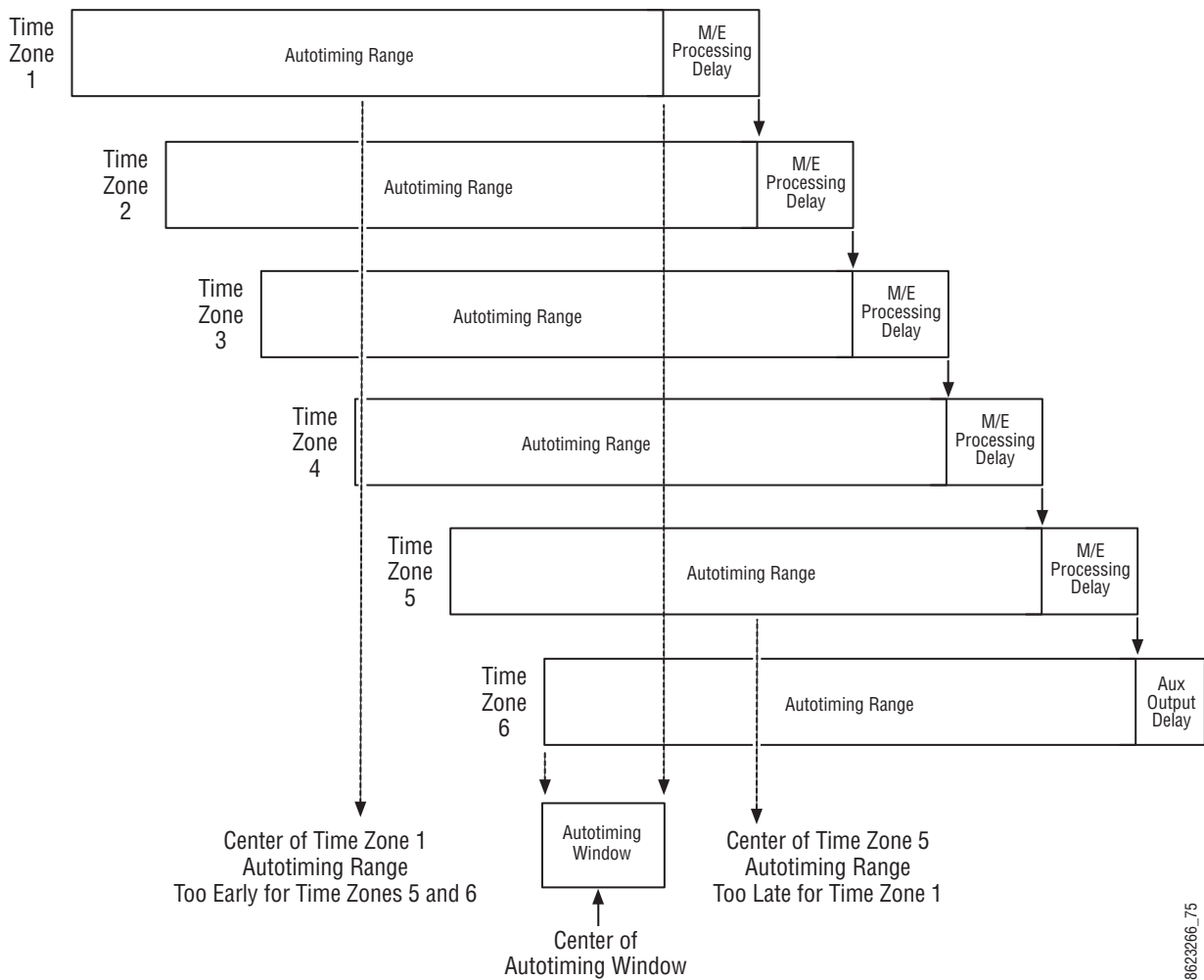
Any source fed to the switcher must be within the autotiming range of all six time zones. If not, the source will be in time on some MEs but not on others. As illustrated in the figure, a source centered in one time zone's autotiming range can be too early or late for other switcher time zones.

If a signal falls just outside the autotiming window, that image will be shifted one line up or down. On SD systems a shift of one line could be easily seen, but on higher resolution systems the lines are so narrow that a single line shift may be difficult to observe.

ClipStore Cabling

Overview

The Karrera K-Frame system uses an Ethernet connection for communications with ClipStore (K2 Summit/Solo, Figure 50 on page 79). Connect an Ethernet cable from the Karrera K-Frame, either directly or through a dedicated Ethernet switch, to the bottom left (of the four) 100BT/1000BT Ethernet ports on the Summit/Solo backplane.

Note For a detailed cabling description, see the K2 Summit/Solo manuals included in the packaging.

ClipStore Video Cabling

The ClipStore channels on the server backplane are labeled C1-C4 (Channel 1 through Channel 4 on the Summit) from left to right. The Solo backplane is not labeled, Channel 1 is on the left and Channel 2 is on the right when facing the backplane.

ClipStore requires SDI connections for both video and key— two connections In/Out per channel for recording and playback. For playback only, two SDI connections to Out 1 and Out 2 are all that is required per channel.

Figure 58. ClipStore Backplane Connections
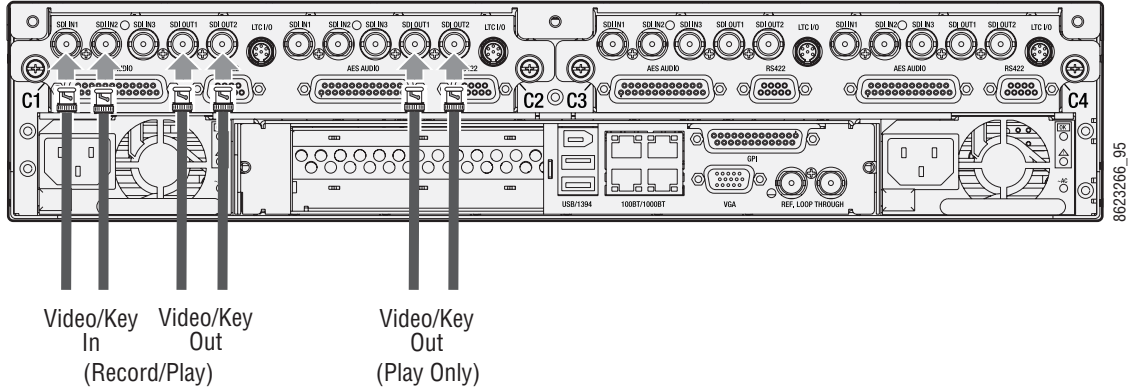
The ClipStore server (4-channel Summit/2-Channel Solo) can be connected directly to the frame. It is also possible to connect to the ClipStore directly from a router and not use any switcher outputs.

Figure 59. ClipStore Direct Connection

ClipStore
(4 Channel Summit)

Channel 1

C1 SDI IN 1
C1 SDI IN 2
C1 SDI OUT 1
C1 SDI OUT 2

Channel 2

C2 SDI IN 1
C2 SDI IN 2
C2 SDI OUT 1
C2 SDI OUT 2

Channel 3

C3 SDI IN 1
C3 SDI IN 2
C3 SDI OUT 1
C3 SDI OUT 2

Channel 4

C4 SDI IN 1
C4 SDI IN 2
C4 SDI OUT 1
C4 SDI OUT 2

Karrera
Video Processing
Frame

8623266_94_Krr
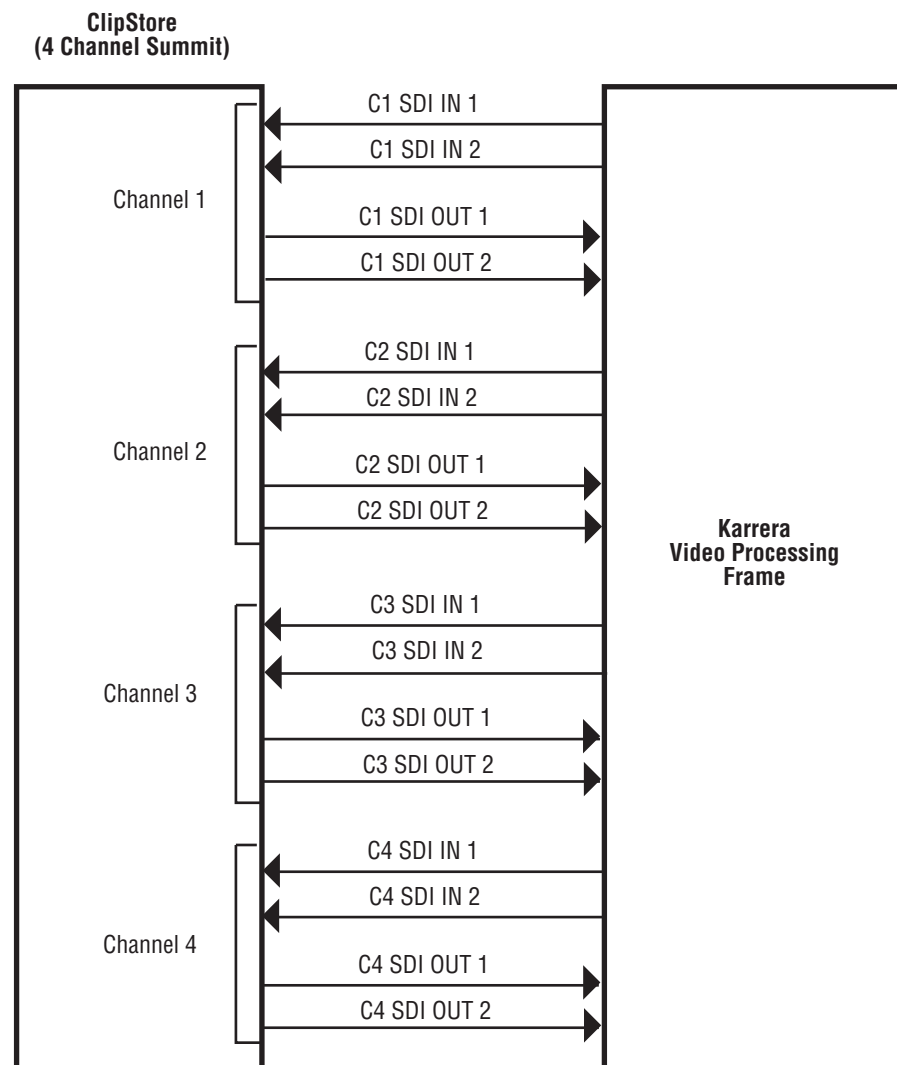
Odd numbered outputs are used for fill and even are used for cut. The first output assigned to a ClipStore channel must be an odd numbered output.

Also, DAs (Distribution Amplifiers) can be used to distribute Karrera K-Frame Aux Bus output. The example in Figure 60 shows DAs being used for both the Video and Key Aux Bus outputs from the frame.

Figure 60. ClipStore Connection Using Distribution Amplifiers
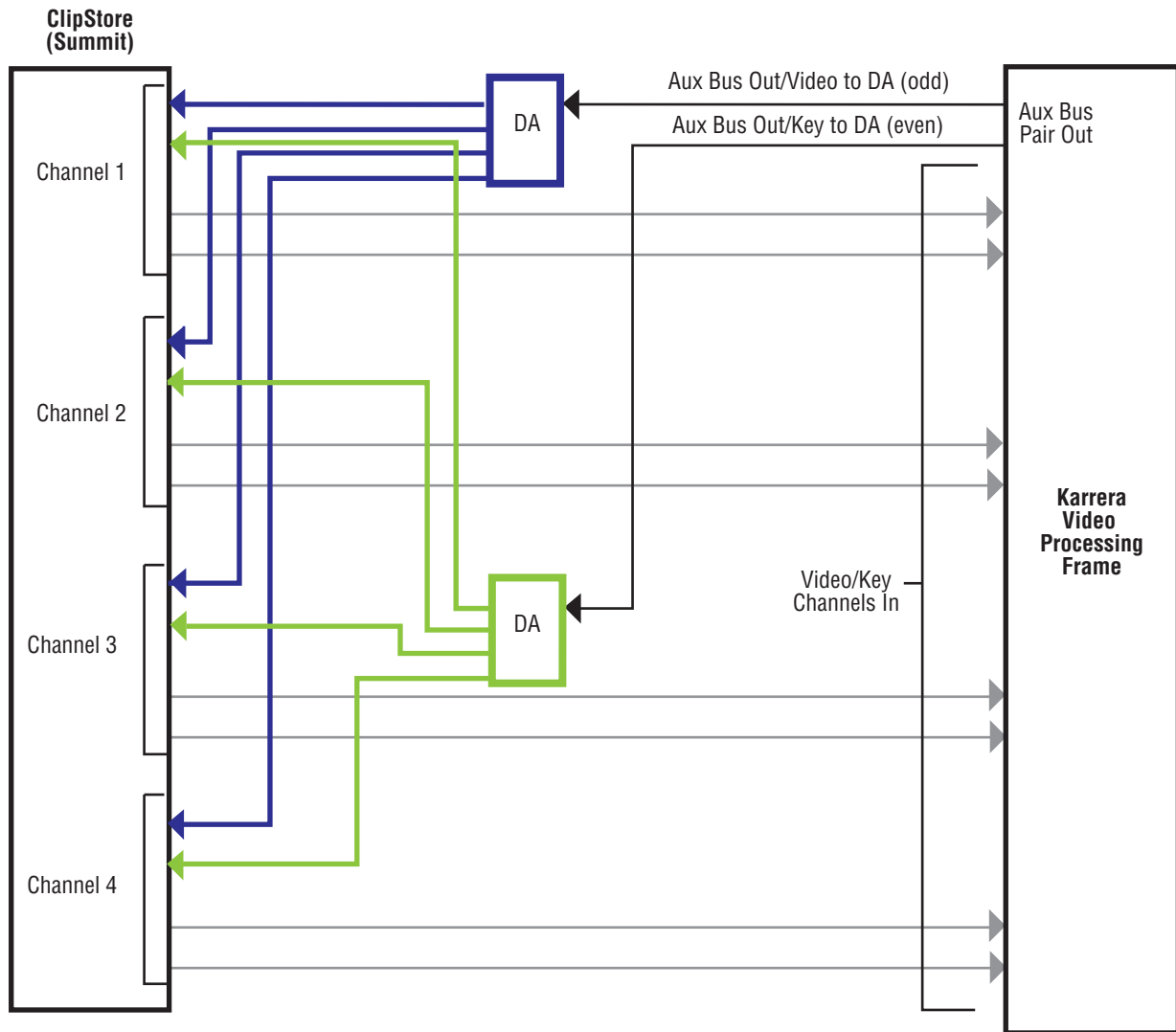
Video Processor Frame GPI/Relay Tally Interface

The GPI (General Purpose Interface) and tally interface provides a means to transfer commands to and from the switcher to external devices. A one wire per function parallel hardware relay mechanism is used. The nominal contact rating specification for each relay is 1A, 60 V.

GPI and Relay Tally Connections

Each K-Frame Video Input module has a 50 pin female sub-miniature D connector on the rear of the chassis, available for GPI and tally. Each connector has 8 GPI Inputs, 8 GPI Outputs and 24 Tally Outputs. Relays are in groups of four with a common ground. The output relays are the same hardware but the GPI is being driven by the GPI output software and the tally is driven by the Tally system software. Tally connections can be used to trigger GPIs on external devices.

GPI Inputs

The purpose of the GPI In pins is to provide a stimulus from the external devices to the switcher. A simple connection of two pins activates the corresponding input. An external relay contact or an open-collector output can be employed.

CAUTION When connecting to an open-collector output, there is no ground potential isolation between the Video Processor Frame and controlling devices.

Since the circuit ground is led out of the device, cabling should be shielded for this kind of control. Non-shielded cables may cause EMC and/or ESD problems. To activate a GPI In you must provide switch closure between a particular GPI In pin and its common (1 or 34). Pins 1 and 34 of each connector is connected to ground (Figure 61). For applications that span across more than one connector, only one ground (common) connection is required.

The following diagram has the GPI inputs on the left.

Figure 61. GPI Input Connections (Typical 2 of 8 Connections)
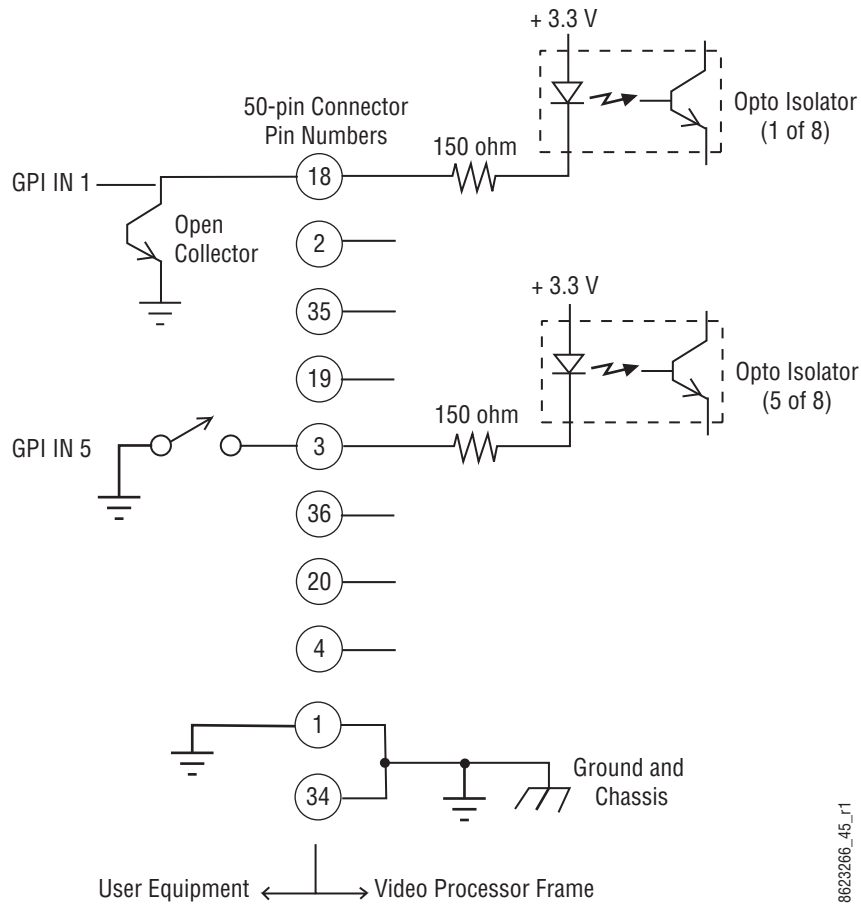
Relay Tally/GPI Outputs

Tally and GPI Outputs are arranged in groups of four. Each group has its own common connection. These commons can all be tied together, forming one common bus for all the outputs. Alternatively, multiple smaller commons can be constructed to interface with systems that need isolated common connections. This common or isolated bus scheme can extend across multiple connectors. For example, a situation may require two isolated common buses, half of the commons form the first common bus and the other half form the second common bus.

The example shown in Figure 62 illustrates two common configurations. The first four outputs have the common bus tied to ground. This drives a logic system. The last outputs have the common bus tied to +12 volts. This drives a tally lamp system.

All relays can be used to drive logic or control external circuitry.

Figure 62. Tally and GPI Output Connection Example
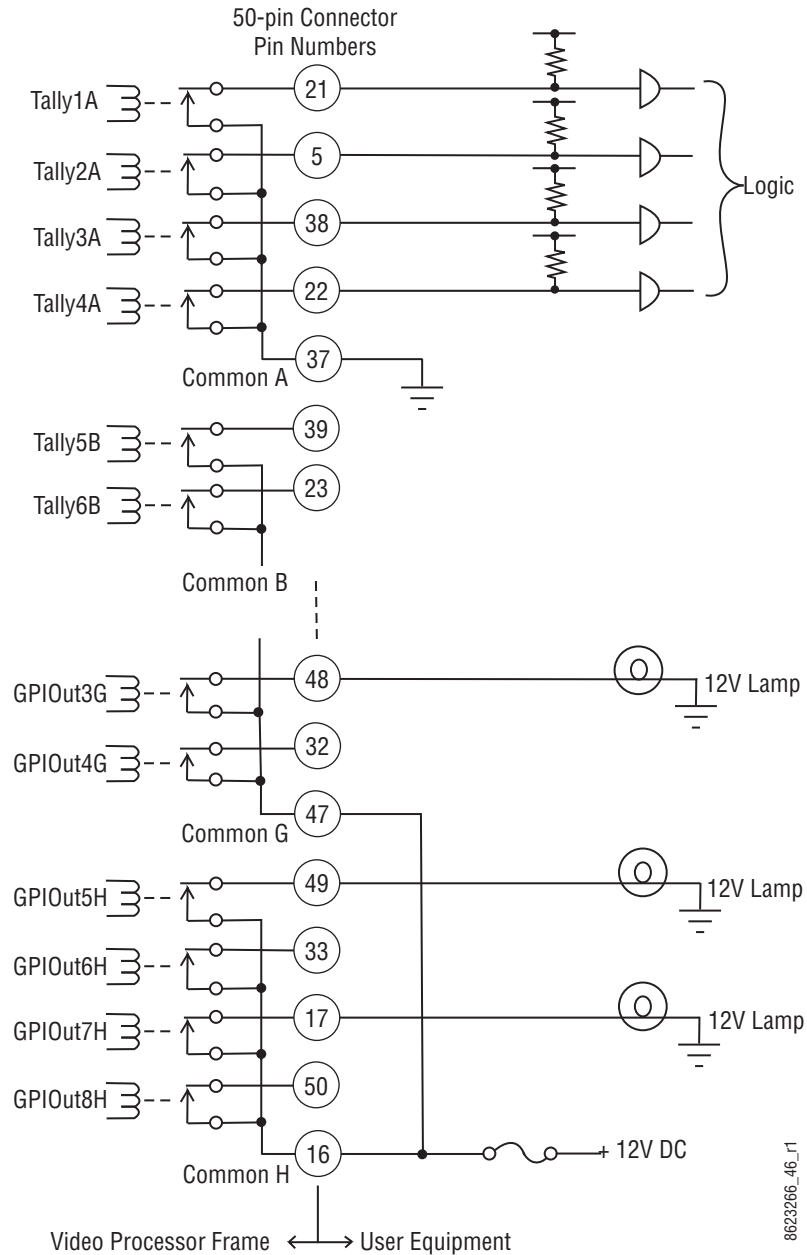
Although the diagram shows mechanical relays, the actual outputs are implemented with solid state relays. The solid state relays are bidirectional; either polarity voltage can be applied. If the switcher GPI/Tally outputs are used to drive downstream DC relays, be sure to install diodes across the

relay coils to clamp inductive spikes. Shielded cable is recommended for the connection from the switcher to the user tally system.

Table 5. Tally and GPI Output Specifications

Maximum current for any one output	1 amp AC/DC
Maximum current for any one common	2 amp AC/DC
Maximum off (open circuit) voltage between output and common	60 Volts peak
Maximum voltage between any point and ground (chassis)	60 Volts peak

GPI In, GPI Out, Relay Tally Pin Assignments

Each Input Module has a 50 pin connector for GPI and Tally. The connectors are arranged in left to right order on the rear of the Standard (13-RU) K-Frame, and in top to bottom order on the Compact (8RU) K-Frame.

Table 6. Input Module Connectors

Module Number	Signals	8RU Frame	13 RU Frame
1	GPI In 1-8	Yes	Yes
	GPI Out 1-8		
	Relay Tally 1-24		
2	GPI In 9-16	Yes	Yes
	GPI Out 9-16		
	Relay Tally 25-48		
3	GPI In 17-24	No	Yes
	GPI Out 17-24		
	Relay Tally 49-72		
4	GPI In 25-32	No	Yes
	GPI Out 25 - 32		
	Relay Tally 73-96		
5	GPI In 33-40	No	Yes
	GPI Out 33-40		
	Relay Tally 97-120		

Table 7. GPI In, Relay Tally, GPI Out Signals

Socket diagram — **D-50 Female**
Pin 1, Pin 18, Pin 34, Pin 33, Pin 17, Pin 50

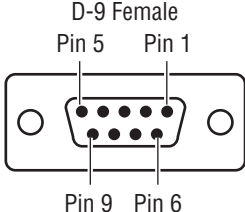| Socket	Ribbon Cable	50-Pin D-Sub		1	2	3	4	5
1	1			GPIInCom	GPIInCom	GPIInCom	GPIInCom	GPIInCom
2			34	GPIInCom	GPIInCom	GPIInCom	GPIInCom	GPIInCom
3		18		GPIIn1	GPIIn9	GPIIn17	GPIIn25	GPIIn33
4	2			GPIIn2	GPIIn10	GPIIn18	GPIIn26	GPIIn34
5			35	GPIIn3	GPIIn11	GPIIn19	GPIIn27	GPIIn35
6		19		GPIIn4	GPIIn12	GPIIn20	GPIIn28	GPIIn36
7	3			GPIIn5	GPIIn13	GPIIn21	GPIIn29	GPIIn37
8			36	GPIIn6	GPIIn14	GPIIn22	GPIIn30	GPIIn38
9		20		GPIIn7	GPIIn15	GPIIn23	GPIIn31	GPIIn39
10	4			GPIIn8	GPIIn16	GPIIn24	GPIIn32	GPIIn40
11			37	TallyComA	TallyComJ	TallyComS	TallyComAA	TallyComAG
12		21		Tally1A	Tally25J	Tally49S	Tally73AA	Tally97AG
13	5			Tally2A	Tally26J	Tally50S	Tally74AA	Tally98AG
14			38	Tally3A	Tally27J	Tally51S	Tally75AA	Tally99AG
15		22		Tally4A	Tally28J	Tally52S	Tally76AA	Tally100AG
16	6			TallyComB	TallyComK	TallyComT	TallyComAB	TallyComAH
17			39	Tally5B	Tally29K	Tally53T	Tally77AB	Tally101AH
18		23		Tally6B	Tally30K	Tally54T	Tally78AB	Tally102AH
19	7			Tally7B	Tally31K	Tally55T	Tally79AB	Tally103AH
20			40	Tally8B	Tally32K	Tally56T	Tally80AB	Tally104AH
21		24		TallyComC	TallyComL	TallyComU	TallyComAC	TallyComAJ
22	8			Tally9C	Tally33L	Tally57U	Tally81AC	Tally105AJ
23			41	Tally10C	Tally34L	Tally58U	Tally82AC	Tally106AJ
24		25		Tally11C	Tally35L	Tally59U	Tally83AC	Tally107AJ
25	9			Tally12C	Tally36L	Tally60U	Tally84AC	Tally108AJ
26			42	TallyComD	TallyComM	TallyComV	TallyComAD	TallyComAK
27		26		Tally13D	Tally37M	Tally61V	Tally85AD	Tally109AK
28	10			Tally14D	Tally38M	Tally62V	Tally86AD	Tally110AK
29			43	Tally15D	Tally39M	Tally63V	Tally87AD	Tally111AK
30		27		Tally16D	Tally40M	Tally64V	Tally88AD	Tally112AK
31	11			TallyComE	TallyComN	TallyComW	TallyComAE	TallyComAL
32			44	Tally17E	Tally41N	Tally65W	Tally89AE	Tally113AL
33		28		Tally18E	Tally42N	Tally66W	Tally90AE	Tally114AL
34	12			Tally19E	Tally43N	Tally67W	Tally91AE	Tally115AL
35			45	Tally20E	Tally44N	Tally68W	Tally92AE	Tally116AL
36		29		TallyComF	TallyComP	TallyComX	TallyComAF	TallyComAM
37	13			Tally21F	Tally45P	Tally69X	Tally93AF	Tally117AM
38			46	Tally22F	Tally46P	Tally70X	Tally94AF	Tally118AM
39		30		Tally23F	Tally47P	Tally71X	Tally95AF	Tally119AM
40	14			Tally24F	Tally48P	Tally72X	Tally96AF	Tally120AM
41			47	GPIOutComG	GPIOutComQ	GPIOutComY	GPIOutComAG	GPIOutComAJ
42		31		GPIOut1G	GPIOut9Q	GPIOut17Y	GPIOut25AG	GPIOut33AJ
43	15			GPIOut2G	GPIOut10Q	GPIOut18Y	GPIOut26AG	GPIOut34AJ
44			48	GPIOut3G	GPIOut11Q	GPIOut19Y	GPIOut27AG	GPIOut35AJ
45		32		GPIOut4G	GPIOut12Q	GPIOut20Y	GPIOut28AG	GPIOut36AJ
46	16			GPIOutComH	GPIOutComR	GPIOutComZ	GPIOutComAH	GPIOutComAK
47			49	GPIOut5H	GPIOut13R	GPIOut21Z	GPIOut29AH	GPIOut37AK
48		33		GPIOut6H	GPIOut14R	GPIOut22Z	GPIOut30AH	GPIOut38AK
49	17			GPIOut7H	GPIOut15R	GPIOut23Z	GPIOut31AH	GPIOut39AK
50			50	GPIOut8H	GPIOut16R	GPIOut24Z	GPIOut32AH	GPIOut40AK
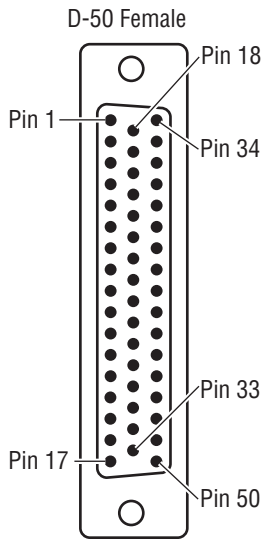
RS-422/485 Port Pin Assignments

Eight RS-422/485 ports are available on the rear of the K-Frame Video Processor, and can be used to control various devices, or for switcher control by an external controller.

Note   The Frame serial port pinout is automatically configured based on assignment. The Frame is the bus controller when controlling external devices and PBus. The Frame is a tributary when controlled by an editor.
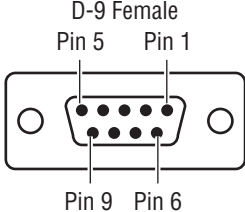
Table 8. RS-422/485 Pinouts

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

RS-232 Port Pin Assignments

RS-232 serial ports are located on each processor board (Video Processor, Panel Processor, Menu PC), available for maintenance and diagnostics. Standard VGA and keyboard ports, present on all processor boards, are also available for maintenance.

Table 9. RS-232 Pinouts

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

Basic Configuration

Introduction

This section provides basic system configuration information for the Karrera K-Frame Video Production Center. Refer to the *Kayenne/Karrera K-Frame Release Notes* for information specific to your current software version.

Configuration Steps

Karrera K-Frame basic system configuration includes the following steps:

1. Power up the system.

2. Set IP addresses for your facility (if not using defaults). Node Settings will also need to be configured for proper system communications (see page 109).

3. If necessary, adjust Control Panel button and display illumination (page 125).

4. If necessary, calibrate Control Panel lever arms and joystick (see *Maintenance* section).

5. Define your basic Engineering Setups. Essential settings include:

   • Source Definition (see page 127)

   • Outputs (see page 134)

   • Tally (see page 139)

6. Define a baseline User Setups (Panel Prefs and Suite Prefs). Important settings include:

   • Button Mapping (see page 169)

   • Source Patching (see page 171)

   • Default Keyframe (see page 171)

7. Configure external devices with the Karrera K-Frame system (see *Section 6-External Interfaces*).

8. Save your configuration files (see).

9. Additional configuration will be required if multiple suites are being used (see).

Karrera K-Frame Configuration Data

Current configuration settings reside on the Video Processor Frame (in the NV folder on the Compact Flash drive on the Processor Board). These settings affect Karrera K-Frame system operation. When the Video Processor resets, these settings are read and enacted. Configuration settings can be saved to files and loaded back into the Karrera K-Frame system at a later time to restore those operational settings.

Karrera K-Frame configuration data falls into a few basic categories:

Eng Setup

Engineering Setup defines basic Karrera K-Frame system functionality, including how it is cabled into a facility. Eng Setup applies to the entire Karrera K-Frame system and can affect both suites if a second suite has been configured. Engineering Setups are intended to be used and maintained by technical staff. These parameters are typically set once and seldom changed, unless the facility changes in some way (new devices installed, signals rerouted, etc.).

User Setups

User Setups can customize Karrera K-Frame system behavior for personal preferences, and to meet workflow requirements of a particular show. These settings are divided into **Panel Prefs** and **Suite Prefs**.

Panel Prefs affects how a specific Karrera K-Frame control surface operates for an individual user, including Button Mapping, Source Colors, etc. These settings apply to a single control surface.

Suite Prefs controls more fundamental system behavior like Resource Allocation, Source Patching, E-MEM Prefs, etc. These settings apply to all Karrera K-Frame control surfaces within that suite, and so can affect multiple operators. On Karrera K-Frame systems configured with multiple suites, each suite will has its own independent Suite Prefs settings.

Network IPs and Node Settings

The Karrera K-Frame system employs Ethernet IP communications. IP addresses are set on the Video Processor Frame, Image Store, Control Panel,

and Menu Panel. The Karrera K-Frame Video Processor Frame maintains a list of IP nodes to enable communication with the other devices in the system. This list is stored separately from the Eng Setup and User Setups configuration files. This permits loading these configuration files without the danger of accidentally disrupting system communications.

One exception is Remote Aux Panel IP network settings, which are stored in the Karrera K-Frame Eng Setup configuration file, along with other Remote Aux Panel settings.

GV Switcher Menu Application

Note   A brief description of the GV Switcher menu application is presented here. Refer to the separate *Karrera K-Frame User Manual* for detailed information.

The GV Switcher menu application is used to configure your Karrera K-Frame system. This application can run on a user supplied PC, using a mouse and keyboard, and can run on the optional Karrera K-Frame Touch Screen menu, allowing system operation by touching the screen.

The GV Switcher system menus are context sensitive. They display different information and provide various types of controls depending on what area of the system is involved. A representative menu is shown in Figure 63.

Figure 63. GV Switcher Menu Example
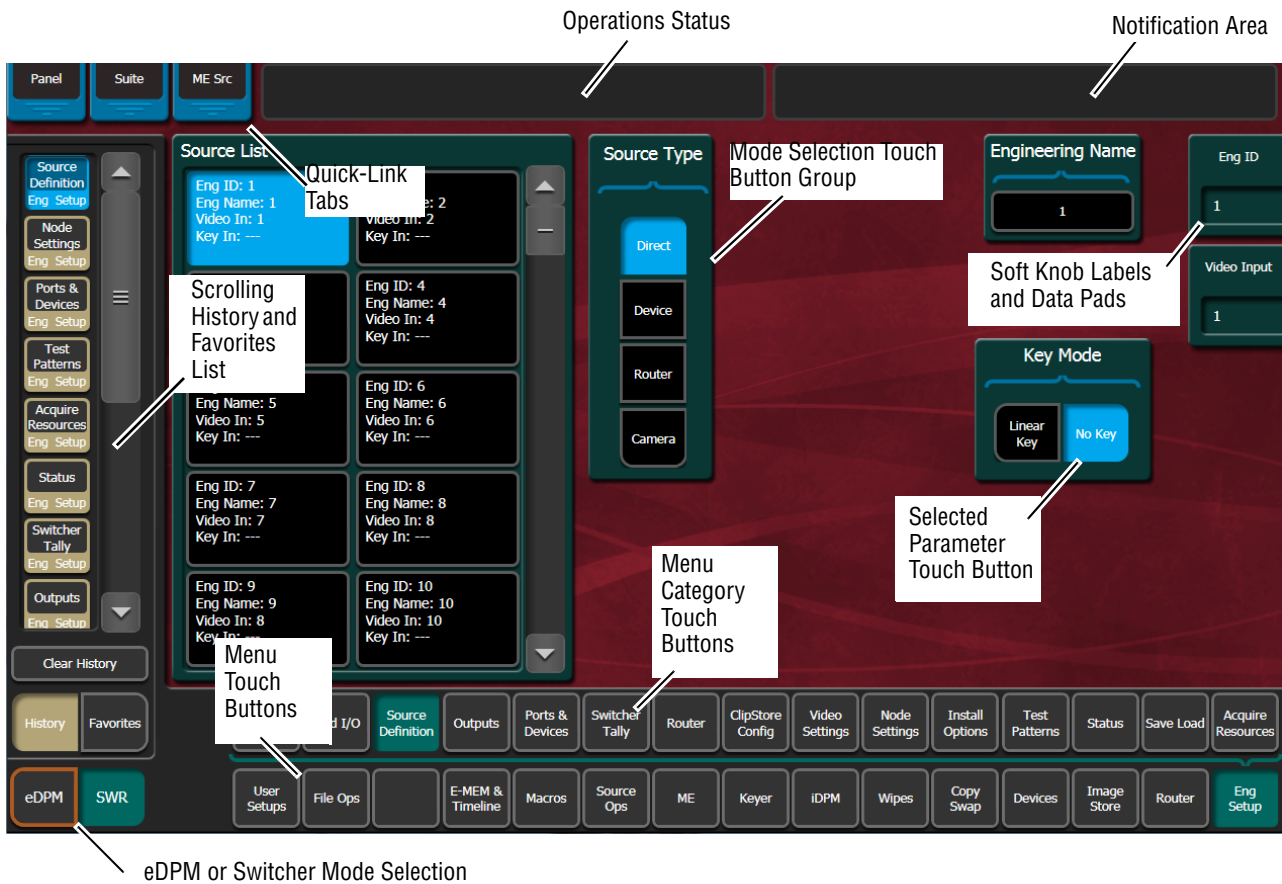
Menu Top Line

The top line is identical in all the GV Switcher system menus:

- The left portion of the top line has three **Quick-Link Tabs**, which provide access to other related GV Switcher menus.

- The center portion of the top line displays operations status messages.

- The right portion of the top line is an operator notification area, where messages generated by the Karrera K-Frame system are displayed.

Data Pads and Touch Buttons

Data pads are active areas on the screen that display a summary of the status of an object, and when clicked or touched bring up additional controls and information for that object.

Touch buttons are labeled by their function and do not display data. Clicking or touching these buttons will immediately activate their function.

Touch buttons can control on/off functions, and have an indicator on the left side, or they can select from a group of parameters, and turn light blue

to indicate the state of that parameter. For on/off buttons, green indicates this is a normal parameter and that either an on or off state is typical. Yellow indicates an active function that may change expected behavior. Red indicates an active function which significantly changes normal behavior.

Data Pads and Soft Knobs

Figure 64. Soft Knob and Data Pad
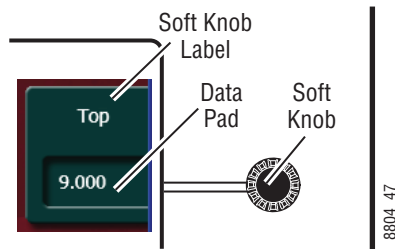
Data pads on the right side of the screen allow adjusting parameters with ranges of values. Left clicking or touching a data pad opens a numeric keypad, allowing entry of a specific value.

When equipped with a Touch Screen Menu Panel, knobs along the right side of the panel can be used to dial in parameter values for functions displayed. When a knob is active, the touch screen shows the parameter name and its current value on that data pad.

Menu Selection

Various GV Switcher system operating menus are selected using the menu buttons at the bottom of the Menu panel touch screen. Menu category selection touch buttons are directly above the **Menu** touch buttons. Touching one of these buttons displays that category (see Figure 63 on page 104).

As each menu is accessed, a button for it appears in the scrolling **History** pane on the left, providing a quick return to that menu. **Favorites** can also be programmed for quick access to specific menus that are not overwritten.

Note   The optional eDPM system has its own set of operating menus, accessed by touching the **eDPM** button on the lower left. For basic Karrera K-Frame configuration be sure the **SWR** button is selected.

Power Up and Initialization the System

The Karrera K-Frame Video Processor Frame, Control Panel, and menu application must be running for full system operation.

1. The Karrera K-Frame Video Processor power switch is located inside the front door, on the front of the control board (see Figure 34 on page 63 and Figure on page 67).

CAUTION   The front doors of the Video Processor Frame must remain closed during normal system operation for proper cooling airflow.

2. The Karrera K-Frame Control Panel power switch is located inside the tub, near the center of the upper board. The two screws holding down the lid can be opened with a 1/4 turn using a coin or flat-blade screwdriver.

3. The PC (customer supplied or optional Fanless PC) running the GV Switcher menu application must be turned on, as well as that PC's monitor or optional Touch Screen menu display.

Power and Initialization Indications

Power to the system is indicated by operation of the fans in the Video Processor Frame, illuminated buttons on the Control Panel, and a Karrera K-Frame screen is displayed on the Menu Panel.

Karrera K-Frame Menu Application Initialization

When GV Switcher menu application initialization completes the Status menu is displayed. This menu reports any connected devices, IP addresses, and software versions and dates of those devices in the center of the screen.

Default Karrera K-Frame System Communications

Karrera K-Frame systems ship with factory default settings that allow components to communicate with one another when powered up, provided they are connected properly). These Karrera K-Frame components appear on the Status menu.

We recommend you use an isolated Ethernet network with your Karrera K-Frame system (to prevent possible IP address or network traffic conflicts), particularly when first setting up your system.

Establishing Menu to Frame Communication

If a Video Processor Frame is not found by the GV Switcher menu application, the Status menu central window will be empty and a **NO FRAME COM** message will be displayed in the upper right Notification Area.

The following conditions need to be met before the GV Switcher menu application can communicate with the Video Processor Frame. This list assumes the Karrera K-Frame Touch Screen Menu Panel is being used.

Similar requirements apply when the GV Switcher menu application is run on a PC:

- The Video Processor Frame must be powered up and running.

- The IP address of the Karrera K-Frame Menu Panel must be set to be on the same network as the Video Processor Frame.

- Ethenet cabling should connect the Control Panel to the Video Processor Frame, either directly or though an Ethernet switch.

- The IP Address the menu application will use to communicate with the Frame must be in the **Frame IP Address** field of the **Frame Suite Nodes & ID** menu (to identify which Frame the Menu Panel will connect to).

- The Menu Panel's IP address must be in the **IP Address** field of the **Control Surfaces** menu (to register that Menu Panel as a node on the Frame).

Connecting the Menu Application to a Frame

Use the following procedure to connect a Menu Panel with a compatible IP address to a properly cabled and operating Video Processor Frame. Two menu application resets will be required, one to connect to the Frame and another to register the menu application IP with that Frame:

1. On the GV Switcher menu application, go to **Eng Setup**, **Node Settings**, **Frame Suite Nodes & ID**.

Figure 65. Frame Suite Nodes & ID Menu
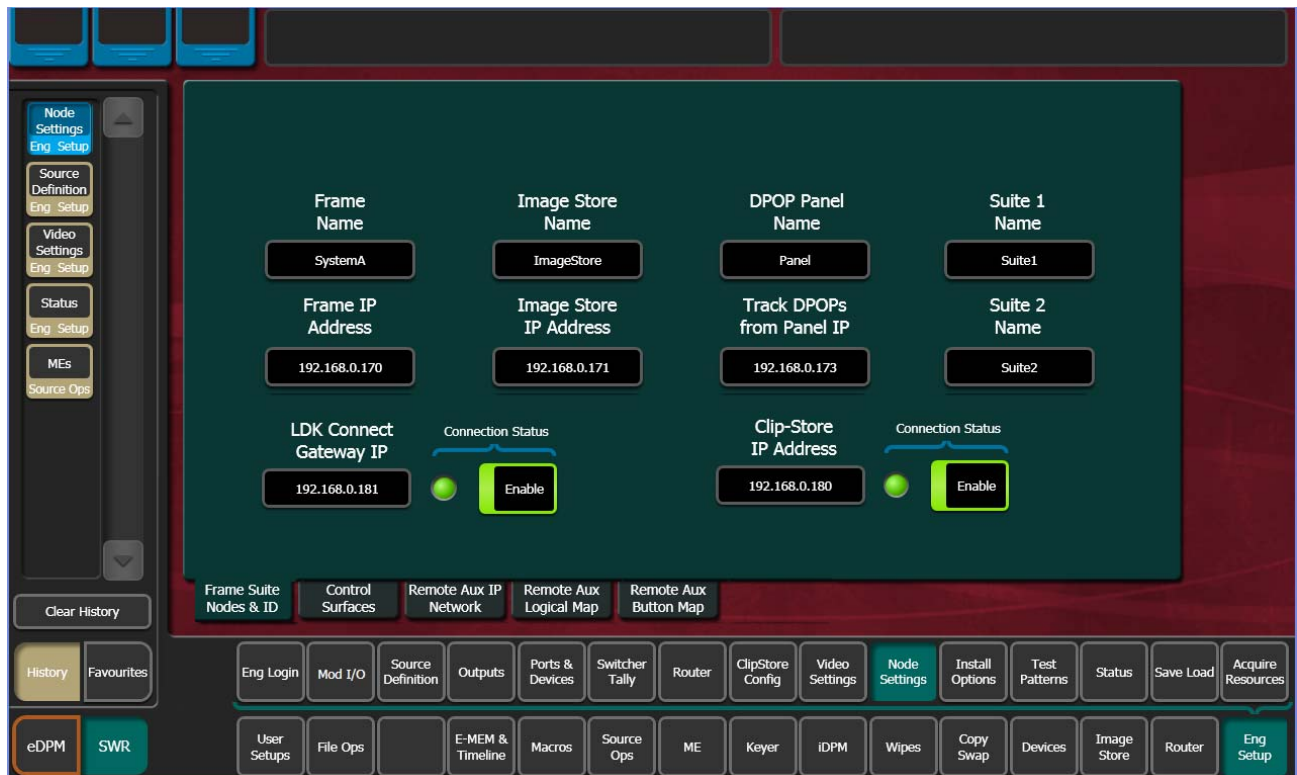
2. Enter the IP address the menu will use to communicate with the Frame in the **Frame IP Address** field.

3. A Restart menu dialog box will appear.

Figure 66. Restart Menu Dialog Box.

4. You can either touch **Restart Now** to restart Menu Panel application, or you can **Cancel**, make changes to the Image Store IP Address and Track DPOPs from Panel IP, and then do a single Menu Panel restart.

5. After the Menu Panel restarts, go to **Node Settings, Control Surfaces**. This is the only GV Switcher menu that will be active when the Menu Panel is not registered with the Frame.

6. Enter a descriptive **Node Name** for the Menu Panel, and enter its **IP address** in one of the fields available.

Figure 67. Control Surfaces Node Menu
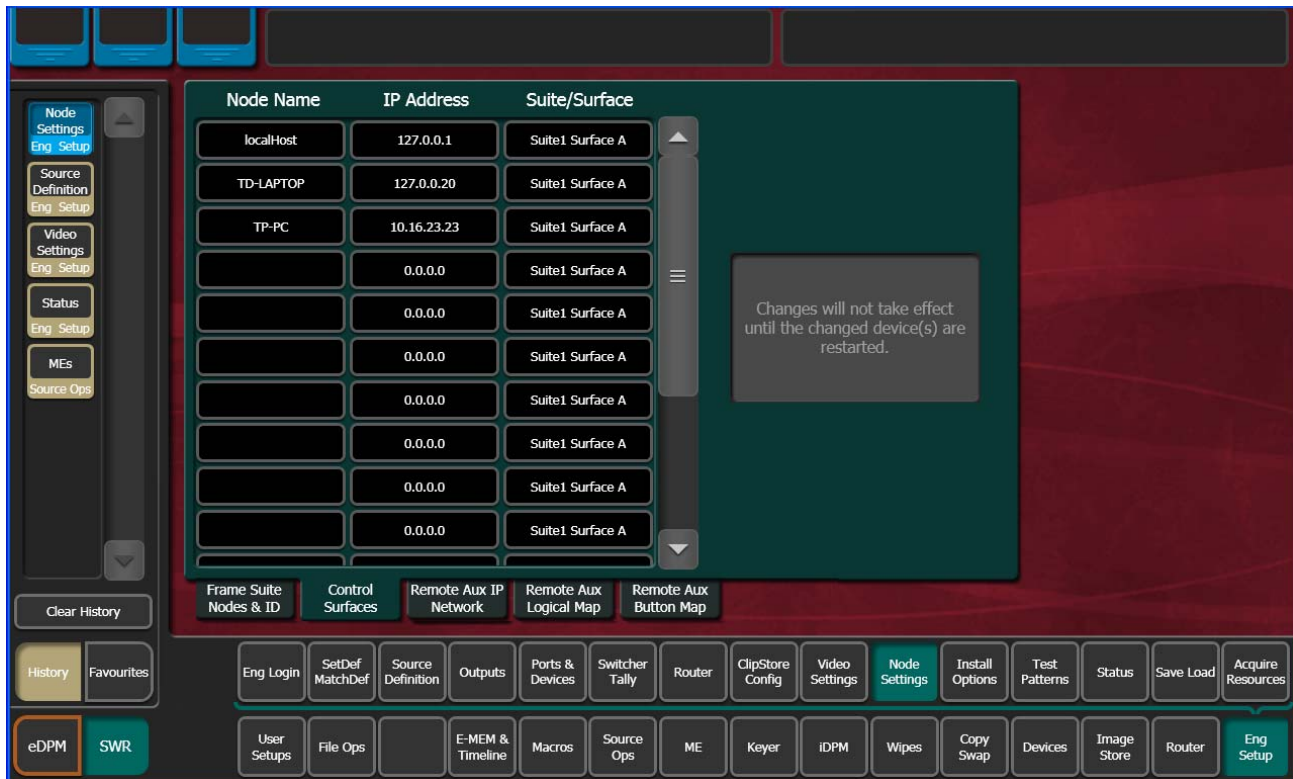
7. Touch the **Status** subcategory button to exit the menu. A Restart menu dialog box will appear.

8. Touch **Restart Now** to restart Menu Panel application.

After restart, the **Status** menu should show the Video Processor Frame, and the Menu Panel should be fully operational.

Network Configuration

IP Address Background Information

Each device connected to any Ethernet network must have a unique IP address. An IP address has two components: the network address and the node address. The Subnet mask defines the dividing line between the two. The first three octets of Subnet mask provide the network address; the fourth is the node address. Nodes with the same network address can communicate directly with each other, while nodes with different network addresses normally do not communicate directly.

The Karrera K-Frame system uses Ethernet switches built into the Video Processor Frame. The switch provides isolation between port pairs, providing deterministic communication for panel and frame messaging, and also allows Control Panel and Menu Panel communication for DPOPs. All nodes must also have the same network address and be given a different node address.

Gateway IP Addresses

A gateway IP address can be entered to allow communication with devices not located on the local Karrera K-Frame system network. Communication outside the local network requires using a configured network gateway server, a description of which is beyond the scope of this document. See your network administrator for information about gateway server installation and configuration.

Karrera K-Frame Default IP Addresses On Isolated Network

Each Karrera K-Frame system is shipped with default IP addresses (see *Factory Default Network Settings on page 84*). Grass Valley has chosen these default IP addresses to make Karrera K-Frame configuration easy. Karrera K-Frame devices should communicate with each other right out of the box when properly connected on an isolated network.

Connecting to an Existing Network

Additional network configuration is required if you connect the Karrera K-Frame Ethernet LAN to your facility Ethernet backbone, install additional Karrera K-Frame system components, or have multiple Karrera K-Frame systems on the same network cabling. For example, if more than one Karrera K-Frame system resides on the same network, the IP address of each additional Karrera K-Frame device must be changed before it is connected to the network.

To enable communication between Karrera K-Frame and other facility devices, you will need to change the Karrera K-Frame system default network addresses to match the facility address, or place a router between Karrera K-Frame and the facility networks. This complexity of network configuration is beyond the scope of this manual. Consult a networking expert if such networking is desired.

See your network System Administrator before connecting the Karrera K-Frame system to an existing network or making any IP address changes. The IP addresses (including any Subnet mask) of all the Karrera K-Frame devices on the network must be known before any changes are made.

Setting IPs with the K-Frame Switcher Installer Program

Figure 68. Installer Icon

The K-Frame Switcher Installer Program can be used to set IP addresses of the Karrera K-Frame Video Processor and Karrera K-Frame Control Panels.

When the Karrera K-Frame software package has been deployed to your Menu Panel or PC, the K-Frame Installer icon will appear on the desktop.

Note A mouse and keyboard is required to navigate through the K-Frame Installer program and enter IP numbers and system names. Standard USB devices can be connected to any of four available ports on the Karrera K-Frame Menu Panel.

Karrera K-Frame System Names

The K-Frame Installer program includes a hierarchy display of Karrera K-Frame system components. This hierarchy starts with the name of the Karrera K-Frame system, and groups that system's Video Processor Frame with the Control Panel(s) configured with that Frame. The Karrera K-Frame system name is taken from the Video Processor Frame name. This hierarchy allows easy identification of each Karrera K-Frame system when multiple systems reside on the same network.
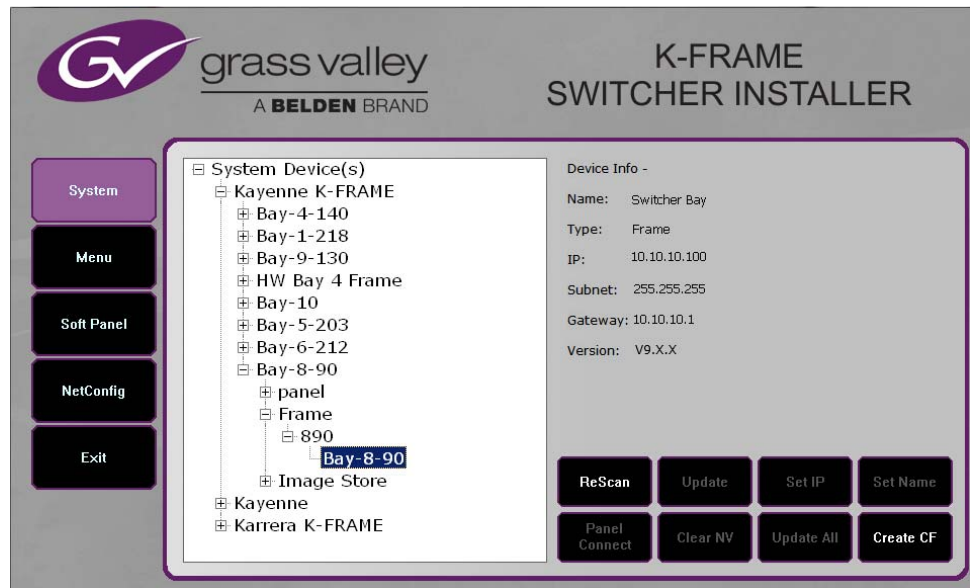
The default name for every Karrera K-Frame Video Processor is **SystemA**, and this works well when only one system is present on the network. However, if more than one Karrera K-Frame system with the default name is present, all the Frames and Control Panels will be grouped under that name.

If you have more than one Karrera K-Frame system, be sure to change the name of the Video Processor Frames so you can identify them easily. When each Frame has a unique name, the Control Panels configured with each Frame will be grouped with that system name.

The name of a Karrera K-Frame Video Processor (and Karrera K-Frame system name) can be changed in several ways. Once changed by any method, any properly refreshed user display will report that changed name. The Video Processor Frame name can be changed with:

- K-Frame Switcher Installer Program,

- Video Processor Frame web page,

- GV Switcher menu Application Frame Suite Nodes & ID menu, and

- NetConfig.

Set IP Procedure Using K-Frame Installer Program

1. Ensure the Menu Panel or PC has an IP address able to communicate with the Karrera K-Frame system components and is physically connected to the Karrera K-Frame network.

2. Double click on the **K-Frame Installer** icon. The K-Frame Switcher Installer program will be launched.

Note   The K-Frame Switcher Installer program cannot run if the separate NetConfig application or any SNMP monitoring program is also being run simultaneously on that same Menu Panel or PC.

