Data sheet

DIGITAL MODULAR MATRIX

www.smart-e.co.uk

Product: LDX-16x16+ Modular Matrix

Professional, fast, seamless switching modular matrix for multi-format video & 70m HDBaseT, ideal for Commercial, Education and Residential

- Resolutions to 4K UHD
- HDMI 1.3a compliant
- 10.2GBps, 1080p@60Hz
- HDCP 1.3 compliant
- Supports Deep Colour
- Scaling outputs
- Modular 4 port cards
- IP Control
- Sizes: 8x8 to 72x72
- 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 HD video sources to 16 displays with mixed HDMI, DVI, HDBaseT, Fibre, 3G-SDI and analogue RGBHV signals with fast switching and output scaling

The **LDX-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, Broadcast quality image Presentation, combined with 4-way modular input and output cards cater for a wide range of signal formats.

The **LDX-16x16+** matrix offers an unprecedented level of both switching and distribution functionality for high resolution HDMI, DVI, 70m HDBaseT and 3G-SDI. Legacy products are also catered for with analogue input cards all of which can be up-scaled to 1080p resolution.

The **LDX-16x16+** is fully HDCP compliant and incorporates enhanced EDID management. The matrix is ideal for many multi-channel signal switching and distribution applications for Commercial, Educational and Residential solutions. The unit comes in a compact 3U 19" rack mounting chassis making it easy to install whilst providing improved reliability.

Smart-e

DESIGN ◆ INNOVATE ◆ ORIGINATE

Data sheet

DIGITAL MODULAR MATRIX

LDX www.smart-e.co.uk

Product: LDX-16x16+ Modular Matrix

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 MDX+ 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.

The LDX+ range provides a cost effective modular solution for budget sensitive projects requiring standard routing features at shorter Cat 6 cable lengths of up to 70m.

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.

