

# Masterpiece Master Control Switcher Family

## SD, HD, 3G and 4K UHD Master Control Switchers



Total master control and channel branding for all standards from SD to 4K UHD.

In today's multiformat, multiplatform world — where consumers have access to content anytime and anywhere — demanding higher quality and delivering that content in its absolute best form is a key priority for broadcasters and media companies who want to remain relevant.

Hardware-based master control switchers are required in many markets across the globe from SD channel playout up to the growing market of UHD playout. The Masterpiece family has a product offering to produce high-quality content anytime, anywhere.

Live sports are an excellent showcase for UHD technology. UHD is ideal for sports video because it presents consumers with vivid, life-like details and gives service providers an engaging way to differentiate their packages from the competition. Sports broadcasters are embracing UHD because it provides them with additional revenue streams to their current and traditional HD channels.

Grass Valley has a rich history in helping media organizations deliver content on time, on budget and to the right audience across whatever distribution mechanisms are appropriate. Building on the success of the Masterpiece 12G-SDI and the Masterpiece IP, we are adding the Masterpiece HD/SD, which is a new market-defining master control switcher.

Whether you are producing your content in SD, HD or UHD, whatever your channel genre, whether it's sports, news or live entertainment, and whatever your distribution — a single over-the-air (OTA) channel, multichannel content distribution or real-time streaming — the Masterpiece family has the power and flexibility to provide you with dynamic and rock-solid master control 24x7x365.

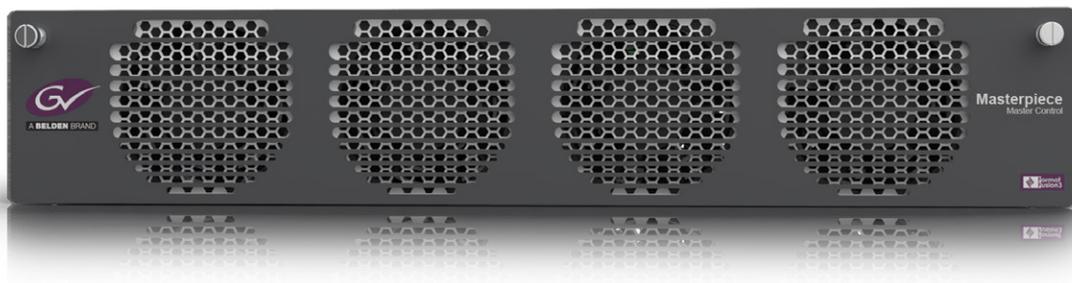
### Differentiate Yourself with Masterpiece Master Control

The Masterpiece family of master control switchers illustrates how Grass Valley is continually growing its range of solutions for content production and distribution. Masterpiece works across multiple formats, includes flexible audio capabilities, channel branding and multichannel video program distribution, as well as dynamic visual effects.

With an intuitive and compact control panel, Masterpiece offers unbeatable master control operation. This is essential in today's complex master control environments where decisions have to be made quickly by operators across multiple channels to ensure the quality of output that's required.

Masterpiece, combined with FormatFusion3 technology, is unique in the master control environment, giving you more capacity to feed multiformat material into your channels. This means you don't have to create multiple versions of the same material to feed different channel outputs, and there is no need for external conversion equipment. This reduces capital outlay and complexity. Commercial breaks in HD can be combined with UHD programs, increasing advertising slots and creating more lucrative revenue streams for you.

FormatFusion4 technology raises the bar again, bringing seamless HDR capabilities to Masterpiece. Selected inputs can independently handle HLG, PQ and S-Log3 for color spaced BT709 SDR and BT2020 HDR in 4K UHD and HD. The core of the switcher can also be set to the desired EOTF and WCG setting.



