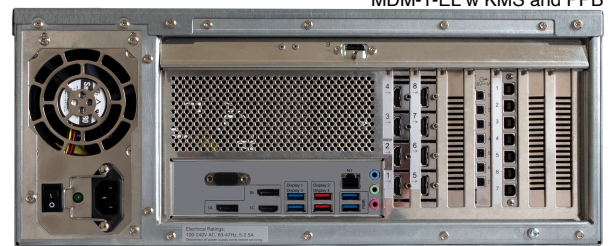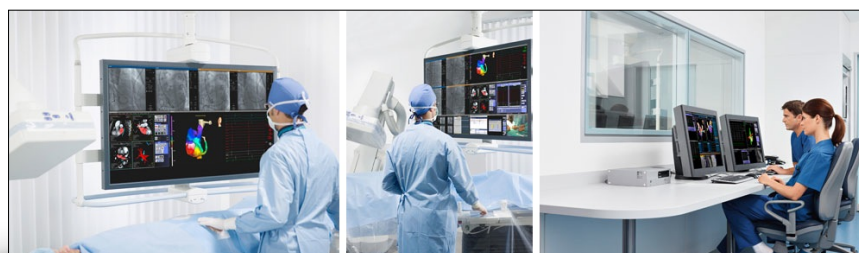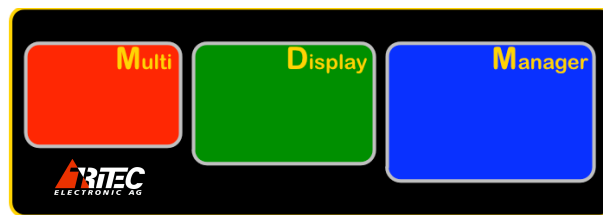# Multi Display Manager MDM-1-EL (Entry Level)

- **9 video inputs**
- **Supports UHD input signal**
- **Support of one 8MP or two 4MP Displays**
- **Real-time architecture with low latency**
- **Customer definable screen arrangements**
- **Hardware scaling with bilinear filter for best possible video quality**
- **High reliable design with redundancies & watch dog build for 24x7 operations**
- **On-Screen administration tool & API for remote control & Touch PanelPC support**
- **Multiple User KVM functionality fully integrated**

MDM-1-EL w KMS and PPB

Overview

- MDM contains **all** system **functionality** in **one unit**

- Capability to collect, combine, and transmit **9** different video **sources** on **1x 8MP** QFHD@60Hz or **2x 4MP** displays.

- one **UHD input** signal with 550MHz pixel clock

- **Digital and analog** **(with ADIO-1)** inputs are supported.

- 2-3 frames delay from input to display possible because of a **Real-time architecture**

- Customer **definable size**, **position** and **scale** of sources, **including overlapping**.

- Sources can be **cropped** on top, bottom, left or right

- Signal can be **scaled** by a factor of 0.1 to 10.0.

- Signals can be **duplicated** to show the same input, cropped or sized on one of different outputs

- Sources can be **framed** (borders with selectable colours and thickness) and **named** (font, color, size and position definable)

- **Customer definable arrangement** sets that can be easily switched via Touch PanelPC, web-interface with iPad or similar device.

- Arrangements are storable at the system as well as external storage equipment.

- Switching between predefined arrangement sets is less then 500ms

- In **critical environments**, the MDM has a highly **reliable design**. No hard disk is used; Redundant FANs; and Active Watch Dog are employed

- **Robust construction** and material methods employed for use in specialized Medical and Industrial disciplines **build for 24x7 operations**.

- **Status information** and Diagnostics accessible **via network.**

- **Customizing** for OEM **partners** is available.

8 MP / 4K

1x Display Port 1.4
2x DualLink DVI (1)

60 Hz

4 MP

Display Port
DualLink DVI (1)

4 MP

Display Port
DualLink DVI (1)

In total 2 connectors can be used with: max. 1x 8MP <u>or</u> 2x 4MP[1]

Output displays with the same resolution are configurable not only as independent displays, but also as extended displays. The behaviour is like an extended desktop on a local PC and two attached monitors.
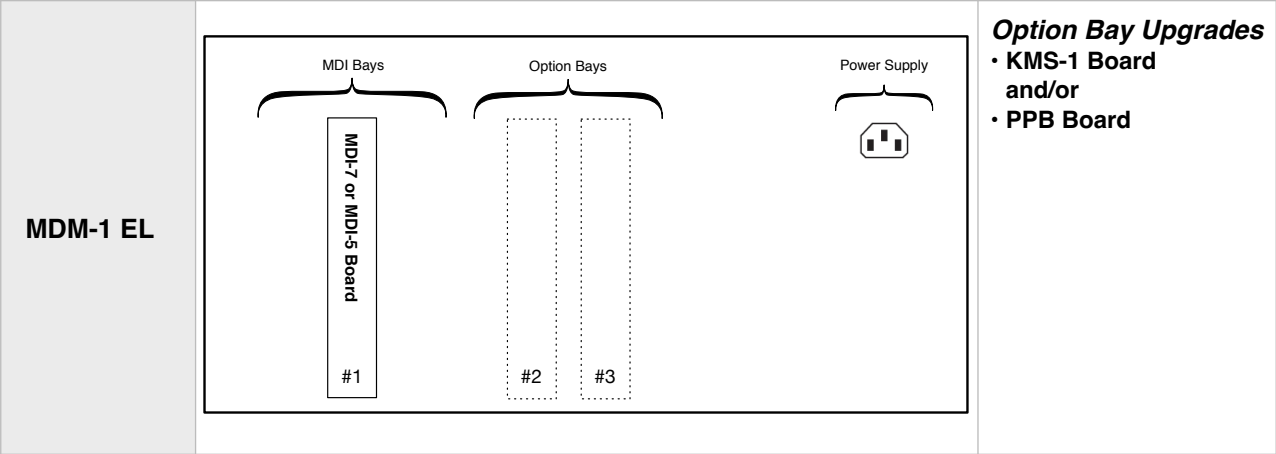
(1)   MDM Display Port to Dual Link DVI Converter necessary.