3. Click on the **System** button on the left to open a hierarchy display of Karrera K-Frame systems. Each Karrera K-Frame system consists of a Video Processor Frame and associated Control Panel(s). Use the mouse to navigate to the desired component.

Figure 70. K-Frame Switcher Installer Program, System Hierarchy
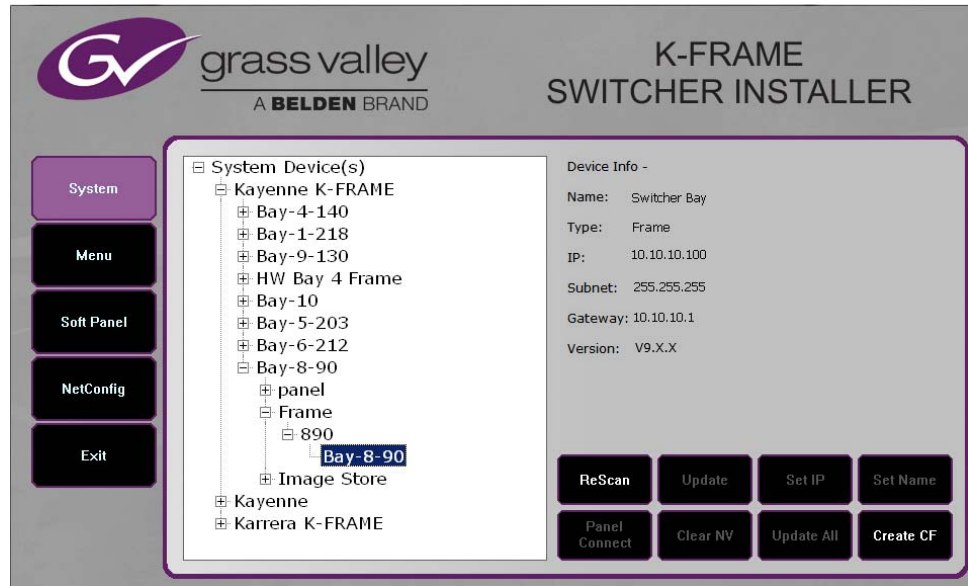
4. Click the **Set IP** button to open an IP Address entry window.

Figure 71. K-Frame Switcher Installer Program, IP Address Entry Window
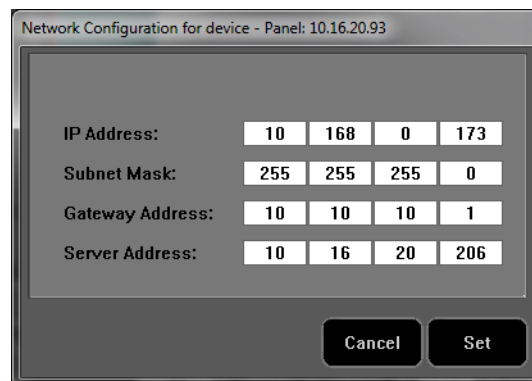
5. Click on each field to be changed, type in the desired IP address, and click **Set**.

6. The component will need to be reset to make the IP address change take effect. Press the reset button on the Video Processor Frame, or the Panel Reset button (the one on the left) on the Control Panel to reset the device. See *Reset Procedures on page 225* for details.

CAUTION Changing the IP address of an operating Karrera K-Frame component can disrupt system communications until matching changes to the addresses other components use are made on those other devices. Registering new IP Node addresses may also be necessary.

Other K-Frame Switcher Installer Program Functions

The K-Frame Switcher Installer program can also be used to install the KSP and NetConfig applications on that PC, using the buttons on the left.

In addition the K-Frame Switcher Installer application has the following other features, accessed by clicking on its labeled button:

Rescan - Re-scans the network for devices. This refreshes the screen to show the currently connected components and any modified system names.

Update - Updates the software on the selected device using the software deployed with this K-Frame Switcher Installer version.

Set Name - Opens a window allowing you to change the name of the selected device.

Set Server - (Control Panel selected in hierarchy window) - Opens a window allowing you to enter the IP address the Control Panel will use to communicate with the Video Processor Frame.

Clear NV - (Frame or Control Panel selected) Clears NV Memory.

Update All - (System selected) Updates software to all devices for the selected system, excluding menus.

Create CF - Allows the duplication of a Frame or Control Panel Compact Flash Card onto another CF Card.

Setting IPs with Device Web Pages

Karrera K-Frame Video Processors and Control Panels have web pages that can be used to set that device's IP addresses.

Set IP Procedure Using Device Web Pages

You need to know the current IP address of the Karrera K-Frame Video Processor or Control Panel before you can change it using a Web browser, mouse and keyboard.

Note   The NetConfig application, included with the Karrera K-Frame software, can be used to find IP addresses of devices accessible on the network. Refer to the separate *NetConfig Instruction Manual* for more information.

1. Using any web browser connected to your Karrera K-Frame network, enter the IP address of the device in the address field and press **Enter**.

Note   A Karrera K-Frame Video Processor is used as the example in this procedure. Similar steps can be used on a Karrera K-Frame Control Panel.

2. Click on **Frame Network Addresses**.

Figure 72. Frame Network Address Web Page
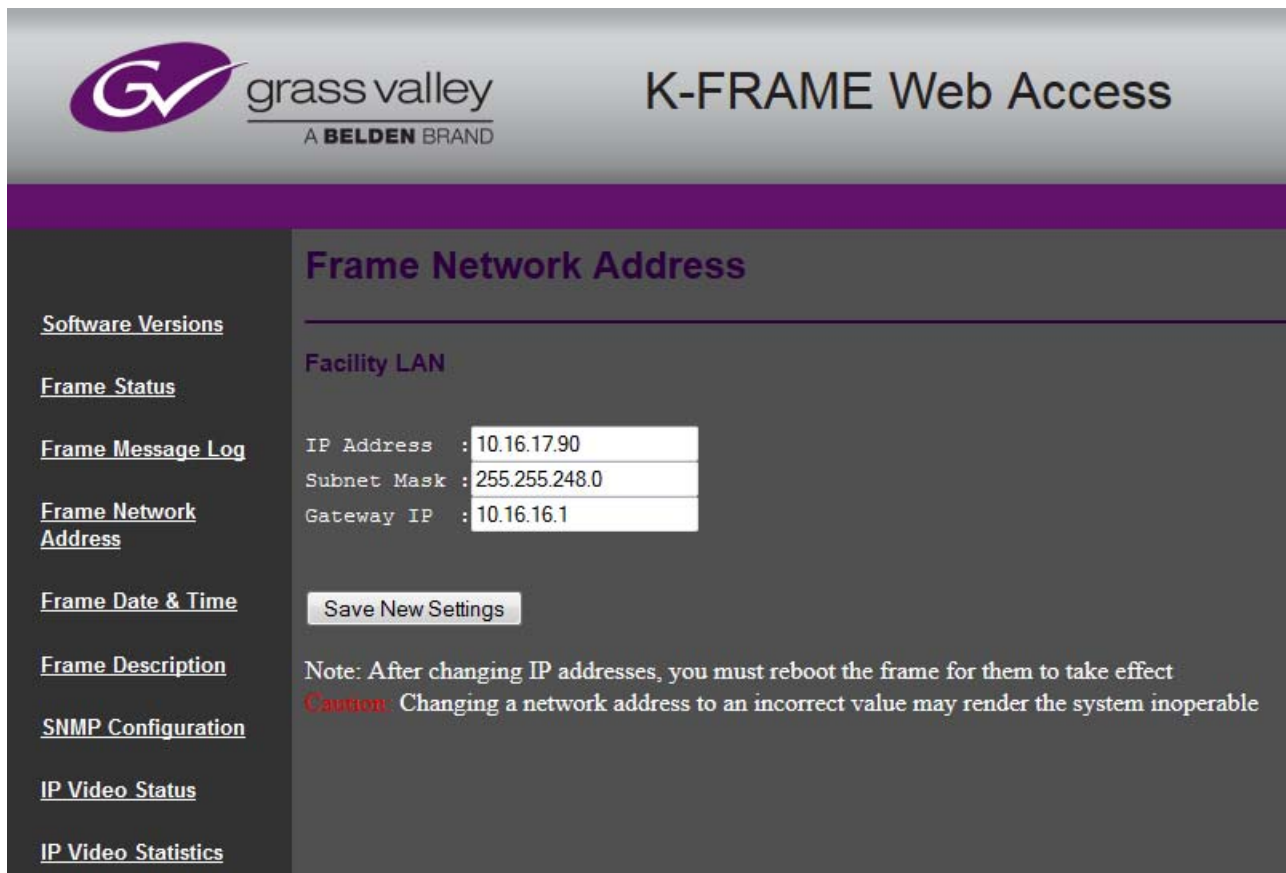
3. Under Facility LAN, type in the new IP address (and subnet mask and gateway if needed). Make sure you enter the correct number exactly. A typing error can make the frame inaccessible over the network, since you need to know its IP address for use with the Web browser.

Note   If you make a mistake, you can use the Serial Port and Terminal method to view the existing Video Processor frame IP address and change then to the correct values.

4. Click on the **Save New Settings** button.

5. Reset the device.

- A Video Processor Frame can be reset by pressing the **Reset** button on the Video Processor Frame Control Processor module.

- A Control Panel can be reset using EMEM area buttons. Press **Menu**, **Page**, select **IP Addr** (press **Lrn**), select **Boot Panel** (press **Bank 3/7**) and then select **Yes** (press **7**). See *Setting The Control Panel's IP Address on page 116* for more information.

The device will boot up with the new IP address.

When a Video Processor Frame IP address has been changed, communications will no longer occur with any Karrera K-Frame system devices that are configured to use the old frame IP address. You will need to go to each device and change the address they use to communicate with the Video Processor Frame.

Changing Image Store IP Address

The Image Store IP address can be changed using the Video Processor Frame web page. See *Setting IPs with Device Web Pages on page 113* for more information.

Changing Control Panel IP Addresses

A Karrera K-Frame Control Panel's IP address can be changed using various methods:

- K-Frame Switcher Installer program (see *Setting IPs with the K-Frame Switcher Installer Program on page 110*).

- the Karrera K-Frame Control Panel webpage (see *Set IP Procedure Using Device Web Pages on page 113*),

- the Grass Valley NetConfig application, or

- Control Panel IP Address mode on a panel EMEM area (see below).

Control Panel EMEM IP Address Mode

A Control Panel's EMEM area can be used to change the IP address of the that panel, set its Subnet Mask and Gateway addresses, and enter the IP address the Control Panel will use to communicate with the Video Processor Frame.

Setting The Control Panel's IP Address

1. On any EMEM area, press **Menu**, **Page**. This shows a list of menu items that are selected with the buttons below the display (Figure 73, left).

Figure 73. Karrera K-Frame Panel IP Address Mode Selection, EMEM Area
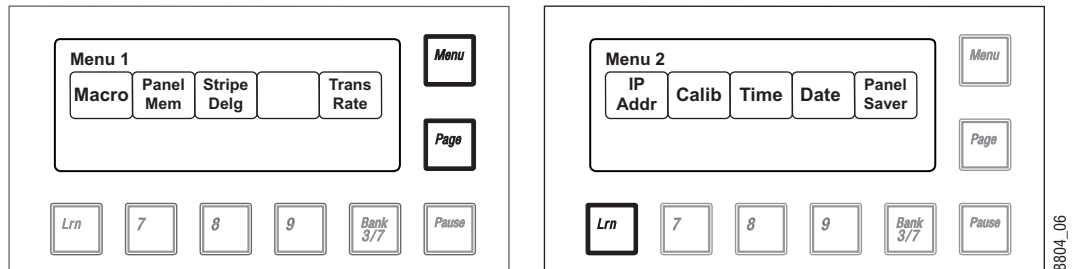

2. Select **IP Addr** (press **Lrn**) to enter IP Address mode (Figure 73, right).

3. Select **Panel IP** (press **7**). then select **Change** (press **Lrn**) to edit the Control Panel IP address (Figure 74).

Figure 74. Karrera K-Frame Panel IP Address Mode, Choosing Panel IP
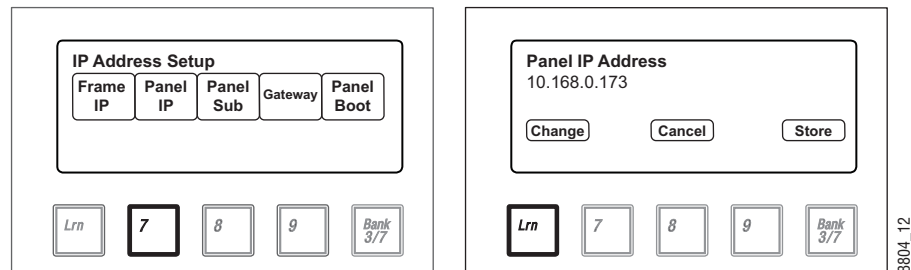
4. Use the keypad buttons to enter the new IP address values. When the new IP address has been entered, select **Enter** (press **Lrn**).

Figure 75. Karrera K-Frame Panel IP Address Mode, Entering New IP Values
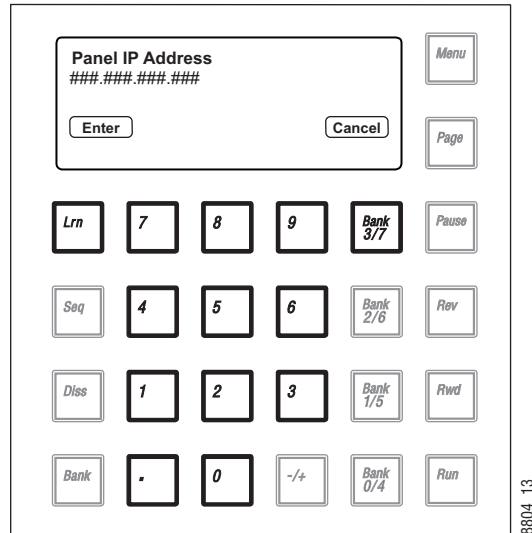
5. Select **Store** (press **Bank 3/7**) to store the IP address on that panel.

Figure 76. Karrera K-Frame IP Panel Address Mode, Storing IP Address
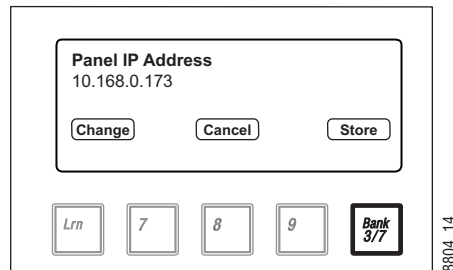
CAUTION   Changing the IP address of an operating Karrera K-Frame component can disrupt system communications until matching changes to the addresses other components use are made on those other devices. Re-registering IP Node addresses may also be necessary. See *Control Panel Registration on page 124* for more information.

6. The Control Panel must be rebooted to make the IP address change take effect. Select **Boot Panel** (press **Bank 3/7**) and select **Yes** (press **7**).

Figure 77. Karrera K-Frame Panel IP Address Mode, Rebooting Panel
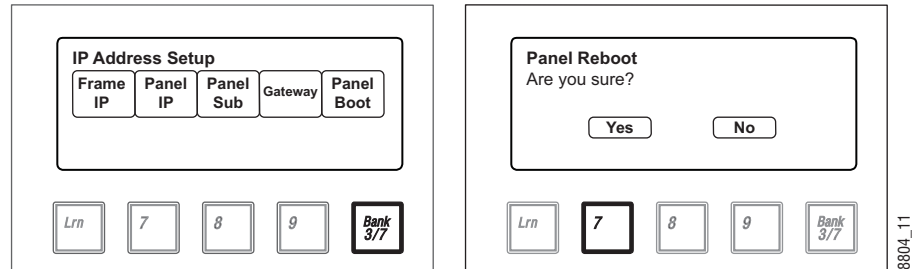
The Control Panel will reboot and operate with its new IP address.

Setting The Control Panel's Subnet and Gateway Addresses

Follow the Control Panel IP procedure above to set the Subnet and Gateway IP addresses of that panel, except select either **Panel Sub** (press **8**) or **Gateway** (press **9**). Only one panel reboot is required, provided the information is entered in IP, subnet, and gateway order.

Setting The Control Panel's Target Video Processor Frame Address

Follow the Control Panel IP procedure above to set the IP Address that Control Panel will use to communicate with the Video Processor frame, except select **Frame IP** (press **Lrn**) and instead of rebooting the panel, select **Connect** (press **Bank 3/7**) (Figure 78).

Figure 78. Karrera K-Frame IP Panel Address Mode, Connecting to Frame
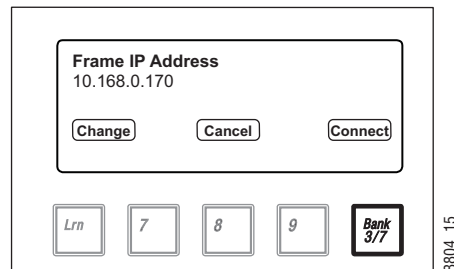
Note Changing and saving the displayed Frame IP setting does not change the Video Processor Frame IP address. To change the actual frame IP address, see *Setting IPs with Device Web Pages* .

Changing Menu Panel IP Address

Set the Karrera K-Frame Menu Panel IP addresses using the Windows XP interface. You may use the touch screen to access the Windows settings but

you will need to use a mouse and keyboard connected to the Menu Panel for entering the IP address values. To set the Menu Panel address:

1. Go to **Eng Setup**, **Status** and touch the **Minimize Menu** button. This will take you to the Windows desktop.

2. Go to **Start**, **Settings**, **Network Connection**, **Local Area Connection**, **Properties,** and follow the standard Windows IP address setting procedure.

See *Menu Panel Registration* regarding additional configuration steps required.

Setting 32-Crosspoint Remote Aux Panel IP Address

The default IP addresses of Remote Aux Panels are set to at the factory before shipment will not work with a Karrera K-Frame system whose other components are set to defaults. Typically, Karrera K-Frame systems are equipped with more than one Remote Aux Panel. If more than one Remote Aux Panel will be used on your Karrera K-Frame system, you will need to change each panels' IP addresses so none are duplicated, and this must be done before you connect them to the network. This will require a mouse and keyboard connected to a PC disconnected from the network.

Check with your network administrator to learn what IP addresses should be used at your facility.

Setting the IP Address

A PC equipped with an Ethernet interface and a web browser is required to change Remote Aux Panel IP addresses.

1. With the PC disconnected from all facility networks, connect the PC's Ethernet port directly to the Remote Aux Panel.

Note A crossover Ethernet cable (Tx/Rx pair crossed) is needed when connecting a PC directly to the Remote Aux Panel without a hub intermediary.

2. Start the web browser, enter the default IP address (192.168.1.2) in the address field, and press **Enter**. If the address is found, a Panel Status screen will appear.

Note If the Remote Aux Panel address is not found, you may need to reset the panel to its defaults (see page 122).

Figure 79. Panel Description Screen
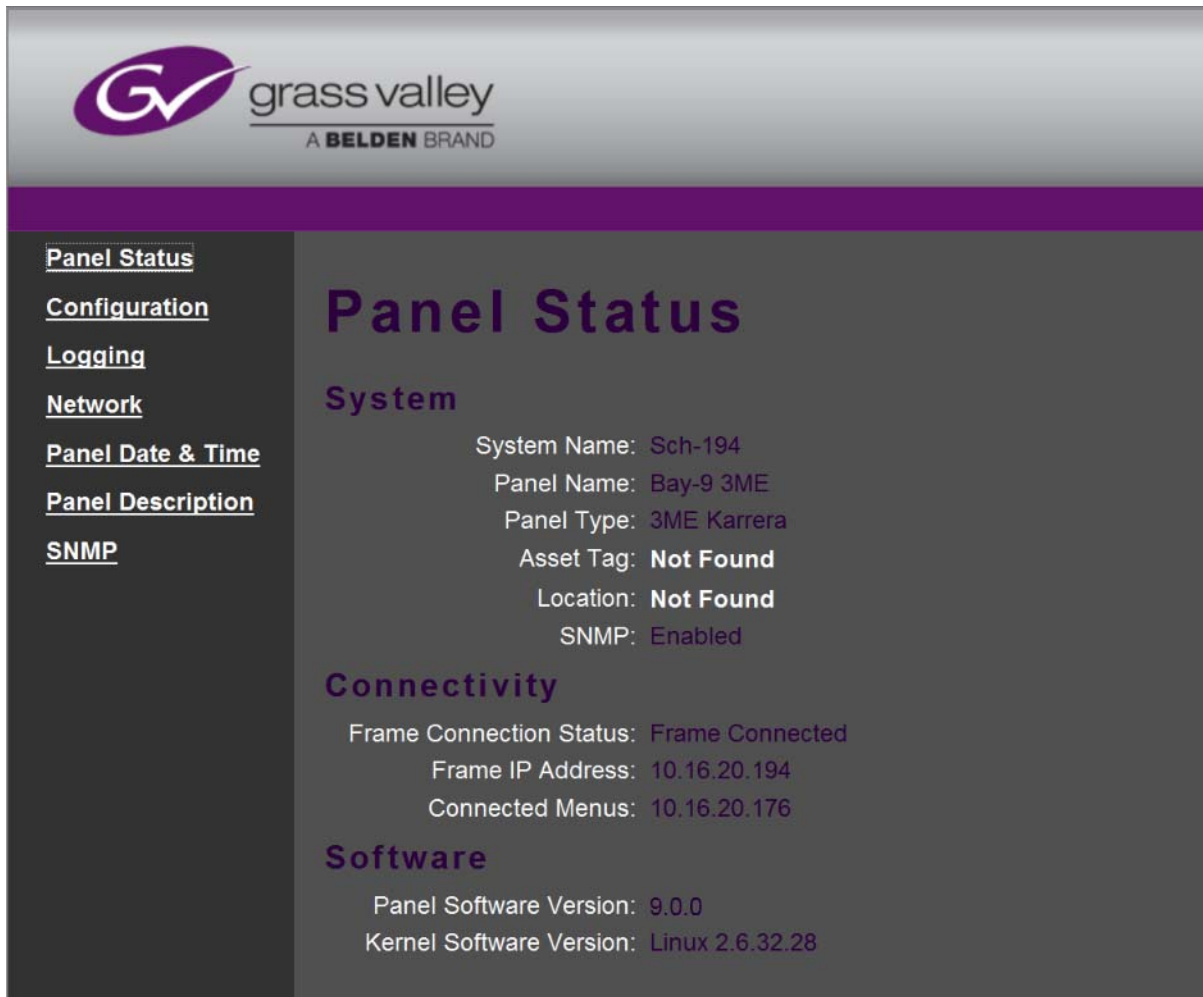
3. Click on **Network**. A Network Configuration screen will appear, displaying the factory default settings.

Figure 80. Panel Network Screen, Default Information

4. Enter the IP addresses and other information appropriate for your system.

   • The **Panel Name** is used to name the panel, for user convenience. This field does not affect the operation of the unit.

   • The **Frame IP Address** field is for the Karrera K-Frame Video Processor.

5. Click on **Apply**. The new IP addresses will be saved and the Remote Aux Panel will reset. You should label the panel with its IP address and keep a record of all IP addresses for future reference.

6. Disconnect the PC, and connect the Remote Aux Panel to the Karrera K-Frame system network.

7. Repeat this procedure on all the Remote Aux Panels to be used with your Karrera K-Frame system, entering a unique IP address for each Remote Aux Panel.

See *Remote Aux Panel Registration on page 124* regarding additional configuration steps required.

Restoring the Default IP Address

You need to know the current IP address of the Remote Aux Panel in order to change it using the Web browser. If a panel's IP address has been changed and its new value not recorded, it will be impossible to change its IP address. You can restore the panel to its factory default address, if necessary, with the following procedure.

1. Disconnect the Ethernet cable and the AC power cable from the Remote Aux Panel.

2. Reconnect only the AC power cable. The panel will enter a diagnostic mode.

3. Push down and hold any panel button. After three seconds panel buttons will light up sequentially, indicating different available diagnostics.

4. When three buttons illuminate, release the held button. This places the panel in IP Address reset mode, and one button will be flashing.

5. Press the flashing button. This resets the IP address to factory default.

Configure 10GigE IP I/O Addresses

Modular Internet Protocol (IP) addresses must be unique for inputs and outputs. To help with configuring Modular IP Addresses sequentially you can use the Auto Complete button to auto-fill a column sequentially, downward, beginning with the currently selected IP address.

Note   TICO compression is not currently supported although it is available.

1. To configure Modular IP addresses, begin with the Input Local IP:

   a. Select an Input Local IP address data pad; a pop-up keypad displays.

   b. Enter the new IP address and select **Enter**.

Figure 81. Modular IP Address Configuration
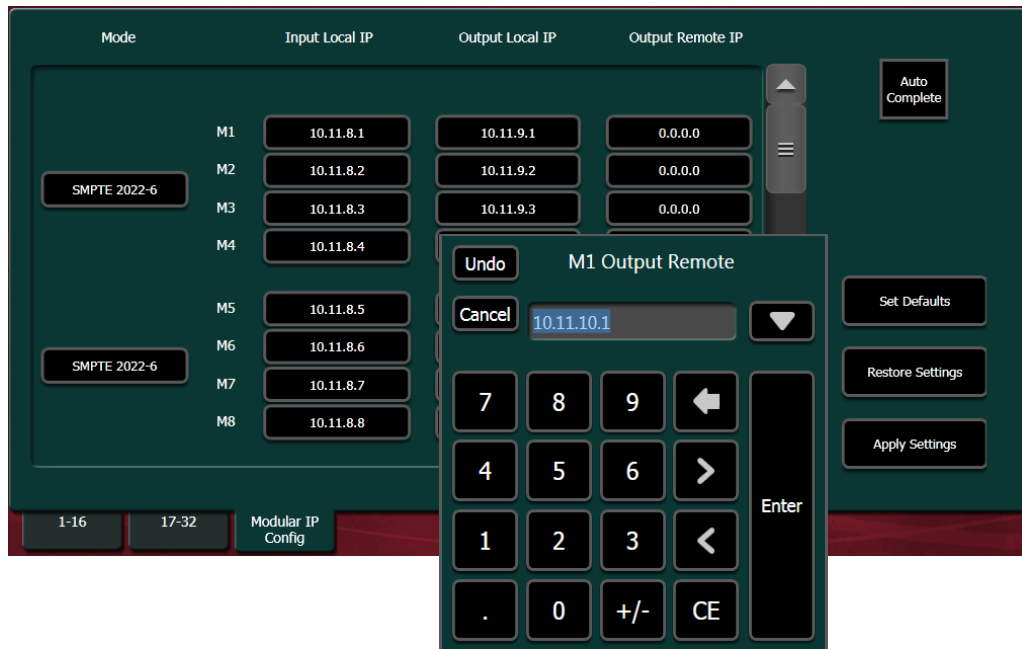
2. Configure the Output Local IPs using the same method.

3. Configure the Output Remote IP column with the destination IP addresses.

4. Click **Apply Settings**.

Registering Karrera K-Frame System Nodes

When IP addresses have been changed on Karrera K-Frame system components, or new components are added, the Video Processor Frame needs to know what new addresses it will use to communicate with those components. This is accomplished by registering those addresses with the Frame using the GV Switcher menu application Node Settings menus.

Menu Panel Registration

Registering the Karrera K-Frame Menu Panel (or PC running the GV Switcher menu application) with the Frame was described earlier (see *Establishing Menu to Frame Communication on page 106*). The GV Switcher menu application needs to be in communication with the Video Processor Frame before other nodes can be registered.

Control Panel Registration

1. Touch **Eng Setup**, **Node Settings**, **Control Surfaces**.

2. Touch an available set of buttons and enter a Node Name and the IP address of the Control Panel.

3. You can assign the component to a suite and control surface now if you wish, but it is recommended to initially configure your Karrera K-Frame system as a single suite. Later, you can modify the configuration for multi-suite operation.

4. If you want that Control Panel button DPOPs (Double Press Open) button to affect this Menu Panel, touch **Frame Suite Nodes & ID** and enter the IP address of that Control Panel in the Track DPOPs from Panel ID field (see Figure 65 on page 107).

5. After making an addition or change, you will need to reset the Control Panel. This can be done two different ways:

- On the Control Panel Multi-Function Module access the Home menu, then press **Panl**, **IP**, **Boot** and press **Yes**.

Remote Aux Panel Registration

Note   Do not confuse the Local Aux Panel, which is considered a Control Panel Stripe, with Remote Aux Panels, which are small panels used to change Aux Bus sources from a different location. The Local Aux Panel Stripe is not configured with the following menus.

1. Touch **Eng Setup**, **Node Settings**, **Remote Aux IP Network**.

Figure 82. Remote Aux IP Network Menu

2. Touch an available set of buttons and enter an Aux Panel Name and IP address of each Aux Panel.

3. Identify the type of Remote Aux Panel (Single or Multi- Destination).

4. You can assign the component to a suite and control surface now if you wish, but it is recommended to initially configure your Karrera K-Frame system as a single suite. Later, you can modify the configuration for multi-suite operation.

Remote Aux Panel Configuration

Each Remote Aux Panel needs to be configured, which involves identifying what Aux Bus(es) it will be able to control, and which sources will be available on that panel's button. See *Mapping Logical Remote Aux Panels on page 196* and *Remote Aux Button Mapping on page 197* for more information.

Control Panel Brightness Adjustment

The Control Panel is calibrated at the factory for even brightness and color balance. Individual panel area illumination levels cannot be adjusted in the field. However, the relative brightness of button tally, source name displays, and text displays can be adjusted on a global basis to meet individual

requirements (for example, to accommodate varying ambient room lighting levels).

1. Access the Karrera K-Frame Panel webpage, by entering its IP address in a web browser, then clicking on **Configuration**.

Figure 83. Control Panel Brightness Adjustment
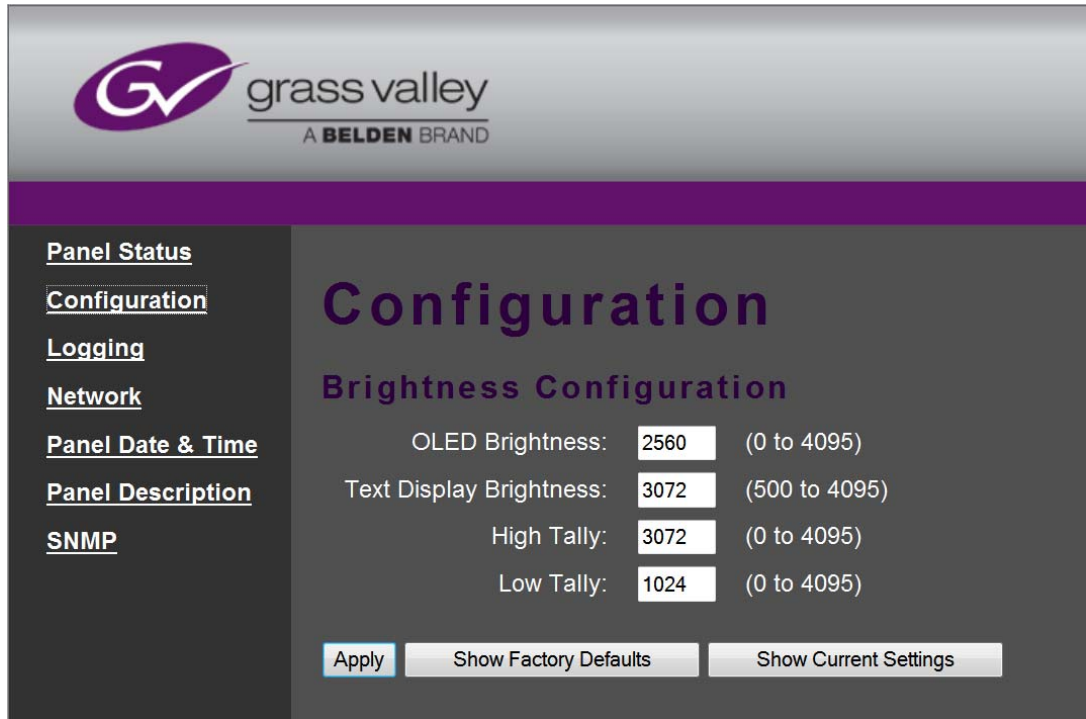
2. Enter the desired values for **OLED**, **Text Display**, **High Tally**, and **Low Tally**, and then click **Apply**.

Note   To extend the life of display illumination hardware (in particular the OLEDs), the Control Panel automatically enters a panel saver state when its controls have not been touched for a specified time (ranging from 10 to 30 minutes). In the panel saver state all the Control Panel buttons and displays go dark, except the **Key 1** through **Key 6** and **Key Prior** buttons are illuminated blue and cycle. Touching any button or control on the Control Panel exits the panel saver state.

Lever Arm and Joystick Calibration

Karrera K-Frame Lever Arms and Joysticks are calibrated at the factory and should not need to be adjusted when a new system is installed. Calibration settings are stored within each module.

If Lever Arm or Joystick calibration becomes necessary, see *Control Panel Adjustments on page 230*.

Engineering Setups

Karrera K-Frame inputs and outputs are connected to the rear of the Video Processor Frame. These video signals need to be configured to your facility's requirements. Engineering Setups defines Karrera K-Frame system component functionality and how it is cabled into a facility. Engineering setups are intended to be used and maintained by technical staff, and can be loaded and saved to disk.

The Engineering Setup menus are accessed by touching the **Eng Setup** menu button at the bottom of the screen, and then selecting the appropriate Menu Category touch button.

Source Definition

Source definition tells the system which physical inputs or internal signals to use when a particular source is selected. The source definition, denoted by an Engineering ID number, specifies the signals involved, how to process that signal, and what external devices, if any, are associated with that source. Each Karrera K-Frame Video Processor has one source definition set, shared by all users of that system (both control surfaces in both suites).

Source Definition Inputs

Table 10. Standard K-Frame Source Definition Inputs

Inputs					Modular Inputs			
1-32	33-64	65-96	97-128	129-160	161-164	169-172	177-180	185-188
					165-168	173-176	181-184	189-192

Table 11. Compact K-Frame Source Definition Inputs

Inputs					Modular Inputs			
1-32	33-64	N/A	N/A	N/A	161-164	169-172	N/A	N/A
					165-168	173-176	N/A	N/A

Source Definition Outputs

Table 12. Standard K-Frame Source Definition Outputs

Outputs				Modular Outputs			
1-16	17-32	33-48	49-64	65-68	73-76	81-84	89-92
				69-72	77-80	85-88	93-96

Table 13. Compact K-Frame Source Definition Outputs

Outputs				Modular Outputs			
1-16	17-32	N/A	N/A	65-68	73-76	N/A	N/A
				69-72	77-80	N/A	N/A

Source Definition Menu

The Eng Setup Source Definition menu is used to change source definitions. Press the **Eng Setup** button, then touch the **Source Definition** to display the menu.

Figure 84. Source Definition Menu
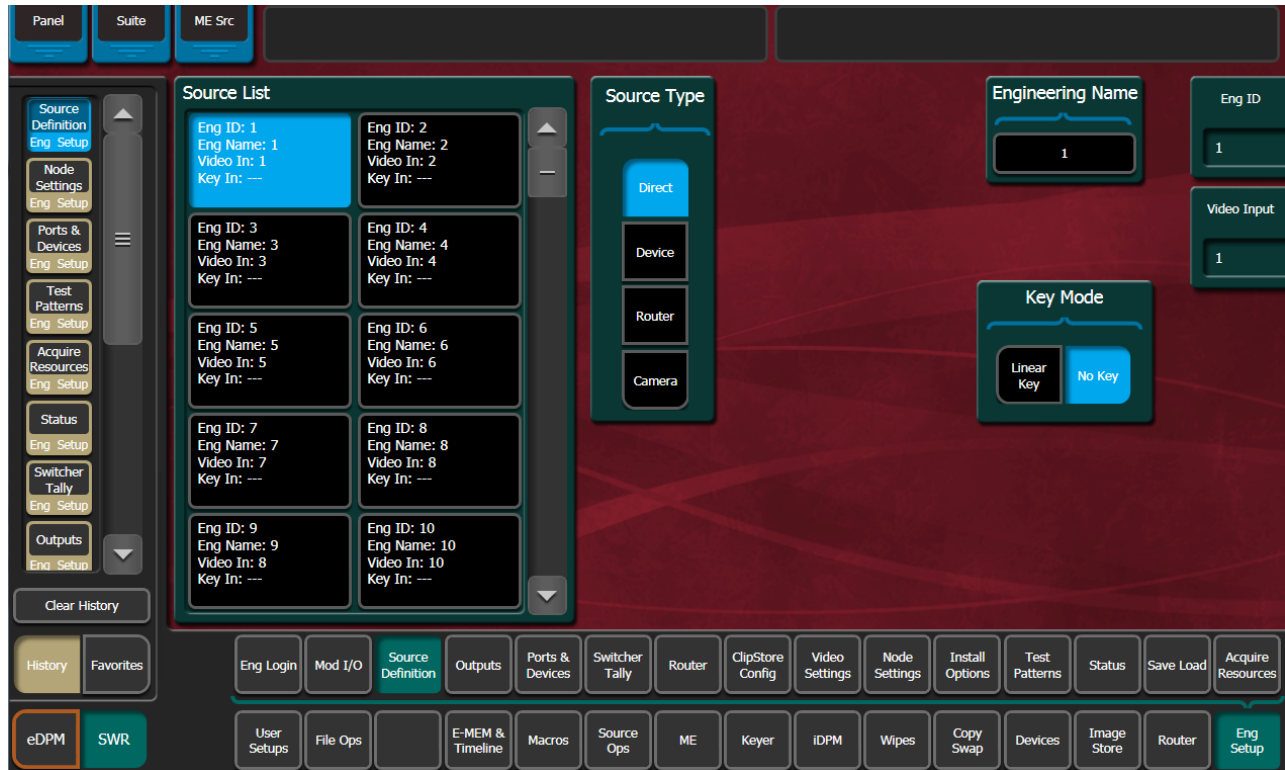
Direct Source Definition

To Change Direct Source Definitions:

1. Touch the button of the desired Source located on left side of the screen (it is a vertical scrolling list).

2. Touch the **Engineering Name** data pad to name the source using the pop up alphanumeric keypad or standard keyboard. Up to 30 characters can be entered, but shorter names are recommended. See *Source Naming Background Information* for more information.

3. Touch the **Video Input** data pad to enter or scroll to the input number of the connector the source will use for video. The change is immediate and can be viewed on a connected monitor.

Note The number of usable input connectors depends on the number of ME boards installed in the Karrera K-Frame Video Processing (24 inputs per board).

4. If the source includes a key signal, select **Linear** key with the lower touch buttons. Then touch the **Key Input** data pad and enter to the input number of the connector the source will use for the key.

Note   For Chroma keys you can select either **Linear** or **No Key**. Chroma keys always use the video signal for keying, ignoring any separate key signal.

5. If desired, define **Clip High** and **Clip Low** values (used when a fixed linear key is selected for that source) with the labeled soft knobs and data pads.

External Device Source Definition

The **Device** and **Router** Source Type buttons are used to set up a source as an external device (including GPI and Peripheral Bus II controlled devices), or as a Router source. See *Section 6-External Interfaces* for information on configuring external devices.

Source Naming Background Information

Facility engineers need to know the exact routing of all the video signals connecting all the devices they are responsible for. These engineers need to be able to identify video signals in a way that will help them connect devices properly. Production personnel, on the other hand, are interested in the content they work with for their shows, and are generally not concerned about which individual device or routing path is used to make those signals available. They just need a way to identify the content and access it when they need it. To support these differing needs, two source naming mechanisms are available on Karrera K-Frame systems.

Engineering Names, Eng IDs, and Logical IDs

Engineering names are intended to identify a source as it applies to a specific facility. In a truck, for example, cameras may be hard wired to the production switcher and might be given Engineering names 1, 2, and 3. Names like Patch 14 or Rtr 5 may be used for inputs that are patched or routed. Engineering names are entered in the Eng Setup Source Definition menu, as described above. Engineering source IDs are numeric only, and are available on data pads and scroll knobs for quick selection. The Karrera K-Frame system also has logical IDs, that can be used for source patching, as explained later.

Alternative Source Names

Alternative names can be assigned to sources for the convenience of production personnel. For example, you may give the cameras menu names that include the operator (C1 Bob, C2 Phil, and C3 Bill), but remove the operator names from the OLED names to show C1, C2, and C3 in larger characters. These alternative names are entered in the Source Patch menu.

The Source Patch menu (Figure 85) has three editable columns for defining up to three alternative names:

A **Panel Name** is limited to four characters, to fit the space available on the Control Panel's Transition Module. This name is only displayed on the Control Panel.

An **OLED Name** appears only on the Source Name Displays on the Control Panel. Up to eight characters are displayed.

A **Menu Name** is limited to eight characters, and appears on all the GV Switcher menu application screens except Engineering Setup menus, which always display engineering IDs or names.

Multiple Suites and Source Names

Different sets of these alternative source names are defined for each Karrera K-Frame suite. Ensure the GV Switcher menu application you are using is logged into the correct suite (**Eng Setup**, **Eng Login**). The same set of engineering names will be used by both Karrera K-Frame suites, however.

Name Display Hierarchy

If a source's engineering name is left blank, the Eng ID number will be used. If no alternative names are defined for that source, then that Eng ID number will appear on all the Karrera K-Frame system displays.

If an engineering name has been entered then the engineering name will be displayed on all the Karrera K-Frame system displays, including menus. Engineering names will be truncated to the character limits of the display, starting with the first character.

For alternative names entered in the User Setups, Suite Prefs, Source Patch menu, the following rules apply:

For the three editable columns: **Panel Name**, **OLED Name**, and **Menu Name**, if any of the three are left blank for that source, the first name to the left appears in that display on the system (if all three are left blank, the name in the Eng. Source Column is displayed). For example, if an alternative name is entered in the OLED Name column for a source and the other two columns remain blank, the Menu Name takes the OLED Name (OLED Name being first to the left of the Menu Name) but the Panel Name takes the Eng. Source column's name (first name to its left). If names are entered in all three alternative name columns, each area of the system displays the name entered in each column of the Source Patch menu.

Figure 85. Source Patch Alternative Source Names

It a good practice to create the least number of names possible. This ensures consistency in the various displays and reduces the time needed to enter and edit the names. If you can create short engineering names that work for both the production staff and engineering, complete naming consistency is assured. However, this level of simplicity is probably only feasible at a fixed installation where all the shows use the same source names. When multiple names are created, try to keep the first four characters unique, and make different names for the same source similar for ease of recognition.

Fixed Sources

Additional, fixed internal sources exist on a Karrera K-Frame system
(Table 14). These internal sources do not have user accessible Engineering
IDs and are not displayed on the Eng Setup Source Definition menu.

Table 14. Fixed Internal Karrera K-Frame Sources

Area	Signals	Source Patch Eng. Source Names
ME 1, 2, 3, 4, Pgm	A, B, C, D, Preview A, Preview C, and ME Viewer (pM) outputs	M1 A, M1 B, M1 C, M1 D, M1 pA, M1 pC, M1 pM same for M2 - M4, Pg A, Pg B, Pg C, Pg D, Pg pA, Pg pC, Pg pM
eDPM	Video Out A, C	eDA, eDC
	Key Out A, B, C, D	eDAk, eDCk
internally generated signals	Test 1, Test 2	Test
	Black, Black Key	Blk
	White	Wht
	Background 1	BG 1
	Background 2	BG 2
Image Store	Video Out 1 - 10	IS 1A - IS 10A
	Key Out 1-10	IS 1B - IS 10B

These fixed sources are accessible via:

• User Setups. Suite Prefs, Source Patch menu

• User Setups, Panel Prefs, Button Mapping menu

• Eng Setup, Outputs menu

Source Patch Feature

The Karrera K-Frame system provides a way to map engineering source
IDs to logical IDs, using the Source Patch feature. By default this mapping
is one-to-one, but this feature can be used to quickly set up production ele-
ments for use in a different facility. For example, a show's effects, DDR
clips, and taped material may have been built in one production truck with
one set of devices, but the next show is scheduled for a different truck. Pre-
viously, to use effects in the other truck the Technical Director (TD) would
need to edit the engineering source definitions in the new truck so they
exactly matched the old truck. By remapping the engineering sources of the
devices in the new truck to the logical sources used to build the effects, all
the effects can be used without having to edit them. Source Patching can
also be used to quickly swap out a defective device during a show without
having to reconfigure the engineering sources. In this case logical names
seen by the production personnel would be identical for that content, even
though the actual device playing the material changed.

Note   Source Patching is the bridge between engineering sources and logical sources. Both TD and EIC should make reference to this menu when resolving source issues. The mechanism is similar in concept to a physical patch panel. Effects and all source selections are based on logical sources. Tally and associations with external devices are based on engineering sources.

Button Mapping

After sources have been defined they can be mapped to Karrera K-Frame system Control Panel buttons. The Button Mapping menu (accessed by touching **Daily Setups**, **Panel Prefs**, **Button Mapping**) is used to map the sources associated with each source selection button. Refer to the separate *Karrera K-Frame User Manual* for specific button mapping instructions.

Output Assignments

Any Karrera K-Frame outputs can be assigned as fixed outputs, which includes any ME, Image Store, or eDPM outputs. In addition, any Logical input source can be assigned to any output.

Default Output Assignments

Default output assignments for K-Frame systems are one-to-one with the Aux buses, beginning with Aux 1.

Changing Output Assignments

The Outputs menu is used to change the Karrera K-Frame system output assignments. The current output assignments can be viewed in this menu. Press **Eng Setup**, **Outputs** to access this menu.

Figure 86. Outputs Menu
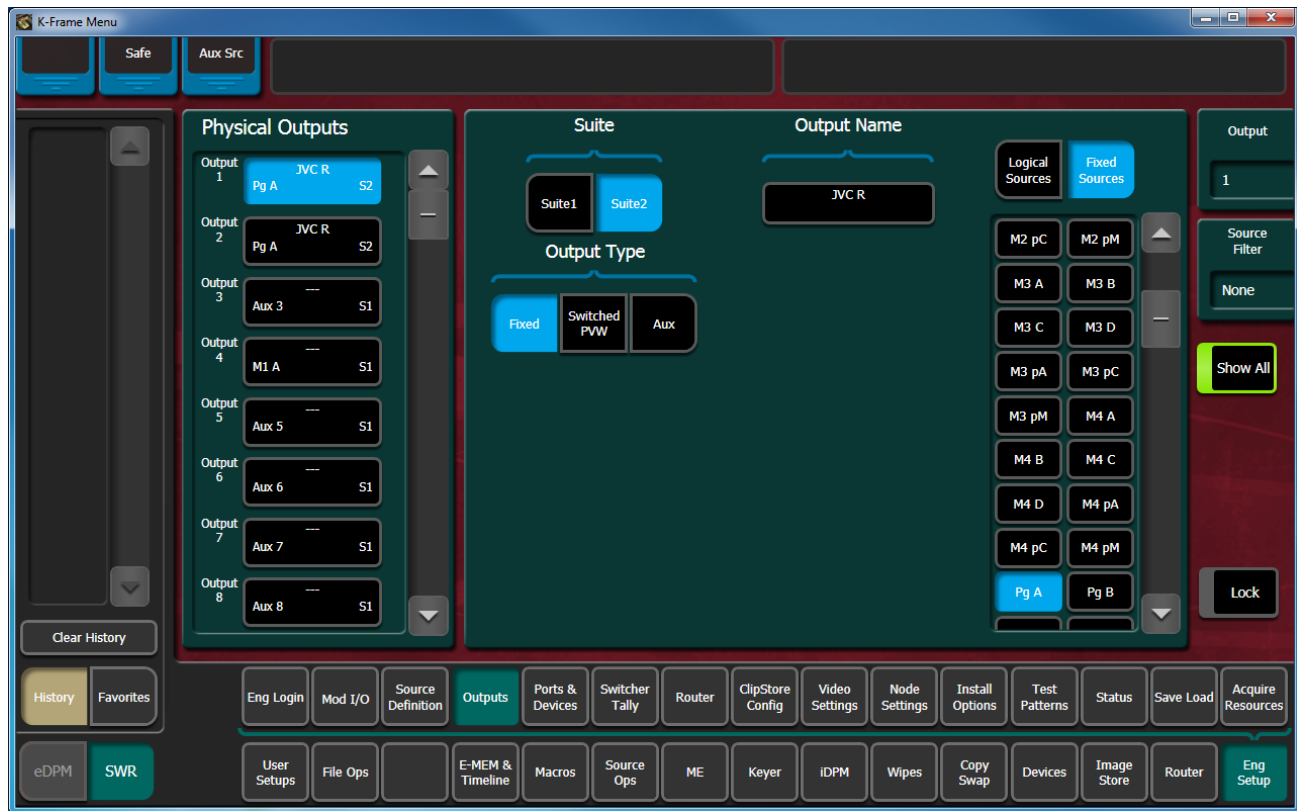
The scrolling list of data pads along the left side of the screen shows the currently assigned output for each listed module output connector. The right side of the menu shows the items available for assignment to that output connector. Different choices appear, depending on the **Output Type** selected.

To Change Output Assignments:

1. Touch one of the output data pads from the left scrolling list to select it and display information for that output connector.

2. Select the appropriate Output Type:

    • Select **Fixed** if the output is to be dedicated. Later you will be able to select from either Logical Sources or Fixed Sources for that output.

    • Select **Switched PVW** if the output will be used for switched preview. Switched preview can be assigned to multiple outputs.

    • Select **Aux** if the output will be an Aux bus (see *Aux Bus Configuration on page 136* for more information).

3. The **Suite 1** and **Suite 2** buttons are used to assign the currently selected output to a suite. The default setting is **Suite 1**.

4. Touch the button of the desired item for the selected output connector from the list on the right. The change is immediate, and can be viewed on a connected monitor. (Switched Preview mode does not offer any output sources to select from).

5. If desired, touch the **Output Name** data pad to change the name of the output using the pop up alphanumeric keypad or standard keyboard. This name appears on the data pad of the scrolling list on the left. Up to 12 characters can be entered.

Aux Bus Configuration

Aux buses can be used to send dynamically selected sources to an output. Aux bus sources are selected using the Local Aux panel, delegating an ME for Aux Bus control, or using Remote Aux Panels delegated to control that Aux bus.

The number of Aux buses on a Karrera K-Frame system varies, depending on how the physical outputs have been mapped. Any output that is not configured as Fixed or Switched Preview is available for use as an Aux bus.

Video Only Aux Bus

When the **Aux Bus Pair** button is not selected, the Aux bus is configured as a single video-only output.

Figure 87. Output Assignments Menu, Video Only Aux Bus
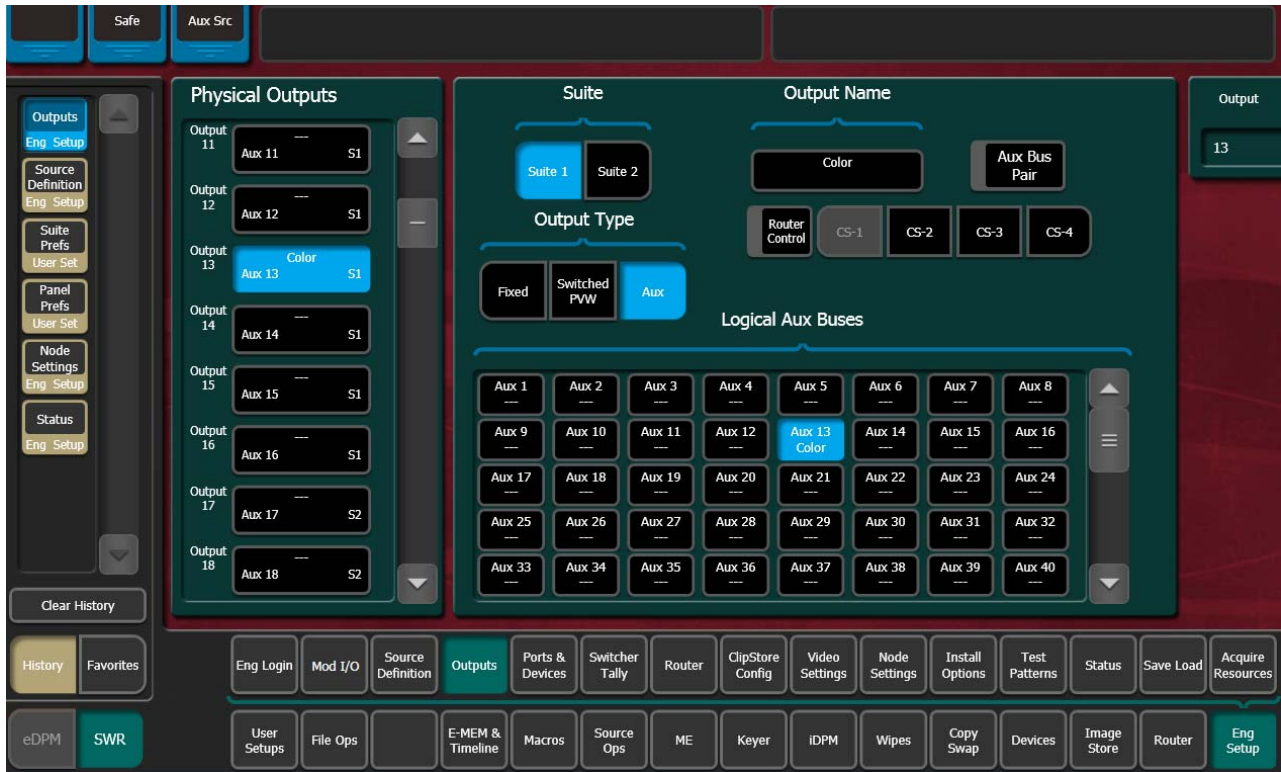
Aux Bus Pairs

Touching the **Aux Bus Pair** button configures the Aux Bus as an Aux Pair.

Figure 88. Output Assignments Menu, Aux Bus Pair

Aux Pairs are two physical Aux Buses that have been configured to send a video and associated key (or another video) signal. Pairing of the video and key signal to be used on the Aux bus is defined in the Sources menu as explained earlier. Aux pairs are indicated on the menu with a bracket beside the two connector buttons. The Aux Bus pairs are also identified with A and B letter indicators. The Aux A signal is always a video signal.

ME Viewer

The K-Frame ME Viewer optional feature provides a special source from each ME that can be used to display multiple ME signals on a single monitor. Each ME has a fixed source named **(ME) pM** (ME = 1-4 or Pg). This source can be assigned one of six multiple signal arrangements, in User Setups/Suite Prefs. Assigning this source to a physical output connector permits viewing that arrangement of signals on a monitor.