## KEY FEATURES

- UHD/3G/HD Master Control Switcher or *NEW* 3G/HD/SD Master Control switcher
- Up to 10x UHD inputs for single link UHD connectivity
- 42x 1080p/1080i/720p/SD inputs
- PGM/PST and clean outputs\*
- 4 keyers for channel branding
- 4 channels of DVE assignable to backgrounds and keyers
- Internal clipstore backed up by 1 TB HDD
- 8-channel AES audio mixer
- 64-channel MADI inputs x2
- 16-channel audio shuffling for every crosspoint and output
- Embedding/de-embedding and routing
- Flexible audio routing
- Controlled via Grass Valley Morpheus Automation
- Optional control panel, built-in motorized audio faders
- SD and HD *OR* HD and UHD processing
- FormatFusion3 for multiformat workflows
- Optional FormatFusion4 for HDR productions
- DVE functionality for squeeze back and on-air effects
- Automatic Dolby® E detection
- Voiceovers with automatic level control
- Control multiple masterpiece mainframes from one control surface
- Optional MSP software control surface offering the same control features as the hardware panel
- Note: Closed captioning is passed through the FormatFusion engines when they are used in Frame sync mode where the input and output are the same standard

\* Outputs match operational format.

## Automation Integration

The Masterpiece family has a seamless control interface to Grass Valley Morpheus playout automation solution.

### Automating Master Control

Seamless interfacing with Grass Valley's Morpheus automation system allows Masterpiece to deliver robust and resilient content distribution and flexible device management, making it the most efficient automation tool for your channel management.

Morpheus automation enables playout schedules to run smoothly, keeping your channel content working effortlessly. Masterpiece also offers third-party automation using Oxtel protocol. The Masterpiece control panel can be operated manually, allowing for on-the-fly operations when needed. Integration with Grass Valley's LiveTouch replay and ChyronHego's graphics engine control provides a strong content and branding toolset.

Switching audio, breaking away audio from video, and triggering effects such as squeeze backs and loading clips on-the-fly are just some of the operations the Masterpiece family and Morpheus can achieve together for automated master control.

### Your Brand Is Everything

The Masterpiece family of switchers gives you the power to brand your channel easily so that it stands out, essential in today's content-rich world. If you're working in HD with plans to transition to UHD, Masterpiece 12G-SDI or Masterpiece IP lets you move seamlessly to UHD workflows without any compromise in quality or performance. The same is true for customers who have SD overflows with plans to transition to HD, Masterpiece HD/SD allows the same seamless move to HD. It also facilitates high-quality keying. There are four keys available with DVE and to transition your graphics to air via preview or directly cut. Features enabling this include:

- Four key layers for essential channel branding and DVE effects to create any on-air style
- Internal clipstore for stills and clips
- 10 Clipstore outputs
- Library of transition types and profiles control for creative visual design including squeeze back

Features	Masterpiece 12G-SDI	Masterpiece IP	Masterpiece HD/SD
<b>Inputs</b>	42x HD/3G BNCs <i>OR</i> 10x 12G BNCs plus 2x HD/3G BNCs	36x HD/3G IP <i>OR</i> 9x UHD IP over 4x 50 GbE QSFP28 6x HD/3G BNC <i>OR</i> 1x 12G-SDI BNC plus 2x HD/3G BNCs	42x SD/HD/3G BNCs
<b>Outputs</b>	12x HD/3G BNCs <i>OR</i> 3x 12G BNCs	12x HD/3G IP <i>OR</i> 3x UHD IP over 4x 50 GbE QSFP28	12x SD/HD/3G BNCs
<b>Keyers</b>	4	4	4
<b>2D DVE tiles</b>	8	8	8
<b>FormatFusion3/4</b>	2 in UHD – 8 in HD/3G	2 in UHD – 8 in HD/3G	8 in SD/HD/3G
<b>ClipStore output</b>	10 channels 16 GB	10 channels 16 GB	10 channels 16 GB
<b>4K quad link</b>	Yes	Yes	N/A
<b>4K 2SI</b>	Yes	Yes	N/A

## Vision Effects and Keying Power

The Masterpiece family offers the same great level of vision effects whether you are operating in SD or UHD.

