4×4 HDBaseT Matrix Switcher with 4K60 & CAT Extension (70m)

The KanexPro MMX-4X4CAT-70M is an 18Gbps 4×4 HDMI matrix switcher with simultaneous mirrored HDBaseT CAT outputs. It connects 4 HDMI 2.0b sources to up to 8 displays simultaneously — 4 via direct HDMI and 4 via CAT6 extension to the included 12V PoC-powered CAT Receivers, reaching up to 230ft (70m) per run over a single CAT6 cable. Control via front panel, IR remote, RS-232, TCP/IP, and Web GUI.

Surge Protection Recommended — This device contains sensitive electronics. Use of surge protection is strongly recommended in all installations.

Cable Wiring — Use direct interconnection (T568B) wiring only. Do not use crossover cables for CAT connections.

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2. FEATURES

- ✓ 4 HDMI inputs • 4 HDMI + 4 mirrored CAT outputs • 4 12V PoC CAT Receivers included
- ✓ 18Gbps video bandwidth • HDMI 2.0b • HDCP 2.2/1.x • DVI 1.0 compatible
- ✓ Up to 4K2K@60Hz (YUV 4:4:4) on all HDMI and CAT ports
- ✓ HDR10, HDR10+, Dolby Vision, HLG pass-through
- ✓ CAT6 extension up to 230ft / 70m via single CAT6 cable with 12V PoC
- ✓ Independent 4K→1080p downscaler per output for mixed-resolution displays
- ✓ LPCM 2.0/5.1/7.1, Dolby Digital, Dolby TrueHD, DD+, DTS-ES, DTS-HD Master, DTS-X audio pass-through
- ✓ One-way IR matrix routing • CEC display control • Advanced EDID management (21 factory + 2 user + copy modes)
- ✓ Control via front panel, IR remote, RS-232, TCP/IP LAN, and Web GUI • Crestron/AMX compatible
- ✓ 1U rack-mountable metal enclosure • 12V PoC on all CAT ports

3. PACKAGE CONTENTS

- 1× 18Gbps 4×4 HDMI Matrix
- 4× CAT Receivers
- 1× Matrix IR Remote
- 1× 12V/3A Power Supply
- 1× RS-232 Serial Cable (1.5m)
- 4× IR Blaster Cables (1.5m)
- 5× IR Receiver Cables (1.5m)
- Mounting Ears (Matrix and Receivers)
- 1× User Manual

4. Specifications

VIDEO	
HDMI	HDMI 2.0b • HDCP 2.2/1.x • DVI 1.0
Bandwidth	18 Gbps
Resolution	Up to 4K2K@50/60Hz (YUV 4:4:4)
Color Space	RGB 4:4:4, YCbCr 4:4:4/4:2:2/4:2:0
Color Depth	8/10/12-bit (1080p) • 8-bit (4K60 4:4:4) • 8/10/12-bit (4K60 4:2:2/4:2:0)
HDR	HDR10, HDR10+, Dolby Vision, HLG
Downscaler	4K→1080p per output (independent)

AUDIO	
HDMI Audio	LPCM 2.0/2.1/5.1/6.1/7.1, Dolby Digital, TrueHD, DD+, DTS-ES, DTS-HD Master, DTS-HD HRA, DTS-X

CAT EXTENSION	
Distance	230ft / 70m (CAT6)
PoC	12V Power over Cable to receivers
ESD	±8kV air-gap / ±4kV contact

CONNECTIONS	
HDMI In	4× HDMI Type-A [19-pin female]
HDMI Out	4× HDMI Type-A [19-pin female]
CAT Out	4× RJ45 [12V PoC]
Control	1× TCP/IP [RJ45] • 1× RS-232 [3-pin Phoenix connector]
IR	4× IR OUT • 5× IR IN • 1× IR EXT [3.5mm]

MECHANICAL	
Housing	Metal, Black, 1U
Dimensions	440mm × 200mm × 44.5mm
Weight	Matrix: ~2.4kg • Receiver: 155g
Power	AC 100–240V 50/60Hz → DC 12V/3A
Consumption	36W max
Operating Temp	32–104°F / 0–40°C
Storage Temp	−4–140°F / −20–60°C
Humidity	20–90% RH (non-condensing)

HDMI CABLE LENGTH	
4K60	Up to 16ft / 5m
4K30	Up to 32ft / 10m
1080p60	Up to 50ft / 15m

5. Operation Controls & Functions

5.1 MATRIX FRONT PANEL

Front Panel — MMX-4X4CAT-70M (Nixie tube display)

No.	Name	Function
1	**Power LED**	Green = working normally. Red = standby mode.
2	**IR Window**	Accepts IR remote control signals for this matrix only.
3	**INPUT ▲▼**	Short press to cycle input channels 1–4. Nixie tube shows selected channel. Long press INPUT ▲ for 3 seconds to enter standby; short press to wake.
4	**OUTPUT ▲▼**	Short press to cycle output channels 1–4 or A (all). Nixie tube shows selected channel. **Long press OUTPUT + ▲ simultaneously for 10 seconds to factory reset** (Nixie shows "FC").

