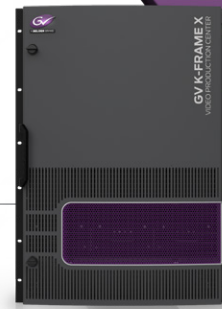# GV K-Frame X

Video Production Engine

A flexible all SDI, mixed SDI/IP, or all IP frame for Grass Valley production switcher panels.

The GV K-Frame X builds upon the successful Grass Valley K-Frame video processing engine, which features the largest I/O footprint in the industry.

The GV K-Frame X uses existing K-FRM-ME-DPM boards coupled with an updated chassis, mid-plane, controller board and I/O board sets to offer a cost-effective and powerful path to all I/P connections, all SDI or combination of both to enable continuing versatility in live production planning.

With the ability of Kayenne, Karrera, or GV Korona control surfaces to run on any K-Frame video processing engine, any operator can transfer their creative skills between switcher models. This is now enhanced by the outstanding performance of the GV K-Frame X, which handles HD, 1080p, high dynamic range video, 4K UHD and 12G 4K without adding stress to the operational workflow. Shows built on any K-Frame will seamlessly translate to the new GV K-Frame X and knowledge of all panel and menu operations is not lost. Skills learned on any Kayenne, Karrera, or GV Korona switcher are valuable, as they translate instantly to the new video processing frame.

Features from existing K-Frames are solidly implemented in the GV K-Frame X, including DoubleTake, Flexikey, Source Rules with an updated Suites mode and conversion/scaling — not only for dedicated input connections, but also with future capability via internal routing for any connected signal.

The GV K-Frame X is the most versatile and powerful K-Frame ever. Its features, which can be upgraded after purchase by software licenses to minimize up-front expense, make it a uniquely cost-effective solution with abilities including fast IP setup and multiple protected shows running on a single frame. Hardware versatility enables changing I/O boards from SDI to IP as source types change within your environment or adding additional ME-DPM boards to enhance production requirements.

KEY FEATURES

- GV K-Frame X video engine: 15 RU frame + 1 RU power supply frame
  – Front to rear airflow with three individual fan trays
  – Same power supply as current Standard K-Frame
- Same industry leading, 192x96 I/O footprint as the current K-Frame comes in two bi-directional offerings:
  – IP I/O boards come in two configurations: 16x8 and 8x4
    – IP boards can have either 10 GbE or 25 GbE SFPs
    – IP boards can accept TICO for SMPTE ST 2022-6, SMPTE ST 2022-7 redundancy, SMPTE ST 2110-20/30/40
  – SDI I/O boards come in three offerings: 16x8, 16x8 with "gearbox" functionality, and 8x4 with conversion
    – 8x4 conversion board for frame sync and format conversion, up/down/cross converts with direct connection
    – MatchSync functionality is found on both the 16x8 with "gearbox" and the 8x4 with conversion

- 4K UHD sources can be handled via one (1) 10 GbE SFP connection with TICO compression, spread over two (2) 10 GbE SFP connections uncompressed, 12G-SDI single link, and on one (1) 25 GbE SFP connection for two (2) uncompressed signals
- Frame sync and conversion modules enable conversion to/from HD and 4K UHD (2SI or SDQS) on inputs and outputs and between 2SI and SDQS. Both SDI "gearbox" and conversion boards support 12G-SDI single link sources
- EZ 4K mode manages quad-resources across the switcher as a single entity, allowing users to configure 4K UHD as easily as an HD show
- Same video processing engine functionality and features as the current K-Frame:
  – Up to 9 M/Es maximum, utilizing current K-FRM-ME-DPM boards
  – 6 full function keyers with 2D DPMs per keyer
  – Up to 16 optional floating iDPMs
  – Supports SD, HD, 1080p 3G, 12G, 4K UHD and HDR (HLG and PQ) with ability to set HDR payload ID on each output
  – Internal 10-channel ImageStore for stills and movies with video and key, plus audio (max. 64 GB of storage)

- Kayenne, Karrera and GV Korona panels available
- Rugged modular design on both control surface and chassis for field reconfiguration and serviceability
- Four (4) independent suite capability in both HD or 4K UHD
- MatchSync aligns incoming SDI signals with IP inputs in a mixed format environment
- Automation application control under GV Ignite and other third-party applications
- On-panel triggered integration with graphics devices: ChyronHego Click Effects PRIME, LyricX or PRIME, and Ross Video XPression (via Ross Talk)

Feature/Function	GV K-Frame X
Control surface	Any Kayenne, Karrera, KSP, and Korona, or GV Korona control surface runs on any K-Frame video processing engine. (3 panel types with multiple configurations)
Video frame	15 RU frame with front-to-rear airflow + 1 RU power supply frame
3G 1080p	3G capable, no loss of functionality
12G	12G single stream sources capable of "gearbox" functionality for processing in 3G
4K UHD	4K capable (SDQS or 2SI, plus TICO compressed)
HDR capability	10-bit, HLG or PQ
I/O type	SDI, IP or mixed
I/O footprint	192x96 max. in either full SDI, full IP or mixed SDI/IP
IP connector type	SFPs: 10 GbE or 25 GbE
Other connectors	4 MediaPorts
Mix/Effects	9 M/Es max. with 6 full keyers each; max. 5 M/Es in a suite
Internal ImageStore	10-channel (video+key), choice of 16 GB, 32 GB (over 2 min. or 4,000 frames at 1080i), or 64 GB. Movie record/playback with embedded audio — 64 GB max.
Conversion	Inputs: up to 32 SDI frame syncs and format converters / Outputs: up to 16 SDI format converters
2D DPMs	2D DPM associated with every keyer
3D DPMs	16 max. floating iDPMs with effects
Software panel option	KSP touchscreen GUI software available with optional tactile custom keyboard

SPECIFICATIONS

Mechanical Specifications

Frame	Depth	Width	Height	Weight	RU
K-FRM-100SX	603.5 cm (23.76 in.)	482.6 cm (19 in.)	665.9 cm (26.22 in.)	58.33 kg (128.6 lbs.)	15
K-FRM-100SX-I	603.5 cm (23.76 in.)	482.6 cm (19 in.)	665.9 cm (26.22 in.)	57.74 kg (127.3 lbs.)	15
K-FRM-PSU-FRAME*	492 mm (19.37 in.)	483.1 mm (19 in.)	44 .0 mm (1.75 in.)	10.5 kg (23.0 lbs.)	1

* Frame weight is with two power supplies. A single supply weighs 2.5 kg (5.4 lbs.). The K-FRM-PSU-FRAME supports up to three power supplies.

