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)

### DATASHEET

<table>
<thead>
<tr>
<th>Feature/Function</th>
<th>GV K-Frame X</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Control surface</strong></td>
<td>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)</td>
</tr>
<tr>
<td><strong>Video frame</strong></td>
<td>15 RU frame with front-to-rear airflow + 1 RU power supply frame</td>
</tr>
<tr>
<td><strong>3G 1080p</strong></td>
<td>3G capable, no loss of functionality</td>
</tr>
<tr>
<td><strong>12G</strong></td>
<td>12G single stream sources capable of “gearbox” functionality for processing in 3G</td>
</tr>
<tr>
<td><strong>4K UHD</strong></td>
<td>4K capable (SDQS or 2SI, plus TICO compressed)</td>
</tr>
<tr>
<td><strong>HDR capability</strong></td>
<td>10-bit, HLG or PQ</td>
</tr>
<tr>
<td><strong>I/O type</strong></td>
<td>SDI, IP or mixed</td>
</tr>
<tr>
<td><strong>I/O footprint</strong></td>
<td>192x96 max. in either full SDI, full IP or mixed SDI/IP</td>
</tr>
<tr>
<td><strong>IP connector type</strong></td>
<td>SFPs: 10 GbE or 25 GbE</td>
</tr>
<tr>
<td><strong>Other connectors</strong></td>
<td>4 MediaPorts</td>
</tr>
<tr>
<td><strong>Mix/Effects</strong></td>
<td>9 M/Es max. with 6 full keyers each; max. 5 M/Es in a suite</td>
</tr>
<tr>
<td><strong>Internal ImageStore</strong></td>
<td>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.</td>
</tr>
<tr>
<td><strong>Conversion</strong></td>
<td>Inputs: up to 32 SDI frame syncs and format converters / Outputs: up to 16 SDI format converters</td>
</tr>
<tr>
<td><strong>2D DPMs</strong></td>
<td>2D DPM associated with every keyer</td>
</tr>
<tr>
<td><strong>3D DPMs</strong></td>
<td>16 max. floating iDPMs with effects</td>
</tr>
<tr>
<td><strong>Software panel option</strong></td>
<td>KSP touchscreen GUI software available with optional tactile custom keyboard</td>
</tr>
</tbody>
</table>
SPECIFICATIONS

Mechanical Specifications

<table>
<thead>
<tr>
<th>Frame</th>
<th>Depth</th>
<th>Width</th>
<th>Height</th>
<th>Weight</th>
<th>RU</th>
</tr>
</thead>
<tbody>
<tr>
<td>K-FRM-100SX</td>
<td>603.5 cm (23.76 in.)</td>
<td>482.6 cm (19 in.)</td>
<td>665.9 cm (26.22 in.)</td>
<td>58.33 kg (128.6 lbs.)</td>
<td>15</td>
</tr>
<tr>
<td>K-FRM-100SX-I</td>
<td>603.5 cm (23.76 in.)</td>
<td>482.6 cm (19 in.)</td>
<td>665.9 cm (26.22 in.)</td>
<td>57.74 kg (127.3 lbs.)</td>
<td>15</td>
</tr>
<tr>
<td>K-FRM-PSU-FRAME*</td>
<td>492 mm (19.37 in.)</td>
<td>483.1 mm (19 in.)</td>
<td>44.0 mm (1.75 in.)</td>
<td>10.5 kg (23.0 lbs.)</td>
<td>1</td>
</tr>
</tbody>
</table>

* 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.

<table>
<thead>
<tr>
<th>Frame</th>
<th>M/Es</th>
<th>Inputs</th>
<th>Outputs</th>
<th>GPI Inputs</th>
<th>GPI/Tally Outputs</th>
<th>Mod I/O (MatchDef/SetDef)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard 15 RU</td>
<td>1 to 9</td>
<td>Max: 192 32 to 160 plus up to 32 expansion</td>
<td>Max: 96 16 to 80 dual plus up to 16 expansion</td>
<td>4 per 16 x 8 I/O board</td>
<td>4 GPI &amp; 16 tally per 16 x 8 I/O board</td>
<td>8 input and 4 output converters per SDI converter board</td>
</tr>
<tr>
<td>Standard 15 RU</td>
<td>Up to 4 dual M/E boards</td>
<td>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</td>
<td></td>
<td></td>
<td></td>
<td>Up to 4 I/O boards with 8 inputs and 4 outputs per board SDI conversion I/O. IP I/O is bidirectional</td>
</tr>
</tbody>
</table>

Video Standards

IP Video Standards:
- SMPTE ST 2210-20/30/40/50
- 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:
- 1080/29.97/30
- 1080PsF23.97/24/29.97/30
- 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 2
One or two GV Korona Control Surfaces

Suite 3
Karrera and GV Korona Control Surfaces

Suite 4
Kayenne Control Surface and KSP Soft Panel

Power and data via PCU

www.grassvalley.com
### 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

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### 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

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### 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

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### 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 VDRs, Turbo iDDR and T2 iDDR.

### Supported Control Protocols

- The Video Production Centers support Ethernet and serial AMP protocol (standard in all systems), serial BW and Odetics protocols, as well as controlling devices using PBus II and GPs
- Serial BW-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/Trixix 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 ChyronHe-go Click Effects PRIME

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### 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. 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

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### GV K-Frame X Video Production Engine

**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)

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**Power Consumption:**

- Line voltage: 100-240 VAC ±10% power factor corrected
- Automatic line-voltage sensing for 120V and 240V sources
- Line frequency: 50/60 Hz ±5%
- Power consumption: max. 600W
- Leakage current: <2.5 mA

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**GV Korona Control Panel:**
- Line voltage: 100-240 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

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**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)
ORDERING

Choose your Board Setup

IP I/O Boards

SDI I/O Boards

Select any Panel

Kayenne or Karrera panel

Customize as You Go

- 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.)