Routing Operation: Press OUTPUT ▲▼ to select the output, then INPUT ▲▼ to select the source. After both Nixie tubes flash 3 times, routing is confirmed. Select output "A" to route one input to all outputs simultaneously.

5.2 MATRIX REAR PANEL

No.	Name	Function
1	**OUTPUT 1–4 (HDMI)**	HDMI 2.0b output ports. Connect to local HDMI displays with Premium High Speed HDMI cable.
2	**OUTPUT 1–4 (CAT)**	HDBaseT mirrored CAT outputs [RJ45]. Connect to CAT Receivers via CAT6 cable (T568B, no crossover).
3	**IR OUT 1–4**	Connect IR blaster cables [3.5mm]. Emits IR signals from the corresponding CAT Receiver IR IN port.
4	**IR EXT**	Connect IR receiver cable [3.5mm] for remote IR reception when front panel IR window is obstructed.
5	**TCP/IP [RJ45]**	LAN port for Web GUI and TCP/IP control. Default IP: 192.168.0.100.
6	**RS-232**	Serial control port [3-pin Phoenix connector]. Connect to PC or control system. Baud rate 115200 (default).
7	**POWER SWITCH**	Press to power on/off the matrix.
8	**INPUT 1–4 (HDMI)**	HDMI 2.0b input ports. Connect to source devices (PC, Blu-ray, media players) with HDMI cable.
9	**DC 12V**	Power input. Connect supplied DC power adapter.

CAT RECEIVER PANEL

CAT Receiver Panel — MMX-4X4CAT-70M

No.	Name	Function
1	**HDMI OUT**	Connect to HDMI display device (TV, monitor, projector) with HDMI cable.
2	**CAT IN [RJ45]**	Connect to the corresponding CAT output port on the matrix with CAT6 cable (direct T568B wiring — no crossover).
3	**Power LED (Green)**	Illuminates when receiver is powered on. Receiver can be powered via 12V PoC from the matrix over the CAT cable.
4	**Data Signal LED (Orange)**	Illuminates when signal is being transmitted between matrix and receiver.
5	**SERVICE Port (Micro USB)**	Firmware update port.
6	**IR IN [3.5mm]**	Connect IR receiver cable. IR signal is forwarded to the corresponding IR OUT port on the matrix to control source devices remotely.
7	**DC 12V**	Power input. Note: Matrix provides 12V PoC — receiver does not require a separate power supply when connected via CAT cable.

6. IR REMOTE

The included IR remote controls the matrix routing. **Operation:** Press an OUTPUT button (1–4 or ALL) first, then press an INPUT button (1–4) to complete the routing. Pressing ALL then an input routes that source to all outputs simultaneously.

IR Reception: The matrix accepts IR remote signals two ways: (1) directly via the front panel IR window (up to 7m, ±45° angle); (2) via an IR receiver cable connected to the IR EXT / IR IN port if the front panel is obstructed or rack-mounted in a closed cabinet.

7. IR Cable Pin Assignment

Cable	Pin	Function
IR Blaster	+	Positive (signal)
	–	Ground
IR Receiver	Power	12V supply
	Signal	IR signal output

Use only the supplied IR cables. Third-party IR cables may have different pin assignments and can damage IR ports.

8. IR Control System

The MMX-4X4CAT-70M supports **one-way IR matrix control**. IR signals received at a remote CAT Receiver are forwarded to the matrix and follow the video routing — allowing viewers at each remote display to control the source device feeding that display.

How it works: If CAT Receiver 4 is displaying input 4, IR received at CAT Receiver 4 is sent to matrix IR OUT 4, which connects to the IR blaster on source device 4. If CAT Receiver 6 is displaying input 6, its IR routes to IR OUT 6 on the matrix, etc.

Connection: Connect IR receiver cable to CAT Receiver IR IN port. At the matrix, connect IR blaster cable to the corresponding IR OUT port and aim it at the source device's IR window.

9. EDID Management

The MMX-4X4CAT-70M has **21 factory EDID presets**, **2 user-defined EDID modes** (upload custom .bin file via Web GUI), and **copy modes** that capture EDID directly from any connected display.

To set EDID via RS-232: Send `s edid in x from z!` (x = input 0–4, z = mode number 1–31). Send `r edid in 0!` to read all current EDID assignments.

To set EDID via Web GUI: Go to the Input page, select the input channel, choose from the preset dropdown or upload a .bin file for USER1/USER2 slots.

