16×20 4K60 Modular Matrix Switcher with Built-In Video Wall

The Sports Bar Matrix — 16 Sources to 20 Screens with Video Wall, Quad View & 7" Touch

The KanexPro FLEX-MF16X20 is a modular matrix switcher that eliminates the need for separate video wall processors, scalers, and multi-view units in medium-to-large AV installations. Designed around a hot-swappable card architecture, this 16-input, 20-output chassis routes 4K/UHD 60Hz signals at full 18Gbps bandwidth with HDCP 2.2 compliance. Built-in video wall support drives up to 12 displays in configurations from 1×12 through 4×3, while quad view combines four sources on a single output — all without external processing hardware.

Independent output scaling adjusts resolution per display, ensuring compatibility across mixed-resolution environments. CAT output cards extend signals up to 230ft (70m) over a single cable, and CEC display control powers screens on and off by zone. The 7" front-panel touchscreen provides direct switching control on-site, supplemented by RS-232, TCP/IP, and Web GUI for integration with Crestron, Control4, and other third-party control platforms.

> **Surge Protection Recommended —** This product contains sensitive electrical components that may be damaged by electrical spikes, surges, electric shock, or lightning strikes. Use of surge protection systems is highly recommended.

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FEATURES

- ✓ Up to 16 HDMI 2.0 inputs and 20 outputs via hot-swappable modular cards (HDMI, CAT, DisplayPort)
- ✓ 4K/UHD 60Hz at 18Gbps with full HDCP 2.2 and HDR support
- ✓ Built-in video wall up to 4×3 (12 displays) with configurable layouts and bezel compensation
- ✓ Quad view mode displays four sources on a single output in multiple layout options
- ✓ Independent output scaling adjusts resolution per channel for mixed-display environments
- ✓ CAT output extends 4K signals up to 230ft (70m) via single cable using FLEX-CATRX receivers
- ✓ CEC display control for zone-based power management across connected screens
- ✓ 7" front-panel touchscreen for on-site switching, preset recall, and system monitoring
- ✓ RS-232, TCP/IP, and Web GUI control for integration with Crestron, Control4, Savant, and other platforms

AVAILABLE CARDS (SOLD SEPARATELY)

FLEX-HDMI8IN	8-port HDMI 2.0 Input Card
FLEX-HDMI12OUT	12-port HDMI 2.0 Output Card
FLEX-CAT12OUT	12-port CAT Output Card (use with FLEX-CATRX receivers)
FLEX-CATRX	CAT Receiver — extends 4K signal up to 230ft (70m)
FLEX-DP8IN	8-port DisplayPort Input Card
FLEX-DP12OUT	12-port DisplayPort Output Card

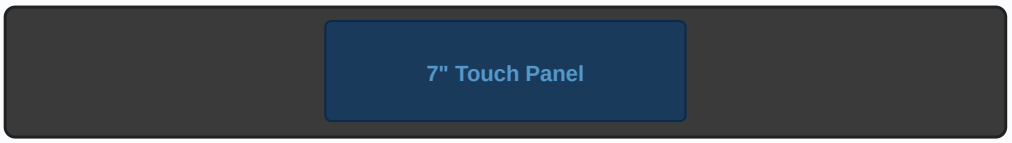
Product Specification

VIDEO	
Standard	HDMI 2.0, HDCP 1.x, HDCP 2.2
HDR	Supported
Maximum Data Rate	18 Gbps
Video Resolution	Up to 3840×2160 60Hz 4:4:4 (8-bit)
Chroma Sampling	RGB and YCbCr 4:4:4, YCbCr 4:2:2/4:2:0
Color Bit Depth	8, 10, 12 bits per color
AUDIO	
Audio Formats	LPCM 2.0/2.1/5.1/6.1/7.1, Dolby Digital, Dolby TrueHD, Dolby Digital Plus (DD+), DTS-ES, DTS HD Master, DTS HD-HRA, DTS:X
CONNECTION	
RS-232 Control	1× 9-pin D-sub
TCP/IP Control	1× RJ45
Input Card Slots	2 slots — 8× HDMI Type A (19-pin female) per card
Output Card Slots	2 slots — 12× CAT (RJ45) per card or 12× HDMI per card
GENERAL	
ESD Protection	±8kV (air-gap discharge) / ±4kV (contact discharge)
Operating Temperature	32° to 104°F (0° to 40°C)
Humidity	10% to 90% RH (non-condensing)
Dimensions	445 × 355 × 450 mm (17.5" × 14" × 17.7")
Weight	21 kg (46 lbs)
Power Supply	100–240VAC 50/60Hz
Video Wall	Up to 4×3 (12 displays), 30 independent zones
Quad View	3 layout options, configurable per output
Output Scaling	Independent per output: Auto, 720p, 1080p, 4K30, 4K50, 4K60, 1024×768, 1280×1024, 1920×1200