Frame	M/Es	Inputs	Outputs	GPI Inputs	GPI/Tally Outputs	Mod I/O (MatchDef/SetDef)
Standard 15 RU	1 to 9	Max: 192 32 to 160 plus up to 32 expansion	Max: 96 16 to 80 dual plus up to 16 expansion	4 per 16 x 8 I/O board	4 GPI & 16 tally per 16 x 8 I/O board	8 input and 4 output converters per SDI converter board
Board Count						
Standard 15 RU	Up to 4 dual M/E boards	Up to 10 standard I/O boards with 16 inputs and 8 outputs per board (IP and SDI boards available). IP I/O is bidirectional				Up to 4 I/O boards with 8 inputs and 4 outputs per board SDI conversion I/O. IP I/O is bidirectional

Video Standards

IP Video Standards:

    SMPTE ST 2110-20/30/40/50

    SMPTE ST 2022-6 with TICO

4K UHD Mode:

    2-Sample-Interleave (2SI)

    TICO-compressed 4K 1-Wire

    Square Division Quad Split (SDQS)

3G Mode:

    1080p 50 Hz SMPTE ST 424 section 4 – Level A

    1080p 59.94 Hz SMPTE ST 424 section 4 – Level A

    1080p 60 Hz SMPTE ST 424 section 4 – Level A

    1080p 50 Hz SMPTE ST 424 section 5 – Level B

    1080p 59.94 Hz SMPTE ST 424 section 5 – Level B

    1080p 60 Hz SMPTE ST 424 section 5 – Level B

HD Mode:

    1080i25/29.97/30

    1080PsF23.976/24/25/29.97/30

    Line frequency: 50/60 Hz ±5%

    720p50/59.94/60

SD Mode:

    525i29.97

    625i25

Media Port Inputs & Outputs

SD:

    720p (1440) x 480i 29.97 Hz
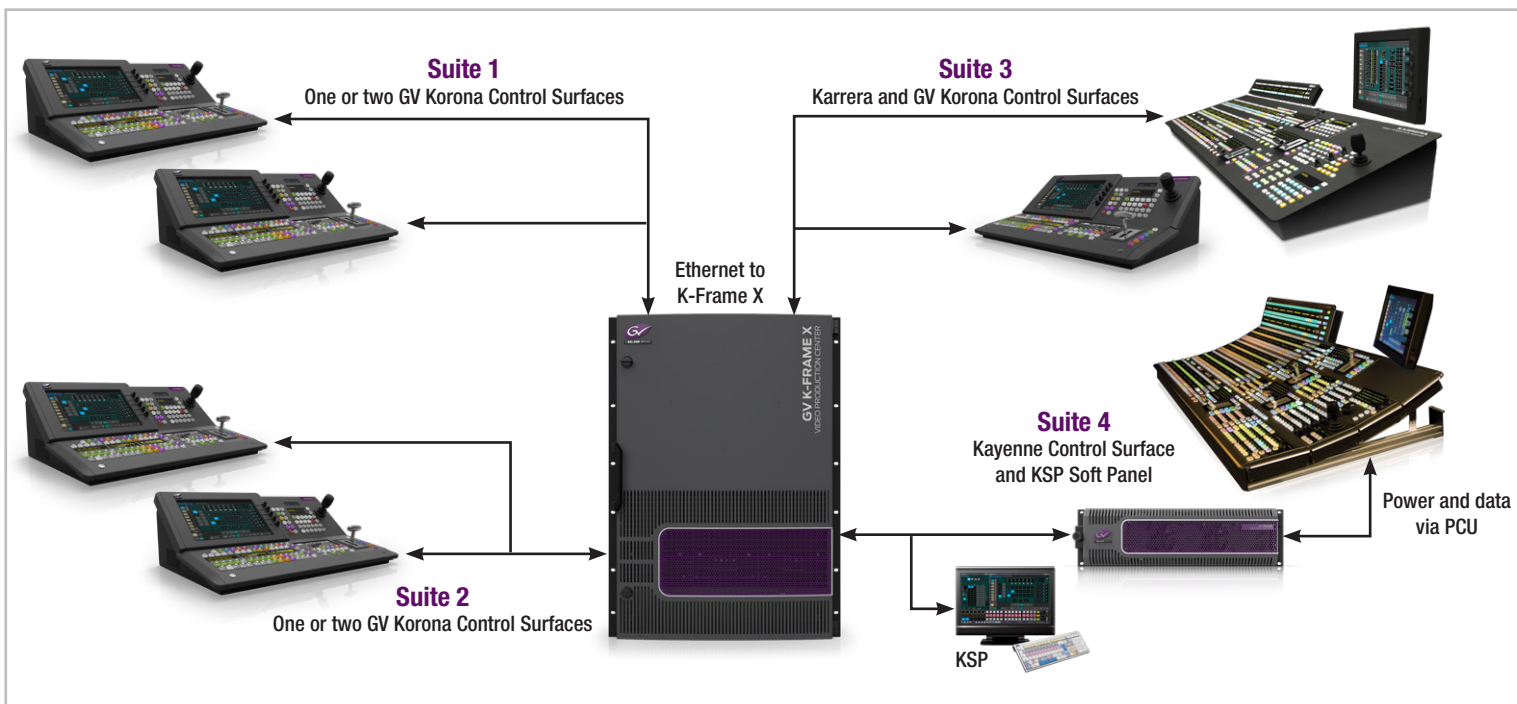
    720p (1440) x 576i 25 Hz

HD:

    1280x720p 50/59.94/60 Hz

    1920x1080i 25/29.97/30 Hz

    1920x1080p 50/59.94/60 Hz

4K UHD:

    2160p 50/59.94/60 Hz

Four Suites with K-Frame X

Suite 1
One or two GV Korona Control Surfaces

Suite 3
Karrera and GV Korona Control Surfaces

Ethernet to K-Frame X

Suite 4
Kayenne Control Surface and KSP Soft Panel

Power and data via PCU

Suite 2
One or two GV Korona Control Surfaces

KSP

SPECIFICATIONS (CONT.)

Serial Digital Video Inputs

Interface:

4K 12G video format SMPTE ST 2082

3G video formats SMPTE ST 424-2006

HD video formats SMPTE ST 292-1998

SD video formats SMPTE ST 259-1997 ITU-R BT.656

Return loss:

≥ 4 dB, 6.0 GHz to 12 GHz

≥ 15 dB, 5 MHz to 1.5 GHz

≥ 10 dB, 1.5 GHz to 3.0 GHz

Type of connector: 75Ω BNC (SMPTE ST 259)

Nominal amplitude: 800 mVp-p terminated

Input impedance: 75Ω

Max. cable length: using Belden 1694A type cable

4K 12G video 60m (197 ft.) typical

3G video 140m (459 ft.) typical

HD video 200m (656 ft.) typical

SD video 350m (1,148 ft.) typical

Serial Digital Video Outputs

Interface:

4K 12G video format SMPTE ST 2082

3G video formats SMPTE ST 424-2006

HD video formats SMPTE ST 292-1998

SD video formats SMPTE ST 259-1997 ITU-R BT.656

Return loss:

≥ 4 dB, 6.0 GHz to 12 GHz

≥ 15 dB, 5 MHz to 1.5 GHz

≥ 10 dB, 1.5 GHz to 3.0 GHz

Type of connector: 75Ω BNC (SMPTE ST 259)

Nominal amplitude: 800 mVp-p across 75Ω

Rise and fall times:

4K 12G: ≤ 45 ps between 20% and 80% amplitude

3G & HD video formats ≤ 135 ps between 20% and 80% amplitude

SD video formats, 400 to 1400 ps between 20% and 80% amplitude

Timing jitter:

4K 12G video format ≤ 2.0 UI

3G video formats ≤ 2.0 UI

HD video formats ≤ 1.0 UI

SD video formats ≤ 0.2 UI

Alignment jitter:

4K 12G video format ≤ 0.3 UI

3G video formats ≤ 0.3 UI

HD video formats ≤ 0.2 UI

SD video formats ≤ 0.2 UI

Output impedance: 75Ω

DC offset: <500 mV with 75Ω termination

Ancillary and embedded data: blanked or passed (user selectable)

EDH: blanked

Reference Input

Analog: Black or Tri-level sync

Digital: SDI – SMPTE ST 425-1

PTP: IEEE 1588-2008 Precision Time Protocol with SMPTE ST 2059-2 PTP Profile

Analog Reference Input

Video standard: Analog Black or Tri-level sync

Return loss: >40 dB, up to 5 MHz

Connectors: 2 BNC loop-through

Impedance: 75Ω external termination

Communications

Connections:

PCU to video frame: LAN cable 100m (328 ft.) max. length

Control panel to PCU: dedicated cables, choice of 7.5m or 15m

Menu panel to PCU: dedicated cables, choice of 7.5m or 15m

Interoperability: The Video Production Centers are interoperable with the Sirius, Encore, Jupiter, SMS-7000 and NV9000 routing control systems; LDK Series and LDX Series cameras using Connect Gateway; and with the K2 media server family (including the K2 Summit and K2 Solo), sQ servers, legacy Profile servers, M-Series iVDRs, Turbo iDDRs and T2 iDDRs.

Supported Control Protocols

The Video Production Centers support Ethernet and serial AMP protocol (standard in all systems), serial BVW and Odetics protocols, as well as controlling devices using PBus II and GPIs

Serial BVW-75 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 and serial

Grass Valley native protocol for routers/routing control systems (Trinix/Trinix NXT, Venus, Triton, NVISION and third-party routers; Jupiter, Encore and NV9000 router control systems)

Ethernet tally

Grass Valley remote Aux Panels via Ethernet

Grass Valley editor protocol for edit controllers and external control

VDCP Serial and Ethernet

VSM control protocol

RossTalk protocol support for direct control of XPression graphics engine

Single-point-of-control integration for graphics with ChyronHego Click Effects PRIME

Power

Video Processing Frame 15 RU:

Line voltage: 100V-240 VAC ±10% power factor corrected

Automatic line-voltage sensing for 120V and 240V sources

Line frequency: 50/60 Hz ±5%

Power consumption: max. 2500W

Leakage current: <2.5 mA

Kayenne Control Panel:

Line voltage: 100V-240 VAC ±10% power factor corrected

Automatic line-voltage sensing for 120V and 240V sources

Line frequency: 50/60 Hz ±5%

Power consumption: max. panel configuration 600W

Leakage current: <2.5 mA

Karrera Control Panel:

Line voltage: 100V-240 VAC ±10% power factor corrected

Automatic line-voltage sensing for 120V and 240V sources

Line frequency: 50/60 Hz ±5%

Power consumption: max. 200W

Leakage current: <2.5 mA

GV Korona Control Panel:

Line voltage: 100-240 VAC ±10% power factor corrected with automatic line-voltage sensing for 120V and 240V sources

Line frequency: 50/60 Hz ±5%

Power consumption: max. 60W

Leakage current: <2.5 mA

Environmental Conditions

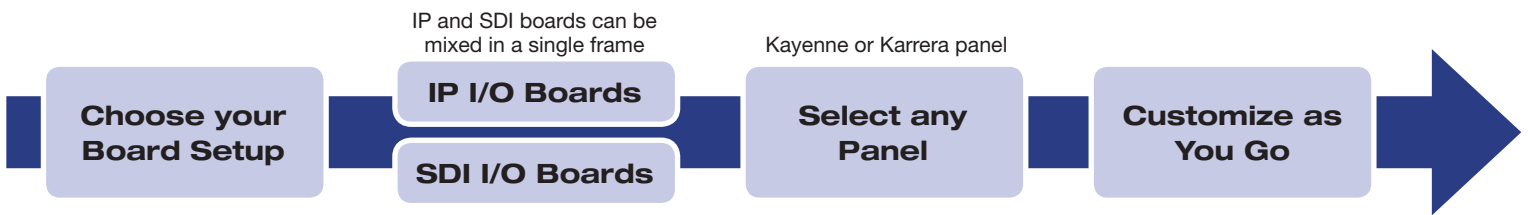**Storage temperature:** -20 to 70ºC (-4 to 158ºF)

Operating temperature: 0 to 40ºC (32 to 104ºF)

Relative humidity: 0-95% (non-condensing)

Electromagnetic environment: E2 (according to EN55103-1, -2)

IP and SDI boards can be
mixed in a single frame

Kayenne or Karrera panel

**Choose your
Board Setup**   **IP I/O Boards**   **Select any
Panel**   **Customize as
You Go**

SDI I/O Boards

- SDI I/O boards come in three types: 16x8, 16x8 with "gearbox" functionality, and 8x4
- SDI I/O boards come in two configurations: 16x8 and 8x4
- 8x4 conversion board for frame sync and format conversion, up/down/cross converts with direct connection

Kayenne Systems (Includes license to enable all 2D DPMs on licensed M/Es.)

System	M/Es*	Stripes	Buttons	Inputs	Outputs
KAYN-3-35-4M-KSX	4	3	35	32 SDI w/"gearbox" functionality	16 SDI w/"gearbox" functionality
KAYN-3-35-4M-KSX-I	4	3	35	64 IP	32 IP
KAYN-3-35-5M-KSX	5	3	35	32 SDI w/"gearbox" functionality	16 SDI w/"gearbox" functionality
KAYN-3-35-5M-KSX-I	5	3	35	64 IP	32 IP
KAYN-4-35-4M-KSX	4	4	35	32 SDI w/"gearbox" functionality	16 SDI w/"gearbox" functionality
KAYN-4-35-4M-KSX-I	4	4	35	64 IP	32 IP
KAYN-4-35-5M-KSX	5	4	35	32 SDI w/"gearbox" functionality	16 SDI w/"gearbox" functionality
KAYN-4-35-5M-KSX-I	5	4	35	64 IP	32 IP

All Karrera Systems (Includes the KRR-PNL-MENU-SET and license to enable all 2D DPMs on licensed M/Es.)

System	M/Es*	Stripes	Buttons	Inputs	Outputs
KRR-3-35-4M-KSX	4	3	35	32 SDI w/"gearbox" functionality	16 SDI w/"gearbox" functionality
KRR-3-35-4M-KSX-I	4	3	35	64 IP	32 IP
KRR-3-35-5M-KSX	5	3	35	32 SDI w/"gearbox" functionality	16 SDI w/"gearbox" functionality
KRR-3-35-5M-KSX-I	5	3	35	64 IP	32 IP

* M/Es number includes one M/E found on the Controller board.