Mode #	EDID Description
1	1080p, Stereo Audio 2.0
2	1080p, Dolby/DTS 5.1
3	1080p, HD Audio 7.1
4	1080i, Stereo Audio 2.0
5	1080i, Dolby/DTS 5.1
6	1080i, HD Audio 7.1
7	3D, Stereo Audio 2.0
8	3D, Dolby/DTS 5.1
9	3D, HD Audio 7.1
10	4K2K30_444, Stereo Audio 2.0
11	4K2K30_444, Dolby/DTS 5.1
12	4K2K30_444, HD Audio 7.1
13	4K2K60_420, Stereo Audio 2.0
14	4K2K60_420, Dolby/DTS 5.1
15	4K2K60_420, HD Audio 7.1
16	4K2K60_444, Stereo Audio 2.0
17	4K2K60_444, Dolby/DTS 5.1
18	4K2K60_444, HD Audio 7.1
19	4K2K60, Stereo Audio 2.0 HDR
20	4K2K60, Dolby/DTS 5.1 HDR
21	4K2K60, HD Audio 7.1 HDR
22	USER1 (custom EDID upload)
23	USER2 (custom EDID upload)
24	Copy from HDMI Output 1
25	Copy from HDMI Output 2
26	Copy from HDMI Output 3
27	Copy from HDMI Output 4
28	Copy from CAT Output 1
29	Copy from CAT Output 2

10. Web GUI User Guide

The MMX-4X4CAT-70M can be fully controlled through a browser-based Web GUI over the network.

STEP 1 — CONNECT & CONFIGURE NETWORK

Connect the TCP/IP [RJ45] port on the matrix rear panel to your network switch using a standard Ethernet cable. Ensure the PC used for configuration is on the same network segment. The factory default IP address is **192.168.0.100**.

To find or change the current IP address via RS-232, send the command: `r ipconfig!`

STEP 2 — LOGIN

Open a web browser on your PC and navigate to the matrix IP address. The login page will appear. Select a username and enter the password. Default credentials:

USERNAME	DEFAULT PASSWORD
User	user
Admin	admin

Security Note: Change default passwords after initial setup — especially for Admin account.

WEB GUI PAGES

Page	Function
Status	**Displays product model, firmware version, and current network settings.**
Video	**Main routing control. Select input source for each output. Save, recall, and name routing presets (up to 8 presets, max 12 characters each).**
Input	**View input connection status, rename inputs, set EDID per input (select from preset list, upload custom EDID .bin file, or copy from a connected display). Download current EDID from any input.**
Output	**View output connection status, rename outputs, enable/disable output stream per port, check cable connection state.**
CEC	**Control CEC-enabled source devices (power, volume, transport) and displays (power on/off, volume, active source) directly from the browser.**
Network	**Configure IP mode (Static/DHCP), IP address, subnet mask, gateway, TCP/IP port, and Telnet port. Reset to default network settings. Modify User/Admin passwords.**
System	**Panel lock on/off, beep on/off, serial baud rate selection, firmware update (upload .bin file), factory reset, and device reboot.**

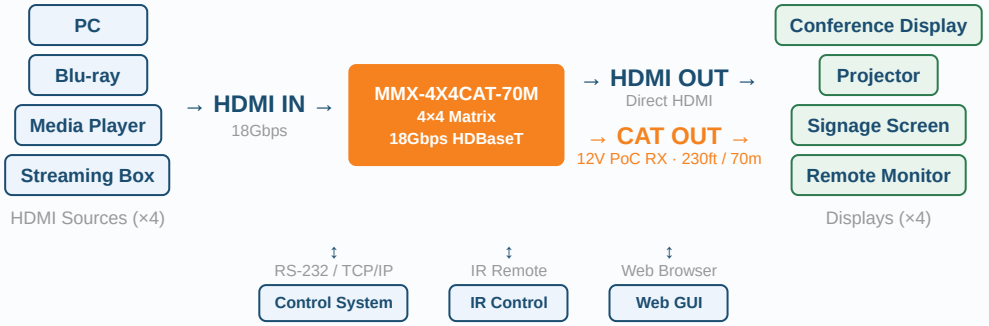
11. RS-232 Control Commands

Serial port: Baud rate: 115200 (default) • Data bits: 8 • Stop bits: 1 • Parity: None • TCP/IP port: 8000
Parameters: x = Parameter 1 • y = Parameter 2 • ! = Delimiter (required at end of every command)