Operation

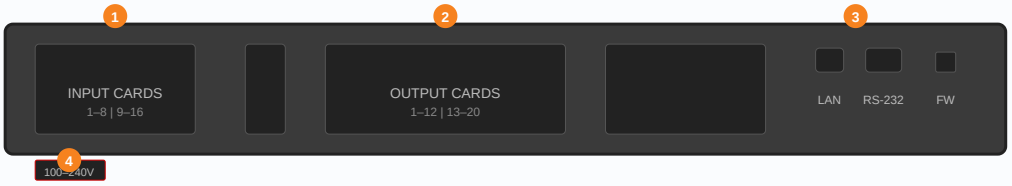
The FLEX-MF16X20 is controlled via the 7" front-panel touch screen, which provides access to system status, input/output switching, preset management, I/O configuration, and EDID settings.

FRONT PANEL



No.	Name	Function Description
•	**Touch Panel**	7" capacitive touchscreen for on-site control of all matrix functions: switching, presets, I/O config, EDID, system info.

REAR PANEL



No.	Name	Function Description
1	**Input Card Slots**	2 card slots — 8 ports per input card (up to 16 HDMI inputs for FLEX-MF16X20). Cards: FLEX-HDMI8IN, FLEX-DP8IN.
2	**Output Card Slots**	2 card slots — 12 ports per output card (up to 24 outputs). Cards: FLEX-CAT12OUT, FLEX-HDMI12OUT, FLEX-DP12OUT.
3	**MCU Board**	LAN (RJ45) for TCP/IP and Web GUI control, RS-232 (D-sub 9-pin) for serial control, firmware update port.
4	**Power Switch**	100–240VAC 50/60Hz power input with on/off switch.

TOUCH PANEL MENUS

System Info

Displays current communication settings (IP address, RS-232 baud rate, firmware version) and switching status. Sub-pages: Summary, Input, Output, LAN, RS-232.

Create (Switching)

Route input sources to outputs. Select input number, then output number(s), then press Enter to execute. “Set ALL” routes to all outputs; “Clr ALL” clears selection.

Preset

Recall stored presets (1–8). Presets are configured via Web GUI or API commands. Recalling a preset replaces the current switching configuration.

I/O Config

Set output resolution independently per channel or all outputs together. Select scaler timing, then output number(s), then Enter.

EDID

EDID management with pre-stored internal EDIDs and output EDID emulation from connected displays. Select EDID from list, then Enter to save.

Web GUI User Guide

Access the Web GUI by entering the matrix's IP address in a web browser. Default credentials: Username **Admin**, Password **admin**.

Default Network Settings

IP Address	192.168.1.72
Subnet Mask	255.255.255.0
Gateway	192.168.1.1
TCP/IP Port	80
Telnet Port	23

CREATE (SWITCHING)

For each output, use the input drop-down menu to select the source, then click "Create" to execute. "Refresh" displays current switching status. "Preset Save" stores the current configuration.

PRESET

Recall or clear stored presets (1–8).

EDID

Select EDID for each input from the EDID list. Click "Load" to save. "Refresh" retrieves current EDID information from the matrix.

SYSTEM

Configure RS-232 settings, view network information, change login credentials, and perform system resets. Network settings are configured via the front-panel touch screen.

Control Command

The FLEX-MF16X20 supports RS-232 and Ethernet (TCP/IP) control using ASCII commands. Format: command + parameters + **!** delimiter.

5.1 SYSTEM SETUP COMMAND

COMMAND	FUNCTION	FEEDBACK
`s reboot!`	Reboot the device	`Reboot... System Initializing...`
`r type!`	Get device model	`M1616KT`
`r fw version!`	Get firmware version	`MCU APP: Vx.xx.xx`
`s reset!`	Reset to factory defaults	`Reset to factory defaults`
`r link in x!`	Get input x connection status (0=all)	`hdmi input 1: connect`
`r link out y!`	Get output y connection status (0=all)	`hdmi output 1: connect`
`r ipconfig!`	Get current IP configuration	`IP/Subnet/Gateway/Port/MAC`
`r ip addr!`	Get IP address	`IP address: 192.168.1.100`
`r connect!`	Get connection status	`(connection details)`

5.2 PRESET COMMAND

COMMAND	FUNCTION	FEEDBACK
`s save preset z!`	Save current switch state to preset z (1–8)	`save to preset 1`
`s recall preset z!`	Recall saved preset z (1–8)	`recall from preset 1`
`s clear preset z!`	Clear stored preset z (1–8)	`clear preset 1`
`r preset z!`	Get preset z information (1–8)	`Video crosspoint`

