

Flexible and comprehensive next generation professional Digital Modular Matrix (DMM+) for Commercial, Education and Residential use



- Resolutions to 4K UHD
- HDMI 1.3a compliant
- 10.2GBps, 1080p@60Hz
- HDCP 1.3 compliant
- Supports Deep Colour
- Scaled outputs
- Modular 4 port cards
- IP Control
- Video Wall Processor
- Front panel control
- Integrated Web Browser
- Preview quad output
- Seamless Switching
- EDID management
- HDMI, DVI, HDBT, Fibre, VGA & SDI
- RS232 & IR control/passthrough
- Embedding & de-embedded Audio
- POC (remote powering receivers)

Seamlessly route 16 high resolution video sources to 16 displays or create a Video Wall for HDMI, DVI, HDBaseT, Fibre and 3G-SDI together with analogue VGA, YPrPb and composite

The **MDX-16x16+** is a professional flexible Digital Modular Matrix (DMM+) capable of selecting between 16 different devices to 16 displays. Seamless switching together with output video scaling provides a professional image selection with the option of creating a multi-display Video Wall. Connectivity to the matrix is via eight slots each capable of accepting 4-way modular input and output cards catering for a wide range of signal formats. Fully HDCP compliant and incorporating enhanced EDID management the **MDX-16x16+** matrix is ideal for many multi-channel signal switching and distribution for Commercial, Educational and Residential solutions. Compact 3U 19" rack mounting chassis makes for ease of installation

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DESCRIPTION - GENERAL

The DMM+ range of audio-visual (AV) matrices offer a complete solution for switching and distribution of the most common AV signal types and standard connectivity.

Differing signal types can be accommodated by the use of a modular construction. Removeable horizontal blades can be inserted or exchanged allowing inputs and outputs to be expanded in groups of 4 up to the maximum chassis size available. A variety of different blades are presented including: HDMI, DVI, HDBaseT, 3G-SDI and fibre options together with an analogue card capable of accepting RGBHV, YPrPb, Y/C and PAL/NTSC.

All input signals types are converted to an internal standard format allowing the flexibility of conversion to any output signal format. The conversion in an internal co-timed format provides a seamless switching feature allowing images to be changed without frame rolls or the need to go to black. Each output blade has a individual internal scaler allowing every output image to scale to the native resolution of the connected display for a more professional presentation.

Chassis' are available in sizes of 8x8, 16x16, 36x36, 72x72 through to 144x144. Each chassis is supplied with a quantity of empty slots capable of housing a number of 4 way input/output blades, depending on the maximum size of the matrix. The chassis can be partially populated helping match the installation and budget requirements.

All the matrices encompass comprehensive methods of control including IP, an internal web browser, RS232, remote panel and front panel buttons with LCD display.

The DMM+ range now incorporates the VMX Videowall processor technology which allows a number of output blades to be grouped together to form a multi display video mosaic or wall. This feature is available for the HDBT, DVI, 3G-SDI and fibre output cards.

Control signal routing is offered as standard allowing infrared and RS232 signals to be selected independently between the HDBaseT inputs and outputs. The signals can be connected via the blades directly or through the connected appropriate transmitters and receivers.

To aim ease of installation and improve power efficiency and heat dissipation, powering of the transmitters and receivers is achieved through the Cat 6/6A cable. DC power is sent via common mode connection across the 4 differential pairs of the network cabling.

For matrix sizes of 36x36 and larger there is the option of a dual redundant power supply. These are hot swapping, removeable units installed at the rear of the unit and connected by an additional IEC mains lead. Ideal for mission critical applications like command and control centres and disaster recovery vehicles.

Embedded multi-channel audio from the source device is routed along with the video signal but can be swapped with a locally generated signal and inserted via the HDMI or DVI blade. Similarly embedded audio is transmitted inside the output video signal but is also available as a stereo analogue signal on the HDMI and DVI output blades.

A preview card is also available as an output blade option. This features a streamed MPEG signal capable of displaying a composite of up to 4 input images. By using a streamed signal, remote monitoring of the matrix and the source devices is possible, ideal for inaccessible locations and in particular boats and yachts.