### Keying Power

Every Masterpiece has four key layers available with both Linear and Luma keying. Any of the keys can have DVE assigned to it producing squeeze backs. The Masterpiece also has dual tile mode available with the DVE producing two live video tiles from a single Key that can be resized.

### ClipStore

Masterpiece's ClipStore enables playing sequences of key and fill, or video and stills. It provides up to 32 GB of uncompressed SD/HD/3G content available across 10 channels. The ClipStore can play out and record video and key channels. Importing and exporting animations and video is performed via a LAN/WAN, USB device and K-Watch.

K-Watch software runs on a PC. The file conversion process is automatic, and converts from one format into the native Masterpiece .SWS file format. The new K-Manager Pro software takes the converted file and transfers them directly into the relevant project on the Masterpiece frame — ready for the operator. The K-Manager Pro software runs on a PC that is networked to a Masterpiece frame.

The ClipStore has a sophisticated editor for both audio and video (fill and key):

- Instant access to any content and selected on any bus
- Holds both audio and video
- Used for animated clip transitions
- On-board clip editor
- Use in any memory or macro recall
- Grab live incoming video or file via USB or network

In 4K UHD mode, the ClipStore operates as a core component of your production offering key and fill, video and still outputs with full 4K UHD resolution.

### K-Manager

K-Manager utilities allow users to resize and change the still/clip standard whenever they need 525/59.94 or 1080i/59.94 or even 720p/60. K-Manager also enables offline crosspoint mapping for easy configuration.

### Comprehensive Integration and Control Capabilities

For a single point of production control, Kula may be operated under Grass Valley Ignite automation. In addition to full support for other Grass Valley devices, Kula also features an extensive protocol list enabling third-party devices including:

- Production servers
- Audio mixers
- Robotic camera control
- Graphics engines
- Tally systems
- Multiviewers

### Vision Effects

Simple operation and easy setup enables operators to work quickly and efficiently, making more time to work on other elements within the playout environment.

The DVE can be assigned to the "Mixer," allowing squeeze back of the main program output so background PGM/PST wipes and mixes will appear in the resized box. The DVE can also be assigned to the background buses so the Program and the Preset bus will be resized independently.

The Masterpiece family also has a utility bus that can be used to load content from the internal ClipStores, allowing great-looking effects easily created when the squeeze backs are being used.



Key 1 Tile 1

Key 1 Tile 2

### 4K UHD Capable

The Masterpiece 12G-SDI and Masterpiece IP systems are 4K UHD Master Control switchers for those ready to broadcast exclusively in 4K UHD.

If your playout requirements need to be flexible and switch from SD to HD/3G then the **NEW** Masterpiece HD/SD will offer you the solution for your playout facility.

Masterpiece is 4K UHD capable with:

- 4x 4K UHD keyers
- 10x 4K UHD inputs and 3x 4K UHD outputs — Masterpiece 12G-SDI
- 9x 4K UHD IP inputs and 3x 4K UHD IP outputs — Masterpiece IP
- Supports full-screen wipes in 4K UHD
- Native internal ClipStore for 4K UHD animations
- Transparent operation for operators

### Masterpiece 12G-SDI

Masterpiece12G-SDI is engineered with a single link 12G-SDI infrastructure. This means playout organizations can focus on the future of their 4K UHD productions using less cabling while supporting their legacy equipment.

Masterpiece 12G-SDI offers value for money in a package for either 12G-SDI or 3G/1080p operations. With this product, four keyers, DVE effects and features adapted from the powerful Kahuna switchers, Masterpiece 12G-SDI offers a strong backbone for the most comprehensive productions.

### Masterpiece IP

Masterpiece IP is uniquely positioned for playout companies who need full IP I/O, yet want a standalone hardware-based playout solution offering a route into the IP domain, while maintaining a premium level of playout capabilities in a smaller, more efficient form factor.