5.3 OUTPUT SETTING COMMAND

COMMAND	FUNCTION	FEEDBACK
`s in x av out y!`	Route input x to output y (x=1–16, y=0–16, 0=all)	`input 1 -> output 2`
`r av out y!`	Get output y signal status (0=all)	`input 1 -> output1...`
`s hdmi y stream z!`	Set output y stream on/off (z: 0=disable, 1=enable)	`Enable/Disable stream`
`r hdmi y stream!`	Get output y stream status	`Enable/Disable status`

5.4 EDID SETTING COMMAND

COMMAND	FUNCTION	FEEDBACK
`s edid in x from z!`	Set input x EDID from default z (x=0–16, z=1–39)	`input1 EDID:1080p, Stereo`
`r edid in x!`	Get EDID status of input x (0=all)	`input1 EDID:4K2K60_444...`

EDID presets: 1=1080p/Stereo, 2=1080p/5.1, 3=1080p/7.1, 10=4K30_444/Stereo, 11=4K30_444/5.1, 12=4K30_444/7.1, 16=4K60_444/Stereo, 17=4K60_444/5.1, 18=4K60_444/7.1, 19=4K60_444/Stereo HDR, 24–39=Copy from HDMI output 1–16

5.5 VIDEO WALL CREATION COMMAND

Syntax: `s wall v set hdiv w vdiv x time y out z!`

PARAMETER	DESCRIPTION	RANGE
v	Wall number (each wall must have unique number)	1–30
w	Number of horizontal divisions (rows)	1–4
x	Number of vertical divisions (columns)	1–3
y	Output resolution timing index	2–16 (see scaler list)
z	Starting output port number	Must start at card's 1st, 5th, or 9th port

Example: `s wall 1 hdiv 3 vdiv 3 time 13 out 13!` — Creates 3×3 video wall (wall #1) at 4K60 starting from output 13.

Video Wall Switching & Off

COMMAND	FUNCTION	EXAMPLE
s in x wall out y!	Switch video wall y input to source x	s in 2 wall out 2!
s wall x off!	Turn off video wall x (return to normal mode)	s wall 2 off!

5.8 QUAD VIEW CREATION COMMAND

Syntax: `s quad on layer x time y out z!`

PARAMETER	DESCRIPTION	RANGE
x	Quad view layout	1–3
y	Output resolution timing index	2–16
z	Starting output port	Card's 1st, 5th, or 9th port

Example: `s quad on layer 1 time 9 out 1!` — Sets quad view layout 1 at 1080p60 starting from output 1.

COMMAND	FUNCTION	EXAMPLE
s quad off out x!	Turn off quad view on output x group	s quad off out 1!

5.10 CEC COMMAND

COMMAND	FUNCTION	EXAMPLE
s cec hdmi out y on!	Send power ON CEC to output y (0=all)	s cec hdmi out 0 on!
s cec hdmi out y off!	Send power OFF CEC to output y (0=all)	s cec hdmi out 0 off!
s cec send out y cmd xx xx!	Send custom CEC command to output y	s cec send out 0 cmd ef 82 10 00!

5.12 OUTPUT SCALER COMMANDS

COMMAND	FUNCTION	RANGE
s hdmi y scaler z!	Set output y resolution (y=0 for all)	z: 1=Auto, 2=480p60, 6=720p60, 9=1080p60, 13=4K60, etc.
s hdmi y con z!	Set output y contrast	z: 0–255 (default 128)
s hdmi y bri z!	Set output y brightness	z: 0–255 (default 128)
s hdmi y sat z!	Set output y saturation	z: 0–255 (default 128)
s hdmi y hue z!	Set output y hue	z: 0–255 (default 128)

5.17 EXTENDER RX RESET

COMMAND	FUNCTION	EXAMPLE
s rx y reset!	Reset Rx extender on output y (0=all)	s rx 0 reset!

5.18 TYPE B COMMAND APIS

Alternative ASCII command format using *255 prefix for third-party control integration.

Switching Commands

COMMAND	FUNCTION	EXAMPLE
`*255CIxxxOxxx!`	Connect input to output	`*255CI0010012! — Input 1 → Output 12`
`*255CIxxxOxxx-xxx!`	Connect input to output range	`*255CI0020001-005! — Input 2 → Output 1–5`
`*255DI000Oxxx!`	Disconnect output	`*255DI0000012! — Disconnect output 12`
`*255PCxx!`	Recall video preset	`*255PC02! — Recall preset 2`

Input/Output Info Commands

COMMAND	FUNCTION	EXAMPLE
`*255IFIxxx!`	Get input info	`*255IFI001! — Input 1 info`
`*255OFOxxx!`	Get output info	`*255OFO001! — Output 1 info`