SYSTEMS & OPTIONS

K-FRM-100SX

GV K-Frame X, Standard SDI-based 15 RU Frame

GV K-Frame X Standard SDI-based (15 RU) frame with standalone power supply (1 RU) and two PS, standard controller processor module with 1 M/E standard, 6 keyers, 32 SDI inputs/16 SDI dual channel outputs comprised of two (2) K-FRM-IOFULL-X-GB modules capable of 3G and/or 12G with "gearbox" functionality, 8 GPI inputs and 8 GPI outputs, 32 tally, AMP, 999 macros, 1,000 E-MEMs.

Frame has a 9 M/E maximum with 6 keyers per M/E; 192 inputs / 96 outputs maximum.

K-FRM-100SX-I

GV K-Frame X, Standard IP-based 15 RU Frame

GV K-Frame X Standard IP-based (15 RU) frame with standalone power supply (1 RU) frame and two PS, standard controller processor module with 1 M/E standard, 6 keyers, IP bi-directional I/O, 32 inputs, 16 outputs, 8 GPI inputs, 8 GPI outputs, 32 tally, AMP, 999 macros and 1,000 E-MEMs.

Frame has a 9 M/E maximum with 6 keyers per M/E; 192 inputs / 96 outputs maximum.

SFPs must be ordered separately. Frame can also be licensed for SMPTE ST 2022-7 redundancy by utilizing option: K-FRM-LIC-IO-RDND-X.

K-FRM-IO-FULL-X-I

GV K-Frame X IP Input/Output Module (16x8 IP I/O)

Bi-directional I/O adds 16 IP inputs & 8 IP outputs, SFP connector cages can be stuffed for either 10 GbE or 25 GbE (SFPs must be ordered separately*), one board per slot. Board can also be licensed for SMPTE ST 2022-7 redundancy by utilizing option: K-FRM-LIC-IO-RDND-X.

K-FRM-IO-X-I

GV K-Frame X IP Input/Output Module (8x4 IP I/O)

Bi-directional I/O adds 8 IP inputs & 4 IP outputs, SFP connector cages can be stuffed for either 10 GbE or 25 GbE (SFPs must be ordered separately*), one board per slot. Board can also be licensed for SMPTE ST 2022-7 redundancy by utilizing option: K-FRM-LIC-IO-RDND-X.

K-FRM-IO-FULL-X

GV K-Frame X SDI Input/Output Module (16x8 SDI I/O)

Adds 16 inputs and 8 dual channel outputs of 3G and/or 12 Gb capable signals, 4 GPI inputs, 4 GPI outputs, 16 tally, one board per slot. (Future update enables fan-out.)

K-FRM-IO-FULL-X-GB

GB GV K-Frame X SDI Input/Output Module (16x8 SDI I/O)

Adds 16 inputs and 8 dual channel outputs of 3G and/or 12 Gb with "gearbox" functionality. 4 GPI inputs and 4 GPI outputs, 16 tally, one board per slot.

K-FRM-IO-CONV-X

GV K-Frame X SDI Input/Output Conversion Module (8x4 I/O)

Adds 8 inputs & 4 outputs with licensable video up/down/cross converters on each input and output SD and HD sources, including 1080p, one board per slot. (Licensed with option: K-FRM-LIC-SETMAT-X).

K-FRM-CTRL-SX

GV K-Frame X Controller Proc Module

The Controller M/E functionality resides on this module.

K-FRM-100SX-KIT

GV K-Frame X Standard Spares Kit

Includes: Control Processor module (K-FRM-CTRL-SX) and Frame Fan Module.

K-FRM-100S-UPG-SX

K-Frame Chassis Upgrade to SX

K-Frame standard chassis hardware upgrade to GV K-Frame X SDI. This option provides chassis and SDI I/O module hardware upgrade of the K-FRM100S to the K-FRM-100SX, matched IO footprint up to 96x48. Customer must call out number of SDI IO modules (KFRM-IO-FULL-X). Loading KFRM-IO-FULL-X-GB modules will result in a price difference. No KFRM-ME-DPM boards are associated with this upgrade.

Customer may choose to load their existing ME-DPM boards into the new K-FRM-100SX chassis. Order under K-FRM-HWOPT.

K-FRM-100S-UPG-SXI

K-Frame Chassis Upgrade to SX-I

K-Frame standard chassis hardware upgrade to GV K-Frame X IP. This option provides chassis and IP I/O module hardware upgrade of the K-FRM-100S to the K-FRM-100SX-I and matched I/O footprint up to 96x48. Customer must call out number of IP I/O modules (K-FRM-IO-FULL-X-I).

No K-FRM-ME-DPM boards are associated with this upgrade. Customer may choose to load their existing ME-DPM boards into the new K-FRM-100SX-I chassis. Order under K-FRM-HW-OPT.

K-FRM-LIC-IO-RDND-X

Software License enabling K-Frame X IP for SMPTE ST 2022-7

Software License enabling K-Frame X IP Module(s) to support redundancy (SMPTE ST 2022-7) with SFP optical Ethernet cartridges. SFPs must be purchased separately. One license per K-FRM-100SX-I.

K-FRM-LIC-SETMAT-X

Software License K-Frame X SETMATCH

Software License for K-Frame X Conversion Module provides up/down/crossconversion on each input and output of loaded K-FRM-IO-CONV-X modules. Additional capability to convert any matrix source by internally routing it to the installed modules. One license per GV K-Frame X.

GV-RAP-100 or GV-RAP-200

Remote aux panel options.

KAYN-3-35-4M-KSX

Kayenne GV K-Frame X SDI system, 3-stripe panel / 4 M/E system includes control surface, video frame and licenses

Qty 1: K-FRM-100SX GV K-Frame Standard X (15 RU) frame with K-FRM-PSU, power supply (1 RU) frame and two PS, standard controller processor module with 1 M/E standard, 6 keyers, 32 SDI inputs / 16 SDI dual outputs spanning two (2) KFRM-IO-FULL-X-GB modules capable of 3G and/or 12 Gb with "gearbox" functionality, 8 GPI inputs and 8 GPI outputs, 32 tally, AMP, 999 macros, 1,000 E-MEMs. Frame has a 9 M/E maximum with 6 keyers per M/E; 192 inputs maximum, 96 outputs maximum.

> **PLUS:** Qty 1: K-FRM-LIC2DDPM software license enabling ALL 2D DPMs available on licensed M/Es in the video processor frame

> **PLUS:** Qty 2: K-FRM-ME-DPM K-Frame M/E / DPM Module: Adds two mix/effects modules with four licensable M/Es and eight licensable DPMs capability to the K-FRAME. M/E includes: A/B and Utility 1 and 2 backgrounds and 6 full-function keyers with two pages of video and key store, cut, mix and wipe transitions, with 6 program, preview and clean feed outputs. Module hardware may also be utilized to support an eDPM license.

> **PLUS:** Qty 3: K-FRM-LIC-ME Software license enabling mix/effects functionality on the KFRM-ME-DPM Module. One license required for every M/E.