The Masterpiece IP Master Control switcher provides squeeze backs that can be assigned to any Key or the PGM/PST bus to create the look required for your playout channel.

### Masterpiece HD/SD

Masterpiece HD/SD is an addition to the successful Masterpiece family, allowing all the great features of Masterpiece to be available to SD workflows. The Masterpiece HD/SD can operate in SD or HD/3G while seamlessly including HD/3G or SD content into your playout channel with the unique FormatFusion3 technology included with every Masterpiece.

Masterpiece HD/SD is capable of working in an SD playout channel and, with no extra option required, the frame can be changed to operate in HD or 3G — allowing you to easily upgrade your playout channel to HD or 3G.

Key 3  
Station Logo

Squeeze back of  
preset bus

Key 4

Key 2

Background  
Utility Bus

Up Next  
GV Exclusive Interview

Now on  
GV HD-2

Squeeze back of  
PGM bus

Key 1 Tile 1  
From external feed

Key 1 Tile 2  
From ClipStore

## Audio Mixing and System Integration

The Masterpiece family of switchers receives audio signals via both SDI embedded audio, direct AES inputs and MADi inputs.

### Audio Mixing

Masterpiece includes an 80x56 out audio mixer and can execute the following:

- Audio lead and lag transition
- Break away audio transitions
- Voiceovers
- Pre-fade listen audio selection directly from control buttons on the panel

The benefit of pre-fade listening to the audio before it goes live gives the operator confidence knowing that a channel's audio material and feeds are played out as scheduled. The audio mixer provides embedding and de-embedding audio processing. Any 16 embedded channels can be selected from any/all the incoming video sources. Audio channels can be shuffled for flexible alignment with in-house channel mapping.

### System Integration

As a fully loaded master control system, the Masterpiece family offers a full solution from SD to HD/1080p **OR** from HD/1080p and UHD Master Control without needing any (optional) extras.

Of course you can pair Masterpiece 12G-SDI or the Masterpiece IP with Grass Valley's UHD-ready product range including routing, playout, control and monitoring, multiviewers, servers and automation to ensure a seamless workflow for your UHD productions. By combining Grass Valley systems, you get comprehensive master control facilities that satisfy even the most mission-critical live production environments.

### Soft Panel User Interface

Masterpiece supports an optional MSP user interface. The standalone software package runs on a user-supplied standard or touchscreen PC. This easy to operate UI provides direct control of switching crosspoints and the ability to recall effects and macros. If customers require the ability to directly cut on a hardware keyboard, a USB keyboard offers the operator direct customized keyboard control of the switcher. The MSP control UI can operate the Masterpiece mainframe as a standalone control surface or control multiple Masterpiece mainframes that are running in a headless application.

### Master Control That Won't Let You Down

The whole Masterpiece family is built to Grass Valley's precision engineering standards and backed by 24/7 customer support. It is purpose-built to withstand the most testing of operational environments, entirely suitable for today but with a firm eye on tomorrow's requirements, too.

- Designed for channel maximization
- Audience retention
- Redundant power for peace of mind on-air performance
- Traditional hardware control panel or **NEW** MSP software control panel for headless applications

By combining Grass Valley systems you get comprehensive master control facilities that satisfy even the most mission-critical live production environments



## SPECIFICATIONS

### Video/TV Standards

(Common to all models unless otherwise specified)

#### TV Standards

2.97 Gb/s Video Standards (1080p):

- 1080p59.94 SMPTE ST 424
- 1080p59.94 SMPTE ST 425/Level A
- 1080p59.94 SMPTE ST 425/Level B
- 1080p50 SMPTE ST 424
- 1080p50 SMPTE ST 425/Level A
- 1080p50 SMPTE ST 425/Level B