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TECHNICAL SPECIFICATION**Video - Digital**

Connectors	4 x HDMI (Type A) input and outputs 4 x DVI-D 4 x CAT 6 for HDBaseT 4 x HD15S for RGBHV/YPrPb/CV 4 x BNC for 3G-SDI
Signal type	HDMI - TMDS
Standards	HDMI 1.3a. HDCP 1.3
Maximum data rate	2.25Gbps per colour
Maximum pixel clock	340MHz
Resolution range - DTV	Max 1920x1080 @60Hz 36 bit colour depth
Resolution range - PC	Max 1920x1200 @60Hz 24 bit colour depth
Frame rate	24, 25, 30, 50 & 60 Hz
Gain	0 dB
Formats	RGB and YCrCb
Colour space	4:2:2 & 4:2:0
Clock jitter	<0.15T bit
Rise time	<0.3T bit (20-80%)
Fall time	<0.3T bit (20-80%)
Maximum transmission delay	5ns (+/- 1ns)
Signal strength	TMDS +/- 0.4V pk-pk
TMDS signal level	2.9V - 3.3V
Impedance	50R
Maximum DC offset	15mV
Maximum input cable length	15m 24 AWG
Maximum output cable length	15m 24 AWG

Audio - Digital

Standards	Embedded within the HDMI signal, SPDIF
Maximum audio channels	8
Maximum sample rate per channel	192 kHz
Sample size	16-24 bits

Audio - Analogue

Standards	Stereo - unbalanced
Bandwidth	20 - 20 kHz

Power

AC Voltage	100-230 VAC
AC frequency	50/60 Hz
Power consumption	13.5W (max)/ 1.2W (standby)
Operating temperature	0-40 degrees C
Storage temperature	-20-60 degrees C
Relative humidity	20-90%
Chassis size	3U 19" rack mounting
Chassis dimensions	440x394x133mm
Product weight	8Kg
MTBF	30,000 hours

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TECHNICAL SPECIFICATION

Control - RS232

Connector	D9
Signal type	Full duplex
Signal level	+/- 5V
Baud rate	115200
Data bits	8
Stop bits	1
Parity	None
Pinout	1-RX, 2-OV, 3-TX

Control - Ethernet

Connector	RJ45 female
Protocol	TCP/IP
Control rate	Adaptive 10M/100M full or half duplex

Control - IR

Connector	3.5mm mini-jack socket
Signal type	Full duplex (via 2 connections)
Signal bandwidth	20-60KHz

Cat cable connectivity

Number of cables	1 x Cat 6/6A screened twisted pair cables
Connectors	1 x female screened RJ45 connectors per unit
Termination standard	TIA/EIA T568B
Cable requirements	Solid conductor, 24 AWG or better
Cable recommendations	400 MHz bandwidth STP (shielded twisted pair)
Transmission distance	100m shielded twisted pair CAT 6 or CAT 6A

WEB BROWSER

The screenshot shows the Smart-e web browser interface. At the top, there is a navigation menu with options: Matrix 8x8, Matrix 16x16, Key Panel, Video Wall, and IP Setting. The main area is titled 'DRAG & DROP CROSS MULTI-VIEW VIDEO WALL & MATRIX SWITCH'. On the left, there are three sections: '1 Connection' with 'Connect' and 'Disconnect' buttons; '2 Select Signal' with 'Video', 'Audio', and 'Video Audio &' buttons; and '3 Submit' with 'Switch', 'Clear All', and 'Status' buttons. In the center is an 8x8 matrix grid with 'OUTPUT' columns (1-8) and 'INPUT' rows (1-8). Blue squares indicate connections: (1,1), (2,5), (3,2), (4,6), (5,7), (6,8), (7,3), and (8,4). On the right, there are 'Save Profile' and 'Recall Profile' sections, each with a 'Profile 0' dropdown and a corresponding button.