> **PLUS:** Qty 1: KAYN-PNL-300-35 3-stripe / M/E Kayenne panel with 35-button source selectors, Panel Control Unit with redundant power, menu panel, manual set and cables (pick 7.5 meter or 15 meter). Includes three 35-button source select modules (KAYN-PNL-SRC-35), one 35-button local aux panel (KAYN-PNL-AUX-35), three local E-MEM modules (KAYN-PNL-LEM), one master E-MEM module (KAYN-PNL-MEM), three transition modules (KAYN-PNL-TRM), one multifunction module (KAYN-PNL-MFM), and the System Bar. There is one option slot available in the panel trays.

KAYN-3-35-4M-KSX-I

Kayenne GV K-Frame X IP system, 3-stripe, 35-button, 4 M/E, K-FRM-100SX-I

Qty 1: K-FRM-100SX-I, GV K-Frame X Standard (15 RU) frame with K-FRM-PSU, power supply (1 RU) frame and two PS, standard controller processor module with 1 M/E standard, 6 keyers, 32 IP inputs / 16 IP outputs spanning two (2) bi-directional K-FRM-IO-FULL-X-I boards, 8 GPI inputs, 8 GPI outputs, 32 tally, AMP, 999 macros and 1,000 E-MEMs. Frame has a 9 M/E maximum with 6 keyers per M/E; 192 inputs maximum, 96 outputs maximum.

> **PLUS:** Qty 1: K-FRM-LIC-2DDPM software license enabling ALL 2D DPMs available on licensed M/Es in the video processor frame.

> **PLUS:** Qty 2: K-FRM-ME-DPM K-Frame M/E / DPM Module: Adds two mix/effects modules with four licensable M/Es and eight licensable DPMs capability to the K-Frame. M/E includes: A/B and Utility 1 and 2 backgrounds and 6 full-function keyers with two pages of video and key store, cut, mix and wipe transitions, with 6 program, preview and clean feed outputs. Module hardware may also be utilized to support an eDPM license.

> **PLUS:** Qty 2: K-FRM-IO-FULL-X-I, K-Frame X IP Input/Output Module (16x8 IP I/O). Bidirectional I/O adds 16 IP inputs & 8 IP outputs, SFP connector cages can be stuffed for either 10 GbE or 25 GbE (SFPs must be ordered separately), board can also be licensed for SMPTE ST 2022-7 redundancy by utilizing option: K-FRM-LIC-IO-RDND-X, one board per slot.

> **PLUS:** Qty 3: K-FRM-LIC-ME software license enabling mix/effects functionality on the K-FRM-ME-DPM Module. One license required for every M/E.

> **PLUS:** Qty 1: KAYN-PNL-300-35 3-stripe / M/E Kayenne panel with 35-button source selectors, Panel Control Unit with redundant power, menu panel, manual set and cables (pick 7.5 meter or 15 meter). Includes three 35-button source select modules (KAYN-PNL-SRC-35), one 35-button local aux panel (KAYN-PNL-AUX-35), three local E-MEM modules (KAYN-PNL-LEM), one master E-MEM module (KAYN-PNL-MEM), three transition modules (KAYN-PNL-TRM), one multifunction module (KAYN-PNL-MFM), and the System Bar. There is one option slot available in the panel trays.

*** Note:** Item SFP-ETH10G-RT-M85-LC is the 10 GbE SFP validated by Grass Valley and utilized in other Grass Valley IP products. It is orderable as an option for the GV K-Frame X IP I/O boards:
- K-FRM-IO-FULL-X-I
- K-FRM-IO-X-I

K-FRM-IO-SFP10-25G is the 25 GbE SFP validated by Grass Valley for use in GV K-Frame X.

SYSTEMS & OPTIONS (CONT.)

KAYN-3-35-5M-KSX

Kayenne GV K-Frame X SDI system, 3-stripe panel / 5 M/E system includes control surface, video frame, and licenses

Qty 1: K-FRM-100SX GV K-Frame Standard X (15 RU) frame with K-FRM-PSU, power supply (1 RU) frame and two PS, standard controller processor module with 1 M/E standard, 6 keyers, 32 SDI inputs/16 SDI dual outputs spanning two (2) KFRM-IO-FULL-X-GB modules capable of 3G and/ or 12 Gb with "gearbox" functionality, 8 GPI inputs and 8 GPI outputs, 32 tally, AMP, 999 macros, 1,000 E-MEMs. Frame has a 9 M/E maximum with 6 keyers per M/E; 192 inputs maximum, 96 outputs maximum.

> *PLUS:* Qty 1: K-FRM-LIC2DDPM software license enabling ALL 2D DPMs available on licensed M/Es in the video processor frame.

> *PLUS:* Qty 2: K-FRM-ME-DPM K-Frame M/E / DPM Module: Adds two mix/effects modules with four licensable M/Es and eight licensable DPMs capability to the K-Frame. M/E includes: A/B and Utility 1 and 2 backgrounds and 6 full-function keyers with two pages of video and key store, cut, mix and wipe transitions, with 6 program, preview and clean feed outputs. Module hardware may also be utilized to support an eDPM license.

> *PLUS:* Qty 4: K-FRM-LIC-ME software license enabling mix/effects functionality on the KFRM-ME-DPM Module. One license required for every M/E.

> *PLUS:* Qty 1: KAYN-PNL-300-35 3-stripe / M/E panel with 35-button source selectors, Panel Control Unit with redundant power, menu panel, manual set and cables (pick 7.5 meter or 15 meter). Includes three 35-button source select modules (KAYN-PNL-SRC35), one 35-button local aux panel (KAYN-PNL-AUX-35), three local E-MEM modules (KAYN-PNL-LEM), one master E-MEM module (KAYN-PNL-MEM), three transition modules (KAYN-PNL-TRM), one multifunction module (KAYN-PNL-MFM), and the System Bar. There is one option slot available in the panel trays.

KAYN-3-35-5M-KSX-I

Kayenne GV K-Frame X IP System 3-Stripe, 35-Button, 5 M/E, K-FRM-100SX-I

Qty 1: K-FRM-100SX-I, GV K-Frame X Standard (15 RU) frame with K-FRM-PSU, power supply (1 RU) frame and two PS, standard controller processor module with 1 M/E standard, 6 keyers, 32 IP inputs / 16 IP outputs spanning two (2) bidirectional K-FRM-IO-FULL-X-I boards, 8 GPI inputs, 8 GPI outputs, 32 tally, AMP, 999 macros and 1,000 E-MEMs. Frame has a 9 M/E maximum with 6 keyers per M/E; 192 inputs maximum, 96 outputs maximum.

> *PLUS:* Qty 1: K-FRM-LIC-2DDPM Software license enabling ALL 2D DPMs available on licensed M/Es in the video processor frame.

> *PLUS:* Qty 2: K-FRM-ME-DPM K-Frame M/E / DPM Module: Adds two mix/effects modules with four licensable M/Es and eight licensable DPMs capability to the K-Frame. M/E includes: A/B and Utility 1 and 2 backgrounds and 6 full-function keyers with two pages of video and key store, cut, mix and wipe transitions, with 6 program, preview and clean feed outputs. Module hardware may also be utilized to support an eDPM license.