1.485 Gb/s Video Standards (HD):

- 1080i60 SMPTE ST 274(4), SMPTE ST 292(D)
- 1080i59.94 SMPTE ST 274(5), SMPTE ST 292(E)
- 1080i50 SMPTE ST 274(6), SMPTE ST 292(F)
- 1035i60 SMPTE ST 260, SMPTE ST 292(A)
- 1035i59.94 SMPTE ST 260, SMPTE ST 292(B)
- 1080p30 sF
- 1080p29.97 sF
- 1080p25 sF
- 1080p24 sF
- 1080p23.976 sF
- 1080p30 SMPTE ST 274(7), SMPTE ST 292(G)
- 1080p29.97 SMPTE ST 274(8), SMPTE ST 292(H)
- 1080p25 SMPTE ST 274(9), SMPTE ST 292(I)
- 1080p24 SMPTE ST 274(10), SMPTE ST 292(J)
- 1080p23.976 SMPTE ST 274(11), SMPTE ST 292(K)
- 720p60 SMPTE ST 296(1), SMPTE ST 292(L)
- 720p59.94 SMPTE ST 296(2), SMPTE ST 292(M)
- 720p50 SMPTE ST 296(2), SMPTE ST 292(M)

#### Masterpiece 12G-SDI & IP Formats Only

11.88 Gb/s Video Standards (UHD):

- SMPTE ST 2082-10
- 3840x2160p 50 Hz
- 3840x2160p 59.94 Hz
- 3840x2160p 60 Hz

#### Masterpiece HD/SD Formats Only

270 Mb/s Video Standards (SD):

- 576i 16:9
- 576i 4:3
- 480i 16:9
- 480i 4:3

#### Reference

Analog genlock high definition tri-level syncs signal or SD 1V B and B

### Mainframe

#### Video Signal Inputs for Masterpiece 12G-SDI

42x HD/1080p (1.485 Gb/s / 2.97 Gb/s), including 10x 12G-SDI (SMPTE ST 2082) single link BNC connectors

Serial digital interface as REC601/SMPTE ST 292/SMPTE ST 424 via BNC connectors

Genlock reference 2 off Analog Sync (loop A and B through)

#### Video Signal Inputs for Masterpiece HD/SD

42x SD/HD/1080p (270 Mb/s / 1.485 Gb/s / 2.97 Gb/s)

Serial digital interface as REC601/SMPTE ST 292 via BNC connectors

Genlock reference 2 off Analog Sync (loop A and B through)

#### Video Signal Outputs for Masterpiece 12G-SDI

12x HD/1080p (1.485 Gb/s / 2.97 Gb/s), including 3x 12G-SDI (SMPTE ST 2082) single link BNC connectors

Serial digital interface as REC601/SMPTE ST 292/SMPTE ST 424 via BNC connectors

#### Video Signal Outputs for Masterpiece HD/SD

12x SD/HD/1080p (270 Mb/s / 1.485 Gb/s / 2.97 Gb/s)

Serial digital interface as REC601/SMPTE ST 292 via BNC connectors

#### Video Signal for Masterpiece IP

IP Connectivity: Duplex, signals supported over 4x QSFP SMPTE ST 2022-6, SMPTE ST 2022-7, VSFTR-03, VSFTR-04, SMPTE 2110

Up to 10 inputs – 1.485 Gb/s format sources

Up to 10 inputs – 2.970 Gb/s format sources

Up to 9 inputs UHD in SMPTE ST 2110

Up to 12 outputs – 1.485 Gb/s format sources

Up to 12 outputs – 2.970 Gb/s format sources

Up to 3 outputs UHD in SMPTE ST 2110

SDI Signals:

1.485 Gb/s format sources and 2.970 Gb/s format sources

4x 3G-SDI (or 1x 12G-SDI) inputs + 2x 3G-SDI BNC 1.485 Gb/s format and 2.970 Gb/s format inputs

#### Audio Signal Inputs

4 AES Diff pair inputs (either as 8x AES mono or 4x AES stereo)

16 program embedded SDI (1.5 Gb/s / 3 Gb/s / 12 Gb/s)