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SEAMLESS INPUT & OUTPUT BLADES

MDX-IP4-HDMI



- Provides 4x independent HDMI [Type-A] inputs
- HDMI 1.4, DVI 1.0 & HDCP 1.3 protocol
- Supports EDID editing function
- Maximum input resolution:
- 1920x1200p @ 60Hz 24bit, 1080p @ 60Hz 36bit

MDX-OP4-HDMI



- Provides 4x independent HDMI [Type-A] outputs
- HDMI 1.4, DVI 1.0 & HDCP 1.3 protocol
- Maximum output resolution:
- HDCP: 1920x1200p @ 60Hz 24bit
- HDTV: 1920x1080p @ 60Hz 36bit (HD1080p60)

MDX-RX4-HDBT



- Provides 4x independent HDBaseT inputs
- Compatible with HDBaseT protocol
- Supports EDID editing function
- Maximum input resolution:
- 1920x1200p @ 60Hz 24bit, 1080p @ 60Hz 36bit

MDX-TX4-HDBT



- Provides 4x independent HDBaseT outputs
- Compatible with HDBaseT protocol
- Maximum output resolution:
- HDCP: 1920x1200p @ 60Hz 24bit
- HDTV: 1920x1080p @ 60Hz 36bit (HD1080p60)

MDX-RX4-FB



- Provides 4x independent SC optical fibre inputs
- Multimode 850nm <300m
- Supports EDID editing function
- Maximum input resolution:
- 1920x1200p @ 60Hz 24bit, 1080p @ 60Hz 36bit

MDX-TX4-FB



- Provides 4x independent SC optical fibre outputs
- Multimode 850nm <300m
- Maximum output resolution:
- HDCP: 1920x1200p @ 60Hz 24bit
- HDTV: 1920x1080p @ 60Hz 36bit (HD1080p60)

MDX-IP4-DVI



- Provides 4x independent DVI inputs
- HDMI 1.4, DVI 1.0 & HDCP 1.3 protocol
- Supports EDID editing function
- Maximum input resolution:
- 1920x1200p @ 60Hz 24bit, 1080p @ 60Hz 36bit

MDX-OP4-DVI



- Provides 4x independent DVI outputs
- HDMI 1.4, DVI 1.0 & HDCP 1.3 protocol
- Maximum output resolution:
- HDCP: 1920x1200p @ 60Hz 24bit
- HDTV: 1920x1080p @ 60Hz 36bit (HD1080p60)