> *PLUS:* Qty 2: K-FRM-IO-FULL-X-I, K-Frame X IP Input/Output Module (16x8 IP I/O). Bidirectional I/O adds 16 IP inputs & 8 IP outputs, SFP connector cages can be stuffed for either 10 GbE or 25 GbE (SFPs must be ordered separately), board can also be licensed for SMPTE ST 2022-7 redundancy by utilizing option: K-FRM-LIC-IO-RDND-X, one board per slot.

> *PLUS:* Qty 4: K-FRM-LIC-ME Software License enabling mix/effects functionality on the K-FRM-ME-DPM Module. One license required for every M/E.

> *PLUS:* Qty 1: KAYN-PNL-300-35 3-stripe / M/E panel with 35-button source selectors, Panel Control Unit with redundant power, menu panel, manual set and cables (pick 7.5 meter or 15 meter). Includes three 35-button source select modules (KAYN-PNL-SRC-35), one 35-button local aux panel (KAYN-PNL-AUX-35), three local E-MEM modules (KAYN-PNL-LEM), one master E-MEM module (KAYN-PNL-MEM), three transition modules (KAYN-PNL-TRM), one multifunction module (KAYN-PNL-MFM), and the System Bar. There is one option slots available in the panel trays.

KAYN-4-35-4M-KSX

Kayenne GV K-Frame X SDI system, 4-stripe panel / 4 M/E system includes control surface, video frame and licenses

Qty 1: K-FRM-100SX GV K-Frame Standard X (15 RU) frame with K-FRM-PSU, power supply (1 RU) frame and two PS, standard controller processor module with 1 M/E standard, 6 keyers, 32 SDI inputs / 16 SDI dual outputs spanning two (2) K-FRM-IO-FULL-X boards, 8 GPI inputs, 8 GPI outputs, 32 tally, AMP, 999 macros and 1,000 E-MEMs. Frame has a 9 M/E maximum with 6 keyers per M/E; 192 inputs maximum, 96 outputs maximum.

> *PLUS:* Qty 1: K-FRM-LIC2DDPM software license enabling ALL 2D DPMs available on licensed M/Es in the video processor frame.

> *PLUS:* Qty 2: K-FRM-ME-DPM K-Frame M/E / DPM Module: Adds two mix/effects modules with four licensable M/Es and eight licensable DPMs capability to the K-Frame. M/E includes: A/B and Utility 1 and 2 backgrounds and 6 full-function keyers with two pages of video and key store, cut, mix and wipe transitions, with 6 program, preview and clean feed outputs. Module hardware may also be utilized to support an eDPM license.

> *PLUS:* Qty 3: K-FRM-LIC-ME software license enabling mix/effects functionality on the KFRM-ME-DPM module. One license required for every M/E.

> *PLUS:* Qty 1: KAYN-PNL-400-35 4 M/E Kayenne panel with 35-button source selectors, Panel Control Unit with redundant power, menu panel, manual set and cables (pick 7.5 meter or 15 meter). Includes four 35-button source select modules (KAYNPNL-SRC-35), one 35-button local aux panel (KAYN-PNL-AUX35), four local E-MEM modules (KAYN-PNL-LEM), one master E-MEM module (KAYN-PNL-MEM), four transition modules (KAYN-PNL-TRM), one multifunction module (KAYN-PNL-MFM), and the System Bar. There is one option slot available in the panel trays.

KAYN-4-35-4M-KSX-I

Kayenne GV K-Frame X IP system, 4-Stripe, 35-Button, 4 M/E, K-FRM-100SX-I

Qty 1: K-FRM-100SX-I, GV K-Frame Standard X (15 RU) frame with K-FRM-PSU, power supply (1 RU) frame and two PS, standard controller processor module with 1 M/E standard, 6 keyers, 32 IP inputs / 16 IP outputs spanning two (2) bidirectional K-FRM-IO-FULL-X-I boards, 8 GPI inputs, 8 GPI outputs, 32 tally, AMP, 999 macros and 1,000 E-MEMs. Frame has a 9 M/E maximum with 6 keyers per M/E; 192 inputs maximum, 96 outputs maximum.

> *PLUS:* Qty 1: K-FRM-LIC-2DDPM software license enabling ALL 2D DPMs available on licensed M/Es in the video processor frame.

> *PLUS:* Qty 2: K-FRM-ME-DPM K-Frame M/E / DPM Module: Adds two mix/effects modules with four licensable M/Es and eight licensable DPMs capability to the K-Frame. M/E includes: A/B and Utility 1 and 2 backgrounds and 6 full-function keyers with two pages of video and key store, cut, mix and wipe transitions, with 6 program, preview and clean feed outputs. Module hardware may also be utilized to support an eDPM license.

> *PLUS:* Qty 2: K-FRM-IO-FULL-X-I, K-Frame X IP Input/Output Module (16x8 IP I/O) bidirectional I/O adds 16 IP inputs and 8 IP outputs, SFP connector cages can be stuffed for either 10 GbE or 25 GbE (SFPs must be ordered separately), board can also be licensed for SMPTE ST 2022-7 redundancy by utilizing K-FRM-LIC-IO-RDND-X, one board per slot.

> *PLUS:* Qty 3: K-FRM-LIC-ME Software license enabling mix/effects functionality on the K-FRM-ME-DPM Module. One license required for every M/E.

> *PLUS:* Qty 1: KAYN-PNL-400-35 4-stripe / M/E Kayenne panel with 35-button source selectors, Panel Control Unit with redundant power, menu panel, manual set and cables (pick 7.5 meter or 15 meter). Includes four 35-button source select modules (KAYN-PNL-SRC-35), one 35-button local aux panel (KAYN-PNL-AUX-35), four local E-MEM modules (KAYN-PNL-LEM), one master E-MEM module (KAYN-PNL-MEM), four transition modules (KAYN-PNL-TRM), one multifunction module (KAYN-PNL-MFM), and the System Bar. There is one option slot available in the panel trays.

KAYN-4-35-5M-KSX

Kayenne GV K-Frame X SDI system, 4-stripe / 5 M/E system includes control surface, video frame, and licenses

Qty 1: K-FRM-100SX GV KFrame Standard X (15RU) frame with K-FRM-PSU, power supply (1RU) frame and two PS, Standard Controller processor module with 1 M/E standard, 6 keyers, 32 SDI inputs / 16 SDI dual outputs spanning two(2) KFRM-IO-FULL-X-XB GB modules capable of 3G and/ or 12Gb with "gearbox" functionality, 8 GPI inputs and 8 GPI outputs, 32 tally, AMP, 999 Macros, 1000 E-MEMs. Frame has a 9 M/E maximum with 6 keyers per M/E; 192 inputs maximum, 96 outputs maximum.

> *PLUS:* Qty 1: K-FRM-LIC2DDPM software license enabling ALL 2D DPMs available on licensed M/Es in the video processor frame.