Figure 89. Examples of ME Viewer Displays

Previews

Programs

Previews Programs

Primary Secondary Keys

Programs Previews Keys

Primary Previews Programs Keys
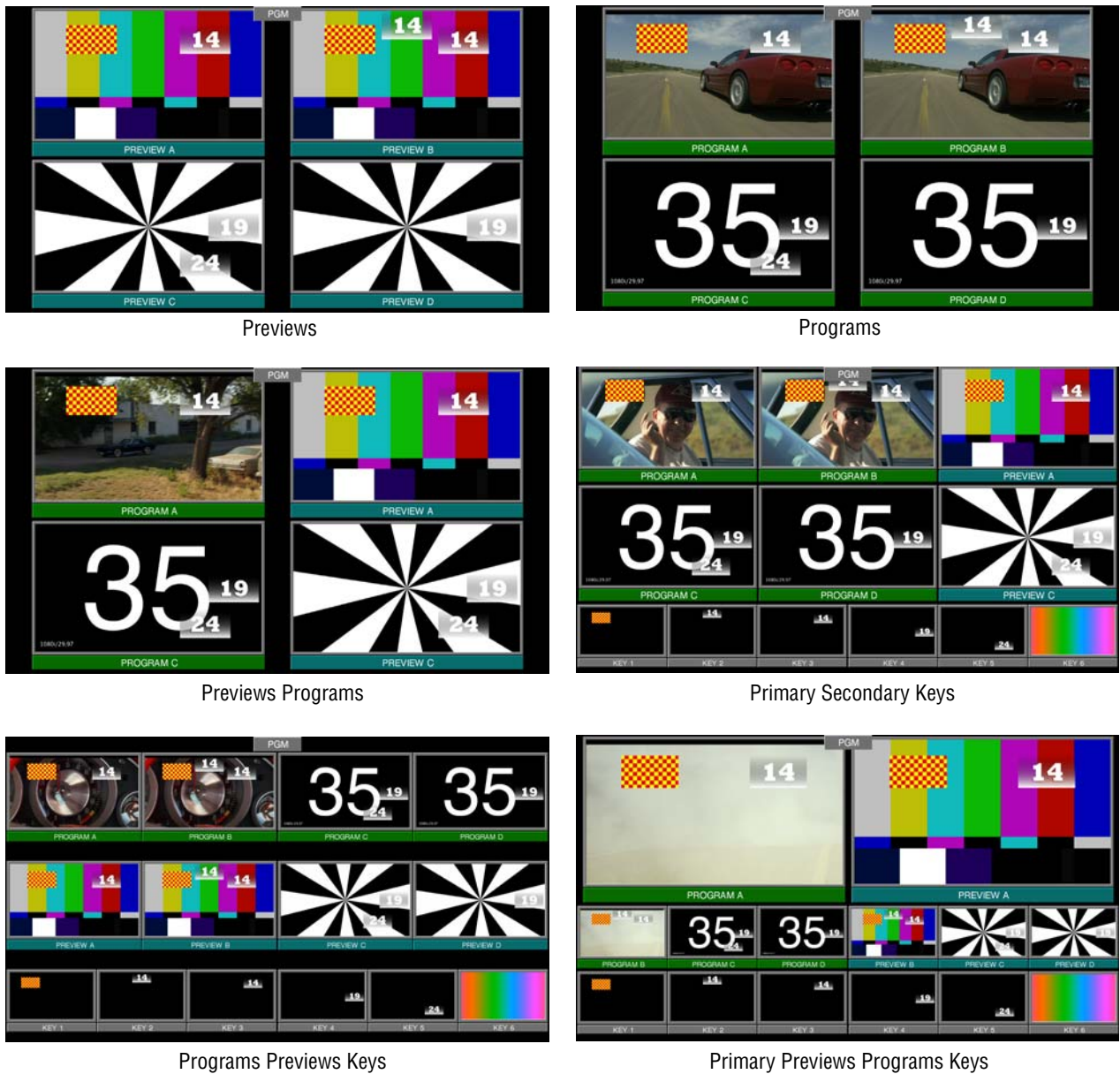
Switcher Relay Tally Configuration

The Switcher Tally menus are used to configure tally system relays. These menus include multiple tally calculators, three different tally calculation methods, and user assignment of tally relays. The results of the tally calculators are applied to the tally relays on the GPI/Tally connectors on the rear of the Karrera K-Frame Video Processor. Those relays can control external tally lights. The Switcher Tally menus also allow the user to map Engineering Sources to the tally relays. Up to 96 tally relay outputs are available

on a Karrera K-Frame Video Processor, 24 for each installed Controller or ME board. Tally is recalculated and refreshed every field.

Note   Tally Contribution is an alternative electronic tally mechanism that can be assigned to a Kayenne K-Frame Video Processor serial port. Refer to the separate *Grass Valley Switcher Protocols Manual* for technical information.

About Relay Tally Systems

In general, a tally system identifies which sources to the switcher contribute to the final picture at a selected point in the video chain. The identification is communicated by activating relays in the Video Processor Frame. The method by which the sources are determined is called the tally calculation.

The tally calculation begins at a point in the video path and then traces the path of the signals upstream to their original video (and key) sources. The state of the switcher affects tally. For example, tally on a true clean feed only includes sources that contribute to the main output, but tally on a programmable clean feed can include sources that do not contribute to the main output.

When configuring a tally calculation, the user chooses the starting video path point (called a tributary) to trace back to its origin. The main On Air tally video output point is Pgm-Pst PGM A, but Pgm-Pst PGM B, Pgm-Pst C, and Pgm-Pst D are included in case these alternate programmable clean feed outputs have keys (or utility buses) that don't contribute to the PGM A output.

The On Air tally calculations are essential for switcher operation. (One calculator is reserved for On Air.) This tally calculation forms the basis for On Air indication (panel, camera tally lights, etc.), and other functions such as external device Auto Start, Off Air Advance, or router protections. On Air tally calculations normally start at the Pgm-Pst PGM A-D outputs.

User tally calculations can be used for purposes other than On Air tally. These tally calculations still trace the video path up stream from the specified points in the video path, but the starting point does not necessarily have to be a program output. For example, a Look Ahead tally begins at the Pgm-Pst Look Ahead Preview (LAP). When a transition is not in progress the source feeding the PVW is not on air.

The Output tally calculator indicates which sources contribute to designated outputs. For example, an ME Iso tally is a user configured Output tally set up to begin at an ME's PGM A, B, C and D. The tally would indicate what contributes to the ME's program outputs but not anything down stream of it. The tally would be the same whether or not the ME was On Air.

The Look Ahead tally calculator indicates which sources will be on air if a main transition is performed on the selected level. One way this can be used is for a second set of tally lamps on a camera to alert the camera operator that his camera is next to be taken on air. Many control room monitor

walls also include a secondary tally indicator for Look Ahead. Look Ahead tributaries do not necessarily leave the switcher as video signals. For example, an ME has four program outputs but only two physical preview outputs. The LAP information for all four program outputs may be included in a tally calculation.

However, if an ME is placed down stream of Pgm-Pst the On Air tally calculation can be configured to start at that ME's program outputs. If this situation is planned, it is recommended that aux buses be set up to provide the real program outputs for the switcher and the On Air calculation configured using those aux buses as the tributaries.

You can use more than one starting point for tally calculations. Programmable clean feed (FlexiKey) and DoubleTake allow the exclusion of video signals from the ME main output (PGM A) that appear on one of the other program outputs. Include the other program outputs with the ME main output (PGM A) as calculation starting points to tally all the On Air sources.

The Bus Selection tally calculator indicates which sources are selected on a specified set of switcher buses. The tally calculator using this method does not trace tributaries upstream; it only tells what sources contribute to the specified bus(es), even if the source is an ME. For example, a Bus Selection tally calculation could be set up to indicate which source is selected on the Pgm-Pst A bus, permitting audio-follow-video selections to be run by the tally system.

Switcher Relay Tally Calculator Menus

The Switcher Tally menus are used to select calculators, methods, and levels, name calculators, and assign items to Tributaries.

Karrera K-Frame has six independently running tally calculators. For example, the system can calculate On Air tally independently for suite 1 and suite 2, and at the same time can calculate Look Ahead tally, and ME output tallies for three MEs. The first of the tally calculators is reserved for On Air tally calculations for the currently logged in suite (1 or 2). The other four tally calculators can be assigned to either suite 1 or suite 2.

Up to four tributaries can be included as the basis for each tally calculation. For example, multiple program outputs of the PGM/PST bank are typically included in the On Air tally calculation. The final tally source list is a union of the sources found on each of the four tributaries. If aux buses are used as the program outputs of the switcher, up to four aux buses can be the basis of On Air tally calculations. Tally calculations do not require actual outputs, for example, LAP tributaries are virtual and may never leave the ME.

Selecting an **On Air Tally** or **Tally Calc 1-4** tab delegates the menu controls to the selected calculator. The On Air Tally menu is shown in Figure 90.

Figure 90. On Air Tally Menu, PGM/PST Outputs—Six-Keyer System
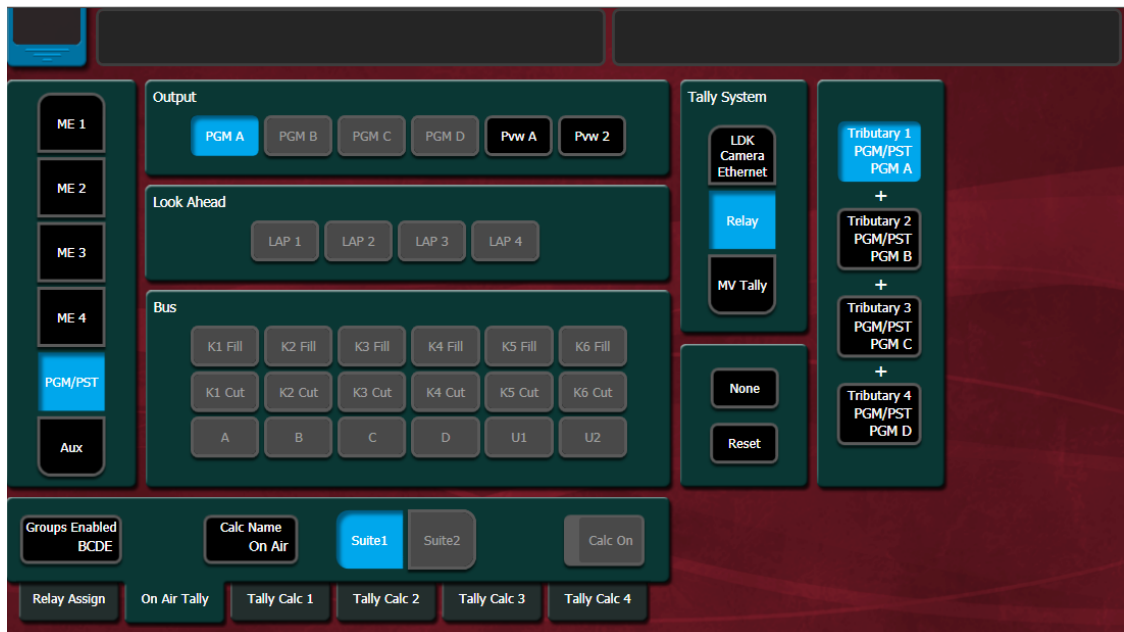
Calc On - Turns the delegated Tally Calculator on or off. When on, the **Calculation Enables** button on the separate Relay Assign menu will be activated for that calculator.

Groups Enabled - Reports which Tally Groups are currently assigned for that calculator, by group letter (A, B, C, D, corresponding to Tally/GPI connectors 1-4 on the rear of the Karrera K-Frame Video Processor). To Enable a Tally Relay Group, it must first be turned on, using the **Calc On** button for that calculator.

The first tally calculator name is fixed to **On Air**. Since the On Air Calculator is restricted the Look Ahead and Bus buttons are disabled (grayed out).

Creating an On Air Relay Tally Calculator Using MEs or PGM/PST

1. If necessary, login to the desired suite (**Eng Setup**, **Eng Login**).

2. Touch **Eng Setup**, **Switcher Tally**, **On Air Tally** to access the On Air Tally menu. The Suite button for the current suite will be highlighted.

3. Touch a **Tributary** button on the right.

4. Touch an **ME** or **PGM/PST** button on the left.

5. Touch an Output button to assign that output of that ME or PGM/PST to that tributary. The name of the output is displayed on the Tributary button.

6. Repeat the steps above for other Tributaries for all the outputs you wish to assign for On Air Tally.

- Pressing the **None** button clears the assignment for that Tributary.

- Pressing the **Reset** button clears all the assignments to all the Tributaries.

Creating an On Air Relay Tally Calculator Using Aux Buses

Use the steps above, but select **Aux** on the left, and choose the Aux bus(es) being used for program output to the On Air calculation.

Figure 91. On Air Tally Menu Aux Outputs
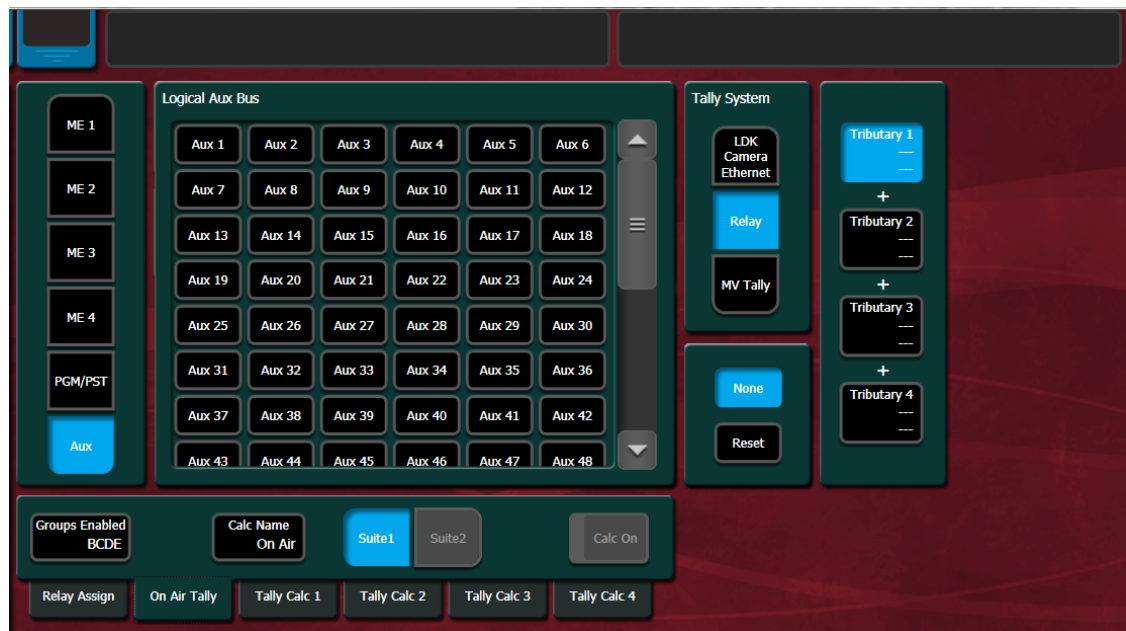
Creating a Look Ahead Relay Tally Calculator

1. Touch **Eng Setup**, **Switcher Tally**, **Tally Calc 1-4** to access a Tally Calc menu.

2. Touch the **Calc 1-4 Name** button to open a keypad you can use to name that calculator.

3. Choose the **Suite 1-2** button for the Karrera K-Frame suite that will use this calculator.

4. Touch a **Tributary** button on the right.

5. Touch an **ME** or **PGM/PST** button on the left.

6. Touch a LAP 1-4 button to assign that look ahead to that Tributary.

Figure 92. Look Ahead Preview Tally—Six-Keyer System
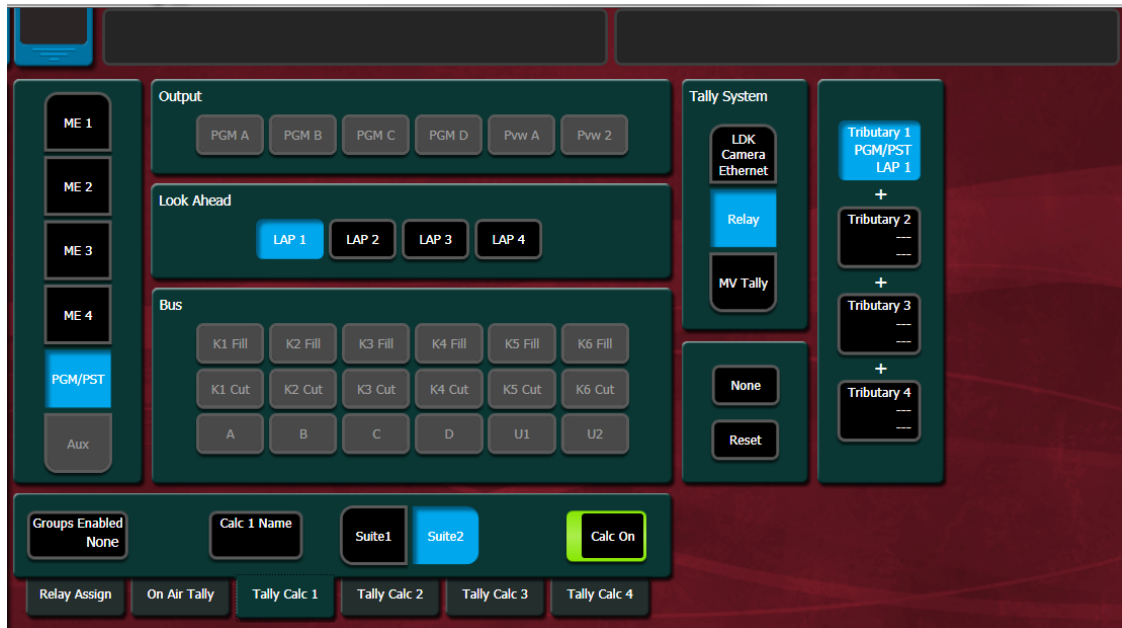
7. Repeat Step 4 through Step 6 to assign all the desired look aheads to the calculation.

8. To activate this calculator, touch the **Calc On** button so it is highlighted.

Note Though the calculator is activated, it will not actually affect Video Processor Frame relay contacts until that calculator has been assigned to a Tally Group (see *Relay Assign Menu on page 145*).

Creating a Bus Relay Tally Calculator

Bus tallies report what source(s) are currently selected on a particular set of buses, and does not trace tributaries upstream.

Use the Look Ahead Preview procedure above, but choose PGM/PST, ME, or Aux, on the left, and then select the desired bus in the center of the screen. Repeat for all the buses you wish to tally.

Figure 93. Bus Tally—Six-Keyer System
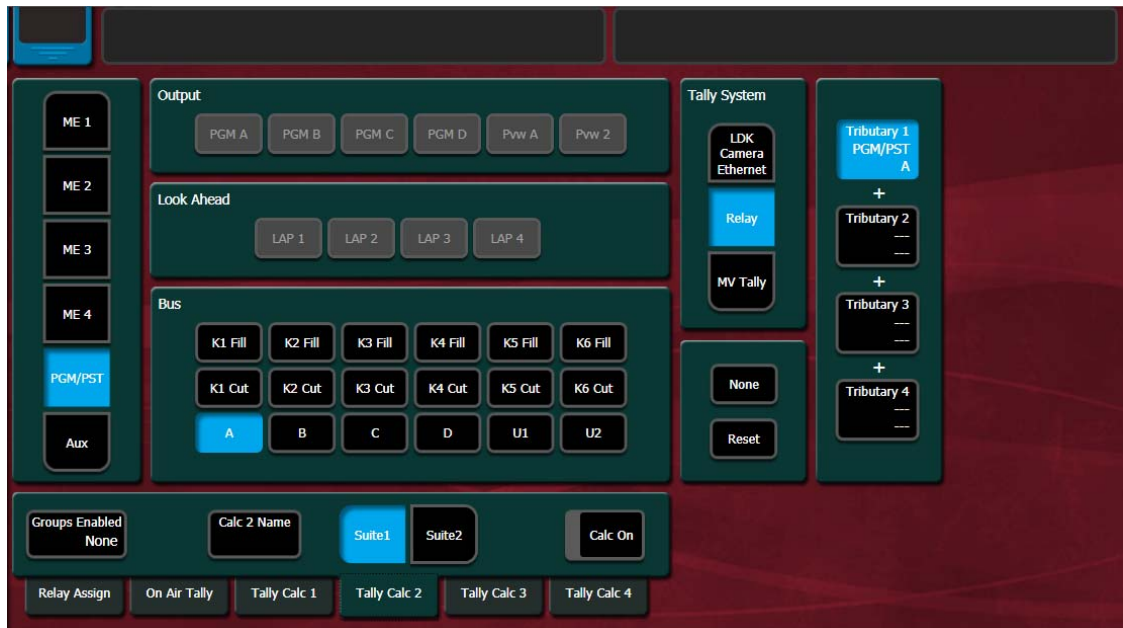
Relay Assign Menu

The Relay Assign menu is used to assign the Tally Calculators to Relay Groups, and assign Engineering/Fixed Sources to relays on the Video Processor Frame GPI/Tally connectors. Touch the Relay Assign tab to access the menu.

Figure 94. Tally Relay Assign Menu

Tally Relay Group - Delegates the menu controls to configure the selected Tally Group. The A, B, C, and D Tally Groups correspond to Tally/GPI connectors 1 through 4 on the rear of the Karrera K-Frame Video Processor.

Calculation Enables - Assigns the Tally Calculators to the delegated Tally Group. When a calculator button is off, that calculator's results will not trigger relays for that Tally Group.

Note   A calculator must be activated with its **Calc On** button before it can be assigned to a Tally Group (see Step 8 on page 144).

Assigning Sources to Tally Relays

Sources are assigned to specific relay connectors with the controls on the upper right.

1. Touch the button for the desired Relay in the center of the menu.

2. Choose the Engineering or Fixed Source in the scrolling list on the right. The name of the source will be displayed on the Relay button.

• The **None** button clears the current Source assignment for the selected relay.

• The **Source Number** data pad and scroll dial can be used to quickly select the desired Engineering Source.

• The **Lock** button can be used to prevent the source list from scrolling automatically to that relay's source. This permits easy selection of adjacent sources.

About MV Green Relay Tally Calculations for Multiviewer On-Air and Green

On-Air and Green tally calculations are configured and applied the same as Relay tally (see the Installation & Service Manual for your Video Production Center model).

Three common scenarios for MV Green Tally:

Note   Red On-Air tally overrides Green tally for Multiviewer assigned sources.

- Look Ahead Preview—In a typical configuration, an LAP calculation can be applied to Multiviewer so any Multiviewer assigned source selected for on-air transition is green tally on the monitor. In this example, the green tally communicates that the source can be taken to air with the next transition. Any upstream sources associated with a Multiviewer assigned source (for example keyers or eDPM channels) will also tally green on the monitor when selected on the PST bus.

- Aux Bus—An example of On-Air and Green Aux Bus tally would be to identify on-air sources feeding monitors located behind the talent on a news or sports broadcast.

- On-Air in another suite—Selected in the On Air Tally tab, in Eng Setup, Switcher Tally, sources on-air in another suite can be tallied green on the monitor with Multiviewer, allowing the operator to observe when those sources are on-air.

Configure MV Green Relay Tally for Look Ahead Preview

Applying green tally to LAP (Look Ahead Preview) will place green borders around the Multiviewer windows on a display when sources are on the PST bus, in a typical configuration, communicating that those sources are in LAP and can transition to on-air next.

1. Select **Eng Setup**, **Switcher Tally**.

2. Select the **MV Tally** button in the Tally System pane (upper right).

3. Select one of the four Tally Calc tabs.

4. Select the Calc Name data button and enter a descriptive name for the calculation; **LAP 1** for Look Ahead Preview in Suite 1 as an example.

5. Assign tributaries to the four Look Ahead Previews:

   a. Select **LAP 1** then **Tributary 4**,

   b. Select **LAP2** then **Tributary 3**, and so on.

6. Turn on the calculation by selecting the **Calc On** button (highlights green when on).

7. Select the **MV Tally** tab.

8. Select the LAP configured tally calculation; for example **Calc 1 LAP 1**.

Ethernet Tally Configuration

The GV Switcher system provides all the tally data needed by the Ethernet tally client. Typically, the only user-defined selection for Ethernet tally from the switcher is the on-air Program ME. PGM/PST is the default on-air tally Program ME, however any licensed ME can be defined as Program. Sources are on or off air based on the Program ME selection.

Configure the On-Air Tally Program ME

The default on-air Program ME is PGM/PST.

1. Select **Eng Setup**, **Switcher Tally**, **On Air Tally.**

2. Select an available (licensed) ME as the on-air tally Program ME, for example ME 1, ME 2, Aux, etc.

Configure the GV Switcher Ethernet Tally System Interface

The GV Switcher system must be configured to interface with third party Ethernet Tally systems. An initial tally client port selection can help ensure a successful connection.

1. Configure the Ethernet Tally interface IP Address:

   a. In the Eng Setup, Ports & Devices menu, select the **Tally Ports** tab.

> **b.** In the Tally Contribution pane, select an Ethernet Tally IP Address data pad and enter the IP address for an Ethernet Tally system in the pop-up keypad and press **Enter**.

Figure 95. Ethernet Tally IP Address

> **2.** Select the adjacent Enable button (highlights green when on).
>
> **Note**   When the connection is enabled, the Connection Status LED turns green.
>
> **3.** At the tally client, set the connection to **Port 2012** to establish the initial connection between the GV Switcher and Ethernet Tally systems.

Set Source Names with External Ethernet Tally

> Support for setting source names through external Ethernet tally clients can be added by tally client developers. Once enabled, the tally client can send data to the Frame that will modify any or all source names in the system, including the Engineering Names for each source. Additionally, the Control Panel, OLED, and Menu names for each logical source in each suite can be set externally.

Note This Tally Protocol enhancement is a superset of the previous version of the Tally Protocol. The 7.0 Tally software is backwards compatible with previous Tally Protocol Clients.

1. Select **Eng Setup**, **Ports** & **Devices**, **Tally Ports**.

Figure 96. Ethernet Tally—Source Name Control

2. Select an Ethernet Tally IP Address data pad, enter the IP Address of the external tally system in the pop-up keypad, and select **Enter**.

   The Connection Status indicator for that tally contributor turns green when connected. The Tally Clients pane (right) displays which suites have external Ethernet tally contribution (S1 and/or S2) and tally system information.

   Connection Status Indicator colors:

   • White—no external Ethernet tally connection

   • Green—external Ethernet tally client is connected

   • Red—external Ethernet tally connection error

3. Select the Connection Status **Enable** button to connect to the external Ethernet tally client.

4. Enable the Source Name Control by selecting the **Enable** button for the external Ethernet tally connection.

Source name control is enabled only when the Connection Status and Source Name Control **Enable** buttons are both enabled (highlighted green).

ClipStore Configuration

ClipStore basic configuration includes preparing the Summit/Solo and Karrera K-Frame systems through licensing, IP addressing, software installation, cabling, and GV Switcher menu configurations.

Summit/Solo Software Version

The latest version of the ClipStore server software is available on the Grass Valley Switcher Software Download site.

CAUTION Do not use AppCenter Elite software for ClipStore from the Summit/Solo server web site as it may not be compatible.

For more information about installing and updating AppCenter Elite software, see the Summit/Solo manuals.

Summit Preparation

Setting the IP Address

The ClipStore Summit/Solo server is shipped with the following defaults:

*   IP Address: 192.168.0.180

*   Mask: 255.255.255.0

*   Gateway: 192.168.0.1

*   WINS: disabled (0.0.0.0)

*   DNS: disabled (0.0.0.0)

You can temporarily change the default settings using Netconfig (see the *NetConfig Network Configuration Application Instruction Manual* at www.grassvalley.com).

To set a new IP Address at the ClipStore (Summit/Solo) server, see *Setting the Summit/Solo IP Address* .

The NetConfig Network Configuration Tool is installed as part of the Karrera K-Frame software.

Note   Make note of the ClipStore IP Address, it will be used later to enable Clip-Stores as external devices later in the Karrera K-Frame configuration process.

Karrera K-Frame System Preparation

Install Karrera K-Frame Software

Verify that the GV Switcher software is version 5.0 or later. For information about upgrading software, see the *Kayenne/Karrera K-Frame Release Notes*.

Install the ClipStore license. The following are the ClipStore options:

- KRR-CLPS-2CH-PAK (2-Channel Solo Server Platform)
- KRR-CLPS-4CH-PAK (4-Channel Summit Server Platform)

Figure 97. ClipStore License

Karrera K-Frame Configuration

Configuring ClipStore as a Node

ClipStore must be configured as a node in the Eng Setup, Node Settings menu before the Karrera K-Frame system can communicate with the Summit/Solo ClipStore server.

1. Verify there is a valid network connection.

2. Go to the Node Settings menu by touching **Eng Setup**, **Node Settings**, **Frame Suite Nodes & ID**.

3. Input a valid IP address for the ClipStore server by touching the **ClipStore IP Address** data pad, typing the address, and touching **Enter**.

4. Touch the **Enable** button.

   The Enable button allows communication between the Karrera K-Frame and the ClipStore server and highlights green indicating a proper connection. Red will show no connection and yellow shows that some channels are connected. For both red and yellow indications, ensure that channels are in AMP mode and available for remote control. Other troubleshooting may be required.

Figure 98. ClipStore Node Settings

Configuring Source Definitions

To configure source definitions for ClipStore return outputs, choose a source, a source type, an input, and in the case of a key, an Engineering Name for the source if desired.

The following example demonstrates the configuration of a Summit with four ClipStore channels. In this example the physical BNC connections from the ClipStore to the K-Frame are Inputs 25-32.

ClipStore can record Video only, Key only, or Video/Key clips. To do this, both a video and a key for the video must be configured for each ClipStore channel.

To configure a source for as a ClipStore Video input:

1. Go to the Eng Setup, Source Definition menu.

2. From the Source List, touch a source.

3. Use the default video input (Video In:) or change it using the **Video Input** data pad.

4. Touch the Linear Key button to select it.

5. Use the **Key Input** data pad (or soft knob) to select the source number of the Key source you will use for the ClipStore channel.

6. Configure the Source Type:

    a. Touch the **Device** mode button in the Source Type pane.

    b. Touch the **External Device** data pad, the External Device List is displayed.

    c. Touch a CS channel to select it (Figure c).

    The External Device List closes and the Engineering Name is filled in with the ClipStore External Device name automatically.

To configure a source as a ClipStore Key input (Key input to the ClipStore Video input created earlier):

1. From the Source List, touch a source (Figure).

2. Touch the **No Key** button in the Key Mode pane to select it (if not selected).

3. Use the default video input (Video In:) or change it using the **Video Input** data pad.

4. Touch the **Direct** mode button in the Source Type pane to select it.

5. Give the ClipStore key input an Engineering Name if desired (CS-1K, Figure), by touching the **Engineering Name** data pad and entering the name in the pop-up keyboard.

You now have device control over this ClipStore resource, and it can be mapped. Repeat the preceding steps for each ClipStore channel.

Configuring Outputs

Set the switcher outputs that are feeding into ClipStore. By selecting an Aux bus then touching one of the CS-1 through CS-4 enable buttons, those Aux bus outputs will be paired. In other words, if you select the output, then

Aux 5, Aux 5a and Aux 5b will be paired as a ClipStore Video/Key pair when the ClipStore button is enabled.

1. Go to the Outputs menu by touching **Eng Setup**, **Outputs**.

2. Select the odd numbered output (first Aux bus output assigned for a video/key pair must be odd/fill) that you wish to use as the input to ClipStore. Then select Aux as the Output Type and the desired logical Aux bus.

3. Touch one of the ClipStore buttons.

4. Repeat the preceding steps for each channel of ClipStore.

Note You only need to configure all channels as video/key if you wish to record on all channels.

The Engineering Names for each ClipStore channel will appear in the Local Aux area and/or can be button mapped as desired.

Acquire and Assign CS channels in another suite

1. In the Outputs menu, deselect the CS channels to be acquired.

2. Touch the **Suite 1** or **Suite 2** button to change suite delegation.

3. Re-acquire the CS outputs by touching the CS buttons (CS-1, CS-2, etc.).

It is recommended at this point that you save a new Eng Setup file that includes these changes.

ClipStore Config Menu

The ClipStore Config menu is used to configure the ClipStore input/output parameters and read those input/output parameters from, or send them to, the ClipStore server (Figure 99).

Figure 99. ClipStore Configuration Menu
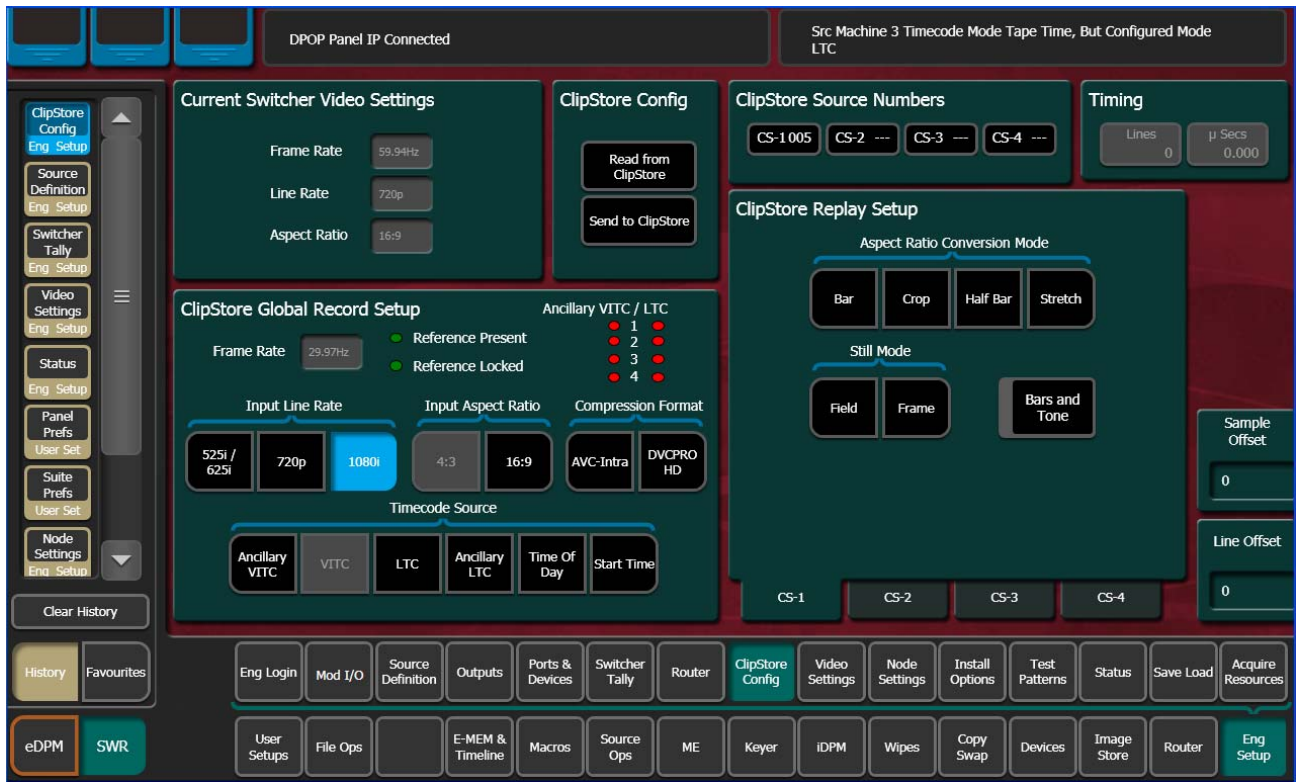
Read from ClipStore button—Updates the Eng Setup, ClipStore Config menu with the current parameter settings for the configured ClipStore server channels (Figure 99).

Send to ClipStore button—Sends all parameter and system settings required by ClipStore to record, edit, and control clips to the server. Any changes to the Record Setup or Replay Setup parameter settings will also be sent to the ClipStore server (Figure 99). A dialog is displayed when this button is pressed (Figure 100), stating that all clips will be ejected as part of this operation; keep this in mind if considering this operation during a broadcast.

Figure 100. Send to ClipStore Confirmation Dialog
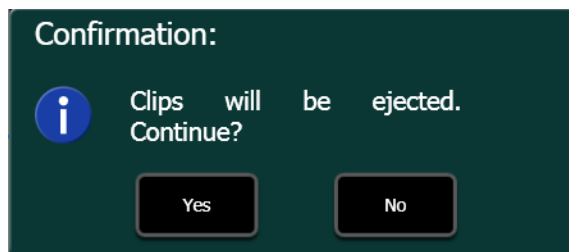
The ClipStore Source Numbers Pane (read-only), provides channel and source information, for example CS-1025 means ClipStore Channel1 (CS-1), Eng Source ID 25 (025).

Bars and Tone button—Turning this button on (highlighted green) then touching the **Send to ClipStore** button, loads color bars (and updates the configuration) and sends a tone to the selected ClipStore channel for testing.

Assigning ClipStore Channel Resources to a Suite

ClipStore resources can be acquired in suites. ClipStore suite assignment buttons have been added to the Eng Setup, Acquire Resources, Effects, Stores & Viewers menu. For information about acquiring suite resources, see the *Divide Resources Between Suites* .

Figure 101. ClipStore Acquire Resources
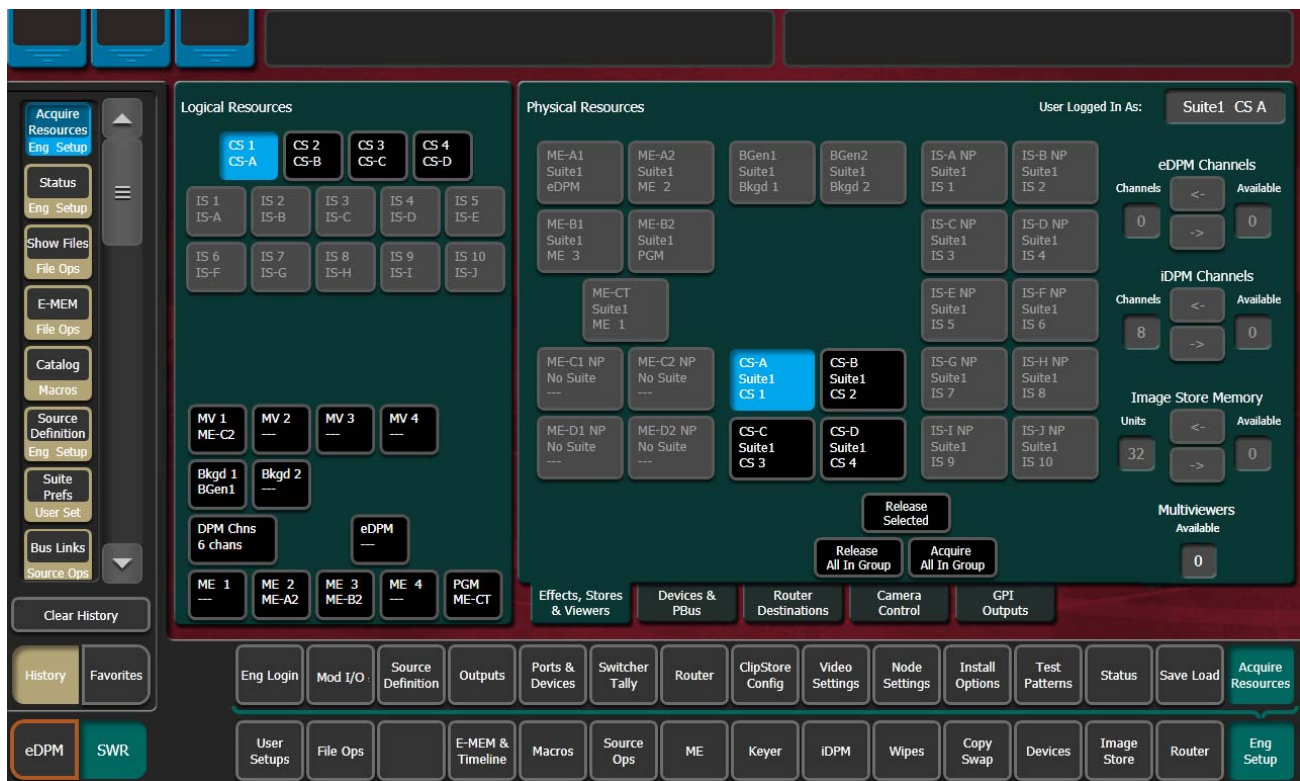
Setting the Summit/Solo IP Address

For more information, see the Summit/Solo manuals packaged with the system.

Remote Desktop Connection

To create a Remote Desktop Connection with the Summit/Solo, perform the following:

1. Minimize the GV Switcher menu on the menu Panel (or PC).

2. Beginning with the Start button in Windows XP, touch **Start**, **Programs**, **Accessories**, **Remote Desktop Connection**.

3. Enter the current IP Address for the Summit/Solo server. (default IP Address: 192.168.0.180) in the Remote Desktop Connection dialog.

4. Touch **Connect**.

5. Enter the following in the Log On to Windows dialog:

- Login: **administration**

- Password: **adminK2**, touch enter.

The Elite AppCenter application window is displayed.

Changing the Summit/Solo IP Address

To change the Summit IP Address, perform the following:

1. Disable the FBWF (File Based Write Filter)

   a. Click on the **Start** menu and navigate to **All Programs**, **Grass Valley**.

   b. Click on **Write Filter Utility** (top of list).

   The FBWF Manager is displayed.

Figure 102. FBWF Manager
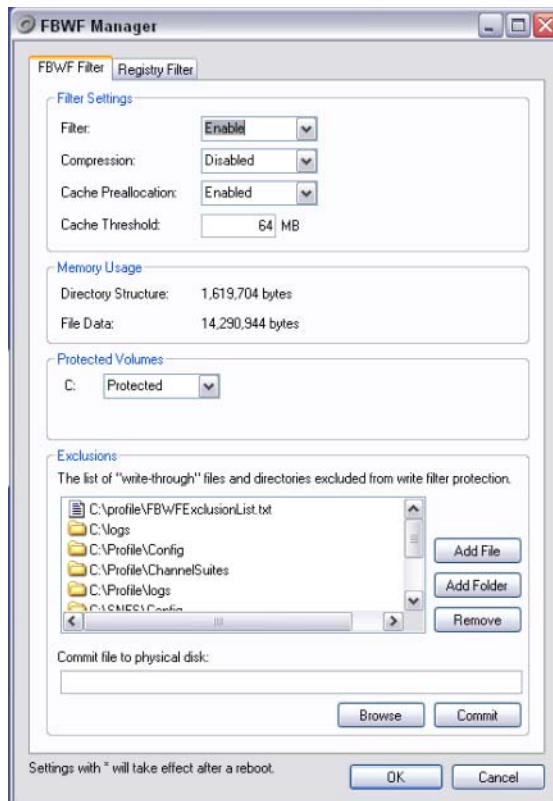
c. Under Filter Settings click on the **Filter:** pull-down menu and click **Disable** (Enabled is the default).

An asterisk (*) will appear next to 'Disable' that indicates the system must be rebooted to implement the configuration change.

Figure 103. Disable/Enable Filter Settings
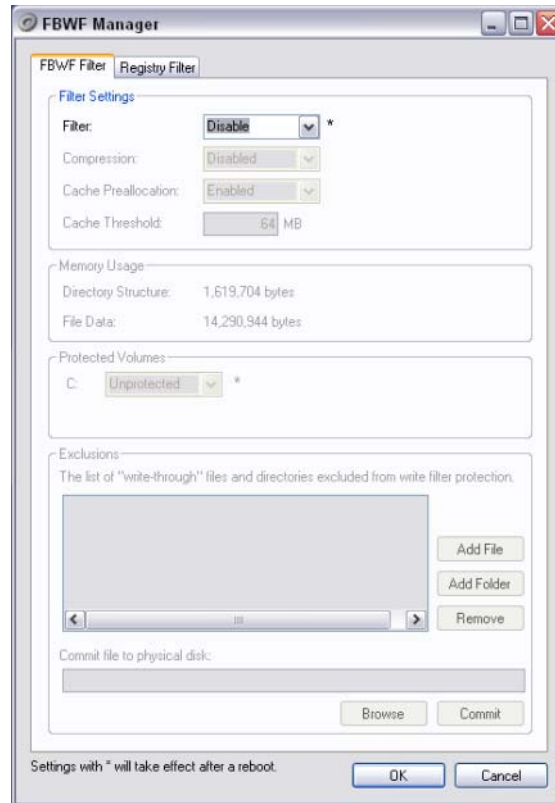
d. Click **OK**.

e. At the reboot prompt, click **Yes**.

Figure 104. Reboot Prompt
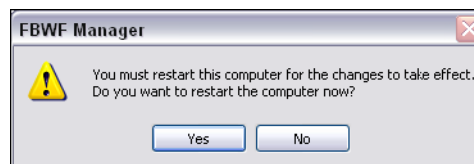
2. Once the server has rebooted, enter your login and password.

3. Right-click on **Network Places**.

4. Click **Properties**.

5. Right-click on **Control Team**.

Figure 105. Network Connections—Control Team
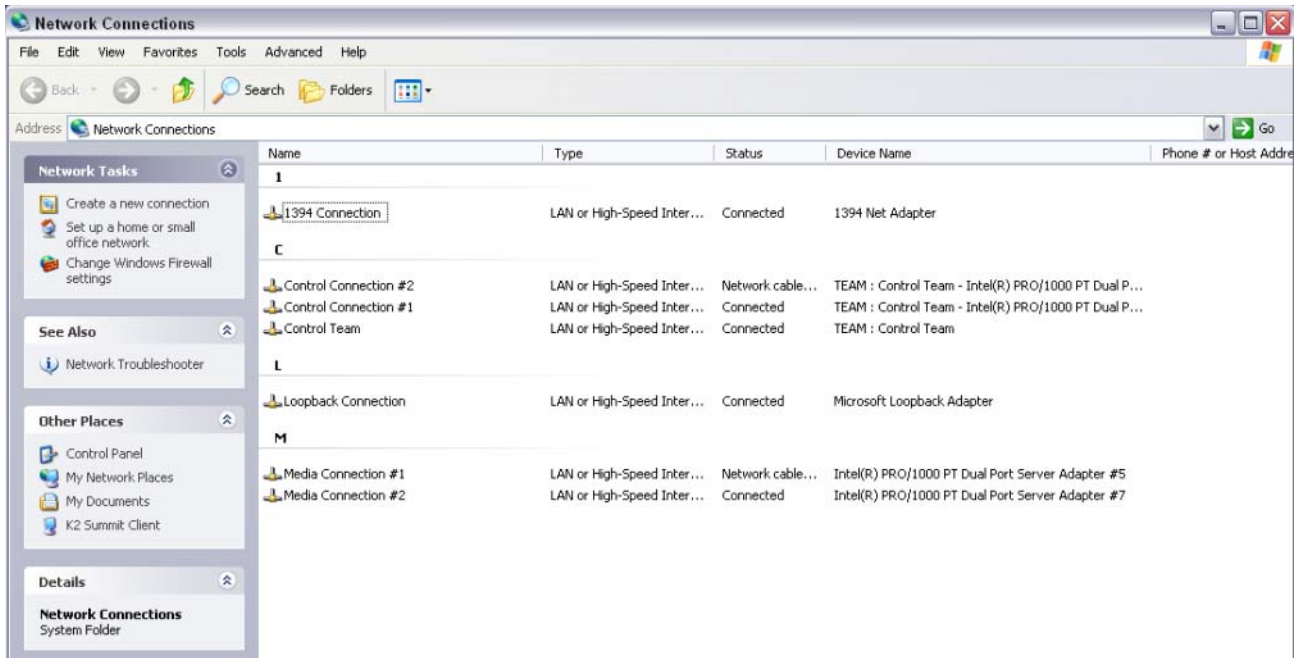
6. Click **Properties**.

7. Scroll down to "Internet Protocol (TCP/IP)" and click to highlight it.

Figure 106. Control Team Properties—TCP/IP Disable/Enable Filter Settings

8. Click **Properties**.

The TCP/IP Properties Dialog is displayed.

Figure 107. TCP/IP—Enter IP Address
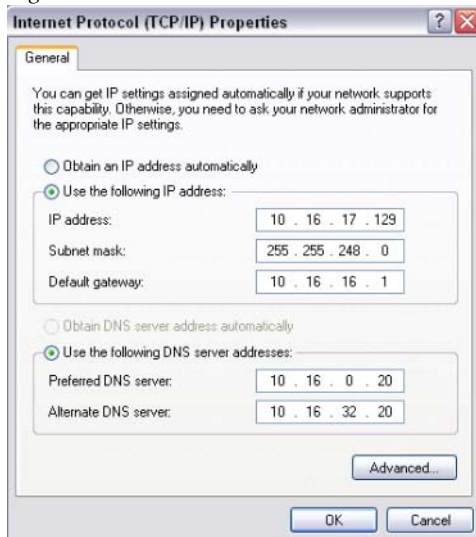
9. Enter the desired IP Address, and click **OK**.

   The Subnet mask will be filled in automatically.

10. Click **OK**.

Enable the FBWF

1. Enable the FBWF (File Based Write Filter), see *Setting the IP Address on page 151*, Step 1.

2. Reboot the ClipStore Summit/Solo server.

Camera Control with Ethernet Tally Configuration

The Karrera K-Frame system uses Ethernet to communicate with the LDK Connect Gateway. Some basic configuration is required in the Eng Setup menu.

Figure 108. Karrera System Interconnection with Camera Gateway
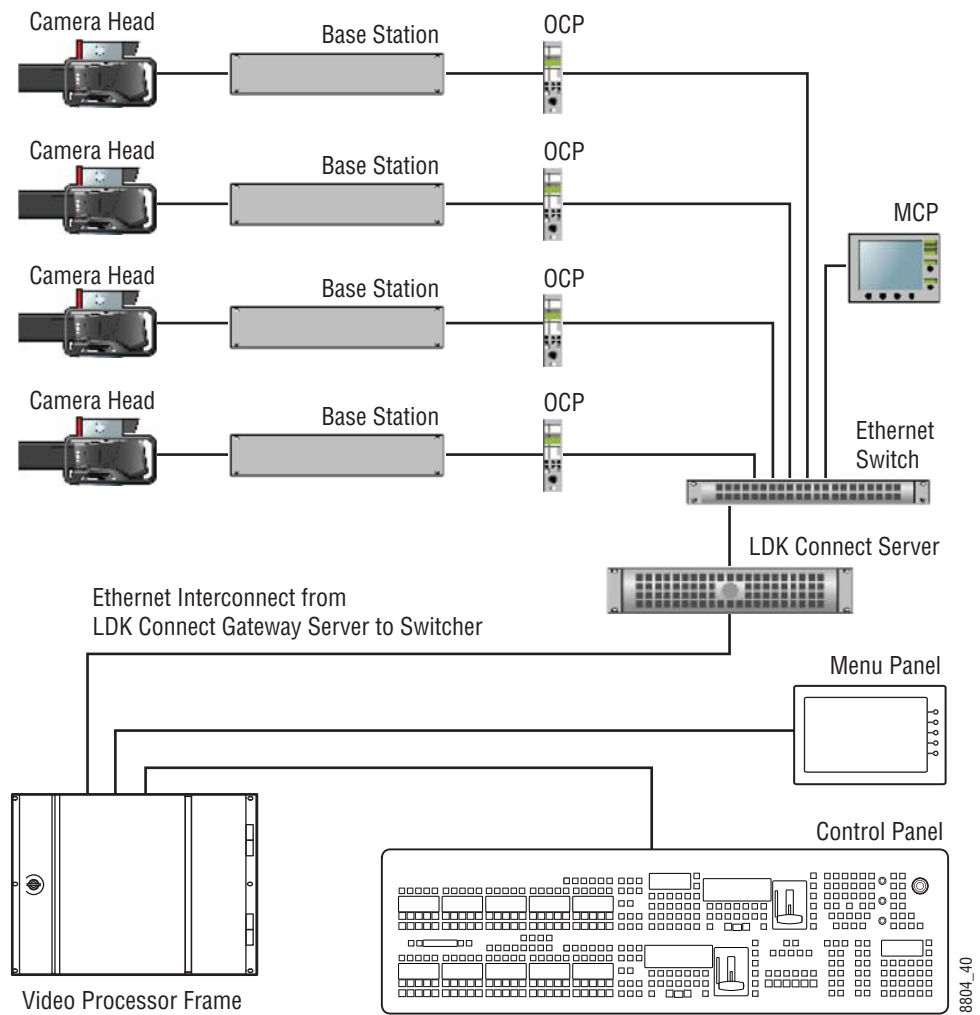
Node Settings

In the Eng Setup, Node Settings menu, enter a valid IP Address for the camera gateway and touch the **Enable** button. When connected, the LDK Connect LED will turn green.

Figure 109. Camera IP/Enable, Node Settings Menu

Source Definitions

To enable camera control from the Karrera K-Frame, the source is defined as a "Camera" type then assigned as a camera in the Eng Setup, Source Definition menu.

Figure 110. Camera Source Type, Source Definition Menu
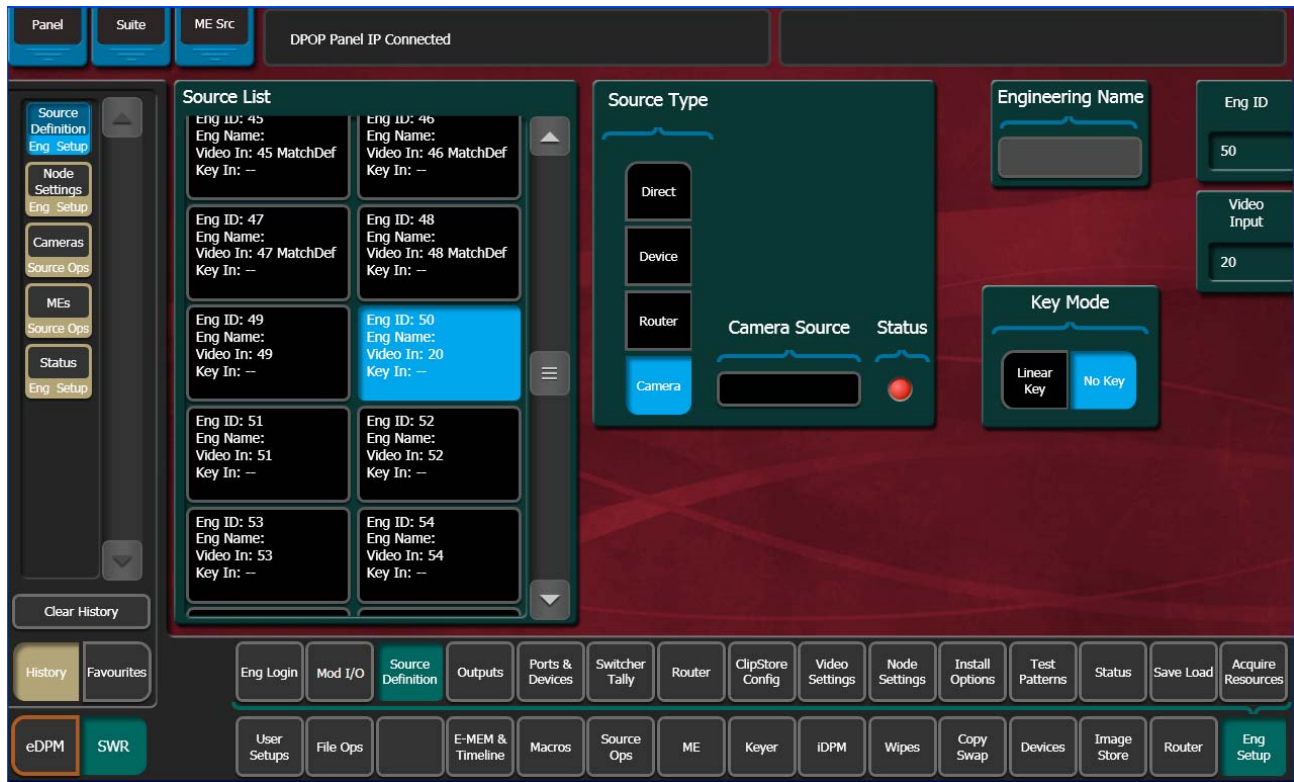
1. Touch the desired source in the Source List (Figure 110).

2. Set the Video Input and Key Mode (see the *Karrera K-Frame User Manual* for more information).

3. Touch the **Camera** source type button in the Source Type pane (Figure 110).

   Once the "Source Type" is defined as Camera, the Camera Source can be selected.