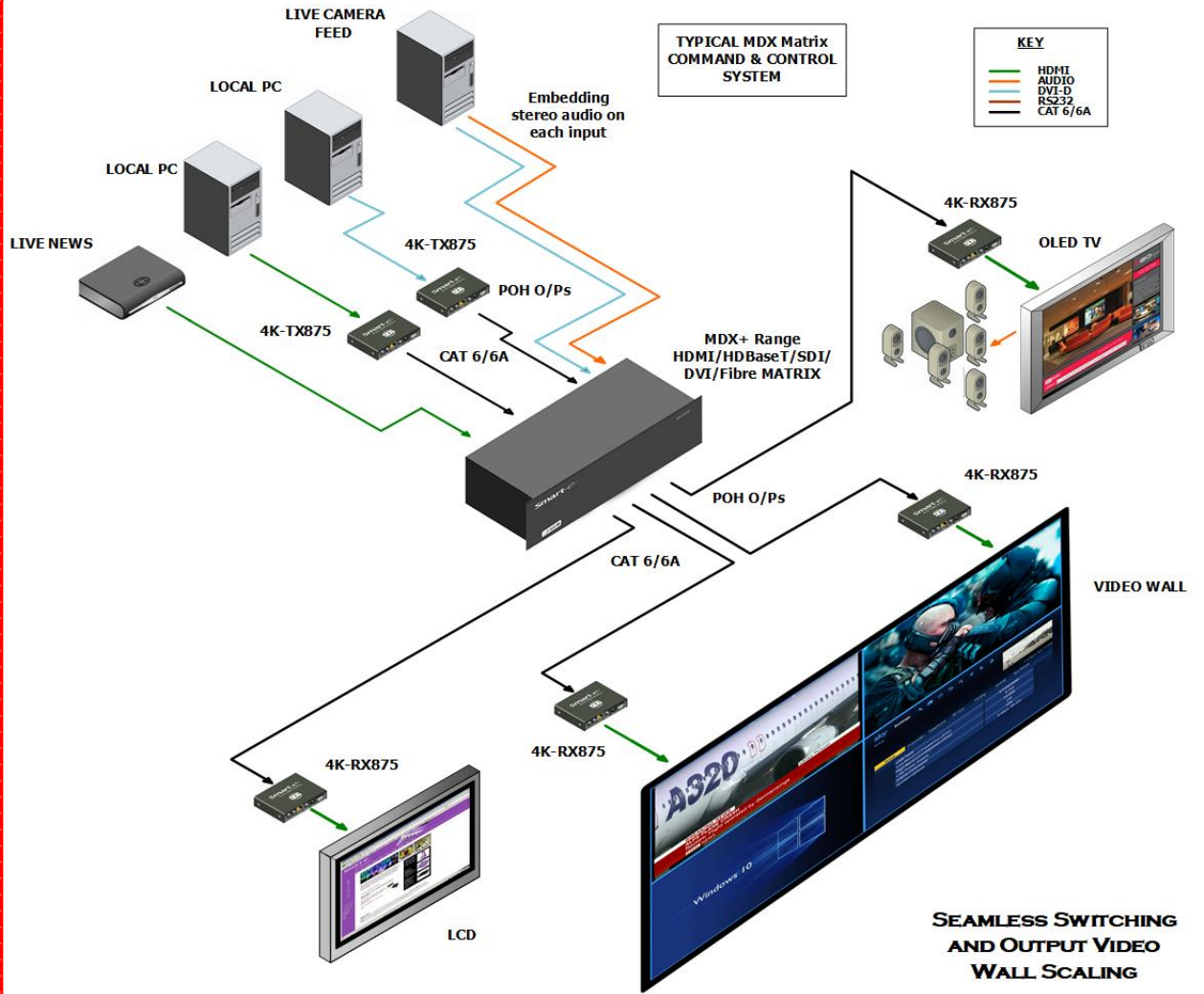
MDX-IP4-VGA



- Provides 4x independent Analogue [HD15] inputs VGA/RGBHV, YPbPr, Y/C S-video, Composite-video (using adapter cable)
- Maximum input resolution: 1920x1200p @ 60Hz 24bit, 1080p @ 60Hz 36bit
- Digitises and up-scales input resolution = 1920x1080p @ 60Hz

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SEAMLESS SWITCHING APPLICATION DRAWING



REAR VIEW



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VIDEO WALL OUTPUT BLADES

VMX-TX4-HDBT



- Provides 4x independent HDBaseT outputs
- Compatible with HDBaseT protocol
- Maximum output resolution:
- HDCP: 1920x1200p @ 60Hz 24bit
- HDTV: 1920x1080p @ 60Hz 36bit (HD1080p60)

VMX-OP4-DVI



- Provides 4x independent DVI outputs
- HDMI 1.4, DVI 1.0 & HDCP 1.3 protocol
- Maximum output resolution:
- HDCP: 1920x1200p @ 60Hz 24bit
- HDTV: 1920x1080p @ 60Hz 36bit (HD1080p60)