16 preset embedded SDI (1.5 Gb/s / 3 Gb/s / 12 Gb/s)

16 utility embedded SDI (1.5 Gb/s / 3 Gb/s / 12 Gb/s)

8 internal store

128 MADI channels – 64 ch on BNC 41 and 64 ch on BNC 42

#### Audio Signal Outputs

4 AES Diff pair outputs (either as 8x AES mono or 4x AES stereo)

### Control Interfaces – Automation

Grass Valley Morpheus Automation via TCP/IP connection using proprietary protocol

#### Standard

44 GPI Tally/GPO outputs assignable GPI / GPO isolated contact closures via 2 x 25-way D-Type. Assignable as GPI or GPO

10/100/1000BaseT 3 x RJ45 Ethernet connectors fixings

4x RS-422 control ports

2x USB

#### Power

Masterpiece mainframe auto-sensing 100-250 VAC power supply 50/60 Hz nominal. Two fully independent hot swappable PSU modules, with separate mains power feeds via 2x 13A IEC - 320-C14 socket

Power consumption: <400W

#### Environmental Specifications

Temp. range: 5 to 40°C (41 to 104°F) non-condensing operation

#### Mainframe Mechanics

2 RU

Height: 87 mm (3.42 in.)

Depth: 604.8 mm (23.81 in.)

Weight: Approx. 14 kg (30.3 lbs.)

#### Masterpiece Mainframe Communications

10/100/1000BaseT 1 x RJ45 Ethernet connectors fixings

2x RJ45 Ethernet connector fixings — connect to Maverik modules

CAT5 or above cables — crossover cables are not suitable

4x USB Ports

1x Monitor connection to local touchscreen

#### PSU

2x fully independent external PSU modules with separate mains power feeds via 2 x 10A IEC leads

Output from each PSU 12V DC 100W via Kycon KPPX 4-pin or compatible connectors

2 supplied as standard

ORDERING

FGADZ 9679121A

**Masterpiece 12G-SDI master control system.** 12G Single link UHD/1080p/1080i/720p 2 RU mainframe with 10 UHD inputs, Program, Preset and Clean Outputs via single link 12G-SDI BNC or 1080p/1080i/720p BNCs. 4 key layers, internal clipstore, 4 channels of assignable DVE. Multichannel AES (48 kHz) audio mixer with embedding, dembedding and audio shuffling functionality. Masterpiece control panel with 16 video crosspoint buttons, 2 motorized faders, transition control and includes built-in touch screen GUI.

FGADZ 9679120A

**Masterpiece 12G-SDI mainframe only.** 12G single link UHD/1080p/1080i/720p 2 RU mainframe with 10 UHD inputs, Program, Preset and Clean outputs via single link 12G-SDI BNC or 1080p/1080i/720p BNCs. 4 key layers, internal clipstore, 4 channels of assignable DVE. multichannel AES (48 kHz) audio mixer with embedding, de-embedding and audio shuffling functionality.

MAST-SYSTEM-IP

**Masterpiece UHD IP master control system.** IP UHD/1080p/1080i/720p 2 RU mainframe with 9x UHD IP inputs plus 1x 12G or 4x HD BNC inputs, Program, Preset and Clean IP outputs UHD/1080p/1080i/720p. 4 key layers, internal clipstore, 4 channels of assignable DVE. multichannel AES (48 kHz) audio mixer with embedding, de-embedding and audio shuffling functionality. Masterpiece control panel with 16 video crosspoint buttons, 2 motorized faders, transition control and includes built-in touchscreen GUI.

MAST-FRM-IP

**Masterpiece UHD IP mainframe only.** IP UHD/1080p/1080i/720p 2 RU mainframe with 9x UHD IP inputs plus 1x 12G or 4x HD BNC inputs, Program, Preset and Clean IP outputs UHD/1080p/1080i/720p. 4 key layers, internal clipstore, 4 channels of assignable DVE. multichannel AES (48 kHz) audio mixer with embedding, de-embedding and audio shuffling functionality.