4. Touch the **Camera Source** data pad—the Ethernet Connected Camera List pane is displayed (Figure 111).

Figure 111. Ethernet Connected Camera List, Eng Setup, Source Definition Menu
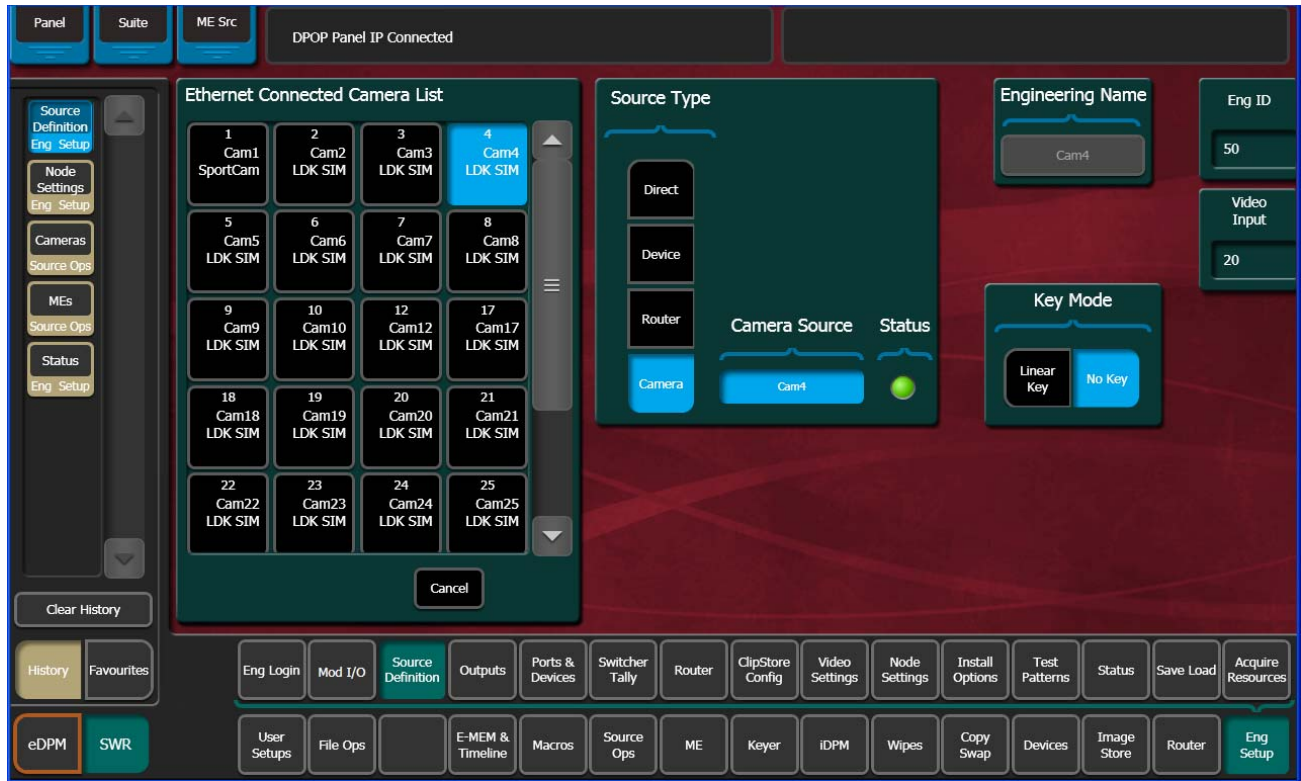
5. Touch a camera in the Ethernet Connected Camera List.

The Ethernet Connected Camera List pane closes and the selected camera's Engineering Name is defined by the selection automatically. A green **Status LED** signifies a connected camera.

Note The Engineering Name of the source becomes "Cam##" and cannot be edited, however the Panel, OLED, and Menu Name can be changed in the Source Patch menu (see the *Karrera K-Frame User Manual* for more information).

Acquire Resources

A camera resource can be acquired by Suite 1 or Suite 2 but not both (E-MEM control is only from the suite currently controlling the camera source). Camera resources are acquired in the Eng Setup, Acquire Resources, Camera Control menu.

Camera resource acquisition is represented in the Camera Controls Acquired in Suite pane in the Camera Controls menu as follows:

Green—Successfully acquired in the current suite

White—Resource not acquired in any suite

Blue—Resource successfully acquired by a suite other than the current suite

Figure 112. Camera Control, Eng Setup, Acquire Resources Menu
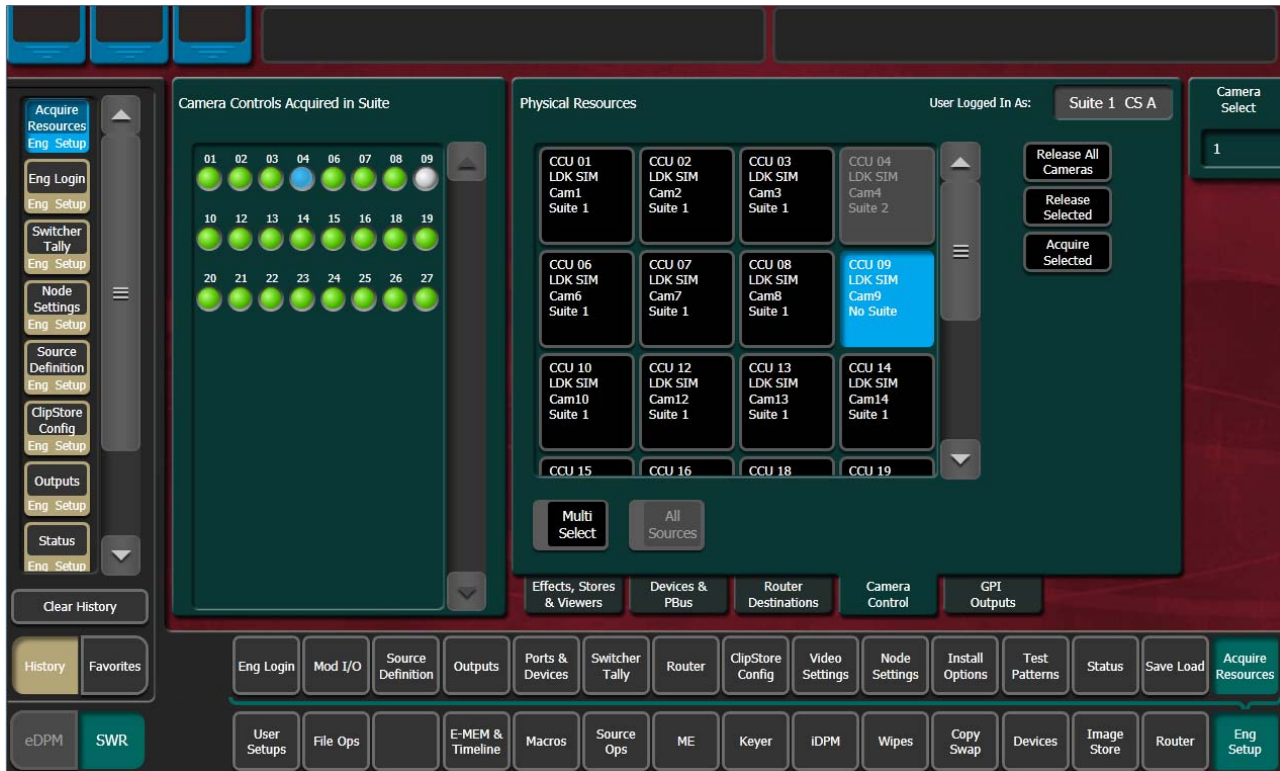
Acquire control of camera components in another suite by releasing one, several, or all components from the current suite using the **Release Selected** and **Release All Cameras** buttons, changing suites, then acquiring those components in the other suite. For more information on acquiring resources, see the *Karrera K-Frame User Manual*.

1. Select the components (cameras) you wish to acquire in another suite in the Components: Camera Control pane.

2. Release those components using the release buttons.

3. Go to the Eng Login menu, and touch the **Change Identity** data pad.

4. Touch the data pad of the desired suite.

5. Return to the Eng Setup, Acquire, Camera Control menu and touch the component buttons you wish to acquire to the suite.

6. Touch the **Acquire Selected** button.

Switcher Ethernet Camera Tally

The Karrera K-Frame system provides a quickly connected, reliable, three color tally (Red, Yellow, and Green) via Ethernet to Grass Valley cameras.

Figure 113. Switcher Tally LDK Camera Ethernet Menu—Six-Keyer System
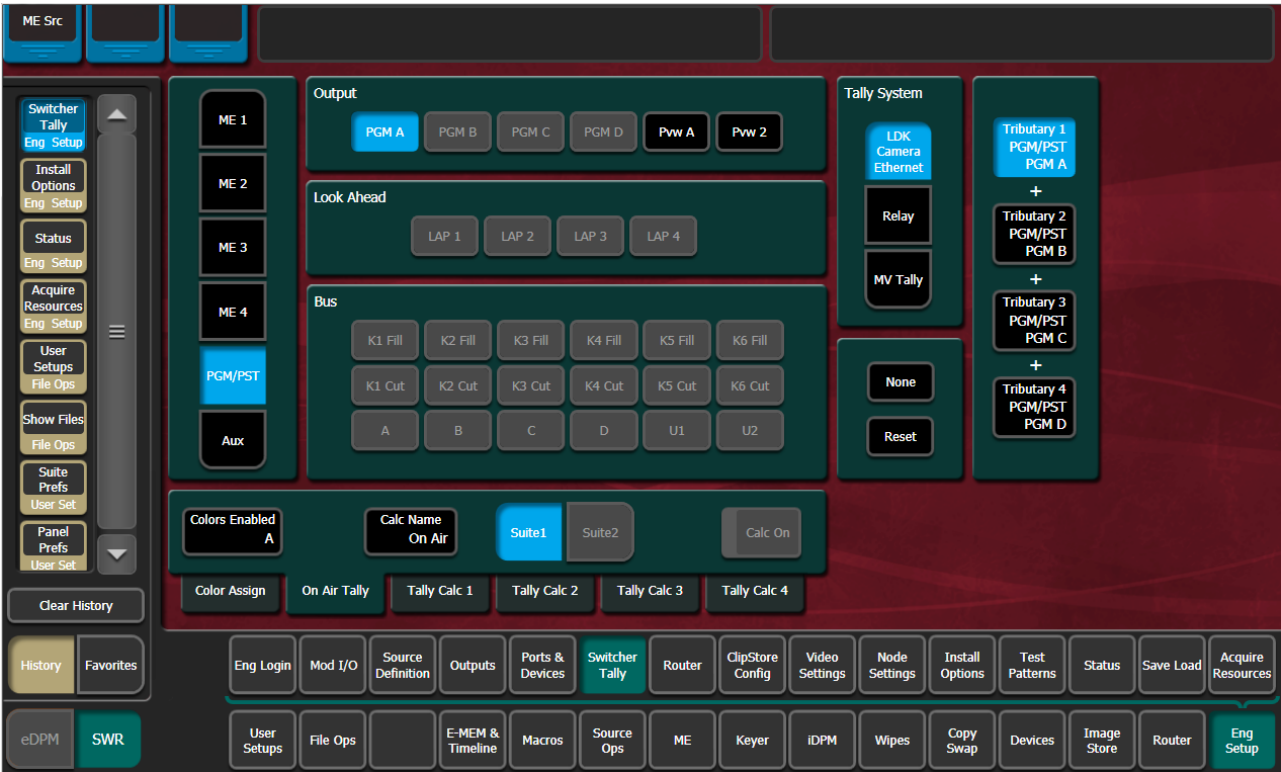
Tally Calc Menus

As with Switcher Tally, the LDK Camera Ethernet menu is used to select calculators, name calculators, and assign bus contributors to tributaries.

Colors Enabled—Reports which colors are currently using that calculator, by color letter corresponding to the viewfinder indicators:

- R (Red=On-Air),
- Y (Yellow=media (record)), and
- G (Green=ND/RE or 'Call').

Color Assign Menu

Assigning a source as a Camera type and giving it a Camera Number is similar to assigning a source to a relay in a Switcher Tally Group.

The Color Assign menu is used to assign the Tally Calculators to the Tally Colors. Touch the Eng Setup, Switcher Tally, Color Assign menu tab to access this menu.

Figure 114. Color Assign Menu

User Setups

User Setups are intended primarily for operators, to allow them to customize their working environment. However, some settings affect basic system operation. The engineer in charge of a Karrera K-Frame system should create and save at least one default set of User Setups (Panel Prefs and Suite Prefs) so the system can be set to a known state.

Particularly important settings are described briefly below. Refer to the separate *Karrera K-Frame User Manual* for more information about User Setups.

Panel Prefs

Button Mapping Menu

Button mapping determines what sources are selected by the buttons on the Control Panel MEs. The Button Mapping menu is accessed via **User Setups**, **Panel Prefs**, **Button Mapping**.

Figure 115. Button Mapping Menu, Logical Sources
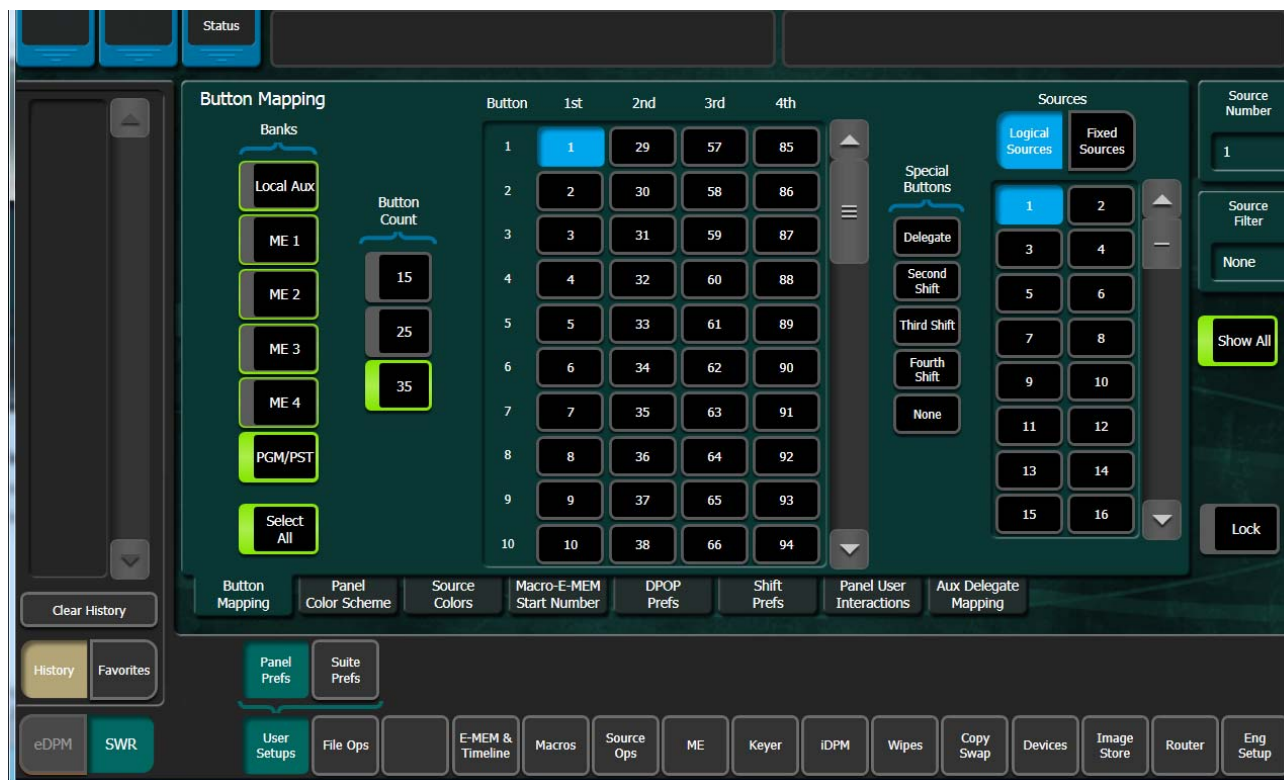
Select the desired Bank(s) on the left, a Source Select button on the scrolling list in the center of the menu, then assign a source to that button from the scrolling list on the right.

Two source lists are available, Logical Sources, and Fixed Sources.

Figure 116. Button Mapping Menu. Fixed Sources
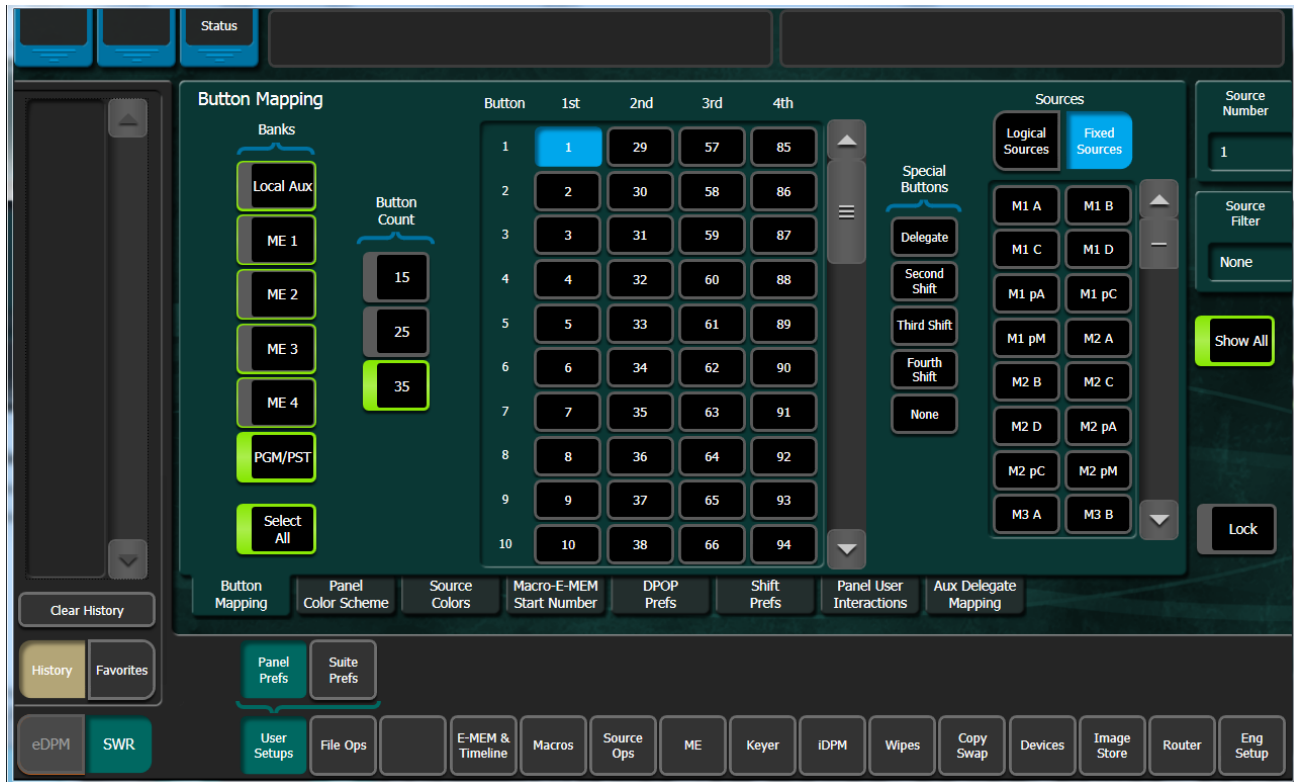
- The **Button Count** settings identify the size of the bank (15, 25, or 35 Source Select Buttons.

- The **Source Number** data pad and knob can be used to quickly scroll through and select sources.

- The **Source Filter** data pad opens a keyboard allowing entry of an alpha-numeric source name filter. Only source names that begin with the entered text will be displayed in the scrolling to the immediate left.

- The **Show All** button clears the source filter.

Suite Prefs

Source Patch Menu

The Source Patch menu controls what source names are displayed on the Control Panel and menus, and permits patching of engineering sources to logical sources.

Default Keyframe

Default Keyframe settings are applied when an empty register is recalled and when the **CWB** (Clear Working Buffer**)** button is pressed in the Master EMEM Module (**EMEM Edit**, **CWB** button) of the main panel. The Default Keyframe menu is used to learn the current panel state to the system's Default Keyframe. Individual settings for each MEs are stored in the Default Keyframe, so different states can be saved for different MEs, if desired.

The Default Keyframe menu is accessed by touching **User Setups**, **Suite Prefs**, **Default Keyframe**.

Figure 117. Default Keyframe Menu
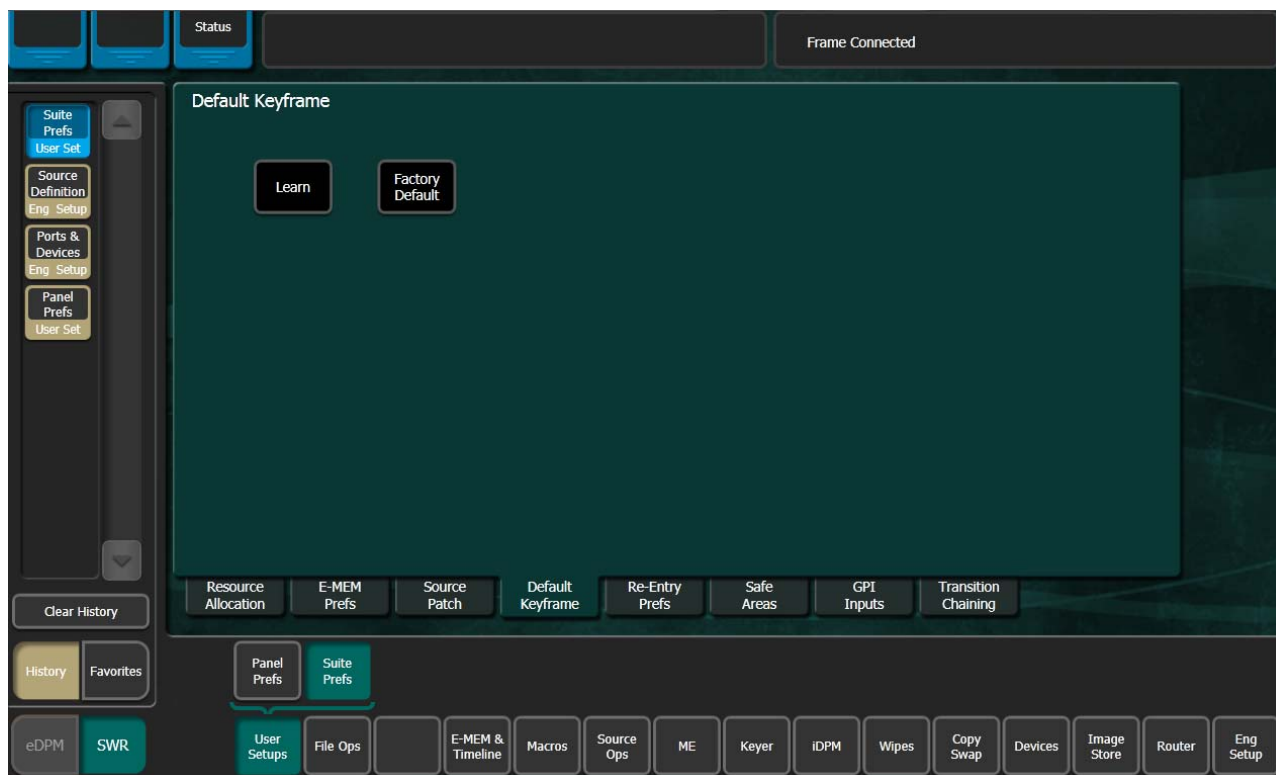
To Learn a Default Keyframe:

1. Setup the entire Control Panel to the desired state.

2. Press the **Learn** button in the Default Keyframe pane.

You will want to save this setting with your baseline Suite Prefs file.

Note   Individual Default Keyframe settings are saved for each ME.

Configuration File Save and Load

Karrera K-Frame File Browser

The Karrera K-Frame system has a file browser. You can browse through folders on the local Karrera K-Frame Menu hard disk, the Karrera K-Frame Video Processor, and the entire network file hierarchy of mapped drives. The various browser menus can be accessed via the **File Ops** menu tab.

Figure 118. Files Ops, User Setups Menu
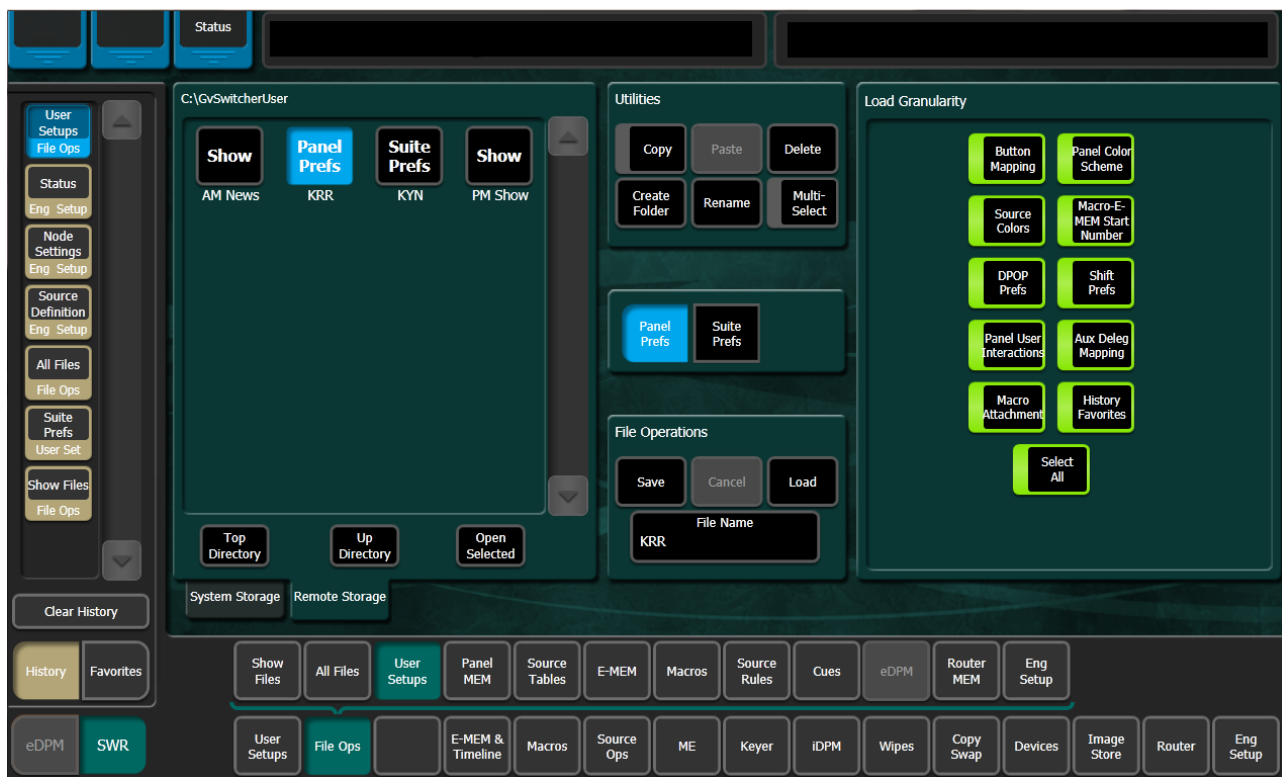
Eng Setup files can be accessed two ways, via **File Ops**, **Eng Setup**, or via **Eng Setup**, **Save Load**.

Figure 119. Eng Setup Save-Load Menu
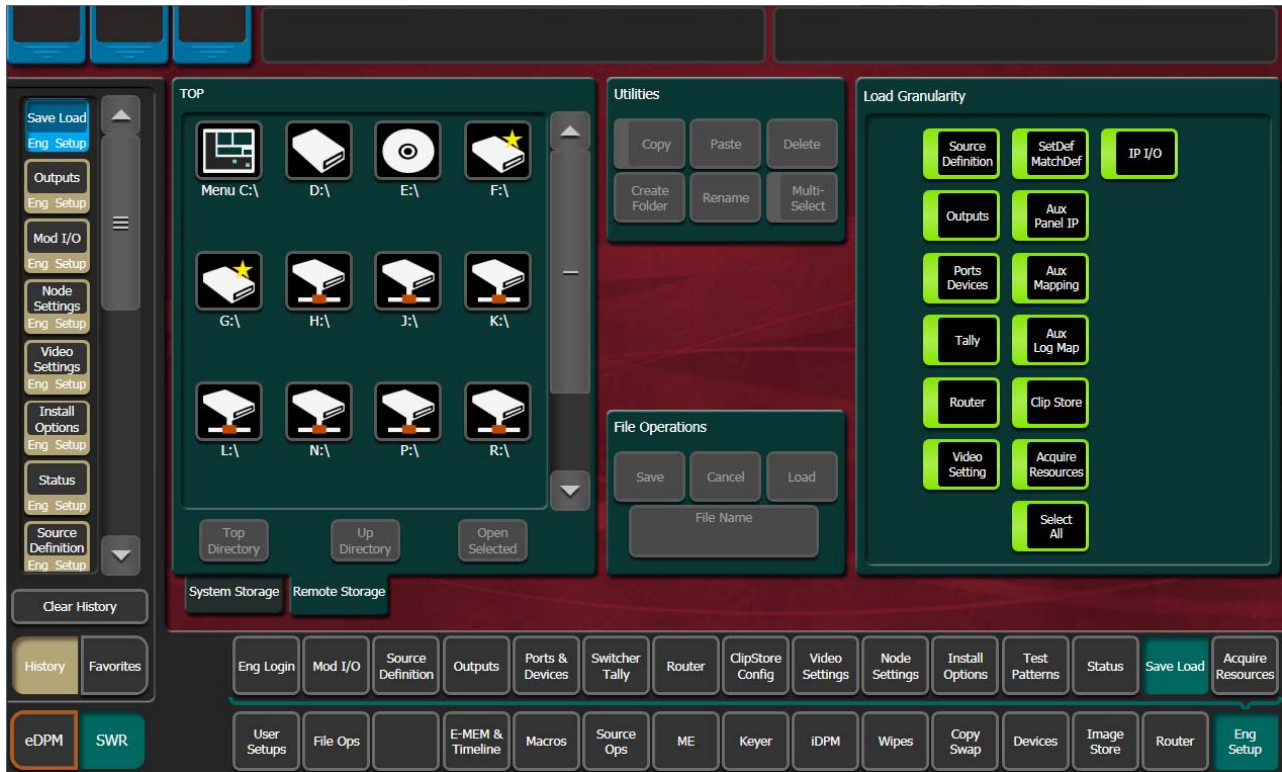
File Storage Organization

The file browser gives you great flexibility for choosing and creating storage locations for your files. Any number of folders can be created in various locations. File folders and the files themselves can be named in any manner. To prevent accidentally saving and loading incorrect files, your facility should establish file storage and naming conventions and follow them consistently.

The engineer in charge should create default Eng Setup, Panel and Suite Prefs files that are not to be modified by anyone. These can provide a known starting point for users when they build their own preference files.

Karrera K-Frame Drive Access

The Karrera K-Frame File Operation menus can access directories located on the USB Memory Stick in the Video Processor Frame (System Storage) and the Menu Panel hard drive (Remote Storage). Local and network drives mapped on the Menu Panel's Windows system are also accessible (Remote Storage). Standard Windows functionality automatically maps all local drives during startup. Mapping network drives to a drive letter using

the Windows Explorer allows them to appear at the top of the File Operation menus on that menu system.

Files saved to the **System Storage**, **Frame User Directory** will be available to any system user.

Files saved to the **Remote Storage**, **Menu C:** location on the Karrera K-Frame Menu Panel will be available to any user of that Menu Panel. Multiple Karrera K-Frame Menu Panels operating with that system will not be able to access files stored at this location on another Menu Panel, unless drives are mapped.

Files can also be saved to an external medium, like a USB Memory Stick, and then removed for personal storage unavailable to other users.

Save important files to multiple locations (for example, to the Video Processor Frame, Menu Panel, and a USB Memory Stick), clearly identify the files (perhaps including the date in the file name), and store removable media containing these files in a safe place.

File Type Extensions

Karrera K-Frame files are named by the user when saved, and this name appears below the icon in the browser. The extension for each system file type is listed in Table 15.

Table 15. Karrera System File Extensions

Icon Example	File Type	Extension
	Panel Prefs	.GVC .GVF .GVJ
	Suite Prefs	.GVS .GVZ
	Source Mem	.GVM
	Eng Setup	.GVE .GVH .GVN
	E-MEM Reg	.GVR
	R-MEM Reg	.GVY
	Panel Memory Reg	.PMEM
	Cues Reg	.GVB
	e-DPM Reg	.GVI
	Image Store	.EIF
	Macro Reg	.GVG
	Source Rules	.GVL
	Show Folders	.GVV

The extension is added to the file automatically when saved, but is not displayed as part of the file name itself by the file browser. To prevent confusion, do not try to add an extension to the file name when saving files.

Non-Karrera K-Frame generated file icons show the file name with extension, and displays the extension letters in the icon.

Eng Setup File Operations

The Eng Setup, Save Load menu is used to save and load engineering setups information. Only this file format is supported in this menu.

Figure 120. Eng Setup Save-Load Menu
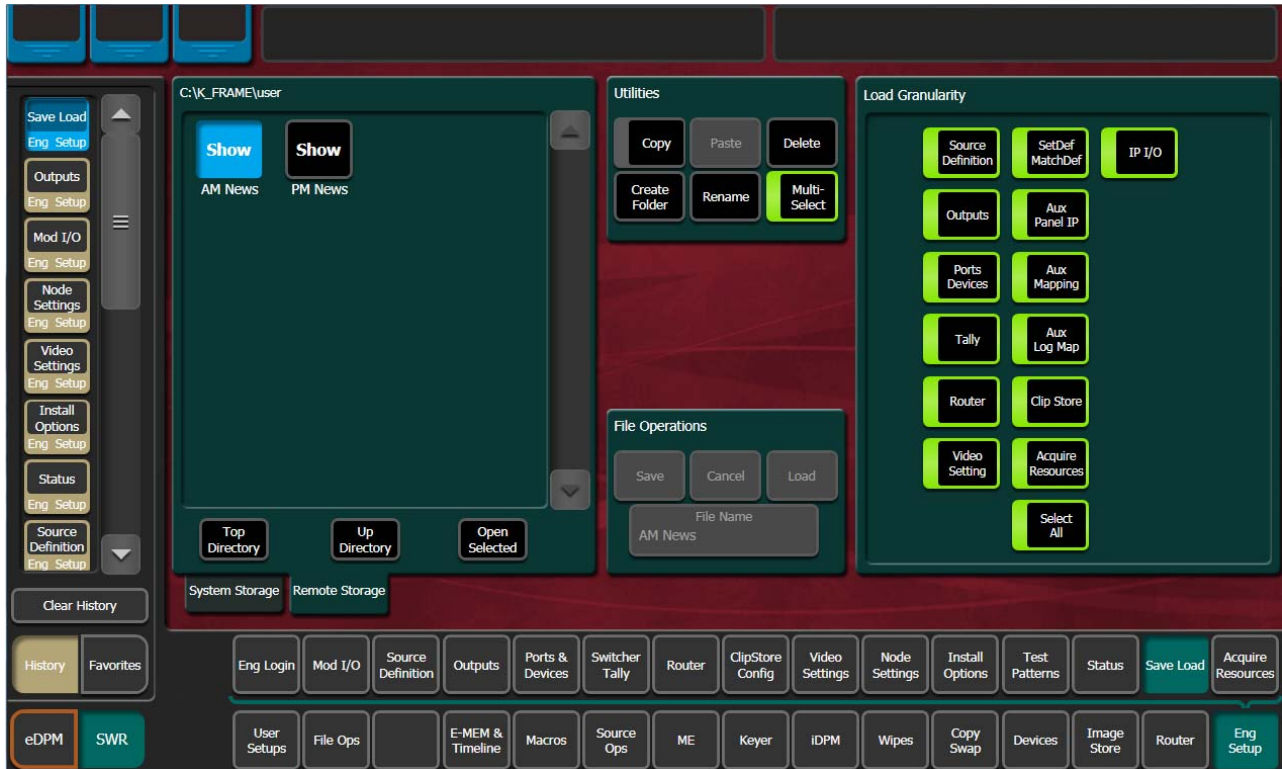
Left Navigation Pane

The left pane has tabs that select **System Storage** (Video Processor Frame) or **Remote Storage**. The **Top Directory**, **Open Directory**, and **Open Selected** buttons permit navigation through the file hierarchy.

Right Load Granularity Pane

The right Load Granularity pane allows selection of different categories of configuration data for save and load operations. The **Select All** button selects or deselects all the categories.

Utilities Pane

The Utilities pane buttons perform Copy, Paste, Delete and Create Folder operations and has a Multi-Select toggle button.

File Operations Pane

The File Operations pane is used to name, save, and load files.

To Save Eng Setup Files

1. Select all or individual file types to save.

2. Touch the **File Name** data pad and enter the name you wish the saved file to have.

3. Navigate to the desired destination directory using the buttons in the left navigation pane. You can create and name a new directory for the file with the **Create Folder** button in the Utilities pane if you wish.

4. Touch the **Save** button.

To Load Eng Setup Files

1. Navigate to the directory containing the files you wish to load, using the buttons at the bottom of the left navigation pane.

2. Select the file(s) to be loaded (choose the **Multi-Select** button for multiple files).

3. Touch the **Load** button.

CAUTION The Load button immediately replaces information the Karrera K-Frame system is currently using with the selected file information. When configuration files are loaded, significant changes to system operation are possible.

Multiple Suite Resource Sharing

Introduction

The Resource Sharing feature permits the allocation of Karrera K-Frame system resources between two suites. This allows independent system operation from multiple locations without conflict.

Logical resource assignments allow the reuse of E-MEM effects in either suite regardless of which specific hardware resources were allocated.

Each suite can be run with its own Suite Prefs settings, and two different Panel Prefs preference settings can operate simultaneously in each suite. These preferences can be saved and loaded, permitting reliable system changes to meet varying requirements.

The system retains the current suite/resource relationships. If the system powers down or is reset, resource allocations for each suite are restored when the system returns to operation.

Collaborative Resource Sharing

Collaborative resource sharing permits a group of operators to have simultaneous access to a resource. For example, a video operator may want access to an ME so he can set up a chroma key, but the TD also wants control of that ME so that he can put the chroma key on air. This type of sharing is available simply by installing additional Control Panels.

Corroborative system operation has inherent limitations. Since one operator can change the settings used by another operator, it is assumed the operators are in close communication with each other so they can avoid system control conflicts.

If two conflicting corroborative commands are sent, the Karrera K-Frame system ends in the state of the last command processed. For example, one operator could select a source on a bus of an ME at nearly the same time another operator selects a different source on that same bus. The output of that ME will momentarily display the first source and then switch to the last source selected, possibly causing an apparent flash on that output.

The Resource Sharing feature allows collaborative sharing of system components with different User Prefs. For example, when a smaller 25 source panel is used in a corroborative environment with a larger 35 source panel, the button mapping for the two panels must be different because of the different number of source buttons available.

Independent Resource Sharing

Independent resource sharing isolates an operator or group of operators from other operators, by defining two separate suites. When one suite has acquired a resource, only the operator or group of operators in that suite will be able to control it. An example of independent sharing is splitting a 4-ME Karrera K-Frame system into two independent 2-ME switchers.

Figure 121. Independent Resource Sharing Example
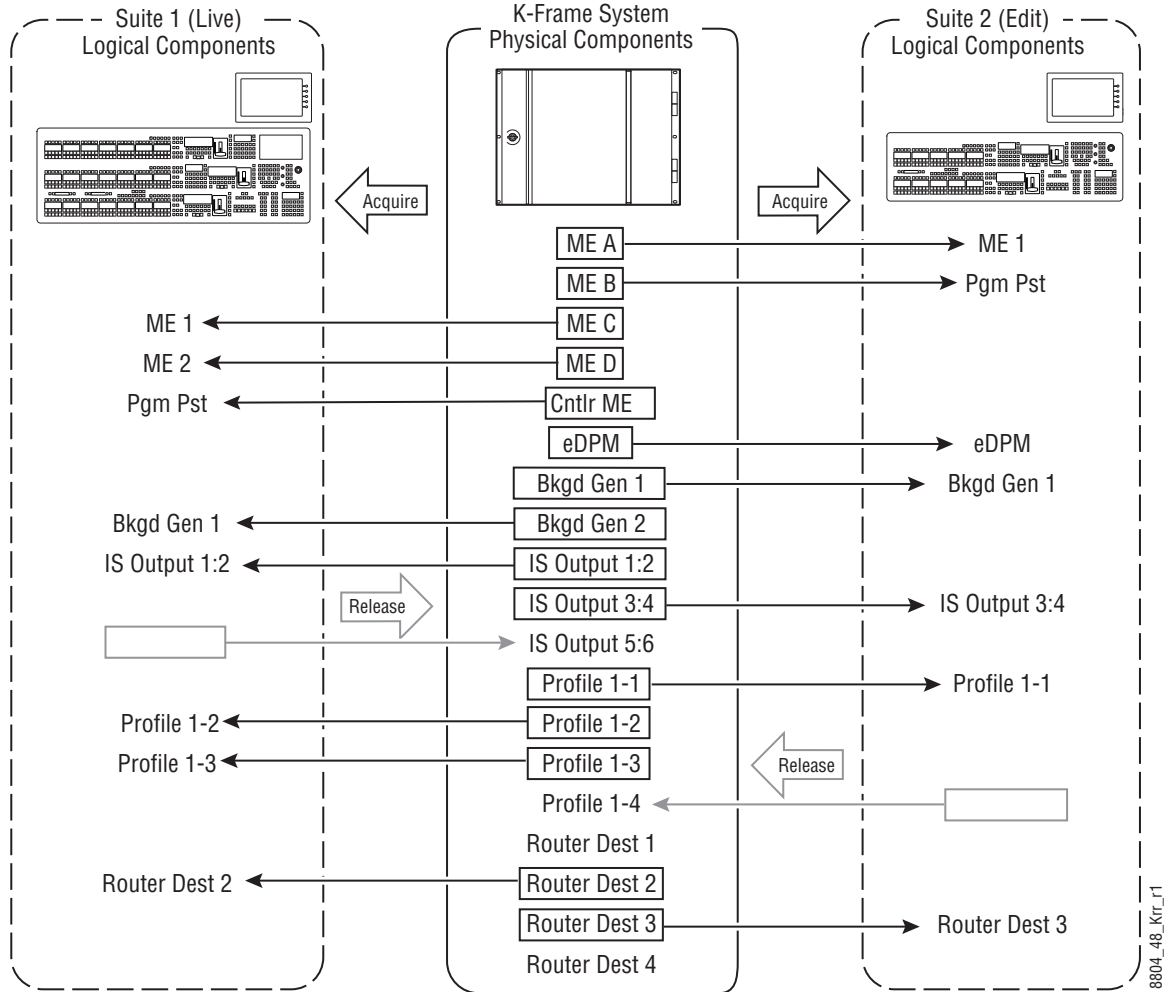
When a suite acquires a physical resource (like an ME) it uses that resource logically. For example, the ME B physical resource can be used as a logical PGM PST bank. Each of the two switchers created can therefore have their own PGM PST bank, and this allows effects built in one suite to operate correctly when loaded and run in the other suite. Effects will also run correctly in the same suite when run at a later time even if different physical resources have been acquired. Resources can be released by a suite. Once released, these resources can be acquired by the other suite. This permits dynamic reconfiguration of the system resources to meet varying operational requirements.

Suite

A suite is a grouping of one or more control surfaces (described below), and constitutes a coordinated working environment. Resources are attached to a suite rather than to individual control surfaces. All control surfaces in one suite have access to all resources assigned to that suite (collaborative sharing). Control surfaces in one suite are not able to control resources assigned to the other suite (independent sharing). Suites provide isolation from operators in the other suite.

Figure 122. Suites and Control Surfaces Example
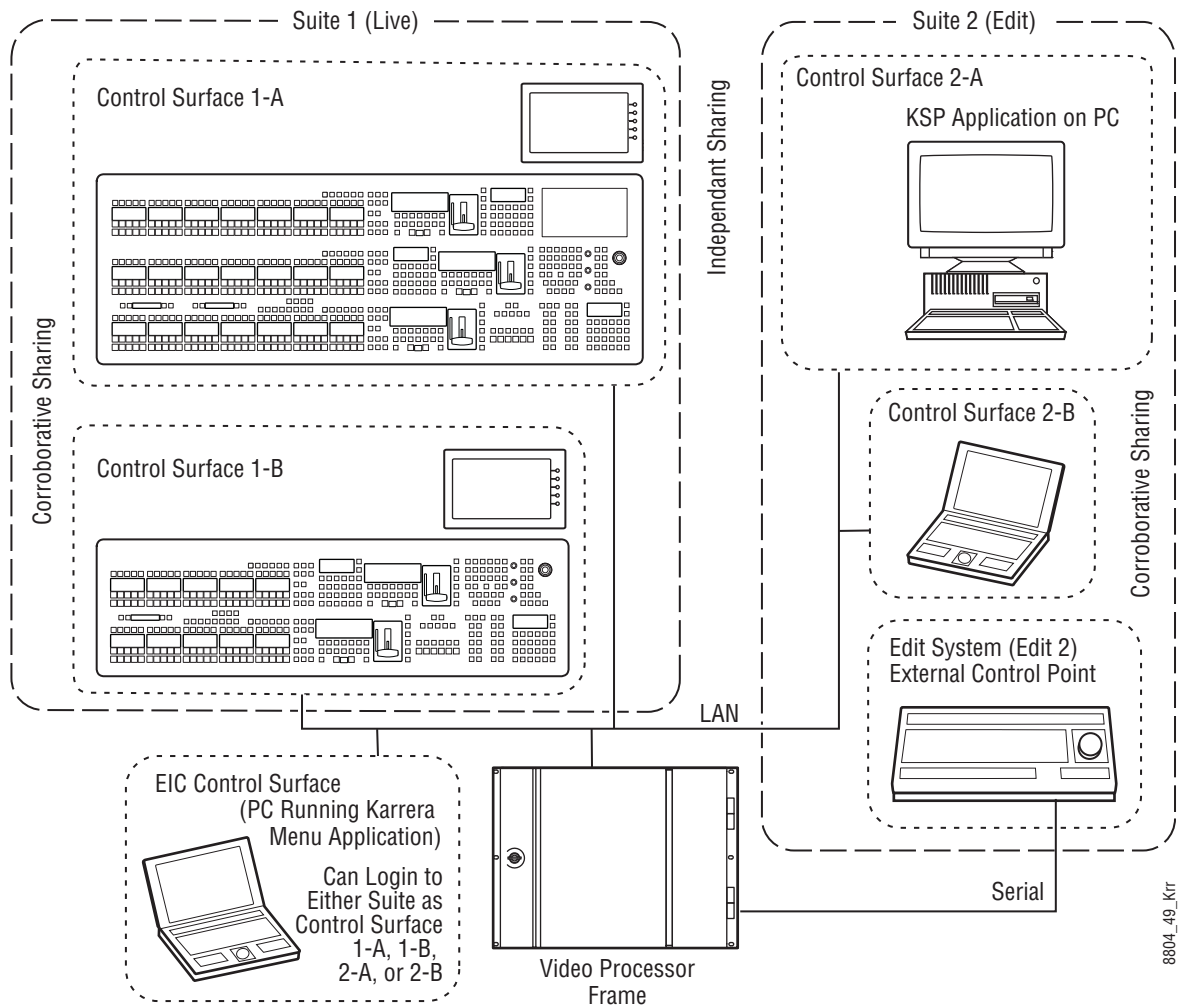
Control Surface

A control surface is generally a group of panels which interact and provide a single user a unified work surface. An example of this type of control surface is a Control Panel and Menu Panel of a 4-ME Karrera K-Frame system. These panels combine to form a Technical Director's (TD) control

surface. Other Control Panel modules or additional Menu Panels can be added to a control surface.

A control surface may also consist of a single item. For example, a Menu Panel (or a laptop computer running the GV Switcher menu application) can act as a separate control surface in a suite.

With Resource Sharing, up to two control surfaces can be created for each of the two suites. Each control surface can load its own Panel Prefs, so they can behave differently from one another. For example, different sources can be mapped to the source select buttons of the two control surfaces in the same suite, permitting quick access to different sources appropriate for each work location.

Control surfaces allow operators to collaborate on the same production while providing isolation between the operators themselves. For example, a smaller Control Panel set up in the studio for rehearsals will need access to the same effects as a larger Control Panel in the control room, but may need access to a specific set of sources. The smaller panel also requires a different button mapping. If a Menu Panel is associated with each Main panel, the DPOP operations of one panel should affect its menu, not the other one.

Logical Aux Buses

Each suite can be configured to have its own set of numbered Logical Aux buses. This means effects built for one suite will run properly in the other as long as the physical connections for the same numbered logical Aux buses are similar. For example, if Aux bus 5 in one suite is used to feed that studio's monitor wall, using Aux bus 5 in the other suite to also feed that studio's monitor wall will make effects compatible between the suites. Note that these Aux buses have different internal paths and different physical connections, but share the same logical Aux bus number.

Remote Aux Panels

Remote Aux Panels are set up as part of a particular suite. They then become another control surface of that suite, with functionality limited to controlling only the Aux buses assigned to that suite.

External Control Points

Some types of Karrera K-Frame system control originate from an external location, like an edit controller, or a GPI contact closure. The Resource Sharing feature accommodates these control points differently.

A separate editor port can be assigned to each suite. An edit controller connected to each port is considered part of only that suite, and controls only the resources currently acquired by that suite.

GPI inputs themselves are not assigned to individual suites. Each suite can be configured to respond to particular GPI commands, with the other suite ignoring these commands.

Setting Up Resource Sharing

Preparation

Your Karrera K-Frame system should first be fully operational. For new customers, an initial system configuration will be required. This basic setup will become the baseline for suite 1 operation. This includes having an Eng Setup configured with the sources defined, suite 1 outputs assigned, suite 1 tally contacts connected and Ethernet tally defined (if used), and any external interfaces (DDR, VTR.) that will be used in suite 1 should be installed and operational.

Default Suite Prefs should also be defined and saved under a file name identifying its use for suite 1. A default Panel Prefs file should also be defined and saved identifying it as a default setting for control surface A of suite 1. All these files will become the starting point from which changes will be made to make full use of Resource Sharing.

When the above is accomplished and basic system functionality is confirmed, you can then set up suite 2, and more easily troubleshoot any configuration issues that may arise.

If you will be adding new system components for use with Resource Sharing, all these components must be installed and configured on the network, using valid IP addresses. All control surfaces participating in Resource Sharing will also need to be in communication with the same Video Processor Frame. After the primary Main panel has been installed and its connectivity verified, one new panel should be installed and its connectivity also verified before you install any additional panels. This will make it easier to troubleshoot any IP addressing problems that may occur.

Prepare Worksheet

A worksheet is helpful for planning your multi-suite installation and configuration. The worksheet should list all Control Panels, Menu Panels, and PCs running the GV Switcher menu application, their IP addresses, and their suite and control surface associations. It should also list all Remote Aux Panels and which suite they belong to. Physical outputs should also be listed with their suite association and which Fixed output or Aux bus they are associated with, the main program and preview outs for the suite, etc.

Configure Control Surfaces

1. Touch **Eng Setup**, **Node Settings**, **Control Surfaces**, and enter the IP address and name the control surface you are adding. Assign it to **Suite 2 Surface A**. If you are using an additional Menu Panel or PC for that suite, you can change it to **Suite 2 Surface A** at this time as well.

Figure 123. Control Surface Menu with Suite 2 PC and Panel

2. Touch **Reset Panel**. This will re-establish system communications.

Note After reboot, the Eng Setup, Status menu will display the added control surface.

Define Default Multi-Suite Engineering Resources

Assign the following items as appropriate to suite 1 or suite 2:

- Outputs (Pgm, Switched Preview, Aux Buses, etc. accessed via **Eng Setup**, **Outputs**). An example showing reassignment of an output for suite 2 is shown in .

- GPI Outputs (**Eng Setup**, **Ports & Devices**, **GPI Outputs**).

- Editor Ports, if used, are permanently assigned for use by each suite (**Eng Setup**, **Ports & Devices**, **Editor Ports**).

- Switcher Tally (**Eng Setup**, **Switcher Tally**).

Note   Each suite has its own, logical set of outputs that are identically numbered.
Use the **Suite 1** and **Suite 2** buttons to assign them to a suite.

Figure 124. PGM Output Assigned to Suite 2
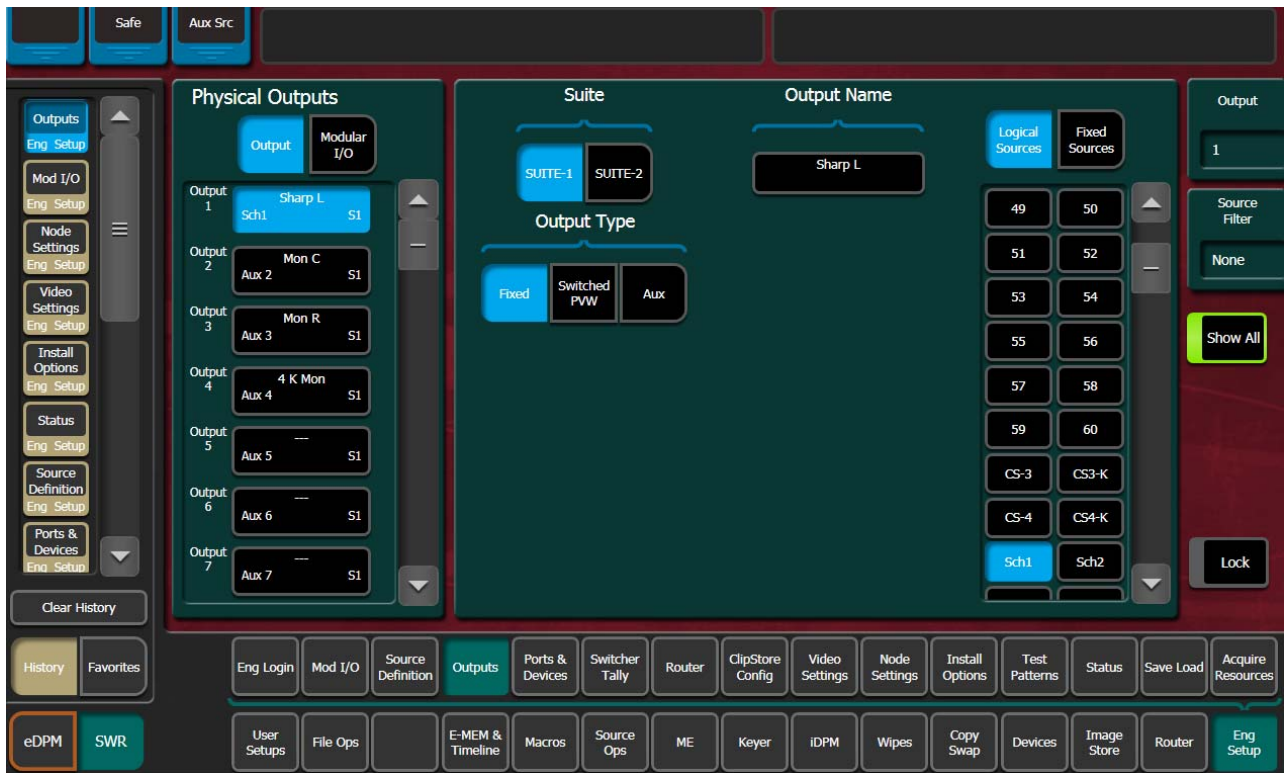
Divide Resources Between Suites

Note   Changes to Suites and Resource Sharing can have serious Karrera K-Frame system operation impacts that may not be completely obvious. For this reason, precautionary messages requiring a response are posted.