smart-e

DESIGN ♦ INNOVATE ♦ ORIGINATE

Data sheet

DIGITAL MODULAR MATRIX

www.smart-e.co.uk

Product: LDX-16x16+ Modular Matrix

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

smart-e

DESIGN ♦ INNOVATE ♦ ORIGINATE

Data sheet

DIGITAL MODULAR MATRIX

www.smart-e.co.uk

Product: LDX-16x16+ Modular Matrix

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, 2-0V, 3-TX

Control – Ethernet

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

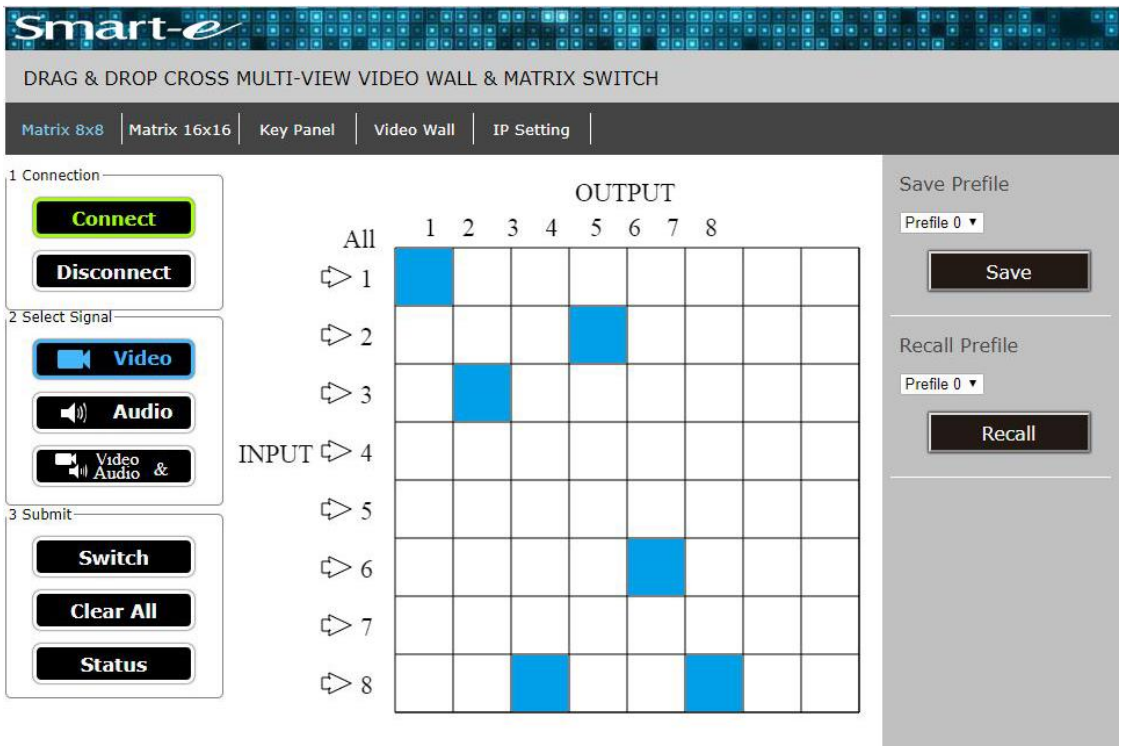
Control – IR

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



specifications are subject to change without notice

DESIGN ◆ INNOVATE ◆ ORIGINATE

Data sheet

DIGITAL MODULAR MATRIX

www.smart-e.co.uk

Product: LDX-16x16+ Modular Matrix

SEAMLESS INPUT & OUTPUT BLADES

LDX-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

LDX-OP4-HDMI