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<th>Buttons</th>
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<td>35</td>
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<td>16 SDI w/“gearbox” functionality</td>
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<tr>
<td>KAYN-3-35-4M-KSX-I</td>
<td>4</td>
<td>3</td>
<td>35</td>
<td>64 IP</td>
<td>32 IP</td>
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<tr>
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All Karrera Systems (Includes the KRR-PNL-MENU-SET and license to enable all 2D DPMs on licensed M/Es.)

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<td>KRR-3-35-5M-KSX-I</td>
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<td>35</td>
<td>64 IP</td>
<td>32 IP</td>
</tr>
</tbody>
</table>

* 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-IO-FULL-X-GB modules capable of 3G and/or 12G with "gearbox" functionality, 6 GIP inputs and 8 GIP 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 GIP inputs, 6 GIP 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. SPFs must be ordered separately. Frame can also be licensed for SMPTE 2022-7 redundancy by utilizing option: K-FRM-LIC-IO-RDND-X.

**K-FRM-IO-FULL-X**
GV K-Frame X IP Input/Output Module (16x8 IP I/O)
Bi-directional I/O adds 16 IP inputs & 8 IP outputs, SPF connector cages can be studded for either 10 GbE or 25 GbE (SPFs must be ordered separately)*, one board per slot. Board can also be licensed for SMPTE 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, SPF connector cages can be studded for either 10 GbE or 25 GbE (SPFs must be ordered separately)*, one board per slot. Board can also be licensed for SMPTE 2022-7 redundancy by utilizing option: K-FRM-LIC-IO-RDND-X.

**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 capable signals, 4 GIP inputs, 4 GIP outputs, 16 tally, one board per slot. (Future update enables fan-out.)

**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 I/O footprint up to 96x48. Customer must call out number of SDI I/O modules (K-FRM-IO-FULL-X-GB). 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.

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*Note:* Item SFP-ETH1/0G-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-FULL-X-25G is the 25 GbE SFP validated by Grass Valley for use in GV K-Frame X.

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**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. SPFs must be purchased separately. One license per K-FRM-100SX-I.

**K-FRM-LIC-SETMAT-X**
Software License for 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 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 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 GIP inputs and 8 GIP 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-LIC2DPDM 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 licencable M/Es and eight licencable DPMs capability to the K-FRM-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 K-frame / 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 GIP inputs, 8 GIP 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-LIC-2DPDM 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 licencable M/Es and eight licencable 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, SPF connector cages can be studded for either 10 GbE or 25 GbE (SPFs 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.

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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 keys, 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 keys per M/E, 192 inputs maximum, 96 outputs maximum.

PLUS: Qty 1: K-FRM-LIC2DPPM software license enabling ALL 2D DPMs available on licensed M/E(s) 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/E(s) 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. SPF connector cables can be stufed 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-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-35SRC35), 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-4-35-5M-KSX-I

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 keys, 32 SDI inputs / 16 SDI dual outputs spanning two (2) bidirectional K-FRM-IO-FULL-X-I-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 keys per M/E; 192 inputs maximum, 96 outputs maximum.

PLUS: Qty 1: K-FRM-LIC2DPPM software license enabling ALL 2D DPMs available on licensed M/E(s) 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/E(s) 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. SPF connector cables can be stufed 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-400-35-5M-5 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-SRC35), 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 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 keys, 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 keys per M/E; 192 inputs maximum, 96 outputs maximum.

PLUS: Qty 1: K-FRM-LIC2DPPM software license enabling ALL 2D DPMs available on licensed M/E(s) 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/E(s) 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 K-FRM-ME-DPM Module. One license required for every M/E.

PLUS: Qty 1: KAYN-PNL-400-35-5M-5 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-SRC35), 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-4-35-4M-KSX

Kayenne GV K-Frame X SDI system, 4-stripe / 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 keys, 32 SDI inputs / 16 SDI dual outputs spanning two (2) bidirectional K-FRM-IO-FULL-X-I-GB modules capable of 3G and/or 12G with “gearbox” functionality, 8 GPI inputs and 8 GPI outputs, 32 tally, AMP, 999 macros and 1,000 E-MEMs. Frame has a 9 M/E maximum with 6 keys per M/E; 192 inputs maximum, 96 outputs maximum.

PLUS: Qty 1: K-FRM-LIC2DPPM software license enabling ALL 2D DPMs available on licensed M/E(s) 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/E(s) 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. SPF connector cables can be stufed 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 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. SPF connector cables can be stufed 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 four 35-button source select modules (KAYN-PNL-SRC35), 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.
KARRA 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-I0-FULL-X-GB modules capable of 3G and/or 12 Gb with “gearbox” functionality, 8 GPl inputs and 8 GPl 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-2DPM software license enabling ALL 2D DPMs available on licensed M/E 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/E 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.

KARRA 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 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-I0-FULL-X-GB modules capable of 3G and/or 12 Gb with “gearbox” functionality, 8 GPl inputs and 8 GPl 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-2DPM software license enabling ALL 2D DPMs available on licensed M/E 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/E 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.

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.