1. If necessary, go to **Eng Setup**, **Eng Login**, answer **Yes** to the warning message, and login as **Suite 1 CS A** using the **Change Identity** button.

Figure 125. Eng Login Menu
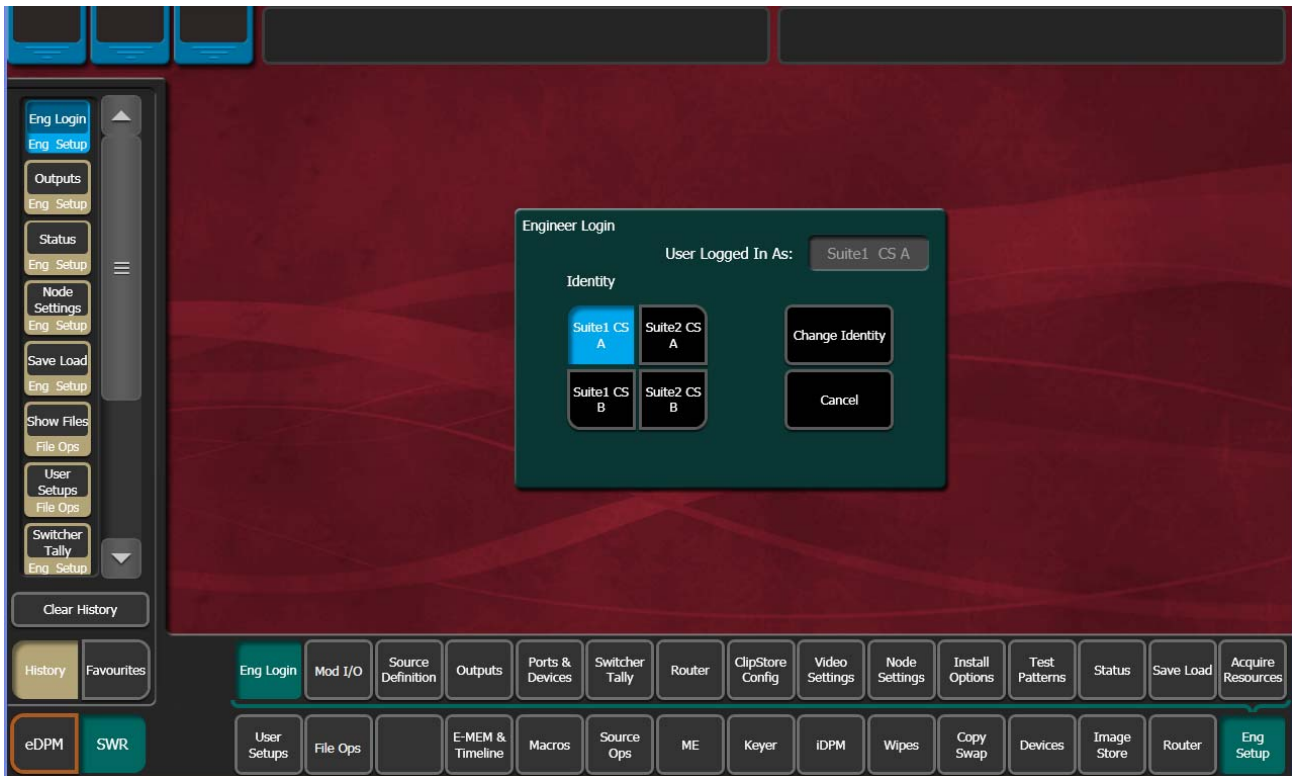
2. Touch **Eng Setup**, **Acquire Resources**, select **Yes** to the warning message, and release resources not needed in suite 1 that you wish to make available to suite 2. You can use the category tabs on the right to release all the resources in each category, and then reacquire only what is needed by suite 1.

Figure 126. Acquire Resources Menu, Suite 1
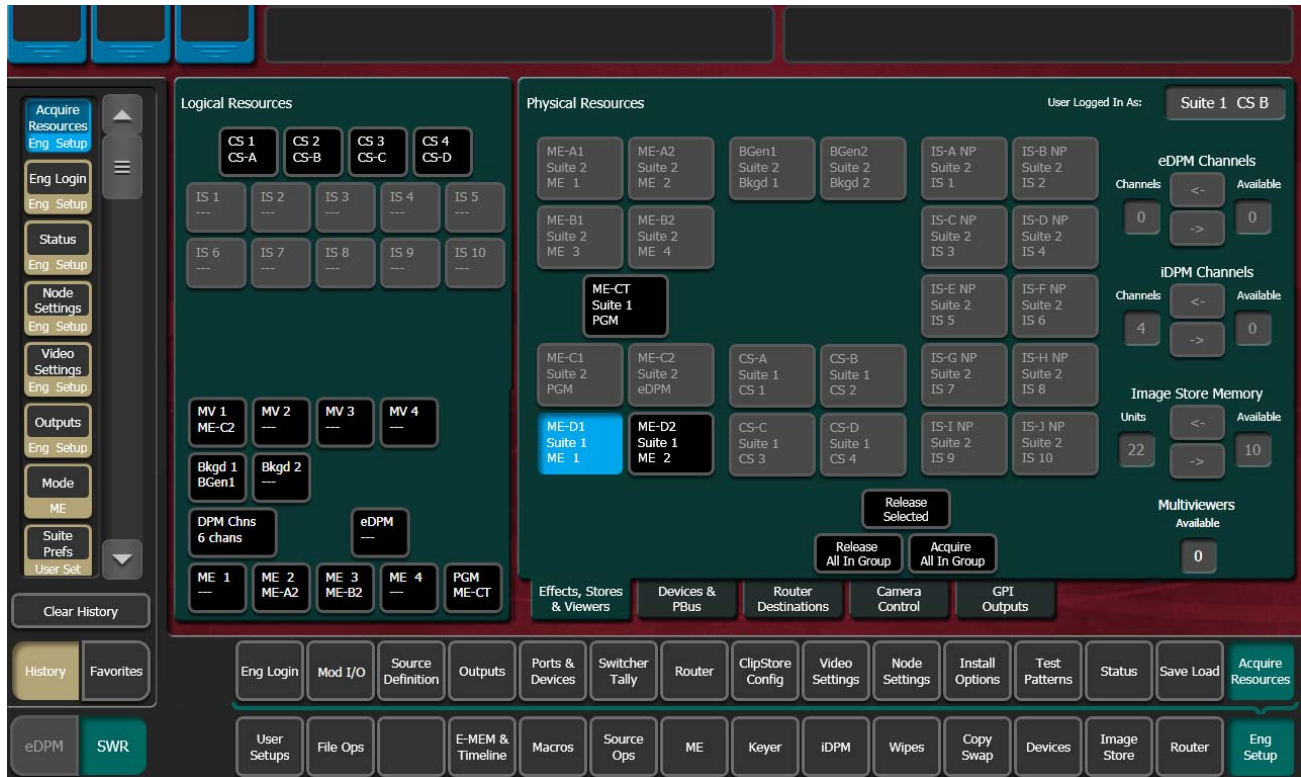
3. To acquire installed DPM options, move available iDPM Channels from Available to Channels using the arrow keys. Any number of licensed iDPM channels can be acquired to the selected resource, or acquired as eDPMs using the Acquire Resources menu.

4. Go to **Eng Setup**, **Eng Login**, and use the **Change Identity** button to login as **Suite 2 CS A**. Then touch **Eng Setup**, **Acquire Resources** and acquire the resources needed in suite 2 that have been freed in suite 1.

Figure 127. Acquire Resources Menu, Suite 2
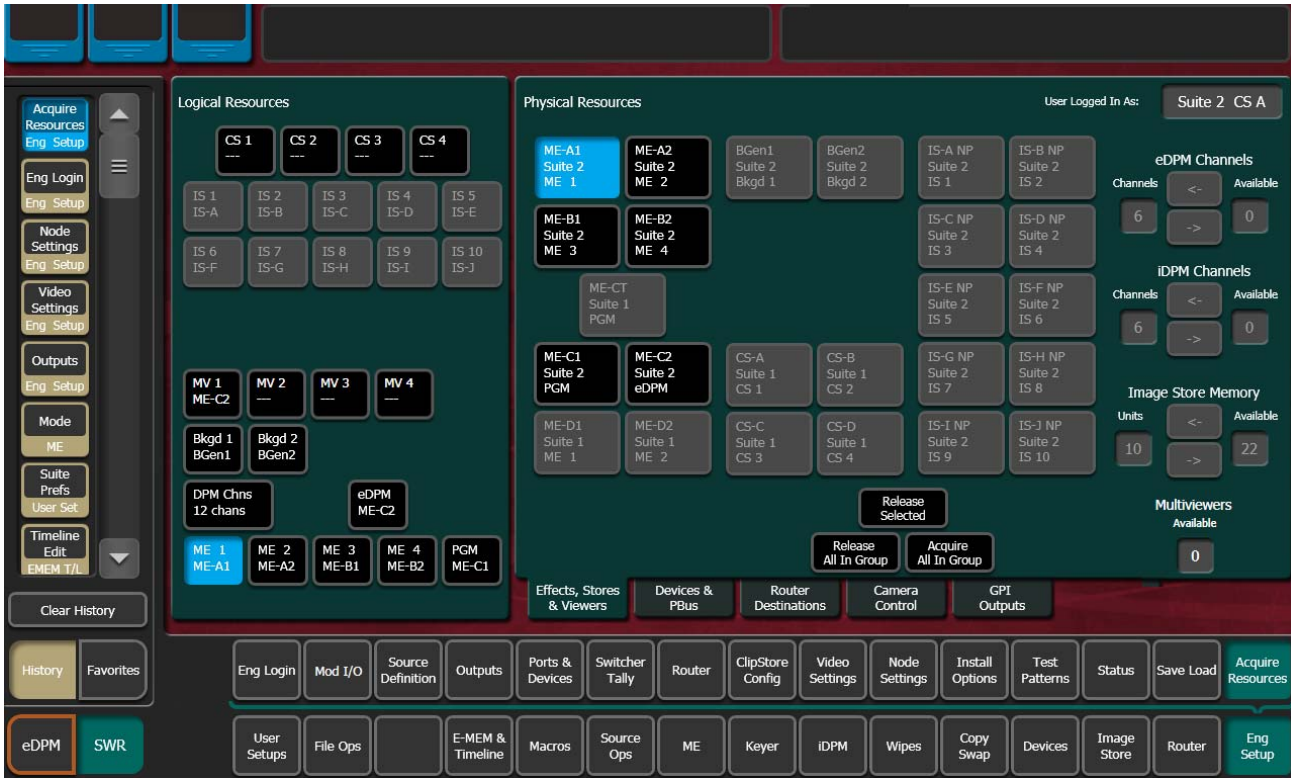
Save Default Multi-Suite Engineering Setups File

Save this Eng Setup configuration to disk, naming the file to identify it as the default multi- suite engineering configuration for the facility.

Define and Save Default Suite Prefs

Define default Suite Preferences as appropriate for suite 1 and suite 2. This is accomplished by logging in to each suite individually, accessing the various configuration menus, setting the available parameters, and then saving a Suite Prefs file for each suite while logged into that suite.

Define and Save Default Panel Prefs

Similar to Suite Prefs above, Panel Prefs files can be created and saved for each control surface, if you wish. For engineering troubleshooting purposes, you may be able to define and save a single Panel Prefs file for use on any control surface.

To use different Panel Prefs for different control surfaces, create and save each Panel Prefs file while logged into that suite and control surface. This is necessary for button mappings on each suite's control panel.

Delegate Stripes to MEs In Each Suite

You can now delegate the Control Panel Stripes to control the desired MEs in each suite using the standard procedure:

1. On a panel EMEM area, press **Menu**, and select **Stripe Deleg** (press **8**).

Figure 128. Accessing the Stripe Deleg Menu s
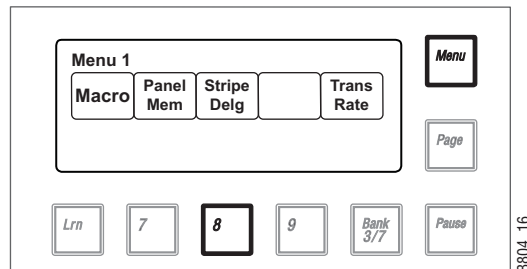
2. The ME Stripe Delegation menu appears. Press the buttons below the MEs indicated to allocate the top to bottom panel stripe to the indicated ME.

Figure 129. Delegating Suite Stripes to MEs
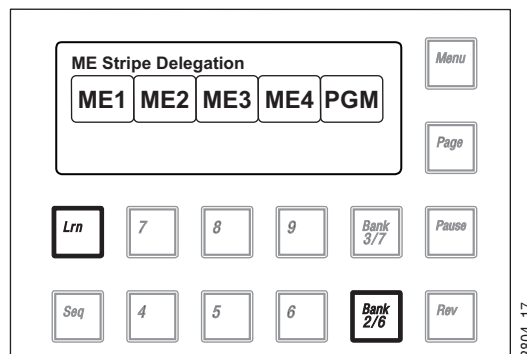
Multi Suite Independent Operation

Once configured with two suites, operators can work on each control surface completely independently from one another. Coordination will be required, however, to ensure the resources each operator needs are shared as necessary.

Operators should also test any EMEMs, RMEMs, or other items created or saved previously to be sure they work properly with their currently acquired resources.

Engineering Login

A Karrera K-Frame system can be configured as two suites, with each suite having up to two control surfaces. The Eng Login menu is used to choose which suite and control surface the GV Switcher menu will interact with and control.

To access a different Suite or Control Surface (CS), go to the **Eng Setup**, **Eng Login** menu and touch the **Change Identity** button. The **Suite** and **CS** buttons will then be available for selection. After selecting a different button, a warning message appears. Select **Yes** to make the change, or **No** to cancel the change and retain the existing menu identity.

Note   Changing a menu's identity in this way is temporary. Reloading the menu application or rebooting the Menu Panel will restore the Suite and Control Surface identity defined in the Node Settings, Control Surfaces menu.

Figure 130. Eng Login Menu
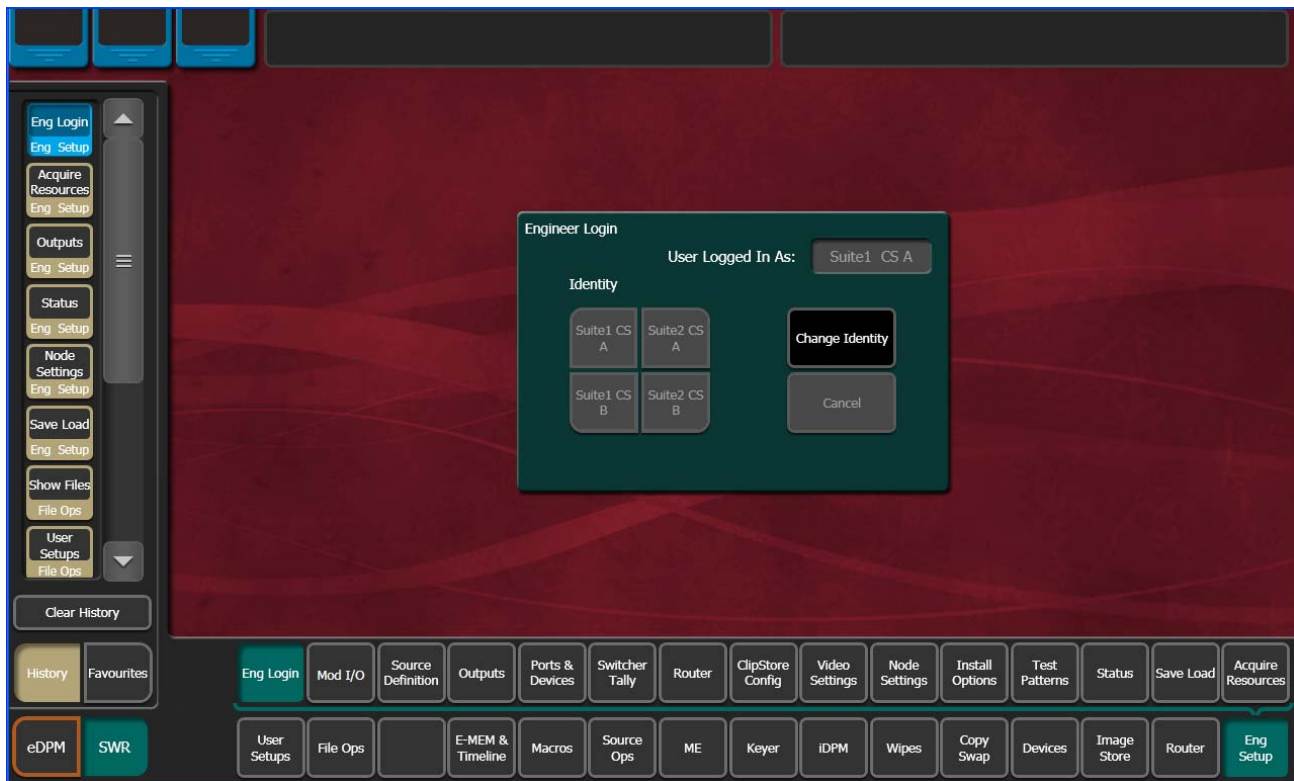
Karrera K-Frame system resources can be allocated to each suite. By default all system resources are allocated to suite 1. See *Multiple Suite Resource Sharing on page 177* for more information.

Note   Changing a menu's identity in this way is temporary. Reloading the menu application or rebooting the Menu Panel will restore the Suite and Control Surface identity defined in the Node Settings Control Surfaces menu.

SetDef and MatchDef

The SetDef and MatchDef options permit line rate signal format conversion of selected Karrera K-Frame system outputs and inputs. SetDef output and MatchDef input conversion is licensed in groups of four. Connectors are active when the associated Modular I/O board is present and the license is enabled. Selecting a Modular I/O button, labeled M1, M2, etc., displays controls for either input or output conversion in the right-hand pane.

Figure 131. SetDef MatchDef Menu
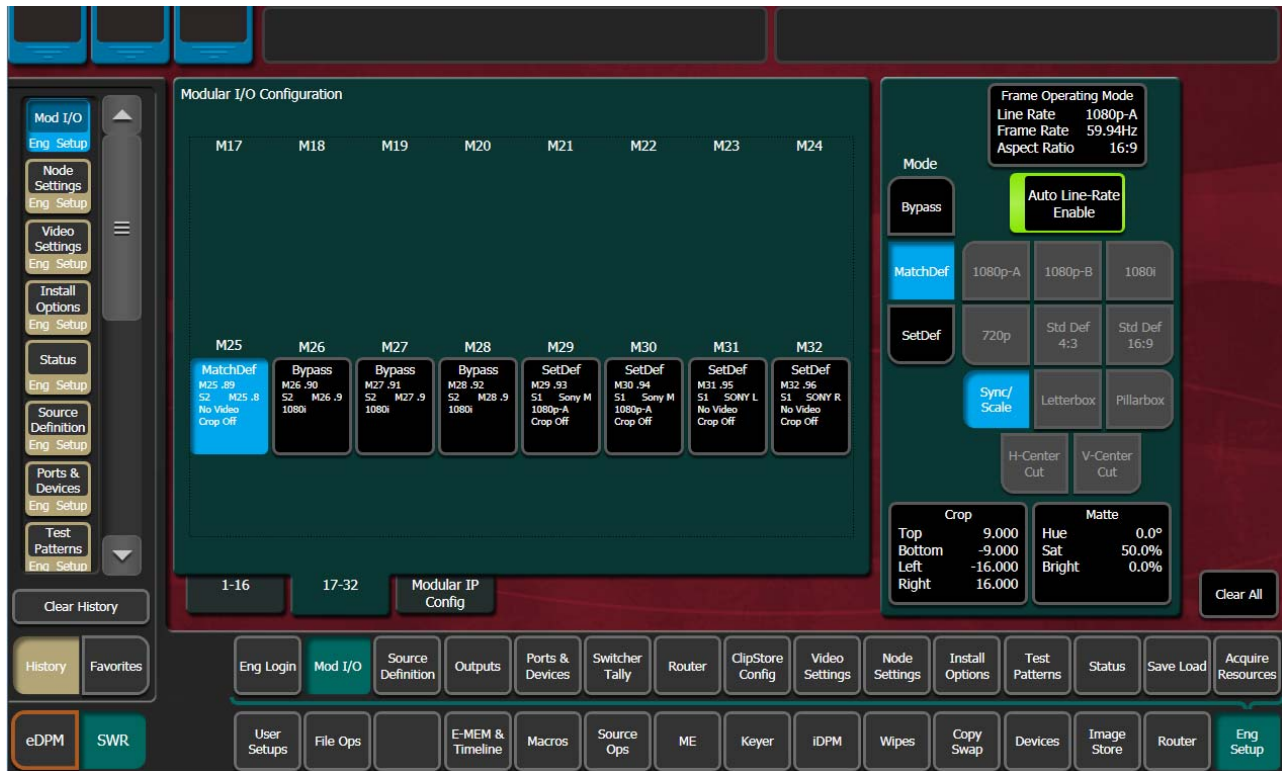
SetDef Output Conversion

When SetDef Mode is selected, the Modular I/O buttons report the Mode, Engineering Name for the input, Suite 1 or 2 (S1 or S2), Output Name, output format and crop status (Off/On) for the output of the selected pair.

The currently operating video standard is shown in the **Frame Operating Mode** status display on the upper right portion of the menu.

The **SetDef Timing** button, when selected, displays Horizontal and Vertical Offset data pads, allowing changes to the timing of that output relative the the system video reference.

The conversion format for the selected output is chosen from the labeled buttons in the right pane (**1080p-A**, **1080p-B**, **1080i**, **720p**, **Std Def 4:3**, **Std Def 16:9**). This format is applied to both output pairs.

Controls for Scale, Letterbox, Pillarbox, H-Center Cut and V-Center Cut are displayed, depending on the format selected.

> **Sync/Scale** - Synchronizes the image then scales it to fill the full raster of the screen. If mismatched formats are involved, the image may distort and appear wider or narrower that its original state.

> **Letterbox** - Used to convert 16:9 to 4:3 by adding bars above and below the image.

> **Pillarbox** - Used to convert 4:3 to 16:9 by adding bars to the left and right sides of the image.

> **H-Center Cut** - Fills the screen with the center portion of the image, cutting off some of the left and right sides.

> **V-Center Cut** - Fills the screen with the center portion of the image, cutting off some of the top and bottom.

The **Crop** button, when selected, displays Top, Bottom, Left, and Right crop data pads. Crop values can be entered and activated by touching the **Crop Enable** button.

When Crop, Letterbox, or Pillarbox is active, the **Matte** button can be selected, which displays Hue, Saturation, and Brightness data pads. The color values entered are applied to the non-image portion of the raster.

MatchDef Input Conversion

When MatchDef Mode is selected, the Modular I/O buttons report the current Mode, Engineering Name of the input, Suite 1 or 2 (S1 or S2),

Output Name, input format and crop status for the input of the selected pair.

Figure 132. SetDef MatchDef Menu
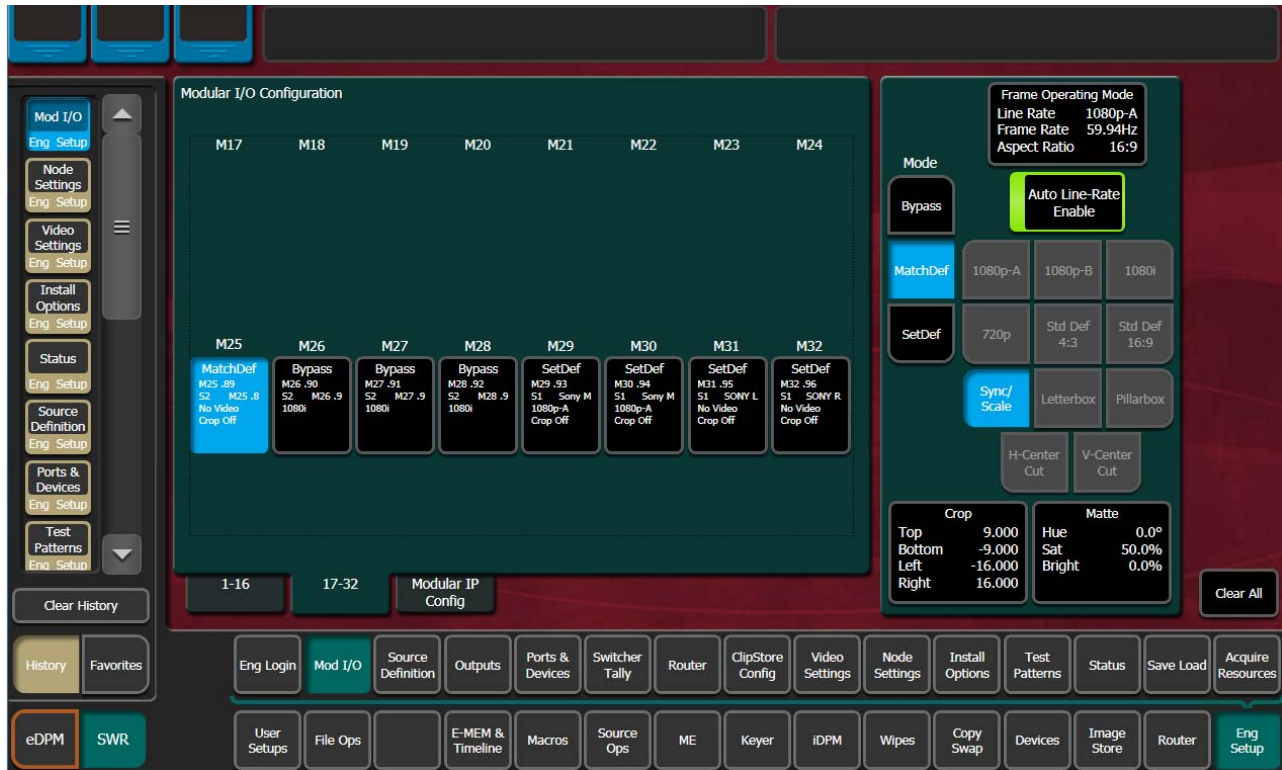
The currently operating video standard is shown in the **Frame Operating Mode** status display on the upper right portion of the menu.

Auto Line-Rate Enable – When on, the system detects the input video format and automatically chooses the appropriate line rate for the selected input. One frame of video is required for detection. If the incoming video signal format changes, one incorrect frame of video will be displayed. When Auto Line-Rate Enable is on, the Line Rate selection buttons below are inactive.

Note If the incoming source is has a noisy signal, choosing the correct frame rate manually may provide better performance.

When Auto-Line Rate Enable is off, the conversion format for the currently selected input can be chosen from the Line Rate selection buttons in the right pane (**1080p-A**, **1080p-B**, **1080i**, **720p**, **Std Def 4:3**, **Std Def 16:9**).

Controls for Scale/Sync, Letterbox, Pillarbox, H-Center Cut and V-Center Cut are displayed, depending on the format selected. These controls are identical to those used for SetDef. The **Sync/Scale** button behaves the same as the SetDef **Scale** button, but also employs frame sync circuitry.

Crop and Matte controls are also available, which operate the same as for SetDef (see).

Video Settings

Figure 133. Video Settings Menu
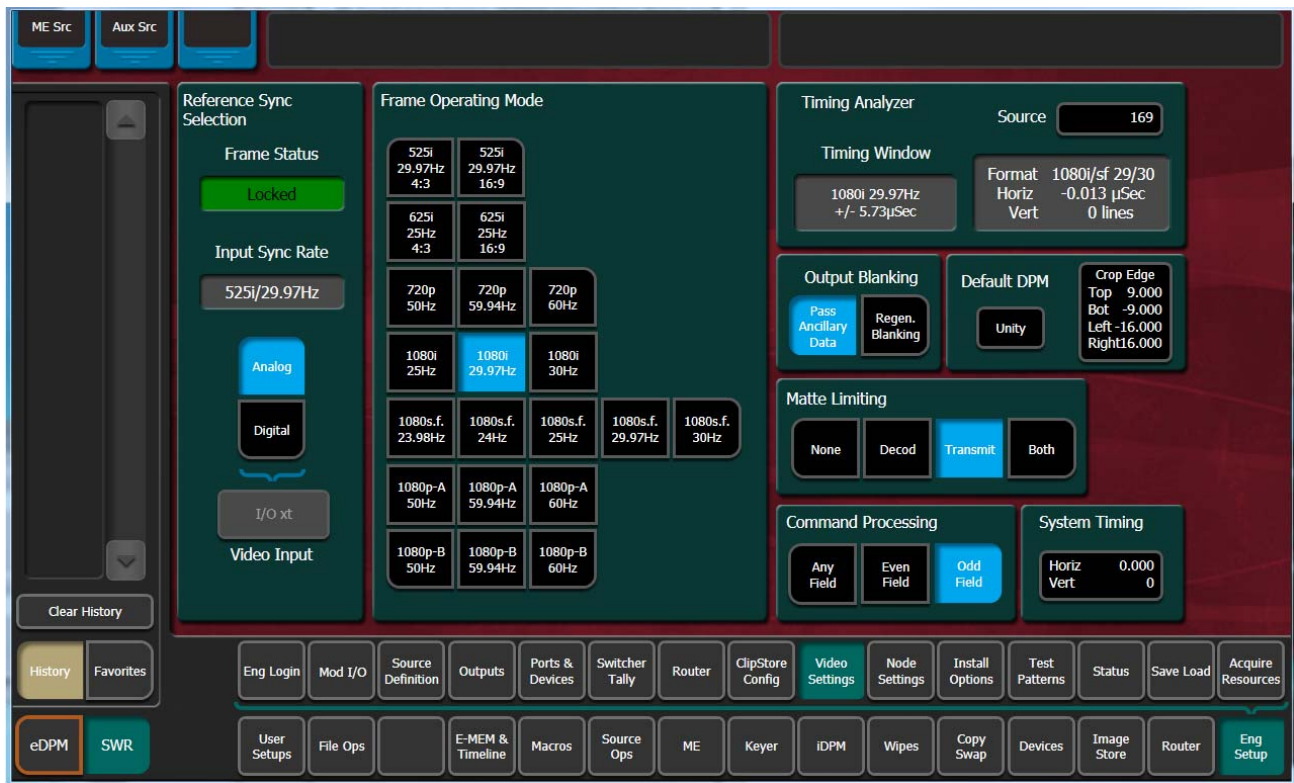
The Video Settings menu reports the current system sync reference and status, allows selection of the Frame Operating Mode, and provides other system functions.

Reference Sync Selection

Choosing Analog selects the Analog Reference connector on the Video Processor Frame for system reference.

Choosing Digital allows selection of a video input source to for use as system reference. This should only be used temporarily, for troubleshooting or initial system test, because an interruption of that input signal can cause Karrera K-Frame system problems.

Frame Status – Reports the current sync status of the frame (for example, Locked).

Input Sync Rate – Reports the current input sync reference format.

Frame Operating Mode

The selected Frame Operating Mode determines the K-Frame's video input and output formats (excluding MatchDef and SetDef) and the internal processing used for the video.

About PSF Video, Supported Live Mode, and Film Mode

Progressive Segmented Frame (psf) video splits each progressive video frame raster into even and odd lines, creating two fields for each frame that can be sent through video equipment using the same transport protocol as an interlaced image. Unlike interlaced video, the two fields making up that progressive frame represent the same instant in time. When the psf image is to be displayed, the monitor puts the progressive image back together for display at the same instant on the screen.

The fact that psf video is actually a progressive image that has been broken up means that a switcher needs to do a number of things differently than when processing an interlaced image. This includes making sure cuts occur on frame boundaries (not between the even and odd fields) and DPM filtering is done in an appropriate manner. In addition to selecting and combining incoming video that contains motion, a switcher can also internally generate movement in the final video (like wipes and DPM moves). When psf video is displayed in a non-film environment, wipes, DPM moves, and other internally generated motion can look jerky at frame rates lower than 30 times per second. The K-Frame uses a "Live Mode" type of psf processing, where motion generated in the switcher is updated at the field rate. This makes that internally generated motion look smoother.

An alternative "Film Mode" of processing, which the K-Frame does not support, is intended for use when the final output is only film. In this mode all of the motion in the image only changes on frame boundaries, and, in 24psf video for example, all motion is only updated 24 times per second. If the psf video has no switcher generated motion, Live Mode and Film Mode processing is exactly alike.

When the K-Frame is set to a psf Frame Operating Mode, it uses "Live Mode" processing for smother internally generated motion, while retaining some "Film Look" aesthetics.

Other Settings

Matte Limiting

Matte Limiting determines how the matte generators produce colors. Limits can be imposed to prevent downstream signal problems.

None – In this mode, no limiting is imposed. Analog signal paths and monitors may behave poorly to some colors produced in this mode.

Decodable – This limiter mode produces colors that decode to valid RGB components. Not all valid RGB colors can be transmitted in NTSC, however. Saturated colors near yellow and cyan over modulate an NTSC transmitter.

Transmittable – This limiter mode prevents over modulating an NTSC transmitter, but can produce colors which can not be decoded into RGB. For example, a 0% luminance blue produces negative green and red components.

Both – This limiter mode is similar to **Decodable**, except that maximum levels are reduced slightly around yellow and cyan to prevent over modulating an NTSC transmitter.

Command Processing

These controls determine when commands (like source selections or the initiation of mixes or wipes) will be enacted by the Karrera K-Frame system (also known as field dominance). These controls can be useful for consistent match frame editing.

Any Field – The action will occur at the start of the next field, either even or odd. Use this setting if you are not going to edit the video output and want the fastest response.

Even Field – The action will always occur at the start of the next even field. This is probably only appropriate if your edit controller is set to edit in the middle of a frame.

Odd Field – The action will always occur at the start of the next odd field. This is the normal setting for almost all conditions, especially when the video output will be edited, and is compatible with most video editing systems that use the frame boundary for edits. This setting is essential, however, when controlling external devices like DDRs that execute commands only at the beginning of the frame.

Output Blanking

Production switchers normally regenerate a clean blanking interval. When the switcher must pass ancillary information such as embedded audio, this

blanking regeneration can be disabled. This following settings apply to the output blanking of all the MEs.

Pass Bus A's Ancillary Data – Passes the ancillary data from the A bus to the ME Program output during the vertical interval.

Regenerate Blanking – Regenerates blanking during the vertical and horizontal intervals.

Default iDPM Crop

Default crops are intended to define the extent of a standard image for a facility. The Default iDPM Crop controls adjust cropping when individual iDPM channel crop is turned off. Individual iDPM cropping is used to adjust for variations in individual sources.

SMPTE RP-187 establishes recommended practices for standard image sizes (production aperture, clean aperture). If a facility conforms to these practices, the Karrera K-Frame system default values will be correct and no adjustment should be necessary. Changing the default crops is not recommended, unless absolutely necessary.

Unfortunately, not all video images have the transition to blanking (black) in exactly the same place. Normally, these blanking variations are hidden at the extreme edges of the picture and are not visible. If an image smaller than expected is transformed, however, black lines can occur at its edges, which are now visible because they have moved inside the visible picture area. If it is necessary to compensate for variations in your facility's nominal blanking, adjust the default crops so they just remove black edges on the facility's normal image.

The 4:3 and 16:9 aspect ratios have different default crops.

Crop Edge – Allows setting alternative cropping for iDPM processing.

Unity – Resets iDPM cropping to factory default.

Timing Analyzer

The Video Settings menu also has a timing analyzer and system timing adjustments. See *Timing Analyzer on page 89* for more information.

Node Settings

The Node Settings menus are used to establish communications among various Karrera K-Frame system components. These important settings are not included in Eng Setup configuration files, to prevent accidental system communication failures if Eng Setup files are loaded incorrectly.

Frame Suite Nodes & ID Menu

Figure 134. Frame Suite Nodes & ID Menu
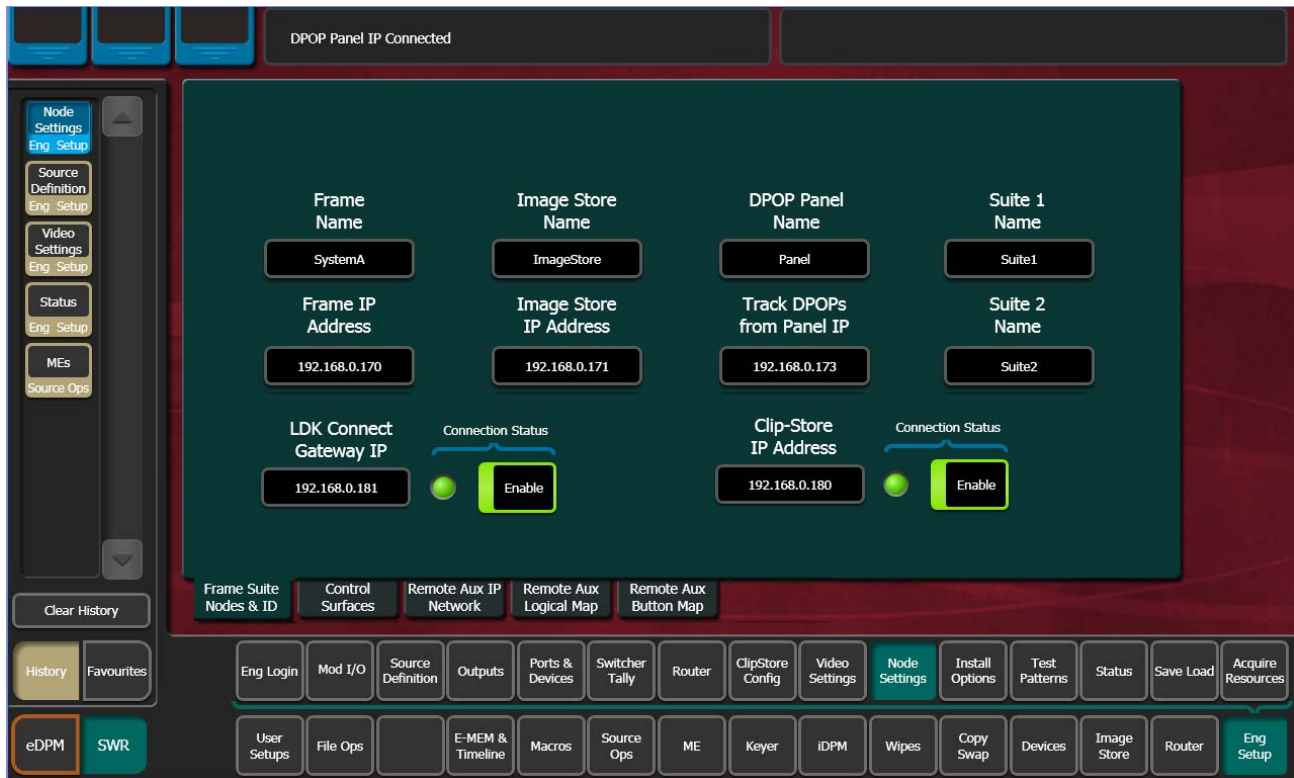
The Frame Suite Nodes & ID menu has fields to enter the IP addresses the GV Switcher menu application will use to communicate with the Video Processor Frame, Image Store, and the Control Panel whose DPOPs will affect this application's menu displays. A menu restart is required to make IP address changes take effect.

When connected, the currently defined names of these devices are displayed. These names can be edited from this menu, and will be sent to the device as soon as the new name has been entered. Subsequent connections to this device from this or another menu will show that edited name.

Note Do not change device or suite names unnecessarily, as this could cause confusion to other Karrera K-Frame system users.

Mapping Logical Remote Aux Panels

The Remote Aux Logical Map menu is used to assign Aux Buses for control by that Remote Aux Panel. Single Aux Panels can control one Aux Bus, while Multi-Delegation panels can have several Aux Buses be assigned to delegation buttons on that panel.

Figure 135. Remote Aux Logical Map Menu
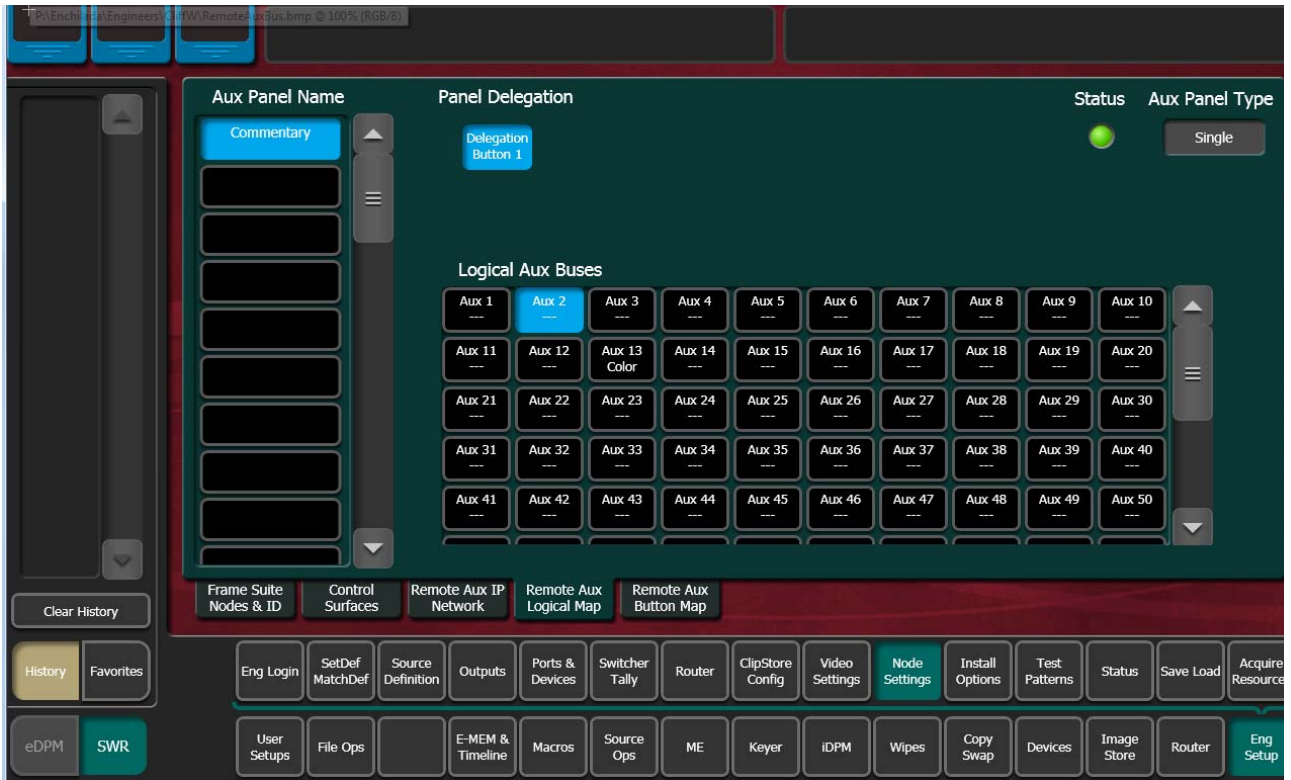
To Assign Aux Buses on a Multi-Destination Panel:

1. Highlight a Panel Delegation button at the top of the screen.

2. Touch one of the Logical Aux Buses buttons on the lower screen. That Aux Bus will then be selected when that Remote Aux Delegation button is pressed on that panel.

Remote Aux Button Mapping

The Remote Aux Button Map menu is used to configure sources to the Remote Aux Panel source select buttons.

To Map Remote Aux Panel Buttons:

1. Highlight a source select button in the central scrolling list.

2. Touch a source button on the scrolling list on the right. It will be assigned to that Remote Aux Panel button.

- The **Source Number** data pad and scroll knob on the upper right can be used to quickly select a Karrera K-Frame source by its logical ID number

- The **Lock** button at the bottom prevents the source list from scrolling when choosing different Remote Aux buttons.

About the Status Menu

Figure 136. Status Menu
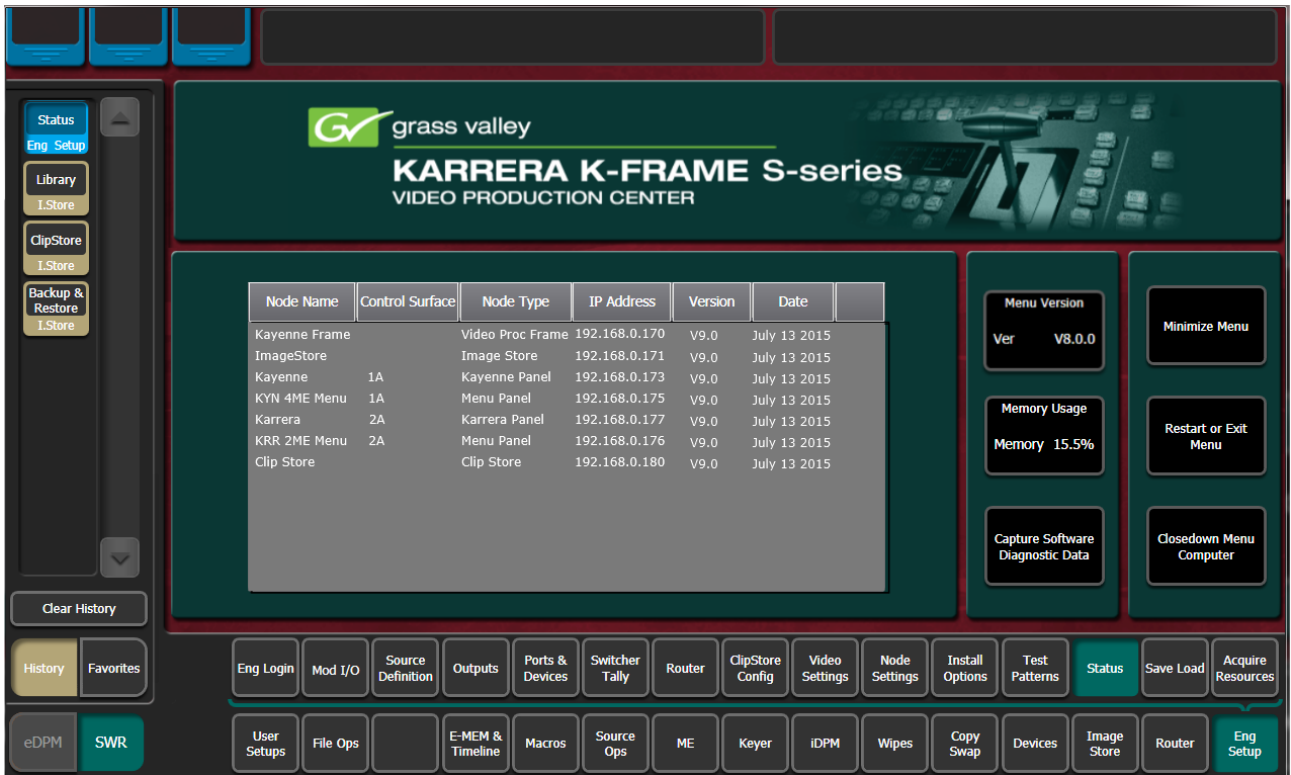
The Status menu reports the currently connected Karrera K-Frame devices by their name, control surface, type, IP address, software version, and date in the central window.

Note   The Control Surface of a Menu Panel indicated on this menu is defined by the Node Settings, Control Surfaces menu settings. It does NOT report the Control Surface that Menu Panel is currently logged in as.

Menu Version – Reports the version of the GV Switcher menu application.

Memory Usage – Reports the amount E-MEM and other keyframe memory currently in use. If usage reaches 100%, no new keyframes will be able to be added to any effect. Deleting keyframes from any effect will regain space.

Capture Software Diagnostic Data – This button provides a convenient method to save the current configuration files, E-MEM, Macro, and also any frame software diagnostics data files that may exist (see Diagnostic Data Collection below). If you need to contact Grass Valley for assistance about any software problems, the engineering team will want these files for efficient troubleshooting. See *Section 7-Maintenance* for more information.

The **Minimize Menu** button minimizes the menu application, revealing the Windows desktop. The **Exit Menu** and **Closedown Menu Computer** buttons perform those functions.

Acquire Resources

The Acquire Resources menus are used to acquire and release Karrera K-Frame system resources when multiple suites are being used. Different menus are used for different resource types.

General Procedure to Acquire Resources

1. Login to the suite.

2. Select the button of the Logical Device you wish to acquire a resource for. These are the left most buttons on the scrolling list on the left. The menu will automatically display the menu for that resource type on the right.

3. Touch the button of the physical resource you wish to acquire on the right side of the screen.

If no resources are available, you may need to Login to the other suite, release the resource(s) you need, then return to the original suite and acquire them.

Acquire Multiviewer Resources with a Standard Frame

Beginning with v7.0, any available unused ME/VPEs (Video Processing Engines) can be allocated as Multiviewer outputs to external monitors provided a physical ME resource is present in the Frame and the Multiviewer is licensed. Up to four external multiviewer feeds are possible and can be acquired by one suite or split between suites, when licensed. For the Standard K-Frame, an additional dedicated Multiviewer resource (that does not use an available ME resource) named MX-MV is provided for use in either Suite 1 or Suite 2.

Prerequisite: The MX-MV Multiviewer physical resource is not allocated to another suite. If configuring additional Multiviewer outputs, unallocated VPE physical resources are available.

1. Select the **Eng Setup**, **Acquire Resources** menu buttons.

Figure 137. Eng Setup, Acquire Multiviewer, Standard Frame—Six-Keyer System
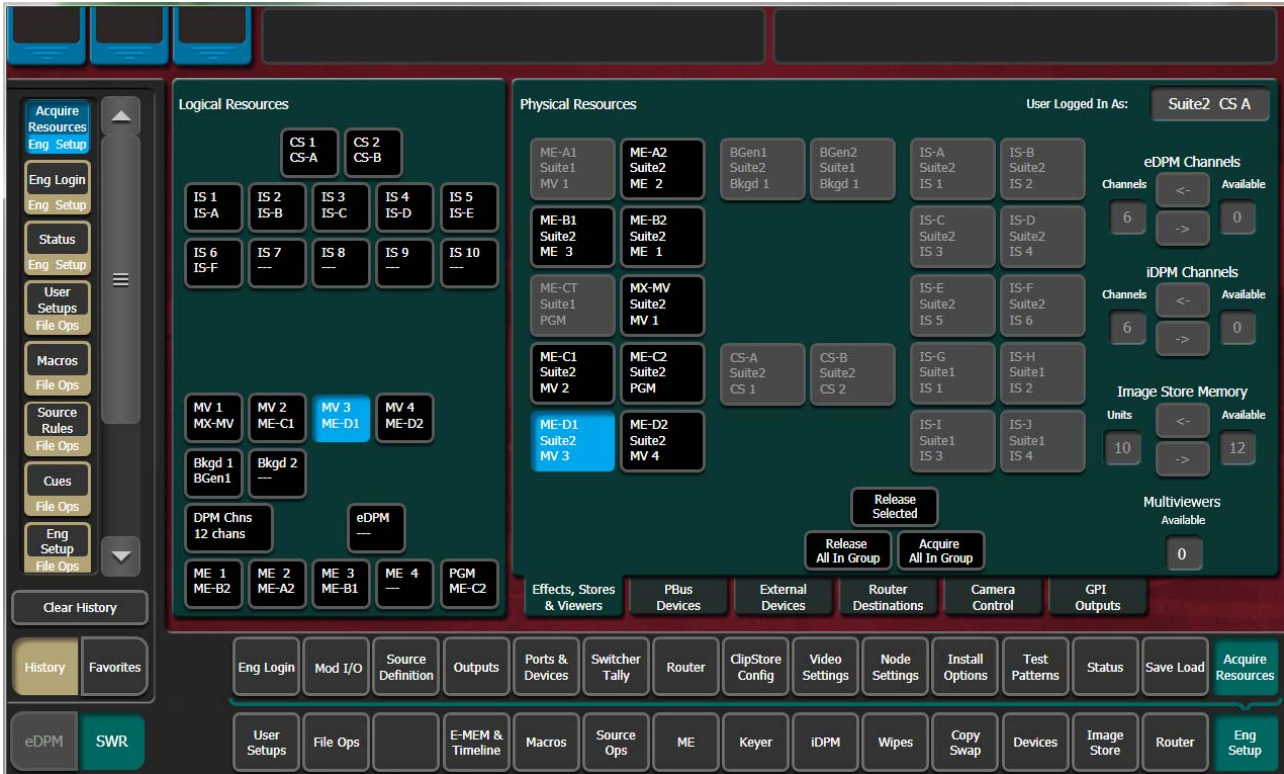
2. Select an **MV** (**MV 1—MV 4**) button from the Logical Resources pane.

3. Select an unallocated VPE resource in the Physical Resources pane to assign the Multiviewer.

Result: the physical resource is allocated for Multiviewer in the current suite.

The number of licensed Multiviewers is displayed in the lower right of the Acquire Resources menu; zero is displayed when all licensed Multiviewers are allocated.

If adding multiviewer resources in another suite:

4. Select the **Eng Login** menu category button.

5. Select **Change Identity**.

6. Select another suite identity.

7. Select **Yes** when prompted to continue.

8. Select the **Acquire Resources** menu button.

9. Select an MV (**MV1**-**MV4**) button in the Logical Resources pane.

10. Select an unallocated VPE/ME resource in the Physical Resources pane.

Configure outputs assigned to external monitors:

11. Select the **Eng Setup**, **Outputs** menu category button.

12. Select an output assigned to an external monitor in the Physical Outputs pane.

13. With the **Fixed Sources** button selected (top right of menu) using the scroll bar or filter for the scrolling sources list, find and select one of the four fixed multiviewer sources, for example **Mview 4**.

Result: The currently selected Multiviewer layout is visible on the external monitor.

Acquire Multiviewer Resources with a Compact Frame

Beginning with v7.0, any available unused ME/VPEs (Video Processing Engines) can be allocated as Multiviewer outputs to external monitors provided a physical ME resource is present in the Frame and the Multiviewer is licensed. Up to four external multiviewer feeds are possible and can be acquired by one suite or split between suites, when licensed.

Note   The MX-MV Multiviewer, a dedicated physical resource, is available on the Standard Frame only so it will be shown as NP (Not Present) in the Eng Setup, Acquire Resources menu for the Compact K-Frame. It cannot be acquired but shows created with the Compact K-Frame can be used on the Standard K-Frame where the MX-MV resource can be acquired.

Prerequisite: Unallocated VPE/ME physical resources are available.