> *PLUS:* Qty 2: K-FRM-ME-DPM K-Frame M/E / DPM Module: Adds two mix/effects modules with four licensable M/Es and eight licensable DPMs capability to the K-Frame. M/E includes: A/B and Utility 1 and 2 backgrounds and 6 full-function keyers with two pages of video and key store, cut, mix and wipe transitions, with 6 program, preview and clean feed outputs. Module hardware may also be utilized to support an eDPM license.

> *PLUS:* Qty 4: K-FRM-LIC-ME software license enabling mix/effects functionality on the KFRM-ME-DPM module. One license required for every M/E.

> *PLUS:* Qty 1: KAYN-PNL-400-35 4-stripe / M/E Kayenne panel with 35-button source selectors, Panel Control Unit with redundant power, menu panel, manual set and cables (pick 7.5 meter or 15 meter). Includes four 35-button source select modules (KAYN-PNL-SRC-35), one 35-button local aux panel (KAYN-PNL-AUX35), four local E-MEM modules (KAYN-PNL-LEM), one master E-MEM module (KAYN-PNL-MEM), four transition modules (KAYN-PNL-TRM), one multifunction module (KAYN-PNL-MFM), and the System Bar. There is one option slot available in the panel trays.

KAYN-4-35-5M-KSX-I

Kayenne GV K-Frame X IP system, 4-Stripe, 35-Button, 5 M/E, K-FRM-100SX-I

Qty 1: K-FRM-100SX-I, GV K-Frame X Standard (15 RU) frame with K-FRM-PSU, power supply (1 RU) frame and two PS, standard controller processor module with 1 M/E standard, 6 keyers, 32 IP inputs / 16 IP outputs spanning two (2) bidirectional K-FRM-IO-FULL-X-I boards, 8 GPI inputs, 8 GPI outputs, 32 tally, AMP, 999 macros and 1,000 E-MEMs. Frame has a 9 M/E maximum with 6 keyers per M/E; 192 inputs maximum, 96 outputs maximum.

> *PLUS:* Qty 1: K-FRM-LIC-2DDPM Software License enabling ALL 2D DPMs available on licensed M/Es in the video processor frame.

> *PLUS:* Qty 2: K-FRM-ME-DPM K-Frame M/E / DPM Module: Adds two mix/effects modules with four licensable M/Es and eight licensable DPMs capability to the K-Frame. M/E includes: A/B and Utility 1 and 2 backgrounds and 6 full-function keyers with two pages of video and key store, cut, mix and wipe transitions, with 6 program, preview and clean feed outputs. Module hardware may also be utilized to support an eDPM license.

> *PLUS:* Qty 2: K-FRM-IO-FULL-X-I, K-Frame X IP Input/Output Module (16x8 IP I/O). Bidirectional I/O adds 16 IP inputs and 8 IP outputs, SFP connector cages can be stuffed for either 10 GbE or 25 GbE (SFPs must be ordered separately), board can also be licensed for SMPTE ST 2022-7 redundancy by utilizing option: K-FRM-LIC-IO-RDND-X, one board per slot.

> *PLUS:* Qty 4: K-FRM-LIC-ME software license enabling mix/effects functionality on the K-FRM-ME-DPM Module. One license required for every M/E.

> *PLUS:* Qty 1: KAYN-PNL-400-35 4-stripe / M/E Kayenne panel with 35-button source selectors, Panel Control Unit with redundant power, menu panel, manual set and cables (pick 7.5 meter or 15 meter). Includes three 35-button source select modules (KAYN-PNL-SRC-35), one 35-button local aux panel (KAYN-PNL-AUX-35), three local E-MEM modules (KAYN-PNL-LEM), one master E-MEM module (KAYN-PNL-MEM), three transition modules (KAYN-PNL-TRM), one multifunction module (KAYN-PNL-MFM), and the System Bar. There is one option slot available in the panel trays.

SYSTEMS & OPTIONS (CONT.)

KRR-3-35-4M-KSX

Karrera GV K-Frame X SDI with 3-stripe panel / 4 M/E system includes control surface, video frame and licenses

Qty 1: K-FRM-100SX GV K-Frame X Standard SDI-based (15 RU) frame with standalone power supply (1 RU) and two PS, standard controller processor module with 1 M/E standard, 6 keyers, 32 SDI inputs/16 SDI dual channel outputs comprised of two (2) K-FRM-IO-FULL-X-GB modules capable of 3G and/or 12 Gb with "gearbox" functionality, 8 GPI inputs and 8 GPI outputs, 32 tally, AMP, 999 macros, 1,000 E-MEMs. Frame has a 9 M/E maximum with 6 keyers per M/E; 192 inputs/96 outputs maximum.

> *PLUS:* Qty 1: K-FRM-LIC-2DDPM software license enabling ALL 2D DPMs available on licensed M/Es in the video processor frame.

> *PLUS:* Qty 2: K-FRM-ME-DPM K-Frame M/E / DPM Module adds two mix/effects modules with four licensable M/Es and eight licensable DPMs capability to the K-Frame. M/E includes: A/B and Utility 1 and 2 backgrounds and 6 full-function keyers with two pages of video and key store, cut, mix and wipe transitions, with 6 program, preview and clean feed outputs. Module hardware may also be utilized to support an eDPM license.

> *PLUS:* Qty 3: K-FRM-LIC-ME software license enabling mix/effects functionality on the K-FRM-ME-DPM Module. One license required for every M/E.

> *PLUS:* Qty 1: KRR-PNL-MENU-SET Touchscreen menu panel set, for a complete menu panel configuration with a Karrera main control panel. Includes menu panel, menu CPU, menu power supply, swing-arm mounting hardware for menu panel and CPU, 20 meter LAN cable, DVI cable, USB cable and power cables.

> *PLUS:* Qty 1: KRR-PNL-300-35 3-stripe / M/E Karrera panel, including redundant power supply, with 35-button source selectors, includes three 35-button source select stripes, one 20 meter Ethernet cable, and a System Control area with two device control submodules, switched preview, alternate bus and aux bus delegation, and macro controls, with controls for background and keyer source selection, master E-MEM, local E-MEM, horizontal keyer cut/mix, and multifunction keypad and display.

KRR-3-35-4M-KSX-I

Karrera GV K-Frame X IP system, 3-Stripe, 35-Button, 4 M/E, K-FRM-100SX-I

Qty 1: K-FRM-100SX-I, GV K-Frame Standard X (15 RU) frame with K-FRM-PSU, power supply (1 RU) frame and two PS, standard controller processor module with 1 M/E standard, 6 keyers, 32 IP inputs / 16 IP outputs spanning two (2) bidirectional K-FRM-IO-FULL-X-I boards, 8 GPI inputs, 8 GPI outputs, 32 tally, AMP, 999 macros and 1,000 E-MEMs. Frame has a 9 M/E maximum with 6 keyers per M/E; 192 inputs maximum, 96 outputs maximum.

> *PLUS:* Qty 1: K-FRM-LIC-2DDPM software license enabling ALL 2D DPMs available on licensed M/Es in the video processor frame.