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

LDX-RX4-HDBT

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

LDX-TX4-HDBT

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

LDX-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

LDX-TX4-FB

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

LDX-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

LDX-OP4-DVI

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

LDX-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

REAR PANEL

specifications are subject to change without notice

DESIGN ♦ INNOVATE ♦ ORIGINATE

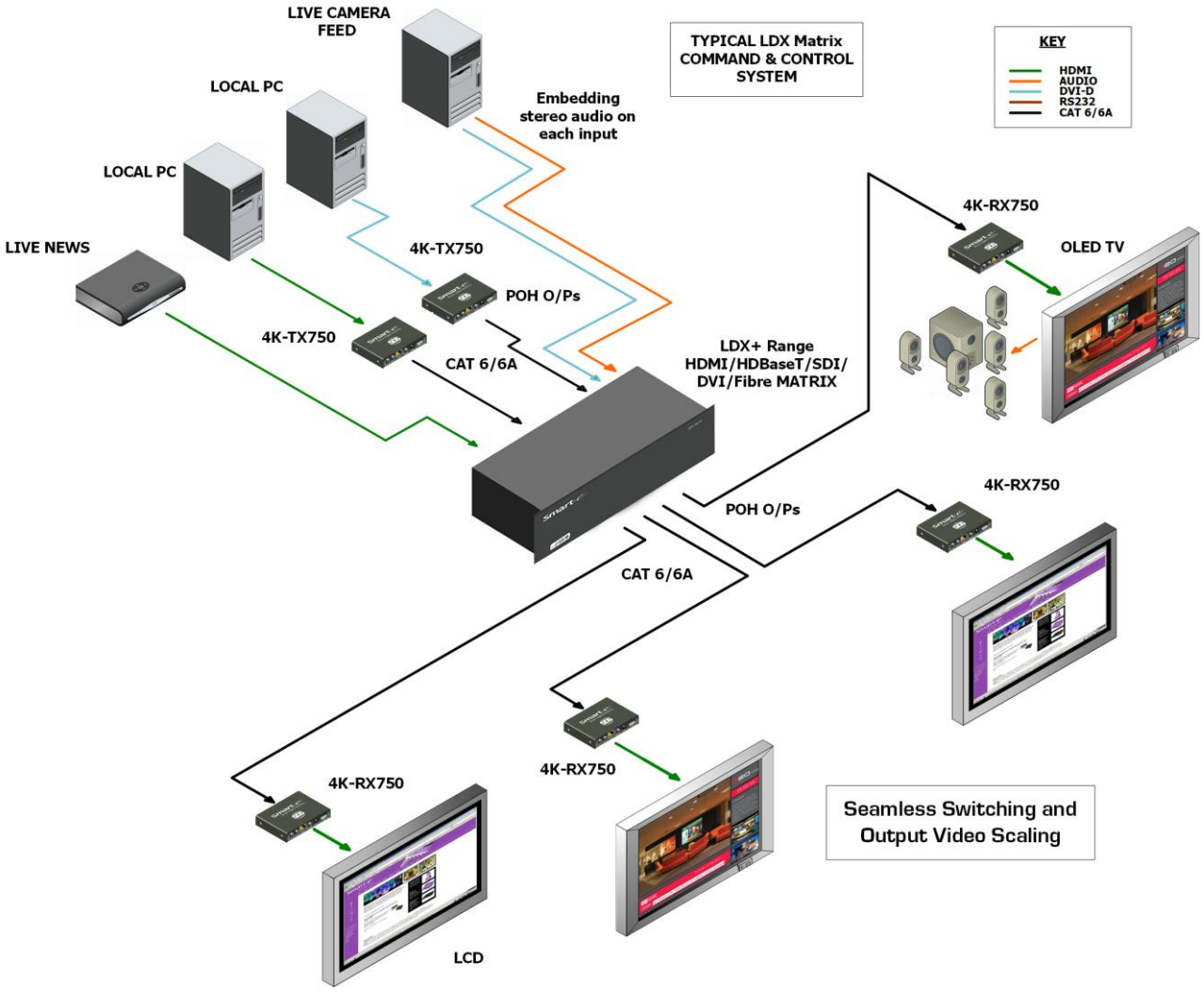
Data sheet

DIGITAL MODULAR MATRIX

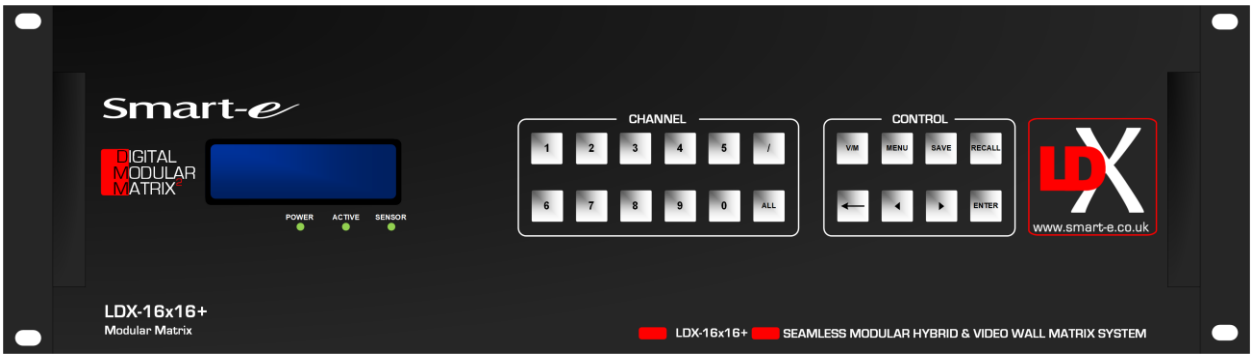
www.smart-e.co.uk

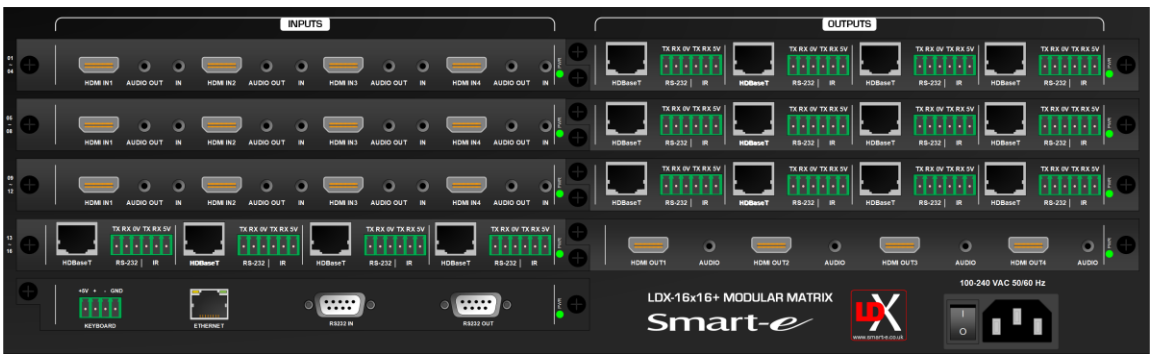
Product: LDX-16x16+ Modular Matrix

SEAMLESS SWITCHING APPLICATION DRAWING



PANEL DRAWINGS





DESIGN ♦ INNOVATE ♦ ORIGINATE