1. Select the **Eng Setup**, **Acquire Resources** menu buttons.

Figure 138. Eng Setup, Acquire Multiviewer Menu, Compact Frame—Six-Keyer System
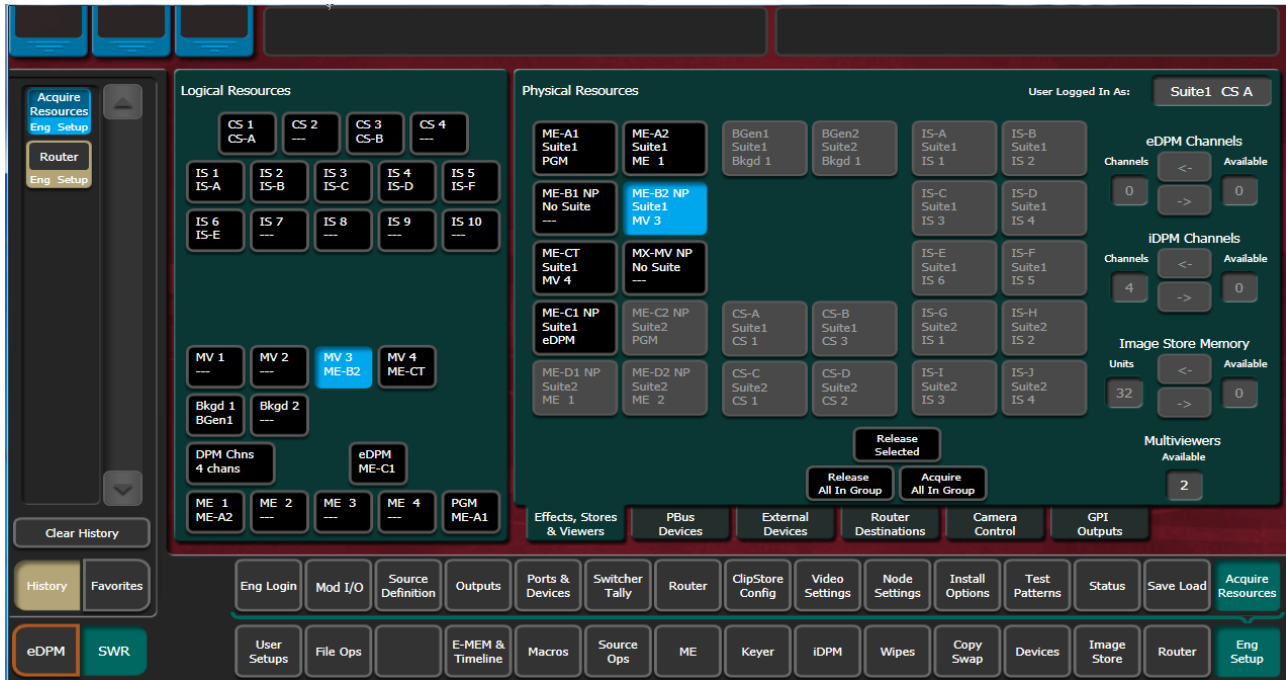
2. Select an MV (**MV 1**-**MV 4**) button in the Logical Resources pane.

3. Select an unallocated VPE resource in the Physical Resources pane to assign the Multiviewer.

Result: The VPE physical resource is allocated to Multiviewer in the current suite.

4. Select the **Outputs** menu category button.

5. Select the output assigned to an external monitor in the Physical Outputs pane.

6. With the **Fixed Sources** button selected (top right of menu) using the scroll bar or filter for the scrolling sources list, find and select one of the four fixed multiviewer sources, for example **Mview 4**.

Result: The currently selected Multiviewer layout is available to an external monitor.

If adding a second multiviewer display:

7. Select the **Eng Login** menu category button.

8. Select **Change Identity**.

9. Select another suite identity.

10. Select **Yes** when prompted to continue.

11. Allocate a second VPE physical resource in the Eng Setup, Acquire Resources menu as previously described.

Acquire Multiviewer Resources with a Compact S-series (Four-Keyer) Frame

There are a pair of Multiviewers that can be licensed on the S-series Controller with pre-configured layouts and On-Air/Preview tally. Up to two external multiviewer feeds are possible and can be acquired by one suite or split between suites, when licensed.

1. Select the **Eng Setup**, **Acquire Resources** menu buttons.

Figure 139. Eng Setup, Acquire Multiviewer Menu—Compact Frame
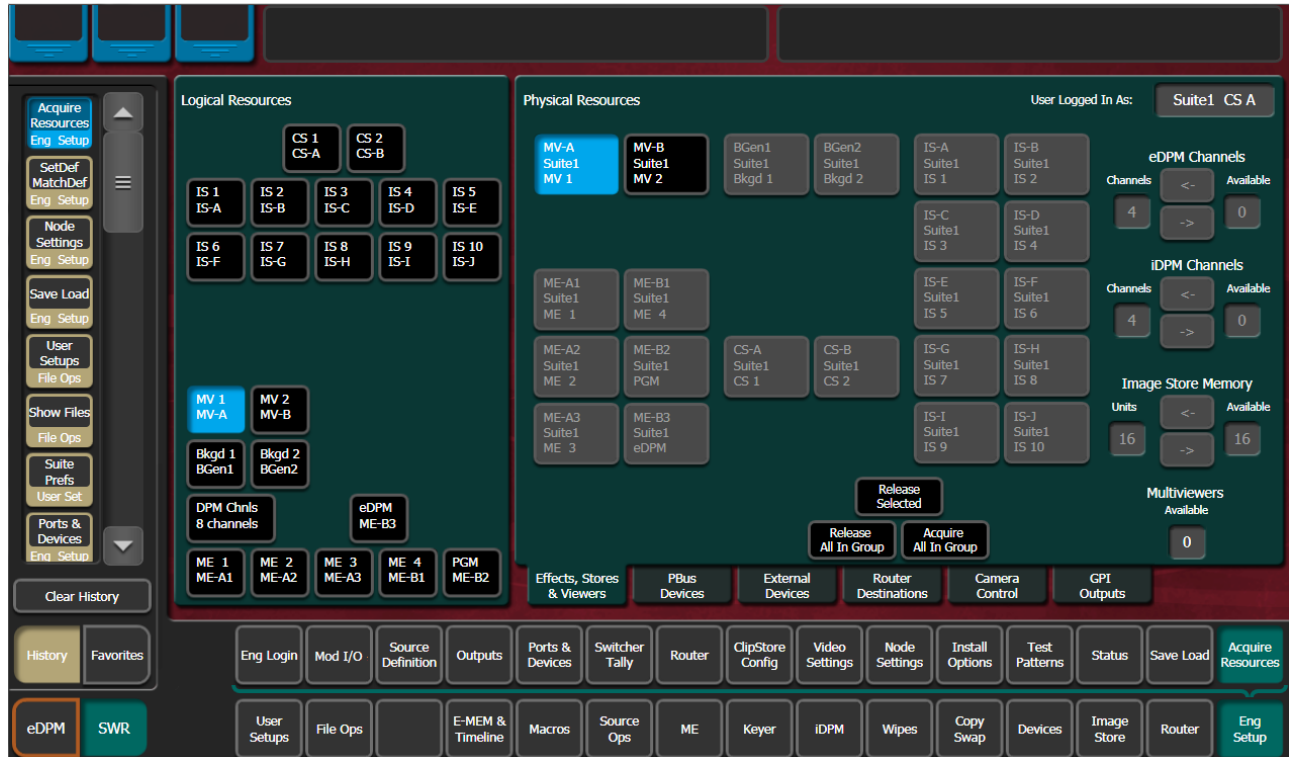
2. Select the **MV 1** or **MV 2** button in the Logical Resources pane.

Result: TheMultiviewer physical resource is allocated to the current suite.

3. Select Eng **Setup**, **Outputs** in the menu.

4. Select the output assigned to an external monitor in the Physical Outputs pane.

5. With the **Fixed Sources** button selected (top right of menu) using the scroll bar or filter for the scrolling sources list, find and select one of the fixed multiviewer sources, for example **Mview 1**.

Result: The currently selected Multiviewer layout is available to an external monitor.

If adding a second multiviewer display:

6. Select the **Eng Login** menu category button.

7. Select **Change Identity**.

8. Select another suite identity.

9. Select **Yes** when prompted to continue.

10. Allocate a second Multiviewer physical resource in the Eng Setup, Acquire Resources menu as previously described.

External Interfaces

Introduction

The Karrera K-Frame Video Production Center has that name because it is more than just a video switcher. For example, a Karrera K-Frame system is also able to control a variety of external devices.

Devices can be associated with sources, via source definition. Three types of source definitions for the Karrera K-Frame are available:

- **Direct** (used for standard video and key inputs, not for external interfaces, as explained in *Direct Source Definition on page 129*),

- **Device** (used for DDR and VTRs). These devices can be controlled via Ethernet or serial port using various protocols. Each device uses a Device Definition that specifies the control mechanism.

- **Router** (used with an external routing system). This type permits the assignment of an external routing system destination to that source. Once assigned, different external routing system sources can be routed to that destination with the system. It is also possible to associate a router source to a device, to allow machine control of that source whenever it is selected on the Karrera K-Frame Control Panel.

Serial ports can also be used to control PBus configured external devices.

GPI outputs can be configured to provide relay closure control of hard-wired external devices from the Karrera K-Frame system.

In addition, external control of a Karrera K-Frame system is possible using GPI input connections, and by configuring an Editor with a serial port.

General External Device Interfacing

In general, interfacing an external device to the Karrera K-Frame system involves the following elements:

- Control cabling and configuration (Ethernet, serial ports, GPIs).

- Video cabling (K-Frame input connectors).

- Creating an External Device Definition (for DDR, VTR, etc.) and assigning it to a source definition.

- Mapping that source to a Control Panel button.

Once configured, that external device can be selected as a source on the Control Panel. If a DDR or VTR it can be directly controlled from the System Bar, Device Control Module, Multi-Function Module, or from the Karrera K-Frame Menu Panel, as well as via EMEM.

PBus and GPI control of external devices is generally accomplished by the operator using EMEM. PBus and GPI triggers can be manually tested from the GV Switcher menu application, and Macros can be created to allow triggering using Control Panel buttons.

Routing System configuration with Karrera K-Frame involves establishing communications between the Karrera K-Frame and Routing control systems, assigning Router destinations to sources, and identifying which Router sources will be accessible to the system.

Ports & Devices

Control ports, GPI outputs, External Device Definitions, Ethernet Tally and Editor Ports are configured with the Ports & Devices menus, accessed via **Eng Setup**, **Ports & Devices**, and then touching the appropriate tab.

PBus Ports

The PBus Ports menu is used to configure serial ports for PBus control of external devices. Twenty four PBus devices are supported, which can be assigned to the same or different serial ports, using PBus addresses (0-23) when the same port is used for multiple devices.

PBus Ports Menu

PBus Devices – One of the eight available PBus devices can be selected on the upper left side of the menu. Once selected, the remainder of the menu is delegated to that PBus device.

**RS422 Port Select / Status** – The button for the port currently assigned to the selected item will be highlighted. Touching **None** clears the port assignment.

Baud Rate / Parity – Serial port settings are selected with these buttons. The **Set Default** button returns the settings to the Karrera K-Frame factory defaults.

PBus Name – Touching this button opens an alphanumeric keypad used to give the PBus device a descriptive name. These names appear on the separate Devices, PBus and PBus & GPI Enables menus, to help the operator identify each function.

Set PBus Address – Touching this button opens a keypad allowing entry of a PBus address, which is required if multiple PBus devices use the same port.

Unassign PBus Device – Clears the name of the selected PBus device and also clears its port assignment.

Trigger Names – Names can be entered for each of the 16 PBus triggers (0-15), by touching each button.

Clear Names – Removes the names from the currently selected PBus device.

Copying Trigger Names

Trigger names can be copied from one PBus device to another.

1. Highlight the PBus device you wish to copy names from.

2. Touch the **Set Copy From** button to enter that device in the adjacent window.

3. Highlight the PBus device you wish to copy the trigger names to.

4. Touch the **Copy Names** button.

Once configured, PBus devices will be available to operators for use with EMEMs via the Devices, PBus menu.

Figure 140. Devices, PBUS Menu
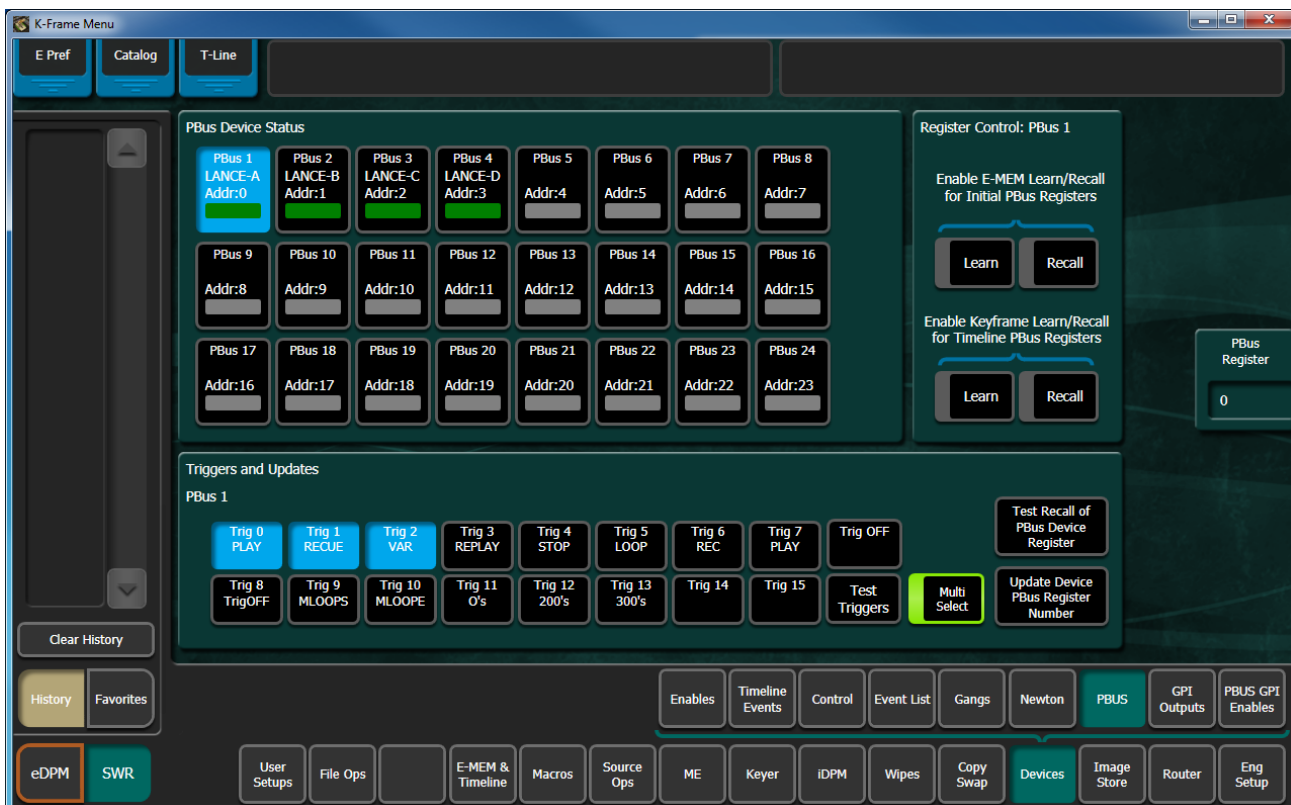
GPI Outputs

The GPI Outputs menu is used to configure the K-Frame's GPI connectors. GPI outputs can be assigned to Suite 1 or Suite 2 using the Eng Setup Acquire Resources menu.

Figure 141. GPI Outputs Menu

GPI Outputs – The buttons in the scrolling list represent the physical GPI output relays available on the system. The functions performed by these relays depend on how they have been connected to the device being controlled. One output can be selected at a time.

GPI Name – Touching this button opens an alphanumeric keypad used to give the GPI Output a descriptive name. These names appear on the separate Devices, GPI Outputs and PBus & GPI Enables menus, to help the operator identify each function.

Duration – Sets the duration the relay will be closed, in video frames.

Test GPI – Touching this button triggers the selected GPI.

Once configured, GPI Outputs will be available to operators for use with EMEMs on the Devices GPI Outputs menu.

Figure 142. Devices, GPI Outputs Menu

PBus and GPI Enables

PBus and GPI Output functionality (communications) can be enabled and disabled by an operator from the Devices, PBus and GPI Enables menu. This menu has two tabs, one for PBus (Figure 143), and the other for GPIs (Figure 144). When items are disabled on these menus, EMEM or Macro programmed PBus and GPI Output triggers will be inactive when the EMEM or Macro is run.

Figure 143. PBus and GPI Enables Menu, PBus Tab

Figure 144. PBus and GPI Enables Menu, GPI Tab
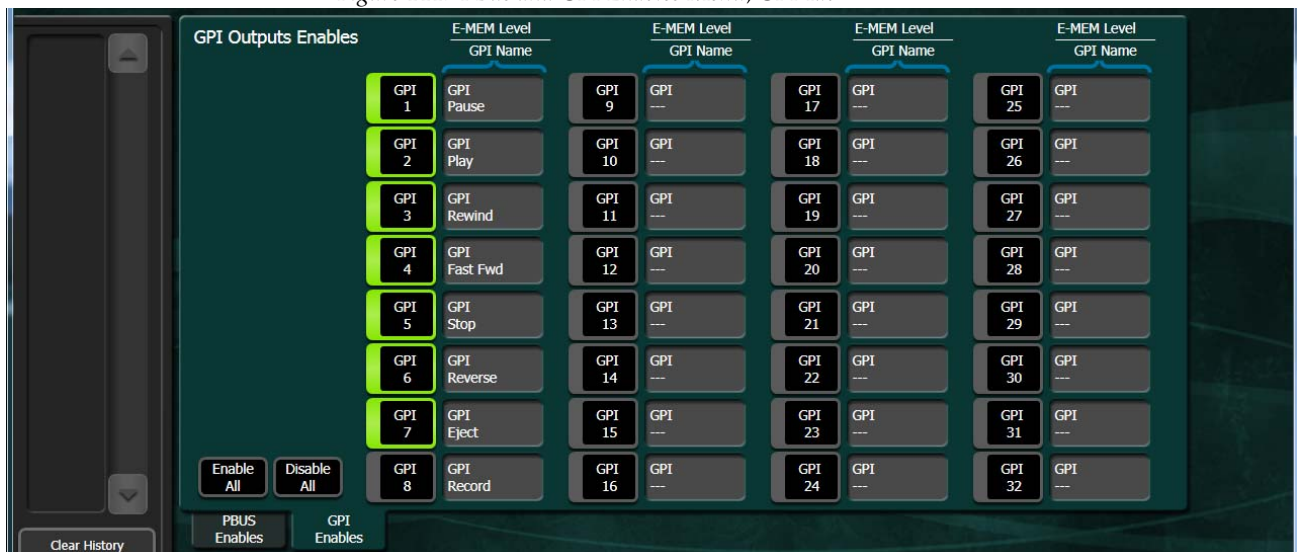
External Devices

The Eng Setup External Devices menus are used to create and edit Device Definitions. Different menus are displayed depending on whether a serial or Ethernet control type of device is selected.

Figure 145. External Devices Menu, Serial Control Device
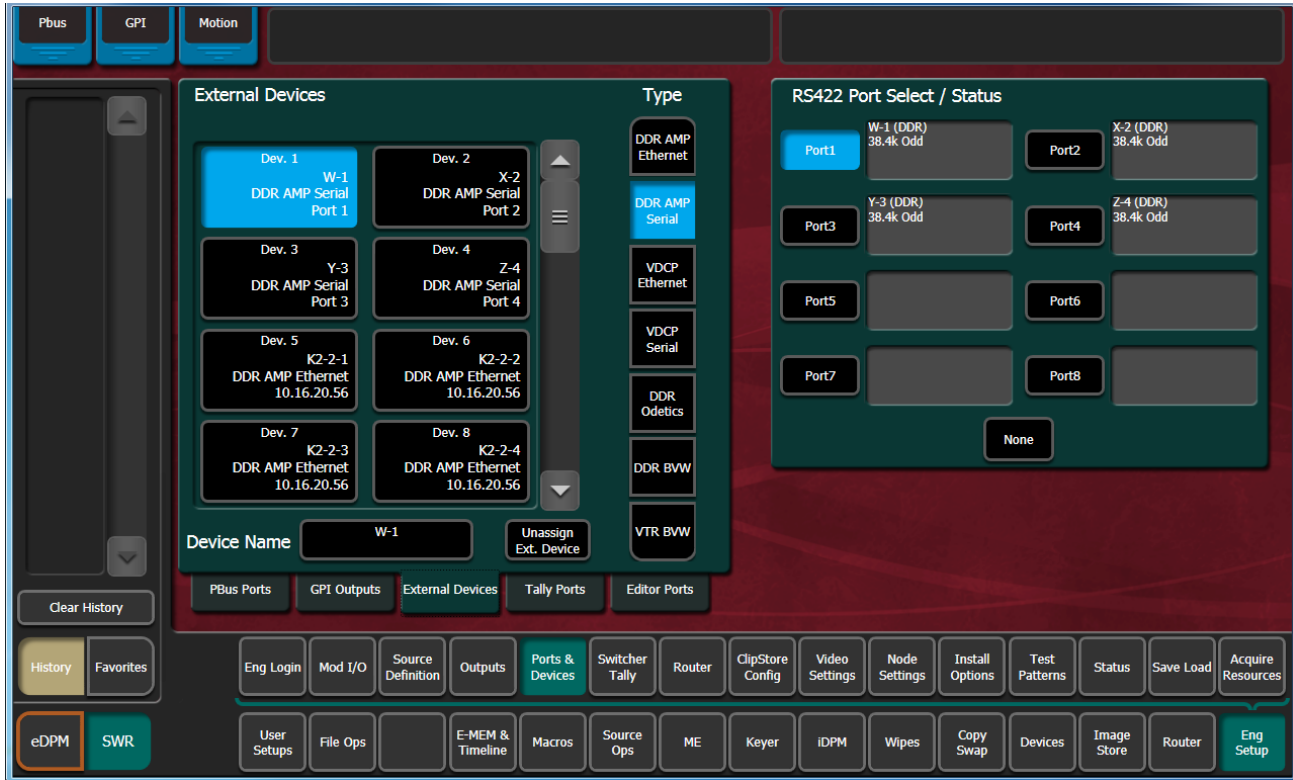
Figure 146. External Devices Menu, Ethernet Device
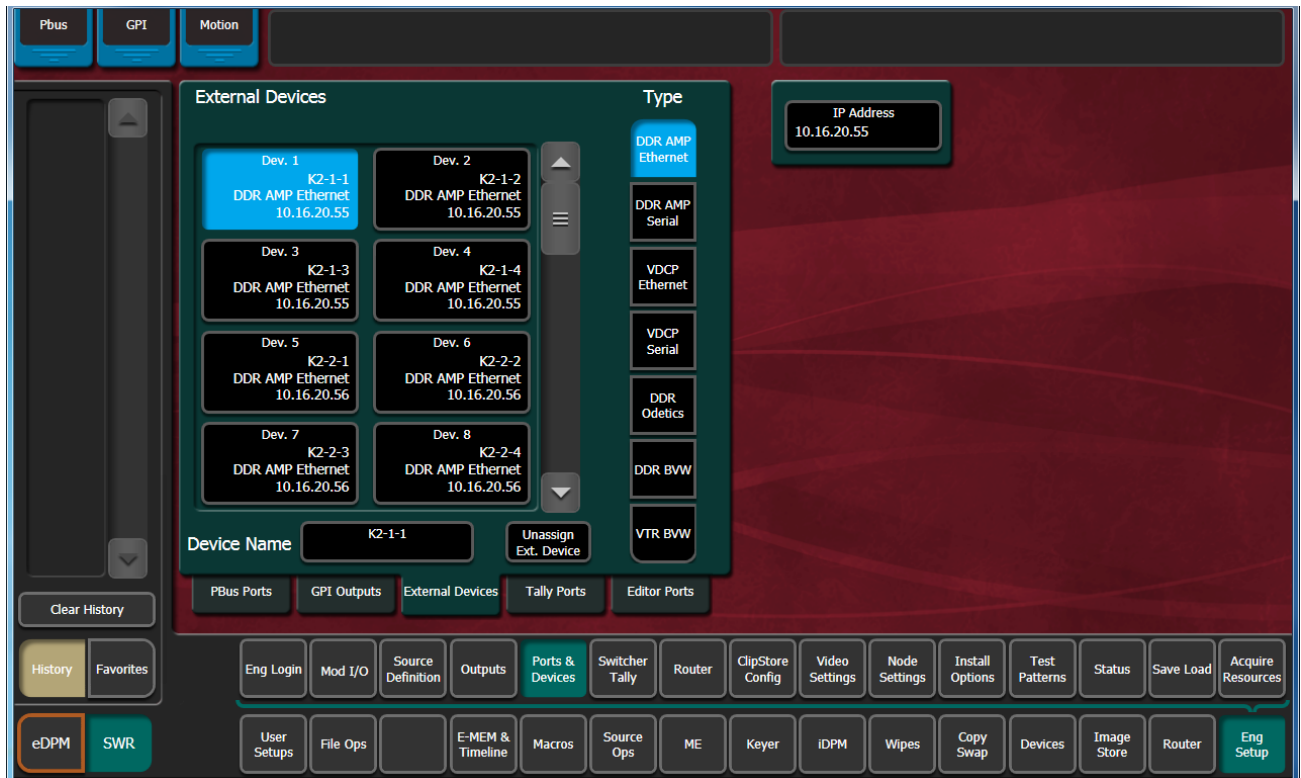
VDCP Ethernet

When VDCP Ethernet is selected, additional parameters are available.

Figure 147. External Devices Menu, with VDCP Ethernet Selected
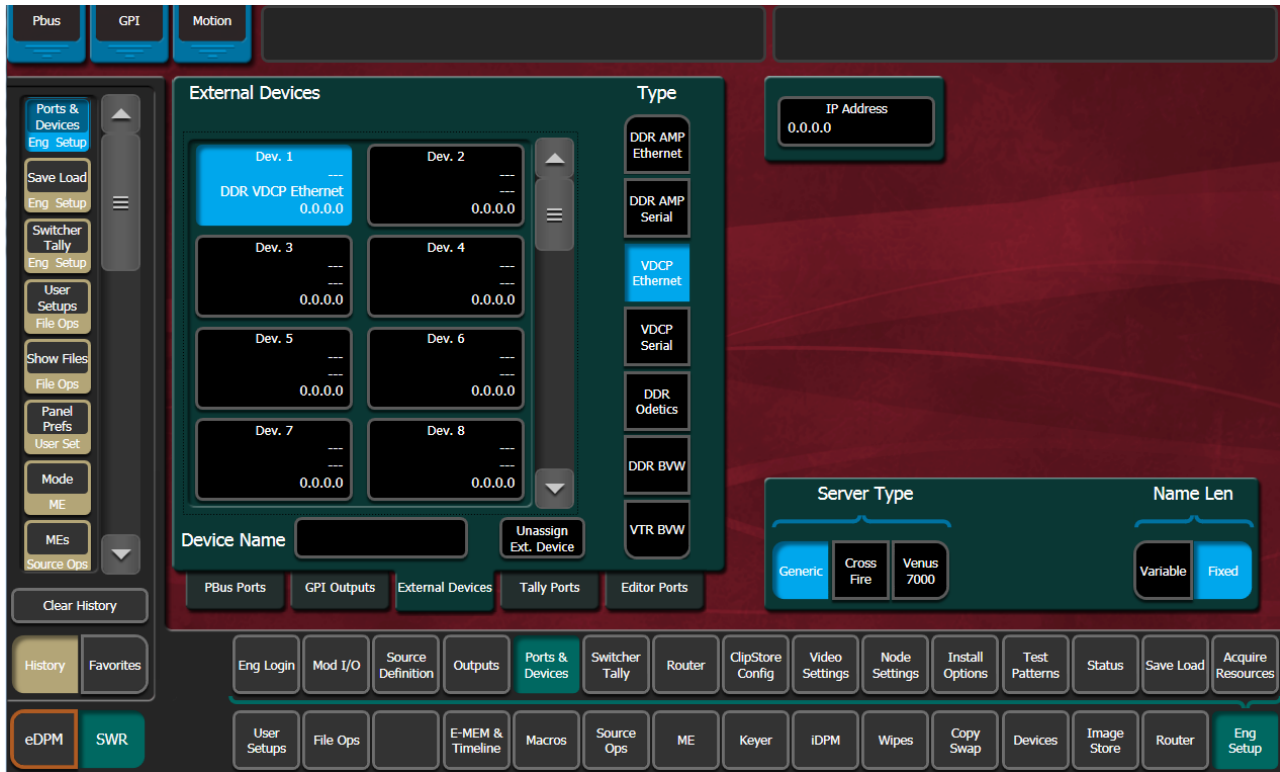
Server Type

- Generic
- CrossFire
- Venus 7000

Name Length

- Variable
- Fixed

VDCP on Ethernet Configuration

For Ethernet VDCP, the user must specify the IP Address of the device they are connecting to, in the Eng Setups/Ports & Devices/External Devices menu.

When configuring a device to connect to the K-Frame with Ethernet VDCP, the device should be configured to use port 8000. The one exception to this is when the Server Type is CrossFire. When the Server Type is CrossFire, the

device should be configured to use port 8000 plus the Device number. For example, if Device 7 in the External Devices menu is configured to use Ethernet VDCP with a server type of CrossFire, the CrossFire device should be configured to accept the connection on port 8007.

Device Definition

The Karrera K-Frame system uses a software External Device Definition object to define the capabilities of each device interfaced with the system.

External Device Definitions contain the interface information required for that external device, (e.g., IP Address or Serial Port). Each Device Definition is given a unique name. Once a Device Definition has been created for a device (DDR, or VTR), it can be assigned to a source. That source then supports the specific capabilities of that external device. (PBus and GPI configurations are different, and are not associated with a particular source.)

Touching an already defined item in the scrolling External Devices list on the left brings up information for that device and delegates the rest of the menu to that object.

Device Name – Touching this button opens an alphanumeric keypad used to give the External Device a descriptive name. These names appear in the Control Panel System Bar and GV Switcher menus.

Note   When configuring servers with multiple channels, the channel number must be appended to the device name with a - character, and the base name be the same for all channels on the same server (e.g. 'Vdr4-1', 'Vdr4-2', etc.).

Type – Chooses a control protocol for the currently selected device.

• For Ethernet devices, and IP address field is available for entering the IP address of the External Device.

• For serial control devices, touching a Port button on the right assigns the selected device to that port.

Unassign Ext. Device – Clears the definition of the selected item.

Creating an External Device Definition

1. Touch **Eng Setup**, **Ports & Devices**, **External Devices** to go to the External Device Definition menu.

2. Scroll through the list of devices on the left and select an available device.

3. Touch **Device Name** and enter a descriptive name for the External Device.

4. Choose the control protocol for that device from the **Type** list.

- If an Ethernet protocol was selected, enter the IP address for the External Device.

- If a serial protocol was selected, choose the port the device will use.

When External Device Definitions have been created, the Source Definition menu lists them when the **Device** Source Type has been selected and the **External Device** button is touched.

Figure 148. Source Definition Menu, Device Type Selected
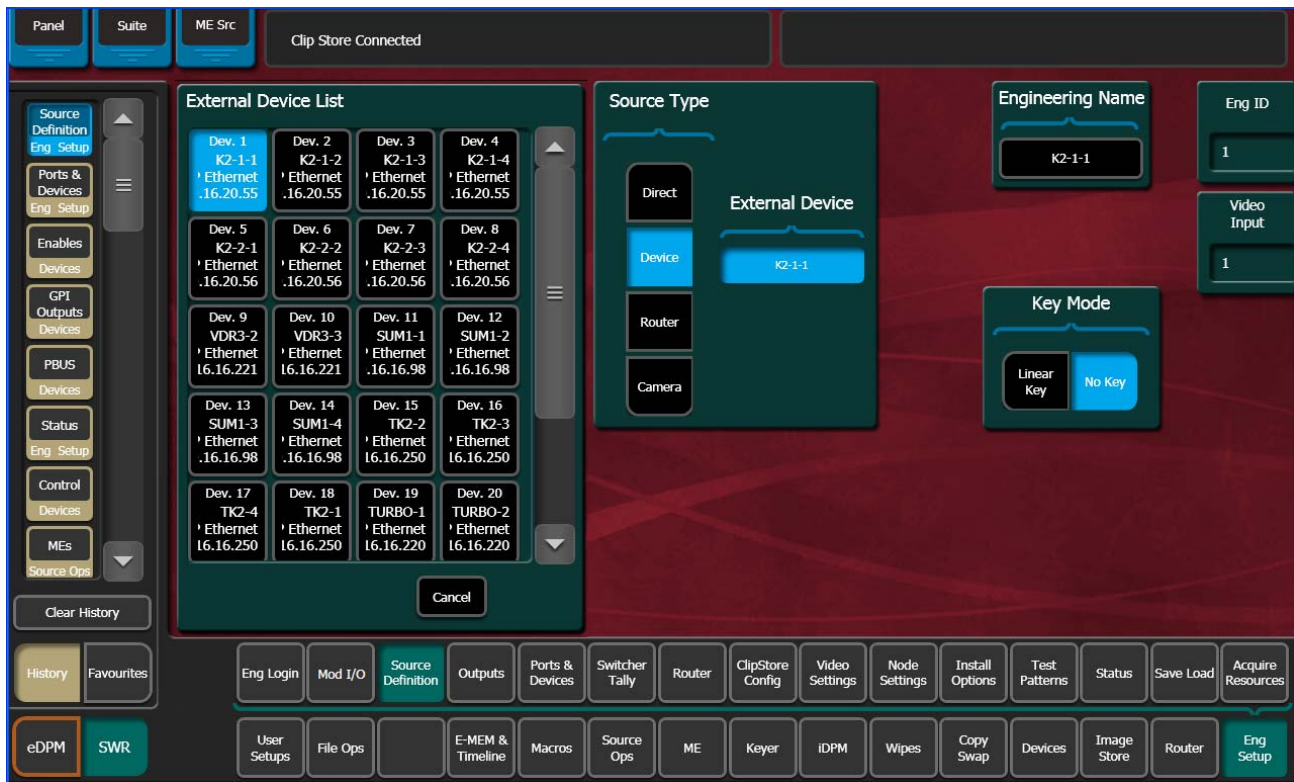
Ethernet Tally Ports

There are three configurable Ethernet Tally ports. Ethernet tally port configuration can vary depending on your needs, for example two tally ports could be used for tally signal while the third is used for diagnostics. See the documentation that came with your Ethernet tally system for more information.

Additionally, tally is supported via GPO connections.

Note   Serial tally is not supported for K-Frame systems due to the vast amount of data being transmitted.

Configure Ethernet Tally Ports

1. In the K-Frame menu, select Eng Setup, Ports & Devices, Tally Ports.

Figure 149. Tally Ports Menu—Ethernet Tally Client Connection

2. In one of the ports, select the IP Address data pad.

3. Enter the client IP Address in the pop-up keypad and select **Enter**.

Editor Ports

Figure 150. Editor Ports Menu
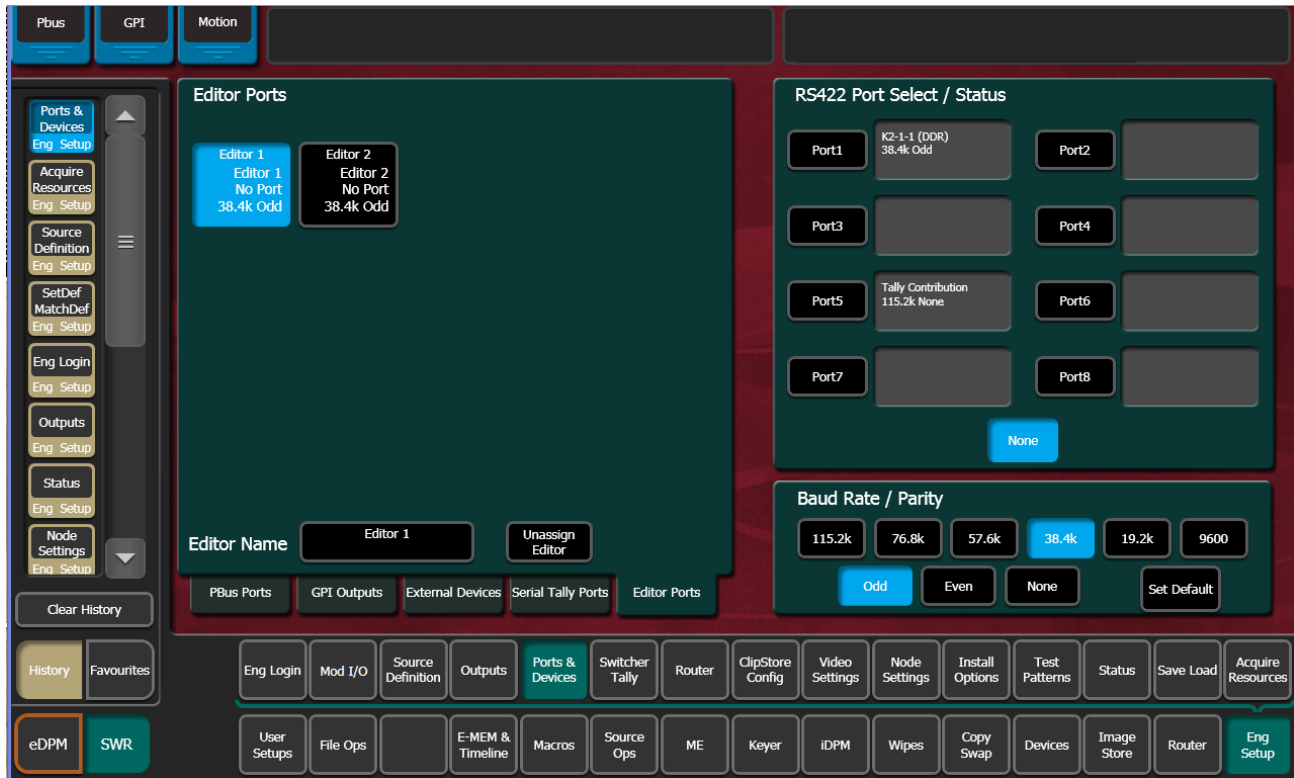
Editor Ports – Two editor ports can be configured and assigned to the Karrera K-Frame serial ports. Selecting an Editor button on the left delegates the rest of the menu to that item.

RS422 Port Select / Status – The button for the port currently assigned to the selected item will be highlighted. Touching **None** clears the port assignment.

Editor Name – Touching this button opens an alphanumeric keypad used to give the Editor a descriptive name.

Unassign Editor – Clears the selected serial port's assignment.

Baud Rate / Parity – Serial port settings are selected with these buttons. The **Set Default** button returns the settings to the Karrera K-Frame factory defaults.

Router Interface

About the Router Interface

The Karrera K-Frame system can interface with an external routing system. A routing system connects a router source (router input) to a router destination (router output). Changing the router source sends a different signal to the destination (called a take). A router destination can in turn be connected to a Karrera K-Frame input and be configured as a routed source (called switcher source in this discussion and in the GV Switcher menus). The router acts as a pre-selector for the switcher source, and so increases the number of inputs available to a button on a Karrera K-Frame system bus.

Figure 151. Router Source, Router Destination, and Routed Switcher Source
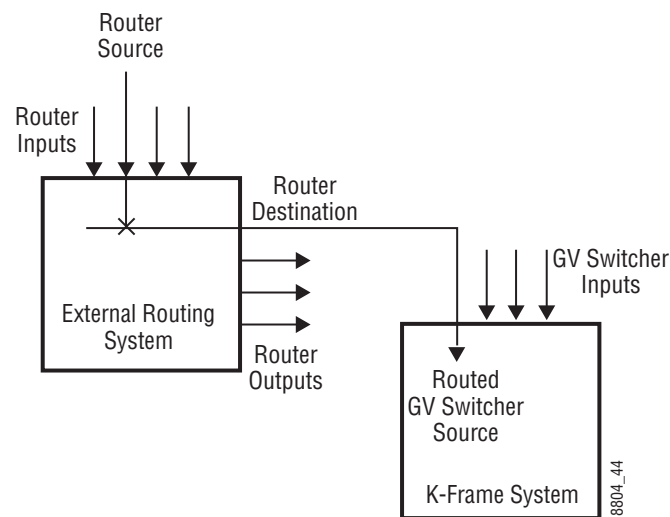
An external routing system can be configured into levels, to allow the switching of multiple signals simultaneously. For example, video signals can be organized on one level, and key signals on another. By specifying both levels when giving a router take command, both the video and key signals of a source will be routed to their destinations.

Note   K-Frame system router Take commands are only applied to all router levels.The external routing system's destinations must be configured with all router levels selected.

Router control panels can also protect router destinations from being changed by other control panels. A protected router destination cannot be changed by a different control panel, but may be changed by the panel that set the protection. Protections help prevent inappropriate router source changes. The Karrera K-Frame system can be considered a type of router control panel, and so the system can protect router destinations. The

Karrera K-Frame system router protect commands are applied to all router levels.

Router Source Name Changes (at the Router) and GV Switcher Updates

When an NV9000, Encore, or other supported router is connected to a GV Switcher system using Grass Valley's Native Protocol (SMS 7000), and router source names are changed, the system and menu will now be updated automatically, with a few limitations.

The following areas of the GV Switcher system will continue to require a manual update for a router source name change:

- R-MEMs—Learn a new R-MEM in the Router, R-MEM menu,

- Macros—Learn a new Macro in the Macro menu,

- Device Control configuration for router sources—Update the router source name in the Eng Setup, Router menu, and

- Switcher sources configured for router destinations—Update the Router Destination source name in the Eng Setup, Source Definition menu.

CAUTION   If these areas of the system are not manually updated, the router source may behave unexpectedly or no longer work.

Features

- Interfaces to the Grass Valley SMS 7000, Encore, and other routing systems via Native protocol.

- Karrera K-Frame system configuration of routed Karrera K-Frame-sources.

- Names of router sources are shown on the Karrera K-Frame Control Panel and Karrera K-Frame Menu Panel displays.

- Router source selection control via the Karrera K-Frame Control Panel and Karrera K-Frame Menu Panel displays.

- Protection types (None, Protect, and On Air).

Router Interface Installation

Control Interface Cabling

Connect an Ethernet cable from a Karrera K-Frame system Ethernet switch to the external routing system Ethernet network. The system can communicate with devices on different networks via a gateway router. If a gateway router is not used, the external routing system must be on the same subnet as the Karrera K-Frame system.

Video Interface Cabling

Connect each external routing system destination to an available input connector on the Karrera K-Frame Video Processor. You will need to know the input connector number used for each destination when you configure the Karrera K-Frame source.

External Routing System Configuration

It is assumed the external routing system has already been configured for basic use in your facility, and only needs to be re-configured to interface with the Karrera K-Frame system.

Configuring a GV Switcher Router

Setting IP Addresses

The Eng Setup Router menu is used to set the IP Address(es) the Karrera K-Frame system will use to communicate to the external routing system. The external routing system can have an optional redundant, or secondary, controller which takes over should the primary fail. Both router control systems will require their own IP address settings.

Touch **Eng Setup**, **Router** selection button to go to this menu.

Figure 152. Eng Setup Router Menu
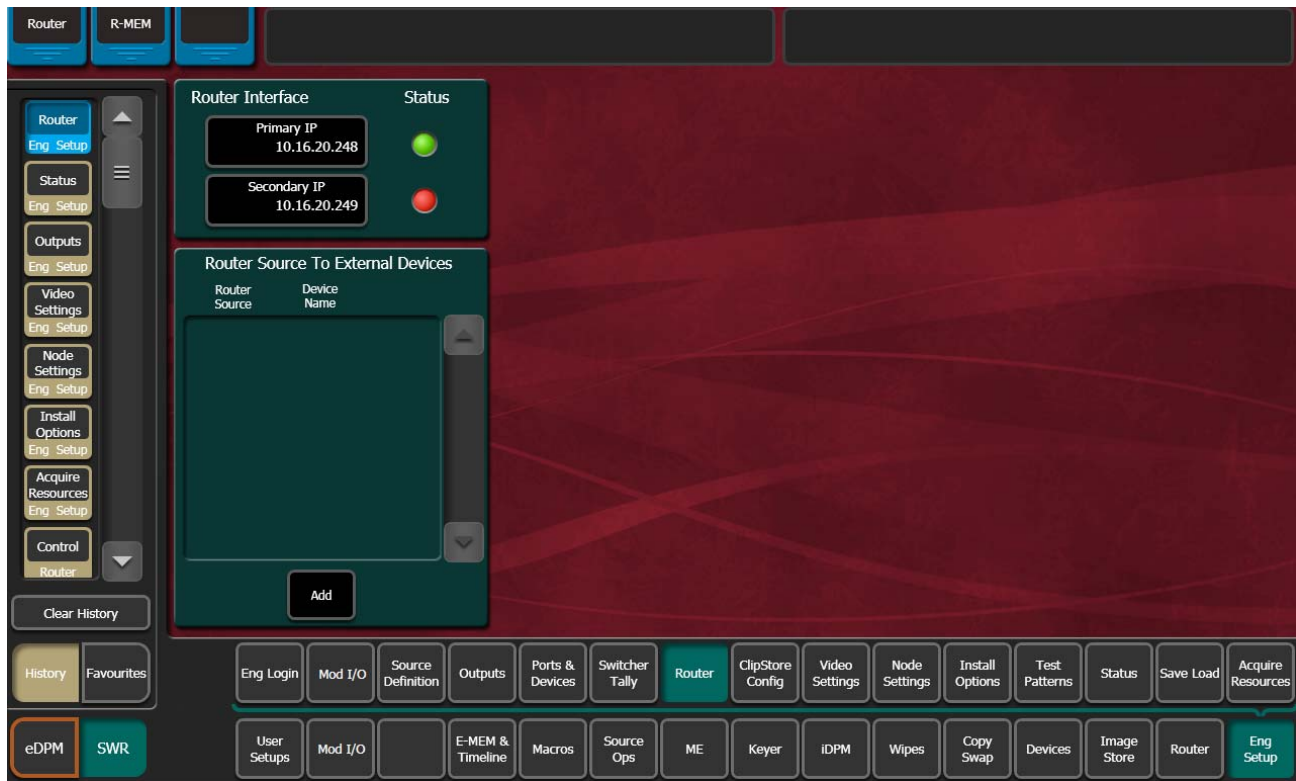
The **Status** indicator is red when communication is not detected, and goes green when communication is established.

To Set the IP Addresses:

1. Touch the **Primary IP** data pad and enter the primary address of the router with the pop-up keypad.

2. Touch the **Secondary IP** data pad and enter the secondary IP address of the router, if appropriate. If the router has only one control system, leave this address set to the blank default.

Note   If the K-Frame system has been configured with a router IP address but a connection to the router has not been established, changing the IP address in this menu will not make the K-Frame system immediately try to connect to the new router address. The K-Frame system will automatically try to connect after about 30 seconds using the entered router IP addresses.

Primary and Secondary Router Communications

The Karrera K-Frame system will initially use the primary router IP address for communications. If the primary control system fails to respond, the system will attempt to use the secondary IP address for router commu-

nications, and if successful will continue using it in the future. If communications then is lost to the secondary control system, the system will attempt to reestablish communications with the primary router control system.

Defining Routed Sources Definition

The Eng Setup Source Definition menu is used to define routed Karrera K-Frame sources, which includes specifying which router destination will be associated with each switcher source.

1. Press the **Eng Setup** Menu panel button, then touch the **Source Definition** category selection button, to go to this menu.

Figure 153. Source Definition Menu
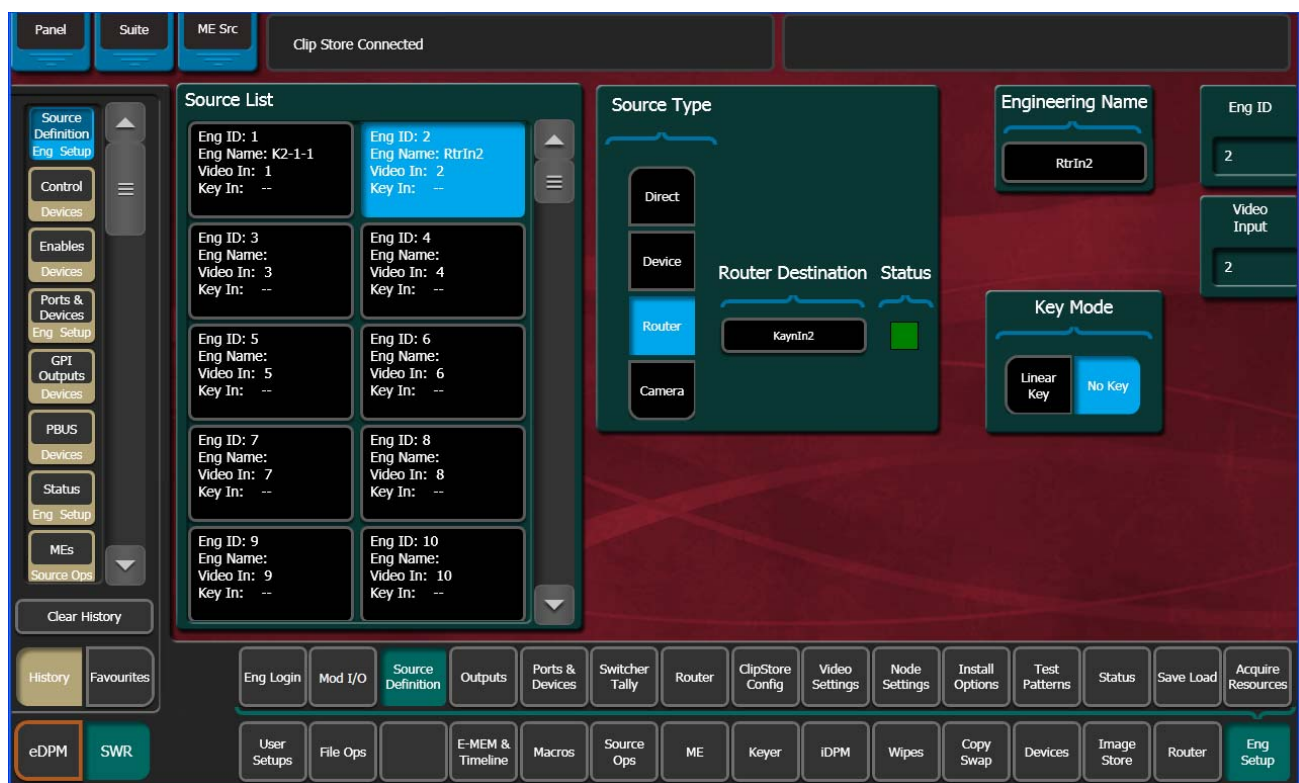
2. Select the source to be configured with the router on the left scrolling list.

3. Touch the Video Input data pad and enter the number of the input that will be used with the router video destination.

4. If the routed source will have an associated key signal, touch the appropriate Key Input button, then touch the Key Input data pad and enter the number of the input that will be used with the router key signal destination.

Note   If you assign a key input, the router system needs to be configured to switch that key destination along with the video destination. Router levels can be used to accomplish this.

5. Touch the **Router** type button to identify it as a routed source.

Note   The adjacent status indicator is green when a router is detected, and red when there is no response. If red, you should check the K-Frame or router system configuration or the physical Ethernet connections.

6. Touch the **Router Destination** data pad to open the Router Destinations menu. The K-Frame Video Processor receives a list of destination from the router and displays them on scrolling list on the left.

Figure 154. Router Destination Selection Menu
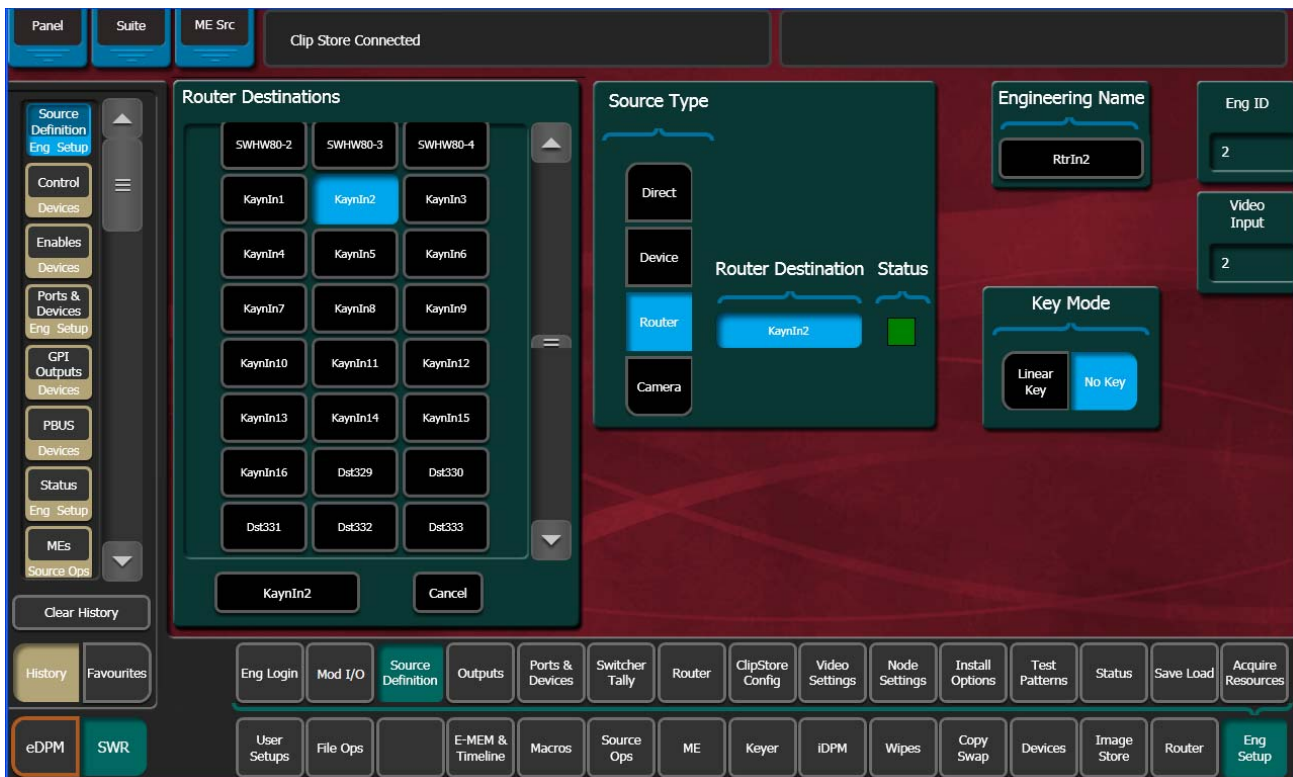
7. Touch the button for the desired destination to assign it to the previously selected router source.

8. Complete the source definition by entering an engineering name using the standard source definition procedure.

User Setups

Once a Karrera K-Frame routed source has been defined, it can be mapped to source buttons using the standard button mapping procedure (User Prefs), and can be given alternate names (Suite Prefs, Source Patch menu)

Maintenance

Introduction

This section provides routine maintenance information for servicing the Karrera K-Frame Video Production Center.

Servicing Precautions

Before performing any type of Karrera K-Frame system maintenance or troubleshooting, read the complete *Safety Summary on page 15* at the front of this manual.

Grass Valley Web Site

Visit the Grass Valley website for documentation, software updates, online support (including FAQs), spare parts information, and a link to the File Transfer Protocol (FTP) site.

Grass Valley Customer Support FAQ Database

Answers to many common questions can be found by searching the Grass Valley Customer Support Frequently Asked Questions (FAQ) database, available on the Grass Valley web site.

Reset Procedures

Video Processor Frame Reset

A Video Processor Frame reset button is located near the center of the front edge of the Controller Board, accessed by opening the front door of the

Frame. The 13-RU and 6-RU Frames use the same type of Controller Board. Pressing this button will reset both the Video Processor CPU and the Image Store Processor CPU. Powering the unit off and back on also resets the Video Processor Frame.

Figure 155. 6-RU Video Processor Frame Reset Button and Power Switch
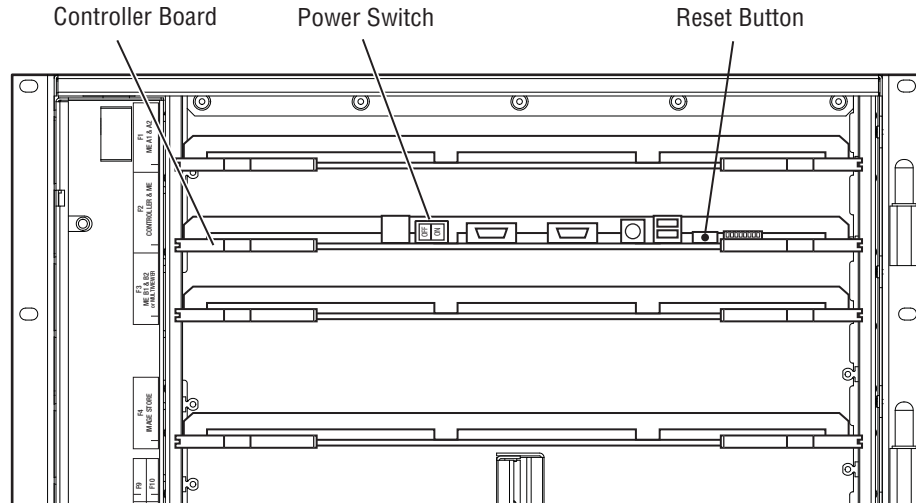
Control Panel Reset

The Control Panel can be reset in IP address mode using that panel's EMEM area buttons, or by cycling power to the unit.