VMX-TX4-MFB



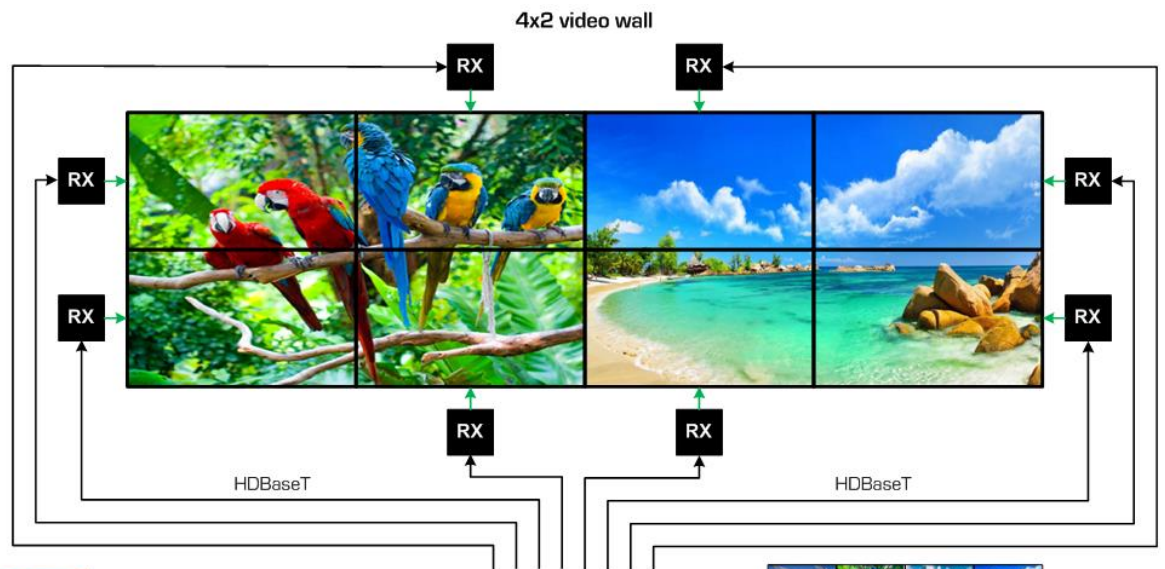
- Provides 4x independent SC optical fibre outputs
- Multimode 850nm <300m
- Maximum output resolution:
- HDCP: 1920x1200p @ 60Hz 24bit
- HDTV: 1920x1080p @ 60Hz 36bit (HD1080p60)

VMX-TX4-SDI



- Provides 4x independent SDI outputs
- SDI, HD-SDI and 3G-SDI
- Maximum output resolution:
- HDCP: 1920x1200p @ 60Hz 24bit
- HDTV: 1920x1080p @ 60Hz 36bit (HD1080p60)

VIDEO WALL APPLICATION DRAWING



8 x HDMI/VGA/
HDBaseT inputs



4x2 video wall

4x2 video wall



4x4 video wall

Model No.	Description
VMX-8x8	Modular 8 input by 8 output matrix
VMX-16x16	Modular 16 input by 16 output matrix
VMX-36x36	Modular 36 input by 36 output matrix

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Flexible and comprehensive professional HDMI extender with CAT 6 distribution system for Commercial, Education and Residential use



- HDBaseT technology
- HDMI 2.0 4K@60Hz
- 4:4:4, 18G, HDR10, Dolby Vision
- HDCP 2.2/1.3 compliant
- Dual mirrored outputs
- Full duplex RS232 pass through
- Bi-directional IR pass through
- 100m CAT 6/6A STP/FTP
- HDMI resolutions 4K, 2K & 1080p
- CEC compliant
- Integral mounting brackets
- Secure DC connection
- POC (remote powering receivers)
- Slim profile 20mm

Distribute high resolution UHD HDMI video together with IR and RS232 over a single CAT 6 screened twisted pair cable up to 100m

The **444K-875** is a flexible and cost effective HDBaseT pair solution for extending HDMI, bi-directional IR, full duplex RS232 together with POC (remote power over cable). The unit is very compact and comes with the IR accessories. By incorporating the full HDBaseT technology 4K UHD HDMI signals can be transmitted up to 100m away over CAT 6/6A STP/FTP.

The **444K-875** is a pair of TX/RX HDBaseT extenders capable of transmitting UHD HDMI signals up to 4K UHD resolutions. Implementing the complete 4-Play of the HDBaseT specification the receiver extender also provides the pass through of wide band bi-directional InfraRed signals and full duplex RS232 up to 115Kbaud. Whilst POC power (12-24V) can be sent by either the TX, RX, Matrix or Splitter through the Cat 6 cable to provide power to the remote end. All that is required is a single Cat 6 cable connection to provide all these features. Dual mirrored HDMI outputs provide a convenient solution to back to back displays commonly found in Digital Signage applications.