> *PLUS:* Qty 2: K-FRM-ME-DPM K-Frame M/E / DPM Module: Adds two mix/effects modules with four licensable M/Es and eight-licensable DPMs capability to the K-Frame. M/E includes: A/B and Utility 1 and 2 backgrounds and 6 full-function keyers with two pages of video and key store, cut, mix and wipe transitions, with 6 program, preview and clean feed outputs. Module hardware may also be utilized to support an eDPM license.

> *PLUS:* Qty 2: K-FRM-IO-FULL-X-I, K-Frame X IP Input/Output Module (16x8 IP I/O). Bidirectional I/O adds 16 IP inputs and 8 IP outputs, SFP connector cages can be stuffed for either 10 GbE or 25 GbE (SFPs must be ordered separately), board can also be licensed for SMPTE ST 2022-7 redundancy by utilizing option: K-FRM-LIC-IO-RDND-X, one board per slot.

> *PLUS:* Qty 3: K-FRM-LIC-ME software license enabling mix/effects functionality on the K-FRM-ME-DPM Module. One license required for every M/E.

> *PLUS:* Qty 1: KRR-PNL-MENU-SET Touchscreen menu panel set, for a complete menu panel configuration with a Karrera main control panel. Includes menu panel, menu CPU, menu power supply, swing-arm mounting hardware for menu panel and CPU, 20 meter LAN cable, DVI cable, USB cable and power cables.

> *PLUS:* Qty 1: KRR-PNL-300-35 3-stripe / M/E Karrera panel, including redundant power supply, with 35-button source selectors, includes three 35-button source select stripes, one 20 meter Ethernet cable, and a System Control area with two device control submodules, switched preview, alternate bus and aux bus delegation, and macro controls, with controls for background and keyer source selection, master E-MEM, local E-MEM, horizontal keyer cut/mix, and multifunction keypad and display.

KRR-3-35-5M-KSX

Karrera GV K-Frame X SDI with 3-stripe panel / 5 M/E system includes control surface, video frame, and licenses

Qty 1: K-FRM-100SX GV K-Frame X Standard SD- based (15 RU) frame with standalone power supply (1 RU) and two PS, standard controller processor module with 1 M/E standard, 6 keyers, 32 SDI inputs/16 SDI dual channel outputs comprised of two (2) K-FRM-IO-FULL-X-GB modules capable of 3G and/or 12 Gb with "gearbox" functionality, 8 GPI inputs and 8 GPI outputs, 32 tally, AMP, 999 macros, 1,000 E-MEMs. Frame has a 9 M/E maximum with 6 keyers per M/E; 192 inputs/96 outputs maximum.

> *PLUS:* Qty 1: K-FRM-LIC-2DDPM Software license enabling ALL 2D DPMs available on licensed M/Es in the video processor frame.

> *PLUS:* Qty 2: K-FRM-ME-DPM K-Frame M/E / DPM Module adds two mix/effects modules with four licensable M/Es and eight licensable DPMs capability to the K-Frame. M/E includes: A/B and Utility 1 and 2 backgrounds and 6 full-function keyers with two pages of video and key store, cut, mix and wipe transitions, with 6 program, preview and clean feed outputs. Module hardware may also be utilized to support an eDPM license.

> *PLUS:* Qty 3: K-FRM-LIC-ME software license enabling mix/effects functionality on the K-FRM-ME-DPM Module. One license required for every M/E.

> *PLUS:* Qty 1: KRR-PNL-MENU-SET Touchscreen menu panel set, for a complete menu panel configuration with a Karrera main control panel. Includes menu panel, menu CPU, menu power supply, swing-arm mounting hardware for menu panel and CPU, 20 meter LAN cable, DVI cable, USB cable and power cables.

> *PLUS:* Qty 1: KRR-PNL-300-35 3-stripe / M/E Karrera panel, including redundant power supply, with 35-button source selectors, includes three 35-button source select stripes, one 20 meter Ethernet cable, and a System Control area with two device control submodules, switched preview, alternate bus and aux bus delegation, and macro controls, with controls for background and keyer source selection, master E-MEM, local E-MEM, horizontal keyer cut/mix, and multifunction keypad and display.

KRR-3-35-5M-KSX-I

Karrera GV K-Frame X IP system, 3-Stripe, 35-Button, 5 M/E, K-FRM-100SX-I

Qty 1: K-FRM-100SX-I, GV K-Frame X Standard (15 RU) frame with K-FRM-PSU, power supply (1 RU) frame and two PS, standard controller processor module with 1 M/E standard, 6 keyers, 32 IP inputs / 16 IP outputs spanning two (2) bidirectional K-FRM-IO-FULL-X-I boards, 8 GPI inputs, 8 GPI outputs, 32 tally, AMP, 999 macros and 1,000 E-MEMs. Frame has a 9 M/E maximum with 6 keyers per M/E; 192 inputs maximum, 96 outputs maximum.

> *PLUS:* Qty 1: K-FRM-LIC-2DDPM software license enabling ALL 2D DPMs available on licensed M/Es in the video processor frame.

> *PLUS:* Qty 2: K-FRM-ME-DPM K-Frame M/E / DPM Module: Adds two mix/effects modules with four licensable M/Es and eight licensable DPMs capability to the K-Frame. M/E includes: A/B and Utility 1 and 2 backgrounds and 6 full-function keyers with two pages of video and key store, cut, mix and wipe transitions, with 6 program, preview and clean feed outputs. Module hardware may also be utilized to support an eDPM license.

> *PLUS:* Qty 2: K-FRM-IO-FULL-X-I, K-Frame X IP Input/Output Module (16x8 IP I/O). Bidirectional I/O adds 16 IP inputs and 8 IP outputs, SFP connector cages can be stuffed for either 10 GbE or 25 GbE (SFPs must be ordered separately), board can also be licensed for SMPTE ST 2022-7 redundancy by utilizing option: K-FRM-LIC-IO-RDND-X, one board per slot.

> *PLUS:* Qty 4: K-FRM-LIC-ME Software License enabling mix/effects functionality on the K-FRM-ME-DPM Module. One license required for every M/E.

> *PLUS:* QTY 1: KRR-PNL-MENU-SET Touchscreen menu panel set, for a complete menu panel configuration with a Karrera main control panel. Includes menu panel, menu CPU, menu power supply, swing-arm mounting hardware for menu panel and CPU, 20 meter LAN cable, DVI cable, USB cable and power cables.

> *PLUS:* Qty 1: KRR-PNL-300-35 3-stripe / M/E Karrera panel, including redundant power supply, with 35-button source selectors, Includes three 35-button source select stripes, one 20 meter Ethernet cable, and a System Control area with two device control submodules, switched preview, alternate bus and aux bus delegation, and macro controls, with controls for background and keyer source selection, master E-MEM, local E-MEM, horizontal keyer cut/mix, and multifunction keypad and display.

For additional K-Frame hardware (such as: K-FRM-ME-DPM, K-FRM-PSU, etc.) and software options (such as: K-FRM-LIC-IDPM-2, K-FRM-LIC-ME, etc.) applicable to GV K-Frame X systems — please inquire with your sales representative or switcher product manager.

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