1. On any EMEM area, press **Menu**, **Page**. This shows a list of menu items that are selected with the buttons below the display (on the left).

Figure 156. Karrera IP Address Mode Selection, EMEM Area
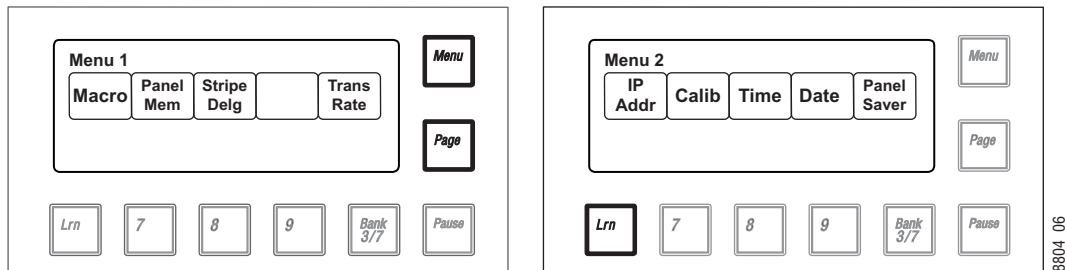
2. Select **IP Addr** (press **Lrn**) to enter IP address mode (on the right).

3. Select **Panel Boot** (press the **Bank 3/7**), then select **Yes** (press **7**) to reset the Control Panel (Figure 157).
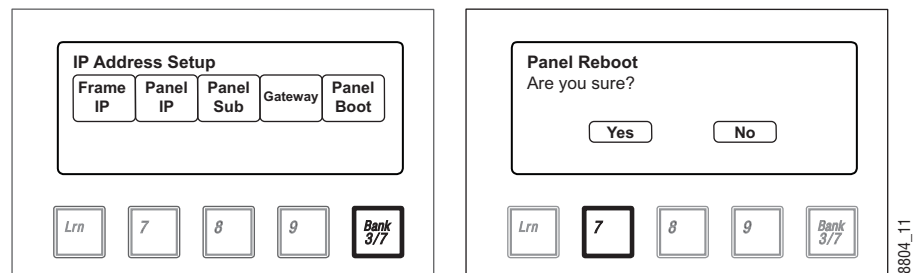
The Control Panel reset procedure using the EMEM area performs a controlled shut-down of the panel software and then reboots the operating system. This is the safest method of resetting the panel.

CAUTION The **Reset** button inside the Karrera Control Panel, located on the processor board under the air guide, performs a hard reboot of that panel's single board computer (equivalent to turning the power switch off and on). The **Reset** button does not properly shut-down the panel software, and should only be used in the rare situation where the EMEM area Reset procedure is not operational.

Software Installation

Karrera K-Frame systems are shipped with the current software version installed. Updates to GV Switcher system software are available for download from the Grass Valley website. Software installation tools are provided with each update package.

Refer to the separate *Karrera K-Frame Release Notes* for complete software installation instructions.

Software Option Authorization

Introduction

Some Karrera K-Frame system options have software components that can be enabled via an authorization process, using authorization codes. Authorization codes are also used for tracking maintenance contracts.

New Karrera K-Frame systems ship with the appropriate authorization codes installed, enabling all purchased options. When new optional features become available, Grass Valley sends new authorization codes to the customers.

Authorization Codes

The authorization process involves receiving an authorization code from Grass Valley and entering it in a menu on the system. The authorization code is associated with a particular Karrera K-Frame Video Processor, identified by a System ID#, and is not transferable to different hardware. If you have multiple systems at your facility, you will need to enter an authorization code onto each system.

Standard authorization codes (Permanent) apply to purchased options and maintenance contracts. Other authorization codes (Temporary) may also be available that can enable selected options for a limited time. Temporary authorizations can be used for trial demonstrations and other special purposes. Temporary authorizations add to any permanently enabled options, but these additional options are disabled after the allotted time elapses.

Expiration Dates

Maintenance contract and temporary authorizations have expiration dates. Messages will be posted on the GV Switcher menu when an expiration date approaches. Expirations occur at midnight, but do not immediately go into effect. Instead, any expired options continue to operate until the system is power cycled or reset, at which time the options are disabled. This is intended to prevent loss of functionality during on-air operations. Expiration of the maintenance portion of an authorization will not disable any options.

Authorization Procedure

Acquire Authorization Code

Grass Valley will be sending authorization codes to all Karrera K-Frame system customers. If you have received your codes and the system IDs are correct, proceed to *Enter Permanent Authorization Code* . If you do

not have valid authorization codes you will need to acquire them from the Grass Valley.

1. Go to the Install Options menu by touching **Eng Setup**, **Install Options**.

Figure 158. Install Options Menu

2. Write down the System ID displayed on the upper left portion of the menu.

3. If you have more than one system, repeat the above steps on every system that will have options enabled.

4. Contact Grass Valley Customer Support and request a code for each Karrera K-Frame System ID. If options have not already been purchased, you can order the options directly from the service representative.

Enter Permanent Authorization Code

1. Go to the Install Options menu (**Eng Setup**/**Install Options**) on a Menu Panel of the system whose options you are enabling (Figure 158 on page 229). Confirm that the System ID on the menu matches the System ID# of the authorization code.

2. Touch the **Perm** button in the Option Group pane.

3. Touch the **New Auth Code for Perm** data pad and enter the code on the pop-up keypad.

Note System ID and Authorization Codes are alphanumeric and need to be entered exactly. Authorization codes do not use the letters "o" or "l" to avoid confusion with the numbers "0" and "1". The dashes in authorization codes are required for use.

4. Touch the button labeled either **Replace** or **Install** next to the new authorization code. The codes will be added and the expiration date of any maintenance contract will be indicated. If you do not believe the option statuses reported are correct, contact Grass Valley Customer Support to resolve the issue.

5. If options were removed, reset the Video Processor Frame.

Note When an option is removed, it remains operational until the Video Processor Frame is reset or power cycled. When an option is added, it becomes operational immediately without requiring a Frame reset.

6. Write down the authorization codes, specifying which system they apply to, and store this information in a safe place, should you need to re-enter the codes at some time in the future.

Temporary Authorizations

For demonstration or rental, optional features can be authorized temporarily. Once you have obtained the temporary authorization code, enter it on the Karrera K-Frame system using the procedure described above, except you first select one of the **Temp** buttons. Temporary authorization information is displayed on the right portion of the menu. Up to four temporary authorizations are allowed at a time. Temporary authorization features that are removed remains active until the Video Processor Frame is reset.

Control Panel Maintenance

Control Panel Adjustments

Lever Arm Calibration

1. On any EMEM area, press **Menu**, **Page**. This shows a list of menu items that are selected with the buttons below the display (on the left).

Figure 159. Karrera Calibration Menu, EMEM Area
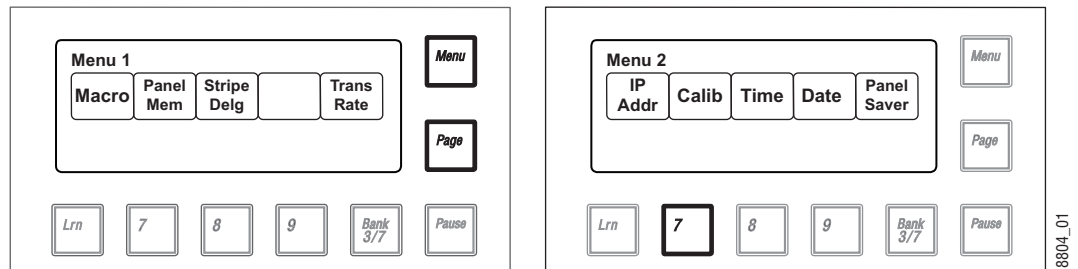
2. Select **Calib** (press **7**) to enter calibration mode (on the right).

Note Pressing the **Menu** button at this time exits calibration mode without making any changes.

3. Choose the ME Lever Arm to calibrate. Lever 1 is the topmost Lever Arm on that panel. For example, to choose the second Lever Arm select **Lever 2 = 8**. (dot).

Figure 160. Karrera Lever Arm Selection, EMEM Area
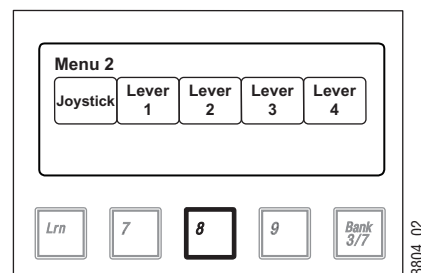
4. On the chosen ME's Transition Area, follow the instructions displayed.

   a. Move the Lever Arm down all the way and select **Next** (press **Key Prior**).

   b. Move the Lever Arm up all the way and select **Next** (press **Key Prior**). This saves the calibration values and exits calibration mode.

Figure 161. Karrera Lever Arm Calibration Procedure, Transition Area
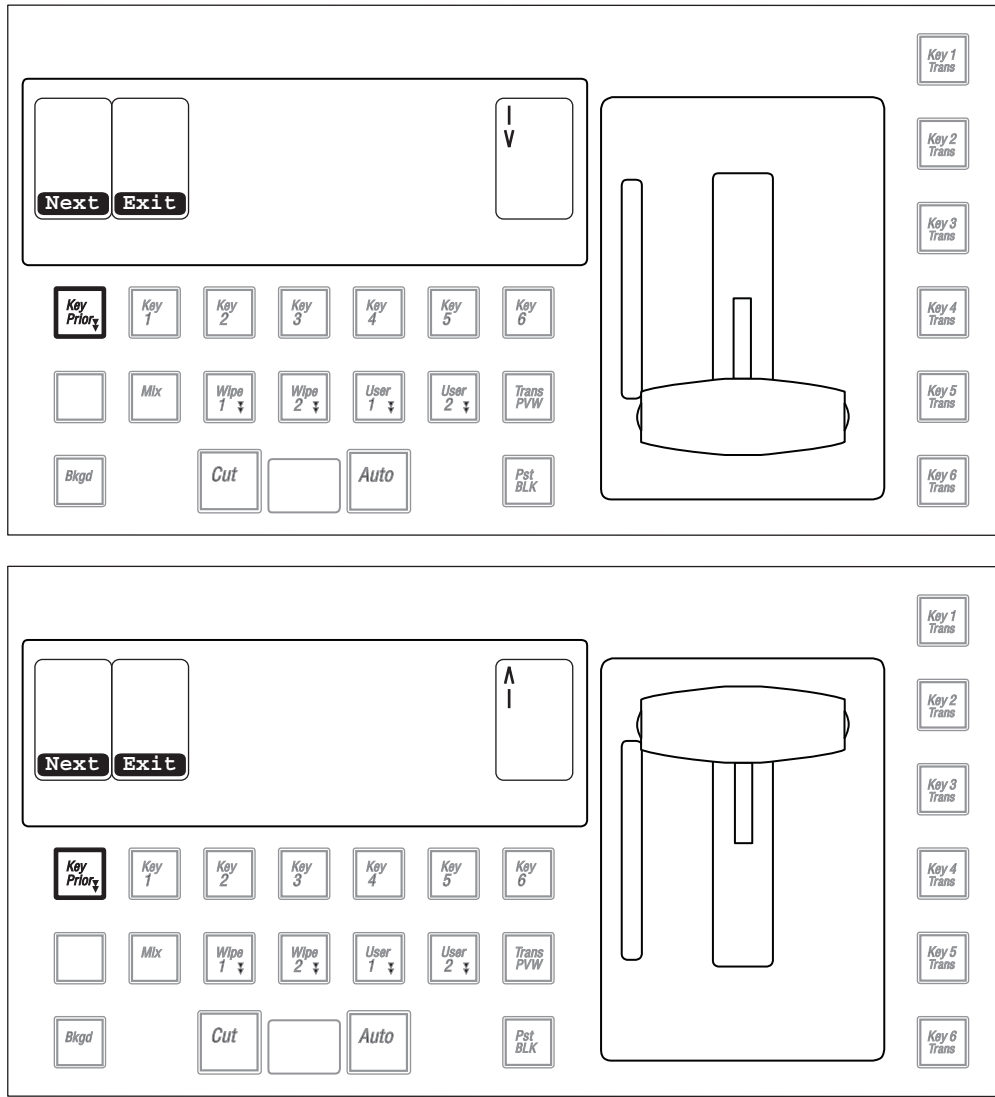
Note   Selecting **Exit** (pressing **Key 1**) cancels the Lever Arm calibration mode and returns that Transition Area to transition operations, but may leave the Lever Arm in an un-calibrated state. Complete the entire calibration procedure to ensure normal operation.

Joystick Calibration

1. On any EMEM area, press **Menu**, **Page**. This shows a list of menu items that are selected with the buttons below the display (, left).

2. Select **Calib** (press **7**) to enter calibration mode (, right).

3. Choose the **Joystick** to calibrate (press **Lrn**) ().

Figure 162. Karrera Joystick Selection, EMEM Area
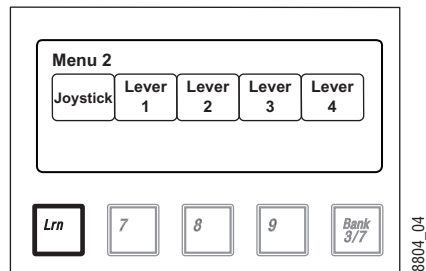
4. Three buttons near the Lever Arm will blink, indicating Joystick actions are required.

Figure 163. Joystick Calibration Indicator Buttons, Modifier Area
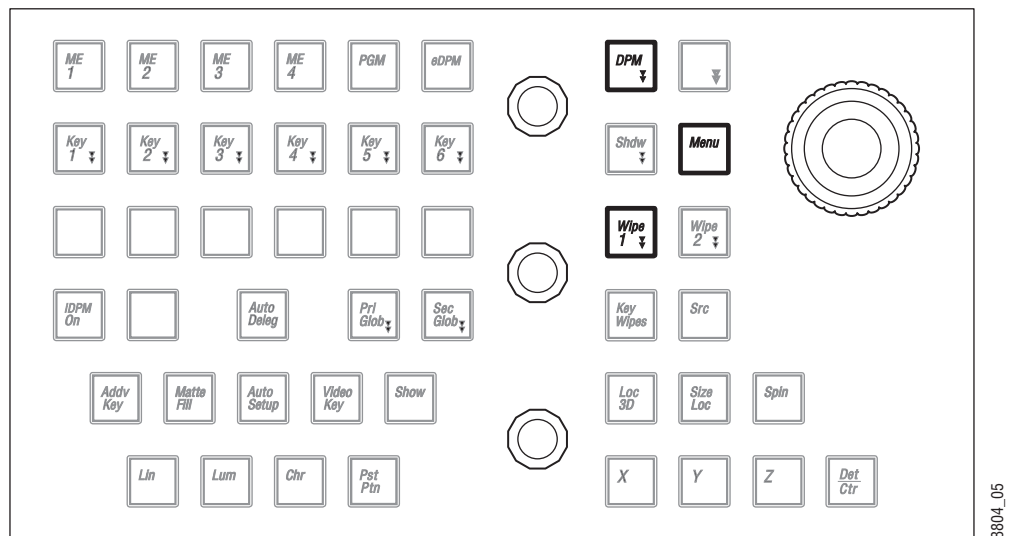
5. Follow the joystick calibration instructions shown on the EMEM display.

    a. Move the Joystick to the top left corner, rotate it counter-clockwise and press **Lrn**.

    b. Move the Joystick to the bottom right corner, rotate it clockwise and press **Lrn**.

    c. Allow the Joystick to return to its center, unrotated position and press **Lrn**.

Figure 164. Joystick Calibration Instructions 2, 3, EMEM Area
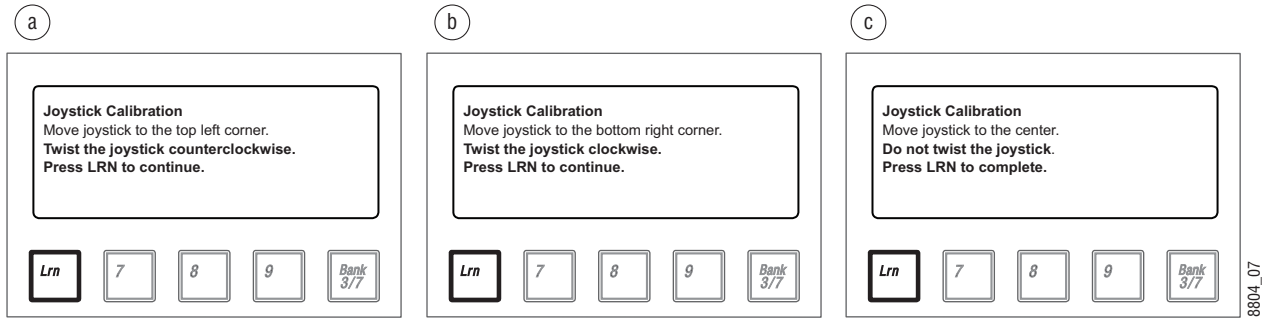
Note   Pressing the **Menu** button cancels the Joystick calibration mode, but may leave the Joystick in an un-calibrated state. Complete the entire calibration procedure to ensure normal operation.

Panel Saver Time Adjustment

1. On any EMEM area, press **Menu**, **Page**. This shows a list of menu items that are selected with the buttons below the display (on the left).

Figure 165. Karrera Calibration Menu, EMEM Area
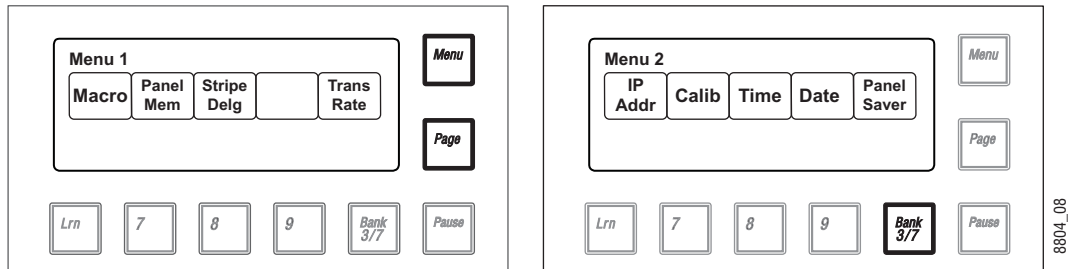
2. Select **Panel Saver** (press **Bank 3/7**) to adjust the panel saver timing (on the right).

3. Once in panel saver mode, select the time period (in minutes) of inactivity required to initiate the panel saver mode using the buttons below the display. The illuminated button indicates the current setting.

Figure 166. Panel Saver Mode, EMEM Area
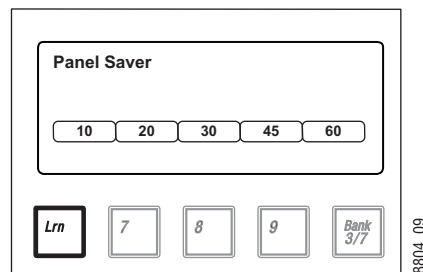
Control Panel Webpages

Web browser access is available for the K-Frame Control Panels. Using any web browser able to access the network, type the IP address in the browser's Address field to view the Control Panel web pages.

Figure 167. Control Panel Webpage, Panel Status

Control Panel NV Memory

The Control Panel circuitry has NV Memory, which stores some Control Panel configuration information, including:

• Macro Attachments

• Panel Memory

Some related panel settings can be saved as configuration files (Panel Prefs, Panel Memory), or as part of a Show file. Should Control Panel software problems occur, clearing the Control Panel NV memory may help with diagnostics and recovery.

Clear Control Panel NV Memory Procedure

Follow the same procedure for clearing the Video Processor Frame NV Memory (see *Clear NV RAM for Control Panel and Frame on page 244*), but select the Control Panel in the hierarchy screen. After the Control Panel resets, restoring User and Panel Prefs and Panel Memory configuration files should restore the Control Panel to its previous operational state.

Control Panel IP Information

After a panel processor board replacement, the Video Processor Frame IP address will need to be re-entered into the Control Panel.

Menu Panel IP Information

Replacing a Menu Panel processor will require resetting all Menu Panel IP addresses. This includes the actual Menu Panel IP addresses, as well as the addresses the Menu Panel uses to communicate with the Video Processor Frame and Control Panel (DPOPs).

3-ME Control Panel Interior

Figure 168. Karrera 3-ME Panel Open, Air Guide In Place
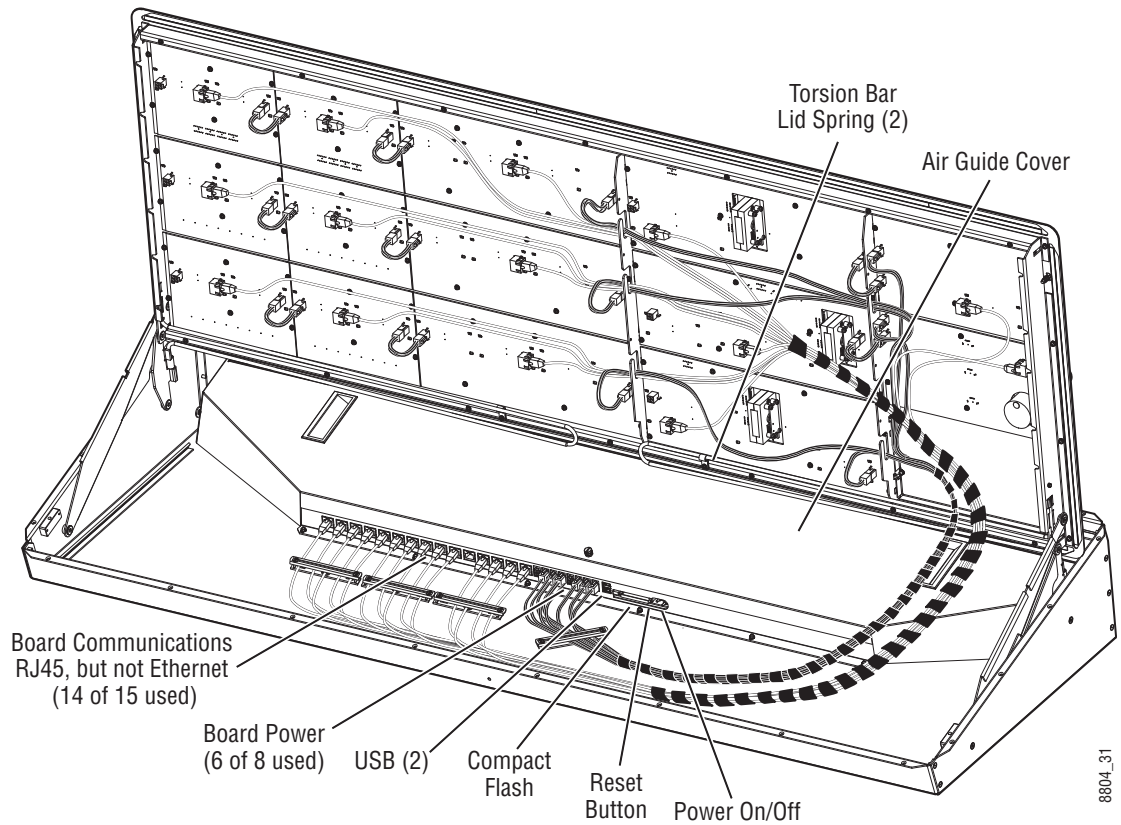
Note   Pressing the **Reset** button performs a hard reset of the panel processor. The preferred reset method is to use the EMEM area, which performs a controlled shut-down of the panel software and then reboots the operating system. The **Reset** button should only be used if the panel is in a state that does not allow an EMEM area reset.

Figure 169. Karrera 3-ME Panel Open, Air Guide Removed
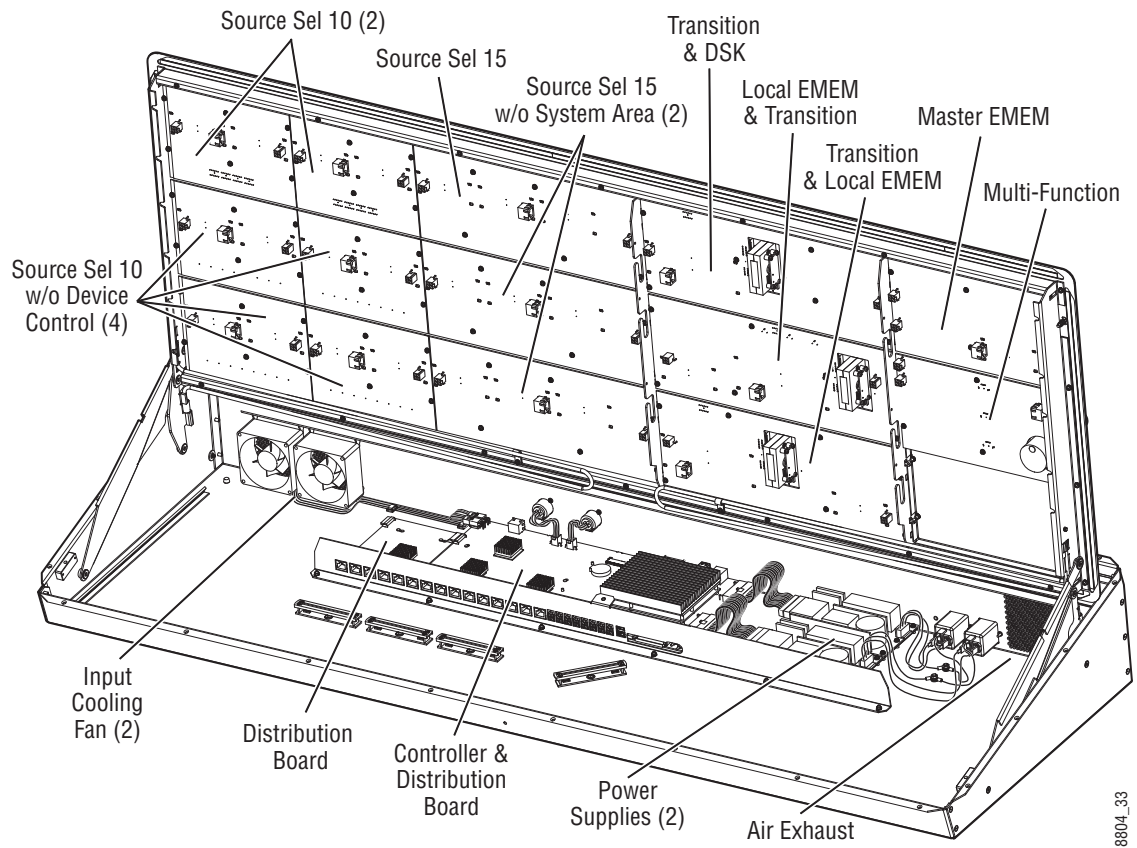
Figure 170. Data Cable Internal Connections, 3-ME Panel
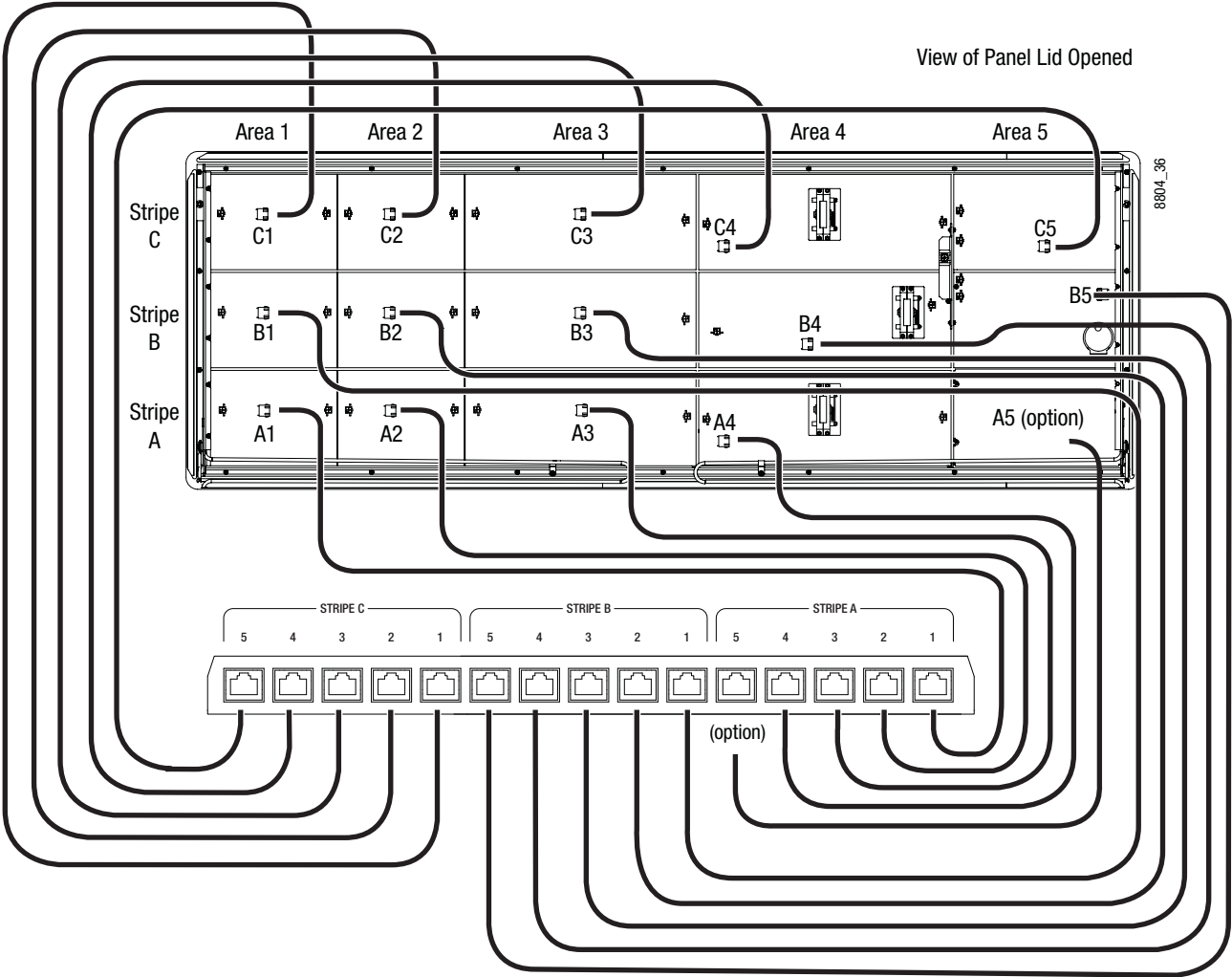
CAUTION Karrera panel data cables must be connected to the correct boards for proper system operation.

Figure 171. Power Cable Internal Connections, 3-ME Panel
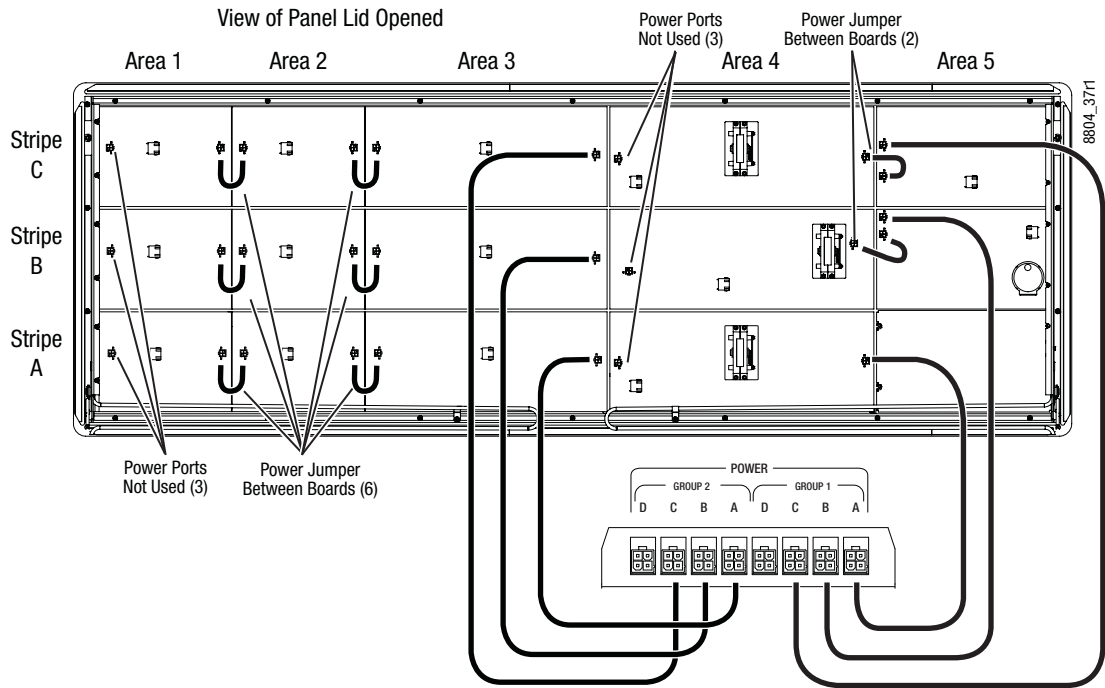
Note   All power ports supply identical power. Power cable routing and jumpers shown are as shipped from the factory.

2-ME Control Panel Interior

Figure 172. Karrera 2-ME Panel Open, Air Guide In Place
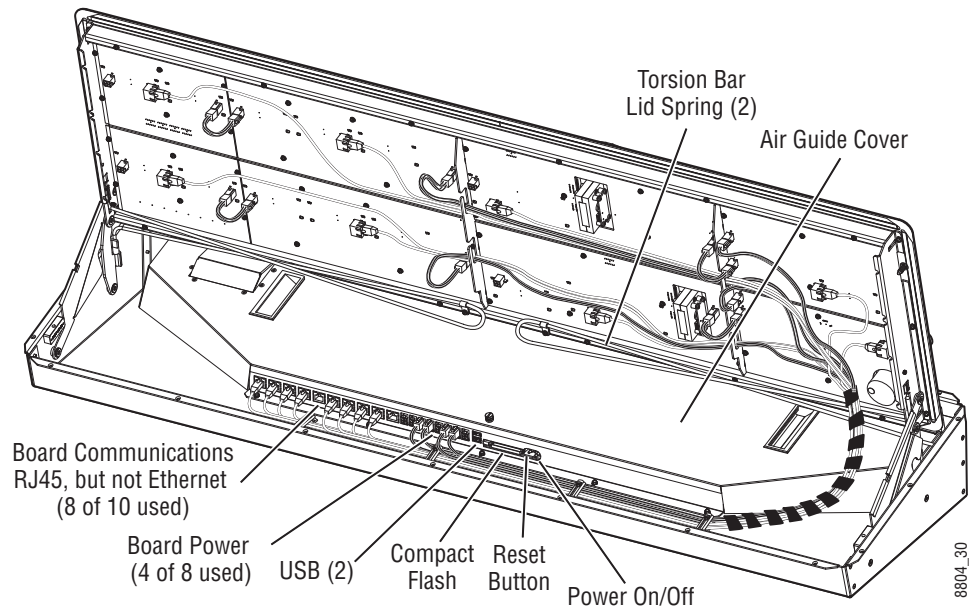
Note   Pressing the **Reset** button performs a hard reset of the panel processor. The preferred method is to reset using the EMEM area, which performs a controlled shut-down of the panel software and then reboots the operating system. The **Reset** button should only be used if the panel is in a state that does not allow an EMEM area reset.

Figure 173. Karrera 2-ME Panel Open, Air Guide Removed
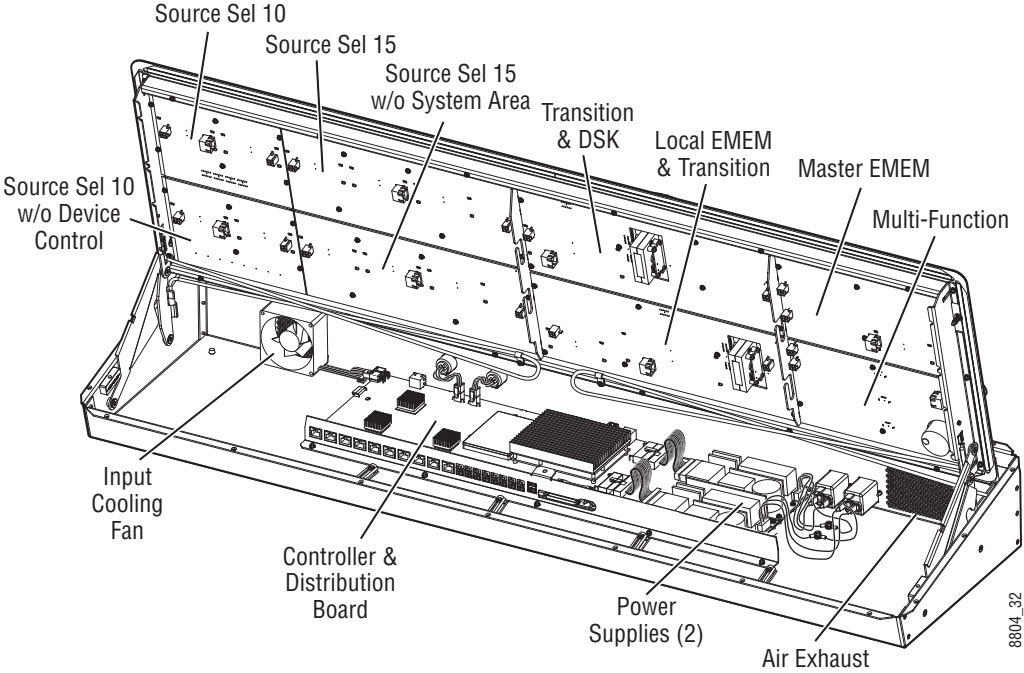
Figure 174. Data Cable Internal Connections, 2-ME Panel
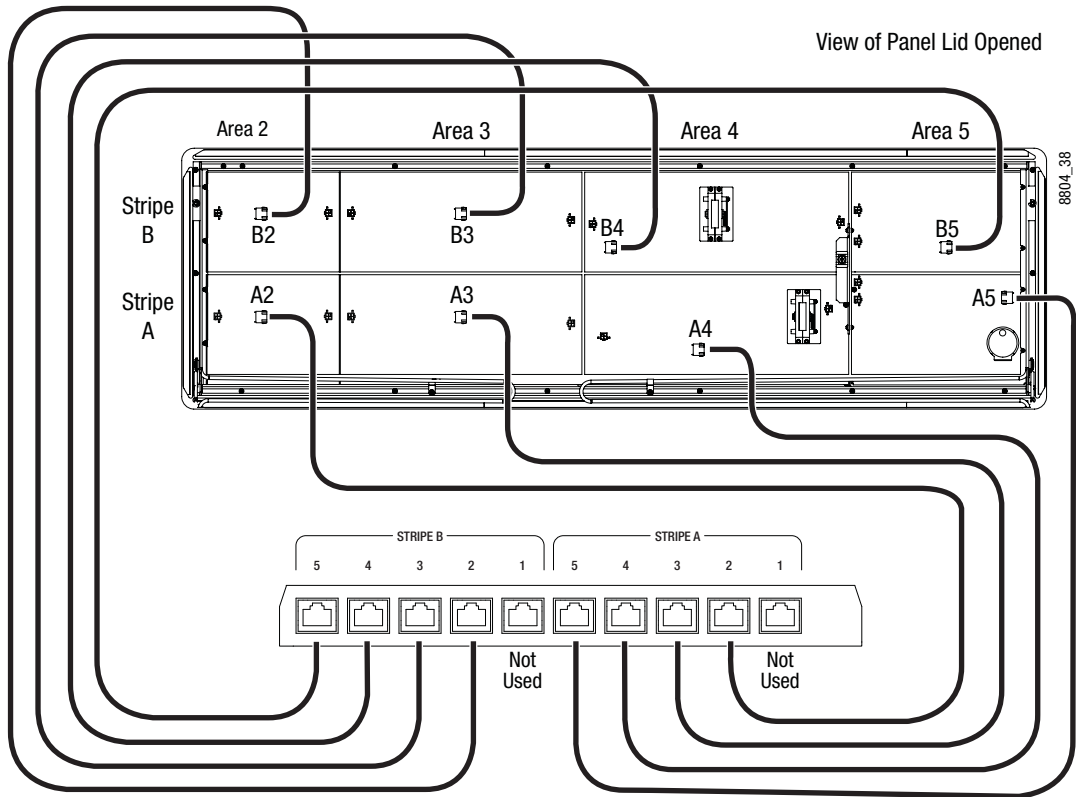
View of Panel Lid Opened

Area 2   Area 3   Area 4   Area 5

Stripe
B   B2   B3   B4   B5

Stripe
A   A2   A3   A4   A5

STRIPE B   STRIPE A
5   4   3   2   1   5   4   3   2   1

Not   Not
Used   Used

CAUTION Karrera panel data cables must be connected to the correct boards for proper system operation.

Figure 175. Power Cable Internal Connections, 2-ME Panel
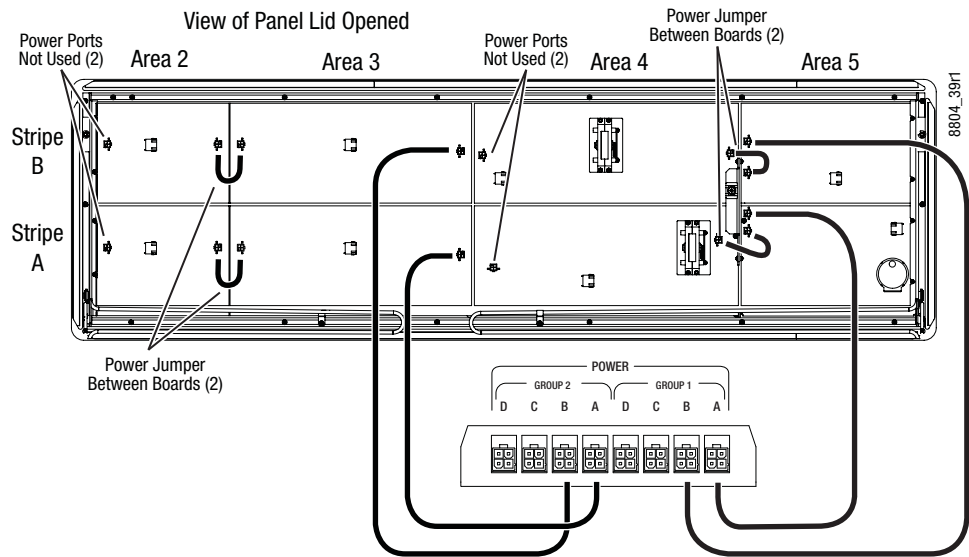
Power Ports   Power Ports   Power Jumper
Not Used (2)   Not Used (2)   Between Boards (2)

View of Panel Lid Opened

Area 2   Area 3   Area 4   Area 5

Stripe
B

Stripe
A

Power Jumper
Between Boards (2)

POWER
GROUP 2   GROUP 1
D   C   B   A   D   C   B   A

Note All power ports supply identical power. Power cable routing and jumpers shown are as shipped from the factory.

General Control Panel Lid Switch Board Remove and Replace

In general, switch boards in the panel lid can be replaced as follows:

1. Power down and unplug panel from its power source.

2. Label any sockets and cables before you unplug them to ensure the cables are replaced in the correct sockets. This is especially important if you will be removing more than one board.

3. Disconnect the data and power cables from the board.

4. Remove the screws (from four to seven depending on board type).

5. Carefully remove the board from the lid.

Source Select Switch Board Remove and Replace

Panel source select boards have overlapping edges that share screws. These boards can be removed in left to right order with the general procedure above.

To remove an interior board, loosen the two left-most screws of the left adjacent board, remove the remaining 4 screws of that left board, then remove the 6 screws of the right adjacent switch board and carefully tilt the board out.

Transition Board Remove and Replace

Follow the general procedure above, except carefully unplug the wires connecting the Lever Arm to the Transition board before you remove the screws holding that board to the lid.

Multi-Function Board Remove and Replace

Follow the general procedure above, except after removing the screws you need tilt the Multi-Function board down and unplug the wires connecting the Joystick to the Multi-Function board.

Video Processor Frame Maintenance

Video Processor Frame NV Memory

K-Frame system non-volatile memory (NV Memory) contains Engineering, Suite, and User configuration data, and also has data for all the effects registers. This data is stored as files on the Video Processor Frame solid state drive, and is loaded on bootup. Errors in this data could cause system prob-

lems, which may be overcome, perhaps only temporarily, by clearing the NV Memory.

Note   You should have backup copies of your configuration and EMEM files compatible with your current software version so they can be restored after the NV Memory is cleared.

Clear NV RAM for Control Panel and Frame

Use the following procedure from the Menu Panel or Menu on PC running the Menu Panel application that operates with the updated Video Processor Frame.

Note   A new Menu Panel or PC that has not been used with the switcher system will need to be configured as a Control Surface Node before it can operate with a switcher system.

1. From the K-Frame Installer menu, touch the **System** button and touch the device to be cleared.

2. Touch the **Clear NV** button.

Figure 176. K-Frame Installer Program Clear NV
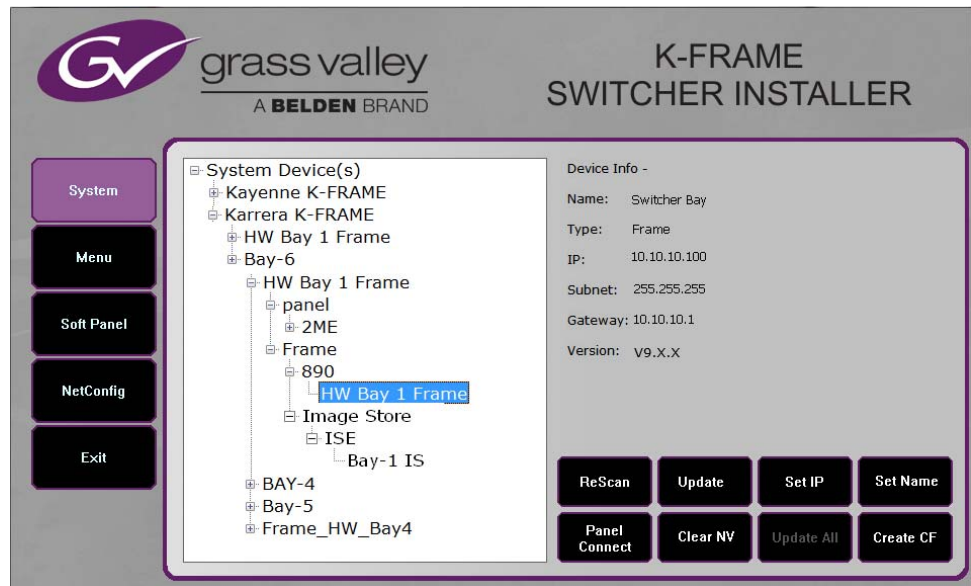
3. Click on the **Clear NV** button. The following Clear NV Files screen will appear.

Figure 177. Video Processor Frame
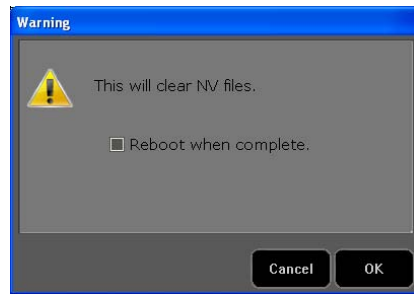
4. Leave the **Reboot when complete** box filled and click **OK**.

NV Memory will be cleared and the Menu or Frame will be rebooted.

Restore System Files

If you have a Show File with a set of standard Karrera K-Frame system settings, you can load it now to restore your system to that state. However, if you are experiencing problems, you may want to reload the files individually to help find what might be causing problems.

1. For troubleshooting, restore your backup files in the following order:

    a. Reload your backup Engineering Setup file and make sure it is correct by, for example, checking that the proper source names appear in the Source Definition menu.

    b. Reload a Suite Prefs file and a User Setups file and check that these settings are correct.

    c. Load some EMEMs and run them to check that they operate correctly.

2. If there are any problems with any of the restored files, they may have become corrupted and need to be deleted and rebuilt. If a problem file locks the system, you may need to clear NV Memory again to restore system operation, but you will know what file is responsible. Contact Grass Valley Customer Support if you need troubleshooting assistance.

Restoring Multiple Suites

If your Karrera K-Frame system is configured has multiple suites, each suite will have its own Suite Prefs file. Clearing Video Processor Frame NV Memory will both suites, so to restore the system completely you will need to reload Suite Prefs for each suite.

IP Address Information

Storing Video Processor Frame IP address information on the backplane of the Frame allows control processor board replacement without the need to enter the IP address of the Frame.

After control processor board replacement you will need to go to the Node Settings menus (**Eng Setup**, **Node Settings**) and re-enter Panel and Menu IP addresses (**Control Surfaces**), and Remote Aux information (**Remote Aux IP Network**)

License Information

License information stored on the Video Processor Frame EEPROMS determine which features are available for use. Licensing is keyed to the serial number (System ID) for the K-Frame Video Processor.

VP Frame Processor Board Replacement

When replacing the K-Frame Video Processor Frame control processor board, in either the 6U or 13U K-Frame, verify that the S2 Boot Mode Dipswitch settings are all in the up or **Normal** position. The dipswitch is located below the SATA drive on the control processor board, as shown in Figure 178.

Figure 178. K-Frame Control Processor Board - S2 Boot Mode Dipswitch Location
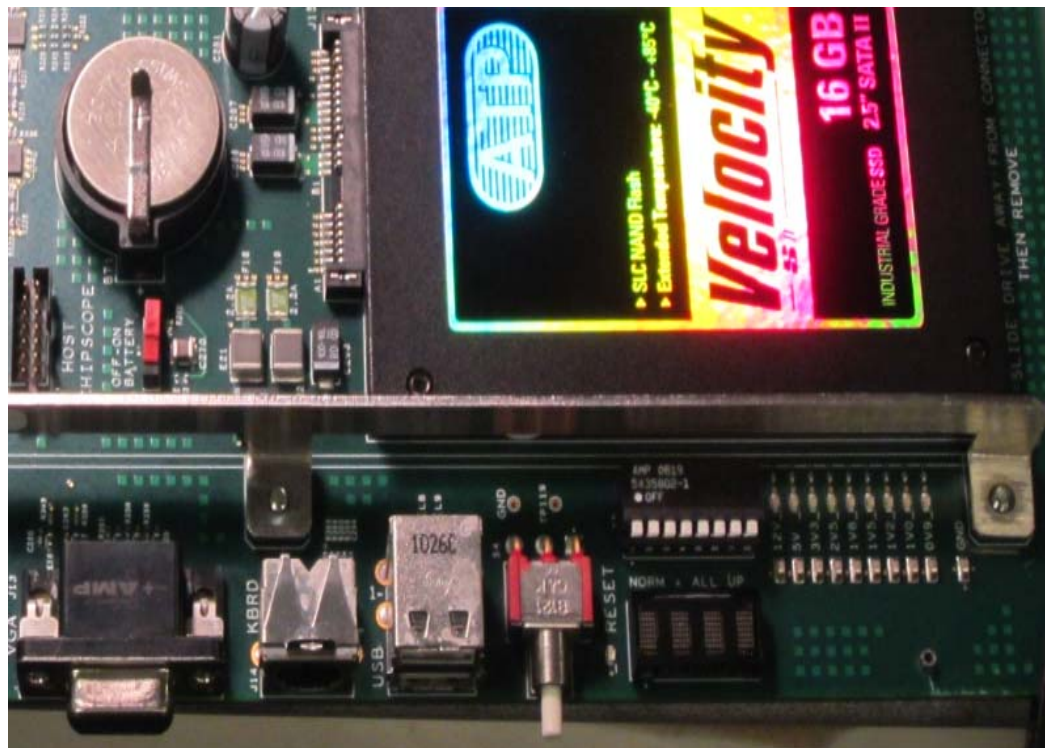
CAUTION If the Dipswitch settings are not in the up or Normal position, the system may not boot.

Lifetime of the Internal Battery

Battery life of the K-Frame Video Processor internal battery is dependent on the operating time of the switcher.

Table 16. Lifetime of the Internal Battery

Capacity	GV #	Type
1000 mA/h	146013800	CR 2477

Video Processor Frame Battery Replacement

1. Turn off all power to the Frame before opening it.

2. Using a grounding strap, open the door to the Video Processor Frame and remove the Controller Board.

3. Remove the old battery by lifting the clip holding it in place.

Figure 179. Video Processor Frame Controller Board with Battery Indicated
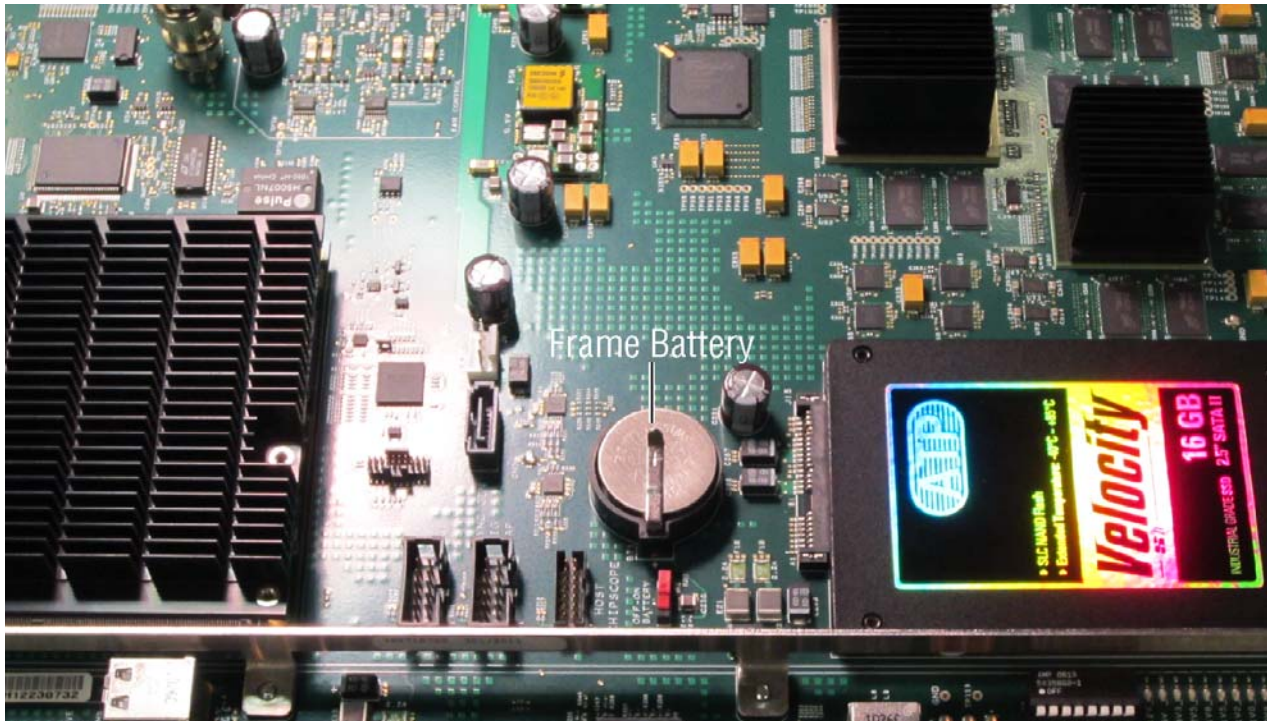
4. Put the new battery in place and secure the clip.