The **444K-866** can connect to any other product in the **4Kconnect** range as an extender or into or out of a matrix including the DMM+ series

The 4Kconnect range is from a family of digital extenders & matrices using standard CAT 6-8 STP cable to transmit HD signals over long distances

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TECHNICAL SPECIFICATION**Video - Digital**

Connectors	2 x HDMI (Type A) outputs
Signal type	HDMI - TMDS
Standards	HDMI 2.0. HDCP 2.2/1.4
Maximum data rate	4.5Gbps per colour
Maximum pixel clock	340MHz
Resolution range - DTV	Max 4096x2160 @60Hz 36 bit colour depth
Resolution range - PC	Max 1920x1200 @60Hz 24 bit colour depth
Frame rate	24, 25, 30, 50 & 60 Hz
Gain	0 dB
Formats	RGB and YCrCb
Colour space	4:4:4, 4:2:2 & 4:2:0
Clock jitter	<0.15T bit
Rise time	<0.3T bit (20-80%)
Fall time	<0.3T bit (20-80%)
Maximum transmission delay	5ns (+/- 1ns)
Signal strength	TMDS +/- 0.4V pk-pk
TMDS signal level	2.9V - 3.3V
Impedance	50R
Maximum DC offset	15mV
Maximum input cable length	15m 24 AWG
Maximum output cable length	15m 24 AWG

Audio - Digital

Standards	Embedded within the HDMI signal, SPDIF
Maximum audio channels	8
Maximum sample rate per channel	192 kHz
Sample size	16-24 bits

Power

DC Voltage	External 12-24V PSU
DC connector	2.1mm jack with screw fitting
AC Voltage (External Supply)	100-230 VAC
AC frequency (External Supply)	50/60 Hz
Power consumption	6W (max)/1.2W (standby)
Operating temperature	0-40 degrees C
Storage temperature	-20-60 degrees C
Relative humidity	20-90%
Dimensions (each unit)	119x67x20mm
Dimensions with brackets (each unit)	139x67x20mm
Product weight	0.5Kg
MTBF	30,000 hours

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TECHNICAL SPECIFICATION

Control - RS232

Connector	3pin Phoenix
Signal type	Full duplex
Signal level	+/- 5V
Baud rate	115200
Data bits	8
Stop bits	1
Parity	None
Pinout	1-RX, 2-OV, 3-TX

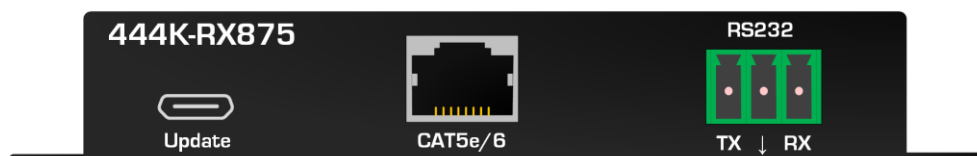
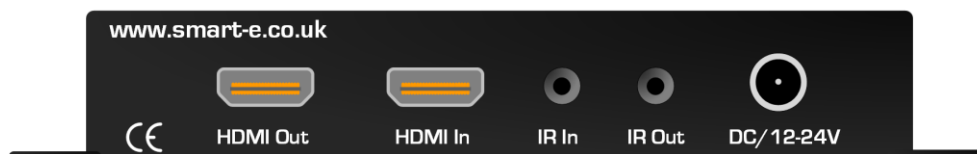
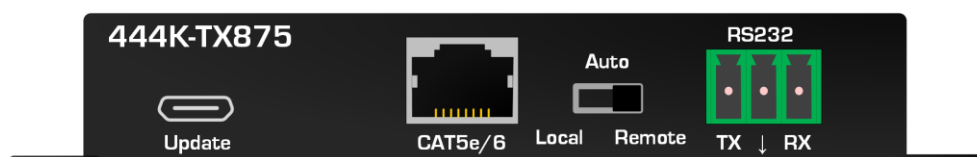
Control - IR

Connector	3.5mm mini-jack socket
Signal type	Full duplex (via 2 connections)
Signal bandwidth	20-60KHz

Cat cable connectivity

Number of cables	1 x Cat 6/6A screened twisted pair cables
Connectors	1 x female screened RJ45 connectors per unit
Termination standard	TIA/EIA T568B
Cable requirements	Solid conductor, 24 AWG or better
Cable recommendations	400 MHz bandwidth STP (shielded twisted pair)
Transmission distance	100m shielded twisted pair CAT 6 or CAT 6A

PANEL DRAWINGS



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