Command	Function	Example	Feedback
Power & System			
`s power z!`	Power on/off (z=0 off, z=1 on)	`s power 1!`	`System Initializing... power on`
`r power!`	Get power state	`r power!`	`power on / power off`
`s reboot!`	Reboot device	`s reboot!`	`System Initializing...`
`s reset!`	Factory reset	`s reset!`	`System Initializing...`
`r type!`	Get device model	`r type!`	`Device model string`
`r fw version!`	Get firmware version	`r fw version!`	`MCU BOOT/APP, WEB GUI versions`
`r status!`	Get full device status	`r status!`	`All crosspoint, EDID, network info`
`s beep z!`	Beep on/off (z=0/1)	`s beep 1!`	`beep on`
`s lock z!`	Front panel lock (z=0 off, z=1 on)	`s lock 1!`	`panel button lock on`
`r lock!`	Get panel lock state	`r lock!`	`panel button lock on/off`
Video Routing			
`s in x av out y!`	Route input x to output y (x=1–4, y=0–4, 0=all)	`s in 1 av out 2!`	`input 1 -> output 2`
`r av out y!`	Get output y routing (y=0=all)	`r av out 0!`	`input x -> output y (all)`
`s hdmi y stream z!`	Enable/disable HDMI output y stream (z=0/1, y=0=all)	`s hdmi 1 stream 1!`	`Enable hdmi output 1 stream`
`s cat y stream z!`	Enable/disable CAT output y stream (z=0/1, y=0=all)	`s cat 1 stream 1!`	`Enable cat output 1 stream`
`r link in x!`	Get input x connection status (x=0=all)	`r link in 1!`	`hdmi input 1: connect`
`r link out y!`	Get output y connection status (y=0=all)	`r link out 1!`	`hdmi output 1: connect`
Presets			
`s save preset z!`	Save routing to preset z (z=1–8)	`s save preset 1!`	`save to preset 1`
`s recall preset z!`	Recall preset z	`s recall preset 1!`	`recall from preset 1`
`s clear preset z!`	Clear preset z	`s clear preset 1!`	`clear preset 1`
`r preset z!`	Get preset z info	`r preset 1!`	`video/audio crosspoint`
EDID			
`s edid in x from z!`	Set input x EDID to mode z (x=0=all, z=1–39)	`s edid in 1 from 18!`	`input 1 EDID: 4K2K60_444, HD Audio 7.1`
`r edid in x!`	Get input x EDID (x=0=all)	`r edid in 0!`	`input 1–4 EDID: ...`
CEC			
`s cec in x on/off!`	Power on/off input x via CEC (x=0=all)	`s cec in 1 on!`	`input 1 power on`
`s cec in x vol+/vol-!`	Volume up/down on input x	`s cec in 1 vol+!`	`input 1 volume up`
`s cec in x mute!`	Mute input x	`s cec in 1 mute!`	`input 1 volume mute`
`s cec in x play/pause/stop!`	Transport control on input x	`s cec in 1 play!`	`input 1 play operation`
`s cec hdmi out y on/off!`	Power on/off HDMI output y (y=0=all)	`s cec hdmi out 1 on!`	`hdmi output 1 power on`
`s cec hdmi out y active!`	Set active source on HDMI output y	`s cec hdmi out 1 active!`	`hdmi output 1 active source`
Network			
`r ipconfig!`	Get current IP configuration	`r ipconfig!`	`IP, Subnet, Gateway, TCP port, MAC`
`s ip mode z!`	Set IP mode (z=0 Static, z=1 DHCP)	`s ip mode 0!`	`Set IP mode: Static`
`s ip addr x.x.x.x!`	Set static IP address	`s ip addr 192.168.1.100!`	`Set IP address: 192.168.1.100`
`s subnet x.x.x.x!`	Set subnet mask	`s subnet 255.255.255.0!`	`Set subnet mask`
`s gateway x.x.x.x!`	Set gateway	`s gateway 192.168.1.1!`	`Set gateway`
`s tcp/ip port x!`	Set TCP/IP port (default 8000)	`s tcp/ip port 8000!`	`Set TCP/IP port: 8000`
`s net reboot!`	Reboot network module to apply IP changes	`s net reboot!`	`Network reboot... new IP config`
`rate xxx!`	Set RS-232 baud rate (9600–115200)	`s baud rate 115200!`	`Baudrate: 115200`

12. Application Example

4×4 HDBaseT Matrix — Multi-Source / Multi-Display with CAT Extension



Signal Flow: Connect 4 HDMI sources to IN 1–4. Route any source to any output via front panel, IR, RS-232, TCP/IP, or Web GUI. Each output delivers 4K60 4:4:4 with HDR via HDMI and simultaneously via CAT cable to the PoC-powered CAT Receiver up to 230ft (70m) away — no remote power supply required. **Downscaler:** Enable per-output 4K→1080p downscaling for mixed-resolution environments. **IR:** One-way IR lets remote viewers control source devices via IR remote at the display location.