5. Re-insert the frame controller board and close the frame door.

Touchscreen Calibration

The Karrera K-Frame Touch Screen Menu Panel is adjusted in the factory before shipment, and so should not require calibration. If the Menu Panel does not respond correctly to screen touches, however, you can perform this procedure.

1. **Minimize** or **Exit** the GV Switcher menu application.

2. With the Windows desktop visible, click on **Start**/**Programs**/**Hampshire TSHARC Control Panel**. The Hampshire application will open.

Figure 180. Hampshire Calibration Application
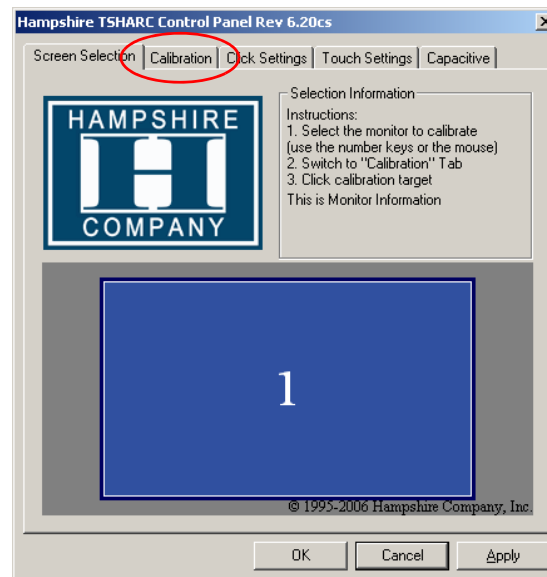
3. Select the second **Calibration** tab on the top (Figure 180).

Figure 181. Calibration Menu Screen
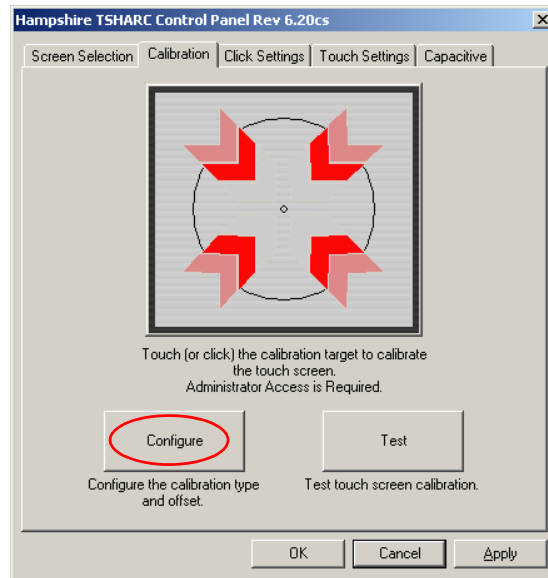
4. Touch **Configure** on the lower part of the screen (Figure 181).

Figure 182. Calibration Type Selection
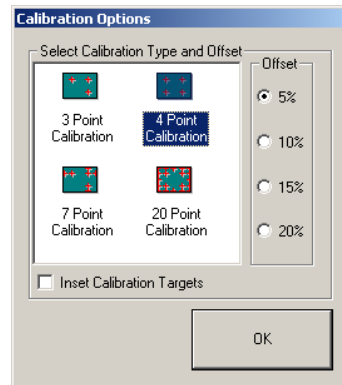
5. Touch **4 Point Calibration** and then **OK**. You will return to the Calibration menu screen.

Figure 183. Calibration Menu Screen
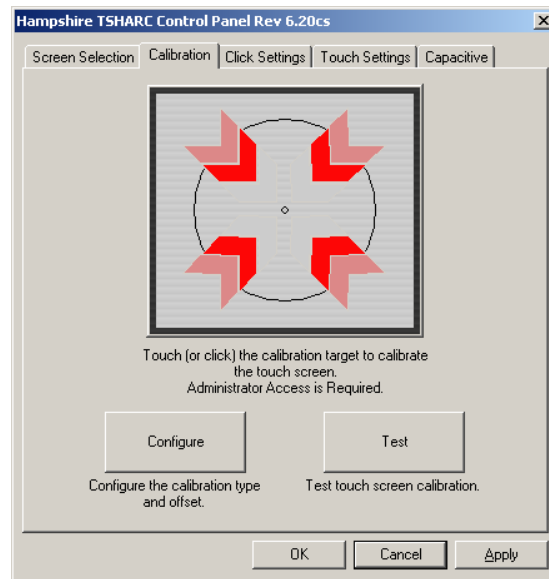
6. Start the calibration process by touching the center of the calibration box and circle where the red arrows are pointing (Figure 183).

Figure 184. Calibration Box

7. The Calibration menu screen will then go away and a new calibration target circle will appear in a corner of the screen (Figure 184).

8. Touch and hold the dot in the center of the small calibration box. The screen will report **TOUCH**, then **HOLD**, and then **RELEASE**. When done the application will register the location and move the circle to another corner. Repeat for all four corners. A blank screen will then appear (Figure 185).

Figure 185. Touchscreen Calibration Final Confirmation Screen

9. Touch the screen to verify the calibration. A calibration circle will appear and follow your finger touch across the screen. If satisfied, touch the **Accept** button at the bottom of the screen to save the calibration.

10. The Calibration menu screen then reappears (Figure 183 on page 250). Touch **OK** at the bottom of the screen to exit the application.

Diagnostics

Capture Software Diagnostic Data

Software diagnostic data can be captured on a K-Frame Video Processor. This information can be useful to Grass Valley engineers for troubleshooting purposes. Typically this procedure is only used when the system is experiencing problems, and is done after a Video Processor Frame reboot.

Note During the diagnostic data capture the K-Frame system may remain functional, but system operation is not recommended at this time. Leave the Software Diagnostic menu displayed and monitor the file save process shown at the top of the menu to allow optimum information collection.

1. Touch the **Capture Software Diagnostic Data** button located on the Status menu (accessed via **Eng Setup**, **Status**). A file browser window will open.

Figure 186. Software Diagnostics Data Capture Menu
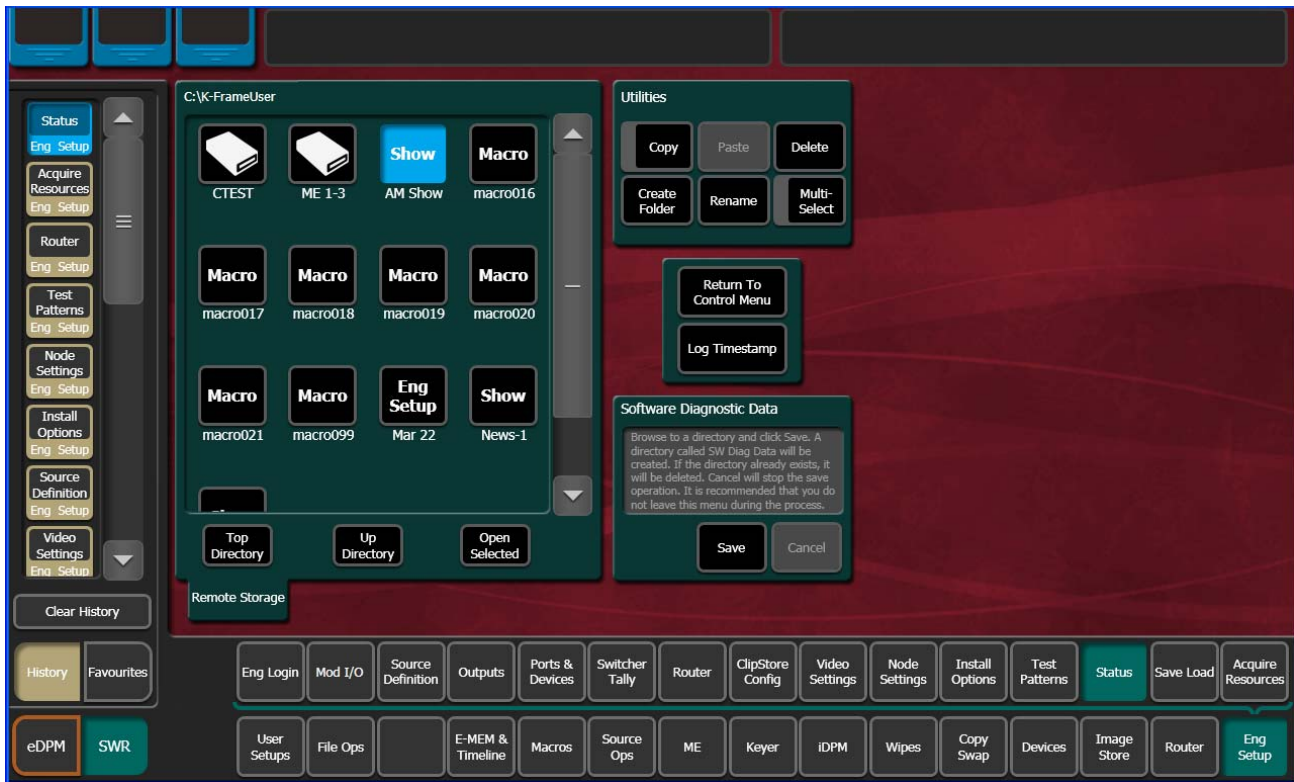
2. After selecting the destination for the files in the left pane, press the **Save** button to initiates the file copy process. A SW Diag Data directory will be created (or overwritten if on already exists) containing GV Switcher system data. The time required to transfer the files varies depending on the amount of data being saved, and may take several minutes.

3. After the files have been copied, the entire contents of the directory should be compressed into a .zip archive. Grass Valley Customer Support can provide instructions on how to send this information to the GV engineering team for analysis.

Control Panel Module Diagnostics

On Control Panels, boot information/diagnostic is shown on the left most character display of every panel board. This information (Table 17) is

immediately visible after a power cycle and present until the application software writes the first data to the character displays

Table 17. Control Panel Board Boot Display Codes

	Digit			
3	**2**	**1**	**0**	Digit Zero shows the link and FPGA boot status
			*	1. Module interface link is working (normal/default). 2. FPGA was loaded over application area (normal/default).
			+	1. Module interface link is working (normal/default). 2. FPGA was loaded over factory area: application area damaged, reprogramming necessary.
				1. Module interface link is not working: link should come up after 1-3 seconds, if not there may be a hardware problem. 2. FPGA was loaded over application area (normal/default).
			!	1. Module interface link is not working: link should come up after 1-3 seconds, if not there may be a hardware problem. 2. FPGA was loaded over factory area: application area damaged, reprogramming necessary!.
		Digit 1 shows the lower number of the FPGA firmware version.		
	Digit 2 shows the middle number of the FGPA firmware version.			
Digit 3 shows the upper number of the FPGA firmware version. (X1 always shows "!" to see the difference to the released versions).				

Example codes are shows in

Table 18. Control Panel Module Boot Display Codes Examples

	Digit			
0	**3**	**7**	*	1. Module interface link is working (normal/default). 2. FPGA was loaded over application area (normal/default). 3. FPGA firmware version is 037 (DS1281.037).
0	**3**	**7**	+	1. Module interface link is working (normal/default). 2. FPGA was loaded over factory area: application area damaged, reprogramming necessary. 3. FPGA firmware version is 037 (DS1281.037).
0	**3**	**7**		1. Module interface link is not working: link should come up after 1-3 seconds, if not there may be a hardware problem. 2. FPGA was loaded over application area (normal/default). 3. FPGA firmware version is 037 (DS1281.037).
0	**3**	**7**	!	1. Module interface link is not working: link should come up after 1-3 seconds, if not there may be a hardware problem. 2. FPGA was loaded over factory area --> application area damaged, reprogramming necessary. 3. FPGA firmware version is 038 (DS1281.038).
!	**3**	**5**	*	1. Module interface link is working (normal/default). 2. FPGA was loaded over factory area because X1 doesn't have a application area (normal/default). 3. FPGA firmware version is X1 and 35 (DS5831.035).
!	**3**	**5**		1. Module interface link is not working: link should come up after 1-3 seconds, if not there may be a hardware problem. 2. FPGA was loaded over factory area because X1 doesn't have a application area (normal/default). 3. FPGA firmware version is X1 and 35 (DS5831.038).

About Updating the HAD FPGA

HAD (Host Address Decoder) FPGA (Field Programmable Gate Array) updates are to be performed by qualified personnel only, i.e. an EIC (Engineer In Charge).

Each CPU or Image Store board installed in a Grass Valley K-Frame Video Processing Frame has a PCI Express endpoint for communication with the host processor. These PCI endpoints are governed by the HAD FPGA. Software updates can include firmware updates for these endpoint HADs.

When to Update the HAD FPGA

A HAD update is required if HAD out-of-date notifications appear in the menu approximately five minutes after the Frame is booted. A software upgrade or board replacement if the board has an older HAD version, can cause the out-of-date firmware notification to be displayed. It is recommended that spare CPU/Image Store boards are upgraded before use. Out-of-date firmware notification can also be seen from a connected serial console or Telnet connection.

Switcher menu notification:

Figure 187. HAD FPGA Menu Notification Message Example
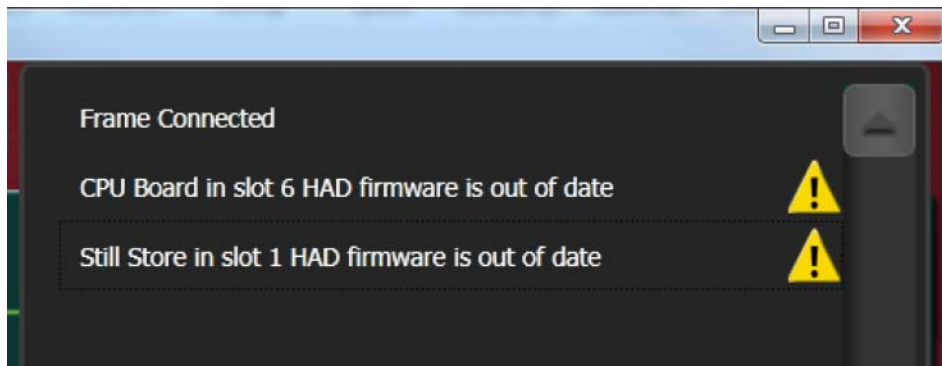
Serial console message example:

```
CPU Board in slot 6 HAD firmware is out of date
HAD revision = 1, latest file revision = 2
HAD E5E00000: CPU Board 6, Num.Ver.Rev 2000.b.1, TimeStamp 05/17/2013
14:01, DMA:Yes
Still Store in slot 1 HAD firmware is out of date
HAD revision = 0, latest file revision = 1
HAD E1800000: Still Store 1, Num.Ver.Rev 5000.b.0, TimeStamp 05/21/2013
16:23, DMA:N/A
```

Update the HAD FPGA

The HAD FPGA update can be performed using either a serial console attached to the front edge of the Controller board using the DB9 connector or a Telnet session.

CAUTION It is recommended that HAD (Host Address Decoder) FPGA (Field Programmable Gate Array) updates are performed by qualified personnel only, i.e. an EIC (Engineer In Charge).

Update the HAD FPGA Using a Serial Console

1. Open the Frame door and attach the serial console cable to the front edge of the Controller board (see the version 8.0 Installation & Service Manual for your K-Frame model for more information).

2. Verify and/or set the serial parameters to:

   ```
   115200 baud
   8 data
   no parity
   1stop
   ```

3. To check the HAD status, enter checkHADs at the prompt:
   ```
   ->checkHADs
   ```

   Result:

   HADs up-to-date: `value = 1 = 0x1`

   HADs out-of-date: `value = 0 = 0x0`

4. Enter the console menu by typing consoleMenu at the prompt:
   ```
   ->consoleMenu
   ```

   Result:

Figure 188. Console Menu

```
-> consoleMenu
 [1] Status             [2] Controller         [3] ME
 [4] Input              [5] Output             [6] ModIO
 [7] Image Store        [8] Spare              [9] Debug
 [10] Software Options  [11] Fan Controller    [P] Power Supply
 [H] Boot Sw Help       [Z] Test Diagnostics   [D] DisableAllUpdates
 [M] DisableAllMonitoring  [x] Exit to shell
 >
```

5. Enter the number nine [9] for the Debug menu, at the prompt: `->9`

   Result:

Figure 189. Debug Menu

```
> 9
 [1] GPI                   [2] Tally                   [3] MessageControl
 [4] TimeThreads           [5] Router Control          [6] RDP/CPL Tests
 [7] Show image info       [8] Show DMA info           [9] Feature Tests
 [10] Transition           [11] Switch Image DMA       [12] Temp Show All
 [13] Temp Adjust Parms    [14] Dump HAD Info          [15] Flash HADs
 [16] NP Aux Control       [17] Field Timing           [18] CPL Msg Timing
 [19] Display Re-entries   [20] DebugNetwork           [21] DebugImageStore
 [22] Debug Event Control  [x] Exit
Debug>
```

6. Enter the number fifteen [15] for the Flash HADs menu, at the prompt:

->15

Result:

Figure 190. Flash HADs Menu

```
Debug> 15
Select FLASH Type
[G] Golden Configuration Image
[M] Multi Boot Configuration Image
[x] Exit (At any time, 'x' will exit)
>
```

7. Enter the letter m [M] for the Multi Boot Configuration menu, at the prompt: ->M

Result:

Figure 191. Multi Boot Configuration Menu

```
Confirm flashing all off HAD's?
Summary:
        Flash Type:     MultiBoot
        Is this correct? (Y or N)>
```

8. Enter the letter Y to begin the reprogramming of the HADs, at the prompt: ->Y

Result: HADs are being erased and programmed which can be seen on the serial console monitor. If successful, a confirmation similar to the following will be displayed on the serial console monitor.

Figure 192. Successfully Installed HAD Example

```
HAD Flashing Success! 8 passed, 0 failed
```

CAUTION Do not power down or reset the Frame during the update process, HAD pro-
gramming takes several minutes to complete.

9. Once the programming is completely finished, power cycle the Frame
   to complete the HAD update process.

10. To verify the update, enter checkHADs at the prompt: `->checkHADs`

    Result:

    HADs up-to-date if value is: `value = 1 = 0x1`

    HADs out-of-date: `value = 0 = 0x0` (followed by a list of out-of-
    date HADs)

Figure 193. Updated HAD Example Menu

```
-> checkHADs
value = 1 = 0x1
->
```

Update the HAD FPGA Using a Telnet Session

1. Open a Telnet Session to the Frame by clicking on the Windows Start
   menu and entering **telnet,** space, <**Frame IP Address**> (example: telnet
   10.10.10.100) in *Search programs and files*.

2. To check the HAD status, enter checkHADs at the prompt:
   `->checkHADs`

   Result:

   HADs up-to-date: `value = 1 = 0x1`

   HADs out-of-date: `value = 0 = 0x0`

3. Enter the console menu by typing consoleMenu at the prompt:
   `->consoleMenu.`

   Result:

Figure 194. Telnet Frame List

```
-> consoleMenu
 [1] Status              [2] Controller        [3] ME
 [4] Input               [5] Output            [6] ModIO
 [7] Image Store         [8] Spare             [9] Debug
 [10] Software Options   [11] Fan Controller   [P] Power Supply
 [H] Boot Sw Help        [Z] Test Diagnostics  [D] DisableAllUpdates
 [M] DisableAllMonitoring [x] Exit to shell
>
```

4. Enter the number nine [9] for the Debug menu, at the prompt: `->9`

   Result:

Figure 195. Telnet Debug Menu

```
> 9
[1] GPI                  [2] Tally               [3] MessageControl
[4] TimeThreads          [5] Router Control      [6] RDP/CPL Tests
[7] Show image info      [8] Show DMA info       [9] Feature Tests
[10] Transition          [11] Switch Image DMA   [12] Temp Show All
[13] Temp Adjust Parms   [14] Dump HAD Info      [15] Flash HADs
[16] NP Aux Control      [17] Field Timing       [18] CPL Msg Timing
[19] Display Re-entries  [20] DebugNetwork       [21] DebugImageStore
[22] Debug Event Control [x] Exit
Debug>
```

5. Enter the number fifteen [15] for the Flash HADs menu, at the prompt:

->15

Result:

Figure 196. Telnet Flash HADs Menu

```
Select FLASH Type
[G] Golden Configuration Image
[M] Multi Boot Configuration Image
[x] Exit (At any time, 'x' will exit)
>
```

6. Enter the letter m [M] for the Multi Boot Configuration menu, at the prompt: ->M

Result:

Figure 197. Telnet Multi Boot Configuration Menu

```
> m
Confirm flashing all off HAD's?
Summary:
        Flash Type:     MultiBoot
        Is this correct? (Y or N)>
```

7. Enter the letter Y to begin the reprogramming of the HADs, at the prompt: ->Y

Result: HADs are being erased and programmed which *cannot* be seen in the Telnet session, however results can be viewed in the K-Frame, Frame Message Logs.

Note   After approximately seven minutes, the HAD programming results can be seen in the K-Frame log files.

8. Open an Internet Explorer window and enter the IP Address of the Frame to display the K-Frame Web pages.

9. Select **Frame Message Log**, then **Current**.

Figure 198. Successfully Installed HAD Example
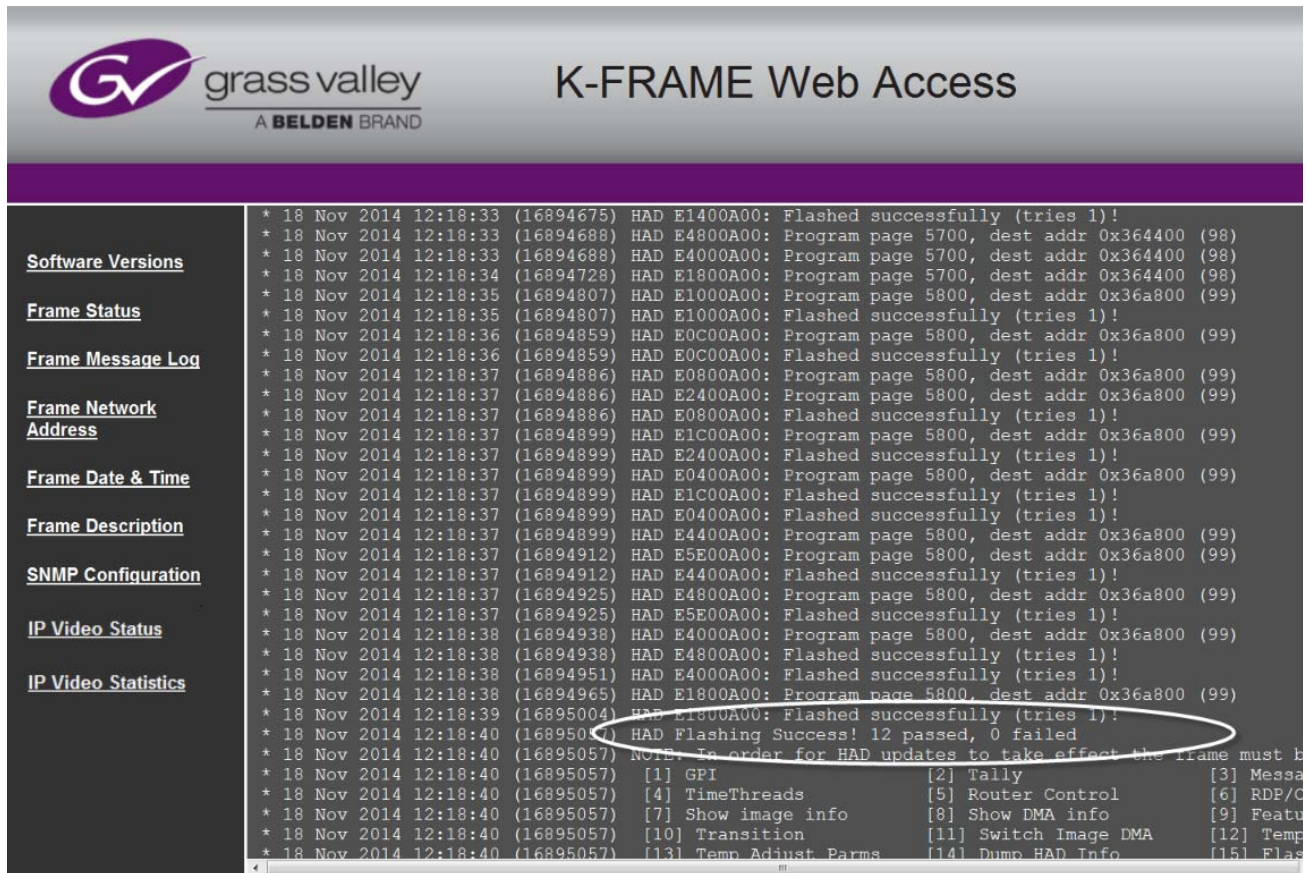
CAUTION Do not power down or reset the Frame during the update process, HAD programming takes several minutes to complete.

10. Once the programming is completely finished, power cycle the Frame to complete the HAD update process.

11. To verify the update, enter checkHADs at the prompt: `->checkHADs`

    Result:

    HADs up-to-date: `value = 1 = 0x1`

    HADs out-of-date: `value = 0 = 0x0` (followed by a list of out-of-date HADs)

Figure 199. Updated HAD Example Menu

Creating Control Panel Compact Flash Cards

The Control Panels each use their own specially formatted and partitioned Compact Flash (CF) card. The system cannot use blank CF cards directly formatted by a PC or other device.

The K-Frame Switcher Installer program is used to format, partition, and load boot files onto system CF cards. Once prepared in this manner, the appropriate GV Switcher software (Control Panel) will need to be installed onto each card. System configuration information will also need to be reloaded and/or re-entered after CF card replacement to restore normal system operation.

Materials Required

To format a K-Frame Control Panel CF card you will need:

* A CF card reader/writer (USB 2.0 recommended),

* PC, or Menu Panel equipped with a mouse and keyboard,

* K-Frame Switcher Installer application program deployed onto the PC or Menu Panel, and

* GV Switcher release software.

After creating new CF cards, you will need the following to restore your system to full operation:

* Backup system configuration files (a Show file, or a set of Eng Setups and User Setups files), and

* Node Settings information (IP addresses and names of all system components). This may be written notes, screen shots, or a spread sheet. This information is not saved to configuration files.

CF Card Formatting Procedure

1. Connect the CF card reader/writer to the USB port of the PC or Menu Panel and insert the CF card into the reader/writer.

2. Launch the K-Frame Switcher Installer program from the desktop icon or the Windows Start menu.

Figure 200. Installer Icon   K-Frame Switcher Installer Icon.

3. Select **System**, click on the **Create CF** button, and choose the CF card type, either **Kayenne Panel** or **Karrera Panel**.

A DOS window will start, and then a separate window opens asking for the CF card location (D, E, F etc.) with the memory size of the device. Choose the correct device (CF card) to format. Even if only one CF card is present, you may still need to choose it on the list.

Figure 201. K-Frame Switcher Installer, Select CF Card Screen
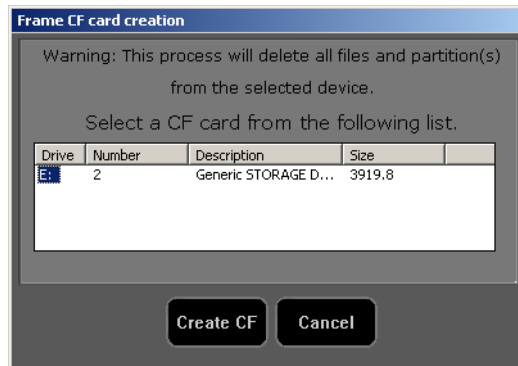
4. Click **Create CF**. The following screen will appear.

Figure 202. K-Frame Installer, Format CF Card Screen
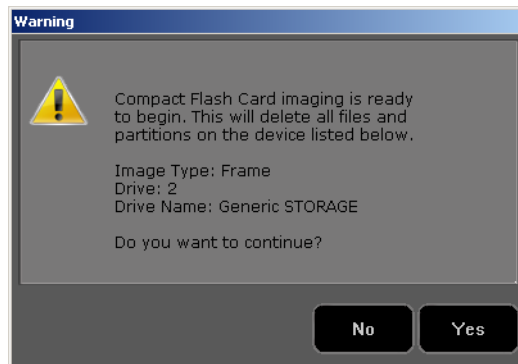
CAUTION Any existing files or partitions on the CF card will be deleted.

5. Click **Yes**. A new Ghost application screen appears that reports the progress of the formatting. The process can take 8 to 20 minutes to fully erase, format, test and partition the CF card.

Note   For Control Panel CF cards, though the progress bar reaches 100% a couple more minutes are still required to complete the process. During this time **Configuring operating system disk layout…** is reported at the bottom of the screen.

Figure 203. K-Frame Installer, Format CF Card Screen
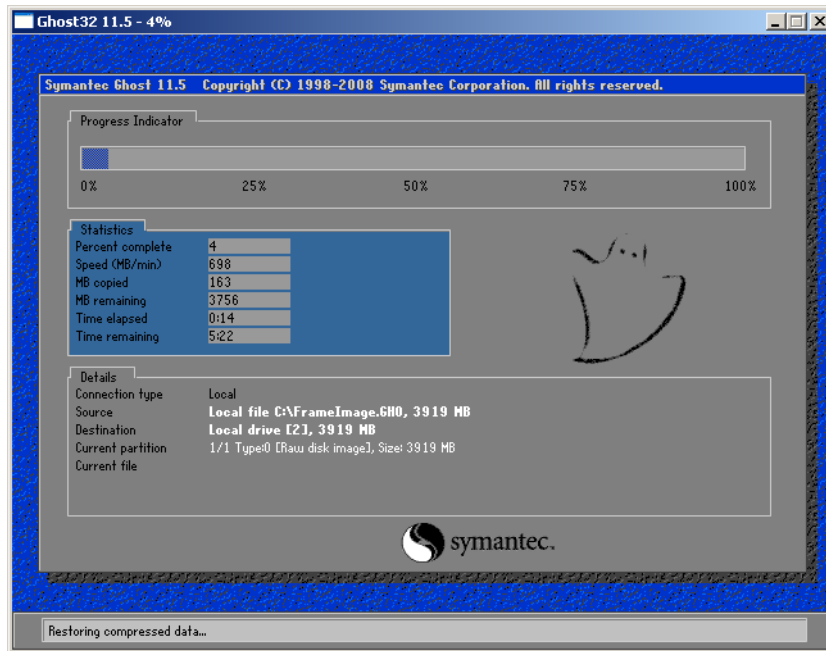
Note   Additional formatting time may be required (perhaps more than an hour) if an older USB 1.1 port or slow reader/writer device is used.

6. When finished, the Ghost window will close by itself.

  • The VP Frame Solid State Drive contains a set of files making a SWUP bootable image. These files can be seen by the Windows OS.

  • The Control Panel CF card now has a Linux O/S that can boot the Control Panel. These files are not visible to the Windows OS.

CAUTION Do Not format CF cards using Windows.

Proceed with the appropriate update process described below.

Updating System Software on a New Control Panel CF Card

1. Remove the CF card from the reader, power down the Control Panel, install the CF card in the Control Panel's processor, and power up the panel.

2. Follow the normal software update process, except the Control Panel will be identified as **Unknown / Panel** in the K-Frame Switcher Installer application program hierarchy.

Restore Control Panel Configuration Files

After installing the K-Frame release software, you can now reload a Show file containing the Eng Setups and User Setups for your system, or reload these configuration files individually.

You will also need to enter the Node Settings information. Go to **Eng Setup**, **Nodes Settings**, and enter the IP address and device name information in the **Control Surfaces** and **Frame Suite Nodes & ID** tabs.

SNMP Monitoring

Introduction

Simple Network Management Protocol (SNMP) is an industry standard mechanism for monitoring devices over a network, primarily intended to support service and maintenance activity. With SNMP, devices can be interrogated about the current status of specific device components (reported as values), and devices can report without prompting (traps) certain conditions that may require immediate attention.

An SNMP system consists of one or more Managed Devices, each of which has an Agent (software running as a daemon on that device), and a Network Management System (NMS). The NMS is a software application running on a computer that communicates with the Agents over the network. The information exchanged is determined by a Management Information Base (MIB) database file. The MIB defines the structure and content of the variables that are available as data for monitoring and reporting. A Community Name is also used as a rudimentary security measure, acting as a password to enable communications with the Agent.

For example, a Managed Device may have a cooling fan and thermocouple. The MIB may define a variable for the thermocouple readout, and a request for this data can be sent from the NMS to the Agent, which will reply (if the community name matches) with the current temperature value. The MIB may also define a Trap that reports a fan failure. Should the device's fan stop working, the Agent sends an unprompted message to the NMS. The NMS can be configured to respond to that Trap message, and may have the capability to alert maintenance staff of the problem, via an automatic email message or by triggering a warning alarm.

SNMP is an optional feature for Grass Valley switchers, and requires the purchase and entry of a license key.

SNMP is an industry standard, however, any third party NMS can be used. For third party NMS installation & configuration, please contact your SNMP NMS software vendor.

Grass Valley switchers comply with the following SNMP standards:

Table 19. SNMP Standards Supported

RFC 1155	Structure and Identification of Management for TCP/IP-based Internets
RFC 1157	SNMP v1
RFC 1901-1907	SNMP v2c
RFC 1213	MIB II
RFC 1215	Convention for defining traps for use with the SNMP

The Grass Valley switcher MIBs are available from Grass Valley Customer Support. Load the MIBs for the Video Processor Frame and Control Panel as shown in Table 20.

Table 20. Grass Valley Proprietary MIBs

MIB	Description	Video Processor Frame	Control Panel
gvg-reg	last updated "200402190000Z"	X	X
gvg-element	last updated "200503230000Z"	X	X
gvg-gcp	last updated "200503240000Z"		X
gvg-vsm	last updated "201304260000Z"	X	

Grass Valley Switcher Device Monitoring by SNMP

Grass Valley switchers support monitoring of the devices and device components shown in the following tables.

Note   Only the capabilities described in this document are supported. For detailed information about each supported item, please refer to the MIBs.

Video Processor Frame

Table 21. Supported K-Frame Video Processor SNMP Monitoring

System Information	High level information regarding the Video Processor Frame including operating system, name, location, serial number, software revision and high level frame state.
Module	Each plug in board slot in the Frame is a module (Controller, ME or eDPM). Information is provided regarding the board plugged into the slot and the current state of the slot.
Power Supply (Up to 3)	Reports power failure if a power supply fails or is not present.
Thermal	High level temperature and fan status for the entire system. If a failure is reported here then look at Fans or Temperature Sensor categories for details.
Fans	Detailed speed and status for each fan in the frame. Five fans are on the compact frame and one fan in the standard frame. Typically inspected if Thermal category is reporting a cooling problem.
Temperature Sensors	Detailed information from each monitored temperature sensor on the Frame. Typically inspected if Thermal category is reporting a cooling problem.
Video Sync	Status of external video reference signal and what type of signal is present.
Network Configuration Data	IP address, Gateway and Netmask settings for external facing network interfaces.

Control Panel

Table 22. Supported Kayenne/Karrera K-Frame Control Panel SNMP Monitoring

Fan (3 or 2)	Kayenne: PCU has three fans. Karrera: 2ME Control Panel has one fan, 3 ME has two fans.
Power Supply (2)	Will report power failure if a power supply is not present or not plugged in.
Temperature (2 or 3)	Kayenne: One ambient temperature, one on CPU. Karrera: One ambient temperature, one on the Panel Processor FPGA, one on CPU.
Modules (Control Panel boards)	Status change traps are sent when a module is connected or disconnected.

Menu Panel Processor

The Menu Panel Processor (the PC running the Menu application) can be monitored separately, using the standard built-in Windows SNMP capabilities and a third-party NMS. No unique Grass Valley MIB entries or traps are available.

SNMP Installation

Grass Valley K-Frame switchers system devices have SNMP Agent software already installed. No user installation is required.

Separate NMS software (third party package) will need to be installed onto a PC that resides on the switcher network. Refer to the documentation provided with the NMS for installation instructions.

SNMP Licensing

Grass Valley switcher system SNMP licensing is based on the Video Processor Frame, and is tied to that Frame's unique System ID number. All Control Panels associated with a Frame will use that same SNMP license.

The Frame's System ID is shown on the Menu application's Install Options screen This screen also reports the current licensing status of that Frame.

Figure 204. Install Options Screen

An SNMP license is purchased from Grass Valley Customer Support. You need to provide the Frame's System ID with your payment, and you will then be given a license key. Enter that license key in the Install Options screen to license the SNMP feature for that entire GV Switcher system.

Licensing Definitions

SNMP Licensed - SNMP is capable of running with all documented features available. See SNMP enable/disabled for additional operational implications.

SNMP Unlicensed - SNMP runs minimal functionality provided by the operating system vendor (VxWorks on Kayenne/Karrera K-Frames, Linux on Kayenne/Karrera K-Frame Control Panels) and is always enabled.

SNMP Enabled - (licensed only) all SNMP variable requests are processed and SNMP traps are sent.

SNMP Disabled - (licensed only) all SNMP variable requests are ignored and SNMP traps are not sent.

SNMP Power Up License Processing

Frames and Control Panels power up with SNMP Unlicensed capabilities. If a SNMP license is detected on the Frame then the Frame and Control Panel initialize SNMP licensed capabilities. SNMP Licensed Configuration must be done to properly configure some of the licensed capabilities.

SNMP Licensed Configuration

SNMP Licensed capabilities require additional configuration though the web interface as noted in this document. The Video Processor Frame and Control Panel have separate web interfaces that are accessed by specifying the correct IP address in the URL (example: **http://192.168.1.170**). An example of the K-Frame Webpage is shown in Figure 205.

Configuration steps consist of:

- Enable/Disable SNMP
- Configure Trap Destination IP addresses
- Configure Community Name

Configuration of the NMS software itself will also be required to make full use of the SNMP feature.

Figure 205. Video Processor K-Frame SNMP Web Page

Switcher Device SNMP Configuration Procedure

Refer to Figure 205 for reference.

1. Check the **Enable/Disable** box to activate SNMP for that device.

Note SNMP configuration fields are inoperable (grayed out) if a valid license is not accessible.

2. Enter the IP address of the PC running a NMS where you want trap messages to be sent. Up to three IPs can be entered.

3. If you are not using the **public** community, enter the name of the community to be used.

4. Click **Save New Settings**.

SNMP Trap Messages

The SNMP trap messages listed below are available for various switcher system components.

Note   Only the capabilities described in this document are supported. For detailed information about each supported item, please refer to the MIBs.

Video Processor Frame Traps

Table 23. Supported K-Frame SNMP Traps

Name	Type	Description	Severity
vsmPowerSupplyStatusChange	status	If the current status is different than the last status then a trap is sent. A power supply OK message is only sent if all power supplies are OK after one of more power supplies have failed or been removed. At boot time, the first running status generates an informational message. After that, a transition to the running status generates a normal message.	comm error = alarm fault = alarm power supply removed = warning power supply OK = normal
vsmFanStatusChange	status	If the fan board is not present or if all fans have stopped working a trap is sent. This trap is resent every 12 seconds until the condition is corrected. If any of the fans are not working properly a trap is sent. This trap is resent every 20 seconds until the condition is corrected. When the system starts running normally or returns from an abnormal condition to running normally a trap is sent.	fan board not present = alarm all fans not working = alarm fan not working = warning normal operation = informational (start up), normal (returning from a warning or alarm condition)
vsmTempStatusChange	status	If temperature crosses the warm threshold in any direction a trap is sent.	hot = alarm normal = normal
vsmModuleStatusChange	powerOK	If the current power status is different than the last power status a trap is sent.	power OK = normal power Fault = alarm
vsmModuleStatusChange	status	If the current status is different than the last status a trap is sent.	operational = normal failed = alarm not inserted = warning
vsmReferenceStatusChange	status	When the video reference transitions between locked and not locked in either direction a trap is sent.	not locked = warning locked = normal
gvgElStateChange	status	When the switcher starts the boot process and the trap status is "initializing" a trap is sent. Another trap is sent when the switcher becomes fully operational and the trap status is "running".	initializing = warning running = normal

Control Panel Traps

Table 24. Supported Kayenne/Karrera K-Frame Control Panel Traps

Name	Type	Description	Severity[a]
gcpUnknown(1)	Panel Status Change	The panel is in an unknown state, or does not possess enough intelligence to report its state.	normal
gcpOk(2)	NOTE: This value can be a bit-wise ORing of the enumerated states. When a faulty state is fixed the corresponding bit in the value gets cleared.	The panel is connected to the equipment it is controlling and is operating normally.	normal
gcpCommunicationError(4)		The panel is unable to communicate with the equipment that it is controlling.	alarm
gcpMainPowerFault(8)		The Main power supply on the controller was removed, got disconnected from the ac line, or was faulty.	alarm
gcpRedundantPowerFault(16)		A redundant power supply on the controller was removed, got disconnected from the ac line, or was faulty.	warning
gcpFanFault(32)		The panel has detected a fault on one or more cooling fans. Karrera has up to two fans, Kayenne PCU has three fans.	warning
gcpThermalFault(64)		The temperature in the panel is too high for reliable operation.	warning
gvgElementRunning (1)	Device Status Change	The element is running and processing load.	NA
gvgElementInitializing(6)		This is a post bootstrap state where the element has been restarted, and is initializing its hardware and software components.	NA
gvgElementHalted(8)		The element has halted and not processing load.	NA
gcpModStateUnknown(1)	Module Status Change	The module is in an unknown state.	normal
gcpModRunning(2)		The module is running OK.	normal
gcpModRemoved(4)		The previously installed hot-swappable module has been removed.	alarm
gcpModCommError(9)		The system is unable to communicate with the module.	alarm

[a] Severity Levels: EGvgAlarm = 6, EGvgWarning = 5, EGvgNormal = 4

Specifications

Table 25. K-Frame Video Standards

3G Modes	
1080p50/59.94/60, Level A and Level B	SMPTE 424M-2006
HD Modes	
1080i 29.97/30	SMPTE 274M Table 4, 5
1080i 25	SMPTE 274M Table 6
1080psf 23.976/24/25/29.97/30	SMPTE RP211 Table 12-16
720p 50/59.94/60	SMPTE 296 Table 1-3
SD Modes	
525i 29.97	SMPTE 259M
625i 25	SMPTE 259M

Table 26. K-Frame Mechanical Specifications

Component	Depth	Width	Height	Weight [a]	Rack Units
Compact 6-RU K-Frame	558.8 mm (22.0 in.)	482.8 mm (19 in.)	266 mm (10.47 in.)	31 kg (68 lbs.)	6
Standard 13-RU K-Frame	566.2 mm (22.29 in.)	482.8 mm (19 in.)	577.1 mm (22.72 in.)	55 kg (121 lbs.)	13
Power Supply Frame	492 mm (19.37 in.)	483.1 mm (19 in.)	44.0 mm (1.75 in.)	11 kg (24 lbs.) Above for two PS modules. A single module weighs 2.5 kg (5.4 lbs.). Up to three modules supported.	1

[a] All weights approximate.

Table 27. Environmental

Storage temperature	-20 to 70 deg C (-4 to 158 deg F)
Operating temperature	0 to 40 deg C (32 to 104 deg F)
Relative humidity	0-95% (non-condensing)
Electromagnetic environment	E2 (according to EN55103-1, -2)

Table 28. Network Connections

Type of connection	10/100/1000 Base T
Protocol	TCP(UDP)/IP, Auto speed detection. Auto crossover cable configuration.
Cable and connectors	CAT5 UTP, RJ45 connectors;
Max. Cable Length	100m / 300ft

Note The K-Frame Video Processor has an internal Ethernet switch with six available external ports. One connection is required for each Control Panel and one is required for each Menu PC. An external Ethernet switch is required to connect more than six devices.

Table 29. Power

K-Frame Video Processor Power Supply	
Line voltage	100V-240V AC +/-10% autorange, power factor corrected. Automatic line-voltage sensing for 120V and 240V sources.
Line frequency	50/60Hz +/- 5%
Power consumption	6-RU (Internal Power Supplies) K-Frame, max. 750W
	13-RU K-Frame, max. 1400W
Leakage current	< 2.5 mA
Interconnect DC cable length	864 mm 34 in.

Table 30. Numbers of MEs, Inputs, and Outputs

Frame	M/Es	Inputs	Outputs	GPI Inputs	GPI/Tally Outputs	Smart I/O Modules (MatchDef/SetDef)
Compact 6-RU	1 to 5	32 to 64 plus up to 16 MatchDef	16 to 32 dual plus 4 to 16 SetDef	8 per input board	32 per input board	Each Smart I/O module provides 4 inputs and 4 outputs with up/down/cross conversion capability
Standard 13-RU	1 to 9	32 to 160 plus up to 32 MatchDef	16 to 64 dual plus up to 32 SetDef			
Board Count						
Compact 6 RU	Up to 2 M/E boards	Up to 2 input boards (32 inputs per input board)	Up to 2 output boards (16 dual outputs per output board)			Up to 4 modules
Standard 13 RU	Up to 4 M/E boards	Up to 5 input boards (32 inputs per input board)	Up to 4 output boards (16 dual outputs per output board)			Up to 8 modules

Table 31. Serial Digital Video Inputs

Format	ITU-R656, SMPTE 259M, 270 Mbit/s. SMPTE 292M, 1.485 Gbit/s SMPTE 424M-2006, 3 Gbit/s
Return loss	>10 dB, 1.5GHz to 3GHz
Type of Connector	75 ohm BNC (SMPTE 259M)
Nominal Amplitude	800mV peak-to-peak terminated
Channel Coding	conforms to SMPTE 259M, SMPTE 292M
Ancillary Data	Blanked or passed (user selectable)
Embedded audio	Blanked or passed (user selectable)
EDH	Blanked
Input Impedance	75 ohm
Max cable length	HD Video 100 meters (328 ft.) using Belden 1694A type cable
	SD Video 300 meters (984 ft.) using Belden 1694A type cable

Table 32. Serial Digital Video Outputs

Format	ITU-R656, SMPTE 259M, 270 Mbit/s. SMPTE 292M, 1.485 Gbit/s SMPTE 424M-2006, 3 Gbit/s
Return loss	>10 dB, 1.5GHz to 3GHz
Type of Connector	75 ohm BNC (SMPTE 259M)
Nominal Amplitude	800 mv peak-to-peak across 75 ohm +/- 10%
Rise & Fall Times	400 to 1400 picoseconds 75 ohm termination between 20% and 80% amplitude
Timing Jitter	≤ I UI R 601/656
Alignment jitter	≤ 2 UI (SD), ≤ 1 UI (HD)
Output Impedance	75 ohm
DC Offset	< 50mV with 75 ohm termination

Table 33. Analog Reference Input

Video Standard	Tri-level Sync or Color Black, analog equivalent to the standard being used.
Return loss	> 40dB, up to 5 MHz
Connectors	2 BNC loop-through
Impedance	75 ohm external

Table 34. Karrera Mechanical Specifications

Component	Depth	Width	Height	Weight [a]	Rack Units
2-ME Compact Control Panel	510 mm (20.08 in.)	1010 mm (39.8 in.)	178 mm (7.01 in.)	25 kg. (55 lbs.)	n/a
2-ME Control Panel KRR-PNL-200-25	362 mm (14.25 in.)	1248.6 mm (49.16 in.)	132 mm (5.20 in.)	19 kg. (41 lbs.)	n/a
3-ME Control Panel KRR-PNL-300-35	510 mm (20.08 in.)	1440.6 mm (56.72 in.)	178 mm (7.01 in.)	28 kg. (62 lbs.)	n/a
Optional Touch Screen Menu System:					
Touch Screen Panel	91.7 mm (3.612 in.)	417.85 mm (16.45 in.)	270.10 mm (10.63 in.)	6 kg. (14 lbs.)	n/a
Menu PC (OEM) KRR-MENU-PCU	254 mm (10.0 in.)	157 mm (6.2 in.)	56 mm (2.2 in.)	4 kg. (8 lbs.)	n/a
Menu Panel Support Arm	n/a	n/a	n/a	5 kg. (11 lbs.)	n/a
Optional Local Aux Panel					
Local Aux 35	78 mm 3.1 in.	800 mm 31.5 in.	162 mm 6.4 in.	4 kg. (9 lbs.)	n/a
Local Aux 25	78 mm 3.1 in.	610 mm 24.0 in.	162 mm 6.4 in.	3 kg. (7 lbs.)	n/a

[a] All weights approximate.

Table 35. Power

Karrera Control Panels	
Line voltage	100V–240V AC +/-10% autorange, power factor corrected. Automatic line-voltage sensing for 120V and 240V sources.
Line frequency	50/60Hz +/- 5%
Power consumption	200W
Leakage current	< 2.5 mA
Optional Touch Screen Menu System	
Touch Screen Menu Panel (power brick provided and required)	
Line voltage	100V–240V AC,1.06 - 0.45A
Line frequency	47-63 hz
Power consumption	90W, max.
Power brick output	48V, 1.87A
Fanless PC (power brick provided, optionally powered from Karrera panel)	
Line voltage	100V–240V AC, 1.7A
Line frequency	50/60Hz
Power consumption	60W
Power brick output	12V, 5.0A
Optional Local Aux Panel (35 or 25, powered from Karrera Panel)	
Power input	12V DC, 0.8A max
Power consumption	< 10W

Field Replaceable Units

This appendix provides lists of the Field Replaceable Units (FRU) and Critical Spares for the Karrera K-Frame Video Production Center. FRUs can be ordered from Grass Valley Customer Support.

Note   The lists given here are for general guidelines only and are subject to change at any time. They do not reflect current pricing or availability information. .

Table 36. FRU List and Replacement Notes and References

Name	Part Number	Replacement Notes and References
K-Frame Video Processors		
13-RU Frame Assembly	761045600	Includes Midplane, Chassis, Fan Assembly
6-RU Frame Assembly	761056700	Includes Midplane, Chassis, Fan Assembly, Transition Board
13-RU Front Door	751039200	K-Frame Door
6-RU Front Door	751036000	K-Frame Door
Power Supply Frame (13RU Standard only)	761049300	Includes 1-RU Power Supply Frame w/Power Supply Distribution PCBA
Power Supply Module	720007800	120/240VAC/48VDC
Power Supply DC Power Cable	731031200	
13-RU Control Processor Board Assembly	771052700	
6-RU Control Processor Board Assembly	771052200	
Dual Mix/Effects Board Assembly	771052301	
Video Input Board Assembly	772001401	
Video Output Board Assembly	772001500	
Control I/O Board Assembly	771051800	13RU Standard
Control I/O Board Assembly	771051850	S-series and Compact S-series
Modular I/O Board Assembly	771052800	
Modular IP I/O Board Assembly	771052900	10 GigE
Modular I/O Rear Cover	390736900	
Image Store Board Assembly	771052502	
13-RU Chassis Fan Assembly	751042200	
6-RU Chassis Fan Assembly	751046001	
Blank Rear Cover for I/O Slot	390736900	
Blank Cover Modular I/O Slot	390737300	
Battery	Panasonic CR2477	Regulations prohibit the shipment of batteries outside of a system, please acquire this battery locally
Karrera Control Panels		
Source Select 10 with Device Control	771056700	

Table 36. FRU List and Replacement Notes and References - (continued)

Name	Part Number	Replacement Notes and References
Source Select 10 w/o Device Control	771056600	
Source Select 15 with Delegation Sub-panel	771056300	
Source Select 15 w/o Delegation Sub-panel	771057800	
Transition & DSK	771055600	
Local EMEM & Transition	771056000	
Transition & Local EMEM	771055800	
Master E-MEM	771056100	
Multi-Function	771056200	
Processor Board	771055200	
Control Panel Distribution Board	771055300	
Local Aux 10	771056800	
Local Aux 15	771056400	
Local Aux Distribution Board	771058100	
Internal Panel Data Cables, RJ45 CAT6 (connect distribution board to modules)	731028500	1350mm
	731028501	1750mm
	731028502	2050mm
	731028504	1950mm
	731028505	2250mm
	731028506	1500mm
	731028507	1250mm
	731028509	750mm
	731028510	2500mm
	731028511	500mm
	731028512	250mm
	731028513	1850mm
	731028514	2150mm
	731028515	2800mm
	731028516	2350mm
	731028517	2600mm
	731028518	3050mm
Internal Panel Power Cables (connect Distribution Board to Modules)	731028600	85mm jumper
	731028601	1200mm
	731028602	1700mm
	731028603	1100mm
	731028604	500mm
	731028605	1350mm
	731028606	1850mm
XLR4 - External Power Cable	731028900	
Panel Fan Assembly	751039000	
Joystick	751041200	3-Axis Hallsens. TRY10-551
Lever Arm	751040900	
Power Supply AC/DC	720007100	12VDSC 400W 33.3 A
Power Supply Cable Assembly	731028800	Cable assembly for 720007100 power supply.

Table 36. FRU List and Replacement Notes and References - (continued)

Name	Part Number	Replacement Notes and References
Cable Assembly Power Supply Controller	731028200	
Fuse	159504000	8A 250V 5X20mm IEC 60127-2/5
Compact Flash Card	157050000	Blank

Table 36. FRU List and Replacement Notes and References - (continued)

Name	Part Number	Replacement Notes and References
Local Aux Panels		
Local Aux 35	761052000	
Local Aux 25	761051900	
Cable Assembly, Karrera Aux Power	731029400	4-pin XLR
Cable Assembly, Karrera Aux Comms	731028502	2050mm, RJ45, CAT6
Menu Panel		
Menu Panel Assembly	761040602	Includes Touch Screen Menu, Fanless PC, Articulated Radial Arm, power supplies, misc. cables.
Articulated Radial Arm	86301630	(OEM)
Fanless PC	711056200	Includes external power supply brick and brackets.
Fanless PC Bracket	390744400	Custom bracket for Fanless PC.
Menu Panel Power Brick	761039300	External power supply.
Misc. Cables	731029300	USB A Male Right Angle USB B Male
	731029100	Fanless PC Power Cable
	731028700	DVI Male/Male Right Angle
	650417500	Subassembly, Line cord
	731015510	Cable Assembly, RJ45 Crossover
KSP (Soft Panel)		
	711056400	Custom legend keyboard for KSP
Remote Aux Panels		
32-Crosspoint Remote Aux Panel (1RU)	761000300	KAL32AUX1
32-Crosspoint Remote Aux Panel (2RU)	761000400	KAL32AUX2
Parts Kits		
Control Panel Lens Kit	85571630	GV ASY MECA WINDOW-1X DISPLAY S.SEL. Can be replaced from top
	85571600	GV ASY MECA WINDOW - OLED - AUX. Can be replaced from top
	85571620	GV ASY MECA WINDOW - SYSTEM BAR. Can be replaced from top
	331060900	TRANSISTION WINDOW LARGE. Can be replaced from top
	331061000	GV ASY MECA WINDOW LEVER ARM. Lever arm and plate must be removed to replace this lens.
Spare Parts Kit	200469800	KEYCAP BLANK E-SWITCH 12mm
	200469900	KEYCAP BLANK E-SWITCH 15mm
	260509300	SWITCH PB 12MM WELL-BUYING
	260509400	SWITCH PB 15MM WELL-BUYING
	146013800	BATTERY COIN TYPE 3V,1000ma I-Ion
	85567300	ROTARY OPTICAL ENCODER W/PUSH SWITCH
	390714200	GV ENCODER KNOB

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Symbols