Output Configuration Commands

COMMAND	FUNCTION	EXAMPLE
`*255OSOxxxHxx!`	Set output scaler timing	`*255OSO001H01! — Output 1 auto`
`*255OVOxxxMxx!`	Set video stream (M00=Normal, M01=Freeze, M02=Black)	`*255OVO001M01! — Freeze output 1`
`*255OCOxxxM01!`	CEC power on output	`*255OCO001-004M01! — Power on 1–4`
`*255OCOxxxM00!`	CEC power off output	`*255OCO001-004M00!`

Video Wall Commands (Type B)

COMMAND	FUNCTION	EXAMPLE
`*255OWOxxx-xxxMxxHxxVxxOxxx...!`	Configure video wall layout	`*255OWO001-009M09H03V03O001...O009!`
`*255OWOxxx-xxxM00!`	Turn off video wall mode	`*255OWO001-009M00!`
`*255OBOxxxHxxVxx!`	Set bezel compensation	`*255OBO001H01V01!`

Quad View Commands (Type B)

COMMAND	FUNCTION	EXAMPLE
`*255OQOxxxMxxLxx!`	Set quad view (Mxx=timing, Lxx=layout)	`*255OQO001M13L05! — 4K60, layout 5`
`*255OQOxxxM00!`	Turn off quad view	`*255OQO001M00!`

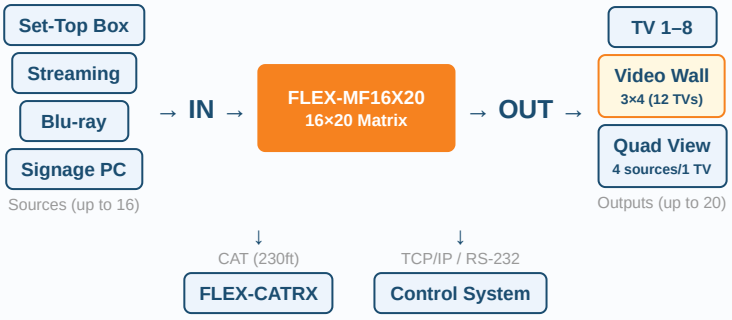
Scaler Graphic Commands (Type B)

COMMAND	FUNCTION	EXAMPLE
`*255OGOxxxBxxx!`	Set brightness (0–255)	`*255OGO001B128!`
`*255OGOxxxCxxx!`	Set contrast (0–255)	`*255OGO001C128!`
`*255OGOxxxSxxx!`	Set saturation (0–255)	`*255OGO001S128!`
`*255OGOxxxHxxx!`	Set hue (0–255)	`*255OGO001H128!`

Resolution Timing Index (M/H parameter): 01=Auto, 02=480p60, 03=576p50, 04=720p50, 05=720p59, 06=720p60, 07=1080p50, 08=1080p59, 09=1080p60, 10=4K30, 11=4K50, 12=4K59, 13=4K60, 14=1024×768@60, 15=1280×1024@60, 16=1920×1200@60

Application Example

Multi-Zone 4K Distribution with Video Wall & Quad View



How it works: Connect up to 16 HDMI sources to the input card slots. Route any source to any of 20 outputs using the 7" touchscreen, Web GUI, RS-232, or TCP/IP. Each output independently scales to match the connected display's native resolution. Configure video walls of up to 12 displays (4×3) or quad view to monitor four sources on a single screen. CAT output cards extend signals up to 230ft via FLEX-CATRX receivers.
CEC Control: Power displays on/off by zone using CEC commands — eliminating the need for separate IR or relay control systems.
Hot-Swap: Replace any input or output card without powering down the chassis.

TROUBLESHOOTING

Q: No video on one or more outputs?
A: Verify the output card is fully seated. Check that the source is active and the input card LEDs indicate a signal. For CAT outputs, confirm the FLEX-CATRX receiver is powered and connected. Try setting EDID to match the display's native resolution.

Q: Video wall displays show incorrect tiling?
A: Verify the hdiv and vdiv parameters match your physical display layout. Ensure the starting output port begins at a card's 1st, 5th, or 9th port. Use bezel compensation commands to correct alignment.

Q: Cannot access the Web GUI?
A: Connect via the LAN port on the MCU board. Default IP: **192.168.1.72**. Ensure your PC is on the same subnet. Login: **Admin / admin**.

Q: How do I reset to factory defaults?
A: Send `s reset!` via RS-232 or TCP/IP. The matrix will reinitialize with factory settings.

WARRANTY INFORMATION

KanexPro products purchased from an Authorized Reseller after September 1, 2015 are covered by a **3-Year Limited Warranty**. KanexPro will repair or replace defective products free of charge for necessary parts, labor, and shipping. This warranty extends to the original end-user purchaser and is non-transferrable. For full warranty details, visit **kanexpro.com/warranty**.