MAST-SYSTEM-HDSD

**Masterpiece 3G-SDI master control system.** 3G HD/1080p/1080i/720p/SD 2 RU mainframe with 40x Inputs, Program, Preset and Clean Outputs via 3G-SDI BNC or 1080p/1080i/720p/SD BNCs. 4 key layers, internal clipstore, 4 channels of assignable DVE. Multichannel AES (48 kHz) audio mixer with embedding, de-embedding and audio shuffling functionality. Masterpiece control panel with 16 video crosspoint buttons, 2 motorized faders, transition control and includes built-in touchscreen GUI.

MAST-FRM-HDSD

**Masterpiece 3G-SDI mainframe only.** 1080p/1080i/720p/SD 2 RU mainframe with 40x inputs, Program, Preset and Clean outputs 1080p/1080i/720p/SD BNCs. 4 key layers, internal clipstore, 4 channels of assignable DVE, multichannel AES (48 kHz) audio mixer with embedding, de-embedding and audio shuffling functionality.

FGADZ 9679090A

Masterpiece control panel with 16 video crosspoint buttons, 2 motorized faders, transition control and includes built-in touch screen GUI.

MSP-PNL-1ME-KBD

Soft panel interface keyboard for 1 M/E GUI with special keycap labels and color for switcher control. Requires the MSP-LIC-1ME-SW option to operate the MSP.

MSP-PNL-1ME-SW

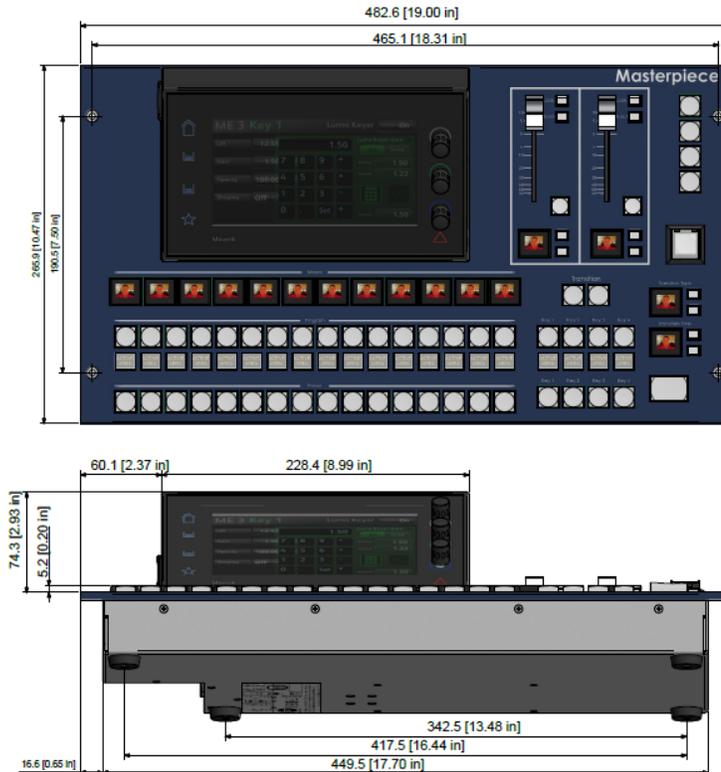
1 M/E soft control panel that provides direct control of switching crosspoints

MAST-LIC-FF4-1ME

Masterpiece 1 M/E FormatFusion4. Enables up to 8x FF4 engines for inputs to be 1080p, HD (1080i/720p) or SD. SDR, HDR – HLG, PQ & S-Log3, BT709 or BT 2020 WCG.

MASTERPIECE CONTROL PANEL SPECIFICATIONS

Width: 482.6 mm (19 in.)  
 Height: 163.6 mm (6.47 in.)  
 Depth: 265.9 mm (10.47 in.)



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