Type		MDM-1-EL
Maximal Display Resolution		8MP (max. 600MHz)
Number of Output connections (1)		2x DisplayPort 1.2
MDI-7 input boards		
Number of Inputs		9
Number of Digital Inputs [HDMI] [550MHz]		1
Number of Digital Inputs [HDMI] [165MHz]		4
Number of Digital Inputs [DVI (HDMI)] [165MHz]		4
Support of Analog Inputs [165MHz]		with ADIO-1 Extension Box
Videotiming	**H-Display**	Min. 320 Pixel ↔ Max. 4096 Pixel
	V-Display	Min. 200 Lines ↔ Max. 2560 Lines
	Pixel-Clock	Min. 16MHz ↔ Max. 165/550MHz
	H-Blank	Min. 8 Pixel
	V-Blank	Min. 4 Lines
	Interlace	Not supported, progressive timings only
Bandwidth	**per System**	1.200MPx/s
Inputs with MDI-5 input boards		
Number of Inputs		9
Number of Digital Inputs [DVI (HDMI)] [165MHz]		6
Number of Digital Inputs [DVI-I] [165MHz]		1
Number of Analog Inputs [DVI-I] [135MHz]		1
Number of Analog Inputs [VGA] [170MHz]		1
Videotiming	**H-Display**	Min. 320 Pixel ↔ Max. 2048 Pixel
	V-Display	Min. 200 Lines ↔ Max. 2560 Lines
	Pixel-Clock	Min. 16MHz ↔ Max. 140/165/170MHz
	H-Blank	Min. 8 Pixel
	V-Blank	Min. 4 Lines
	Interlace	Not supported, progressive timings only
Bandwidth	**per System**	620MPx/s

TRITEC is offering a wide range of equipment completely validated and certified to work with our Multi Display Manager Video Processor. Begins with high quality cabling with locks, HD-SDI converter, optical extenders with galvanic isolation, any many more.

MDM-1-EL

MDM-1 EL

MDI Bays — Option Bays — Power Supply

MDI-7 or MDI-5 Board

#1 #2 #3

Option Bay Upgrades
- **KMS-1 Board
  and/or**
- **PPB Board**

MDM-1 Options

MDI Input Boards	
Downgrade to MDI-5 Boards	Replace preconfigured MDI-7 Boards with a MDI-5 Boards to add analog inputs directly to the MDM.
Add-Ons (check maximum available option bays on next page)	
KMS-1 Board	7 Port Keyboard/Mouse Switch module, USB to Host connection
PPB-S Board	7 Port 5V Power Breakout Module; provides external 5V power (Hirose)

Differences between MDM-EL and MDM Model D

	MDM-EL	MDM-Model-D
max. Displays	1x 8MP or 2x 4MP	5
Connection Type	1x DP 1.2 or 2x DL-DVI[1]	1x DP 1.2, 2x DL-DVI[1] 4x HD[2]
KVM	2x Displays	4x Displays
max. No. of Inputs	9	23
Mirroring	No	Yes
Standby	No	Yes
Redundant Power Supply	No	Yes

(1)   MDM Display Port to Dual Link DVI Converter necessary.
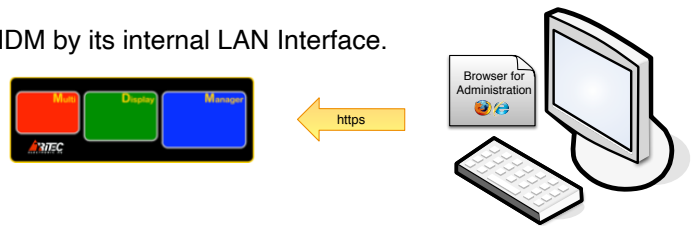(2)   Adapters necessary.

MDM-1-EL w KMS and PPB

The Multi Display Manager supports multiple ways of configure and control the device.
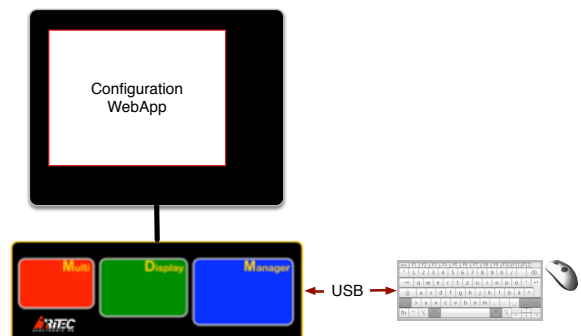
External Browser Interface

A full featured configuration WebApp is provided by the MDM by its internal LAN Interface.
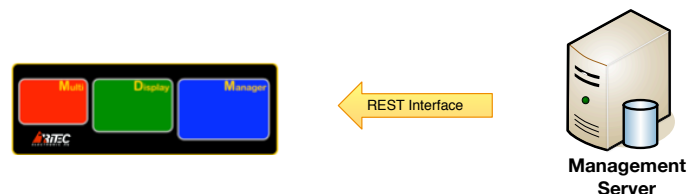
OnScreen Interface

The Multi Display Manager is able to show the configuration WebApp as a single window OnScreen. It is usable by connecting a Keyboard and Mouse beneath a display to the MDM
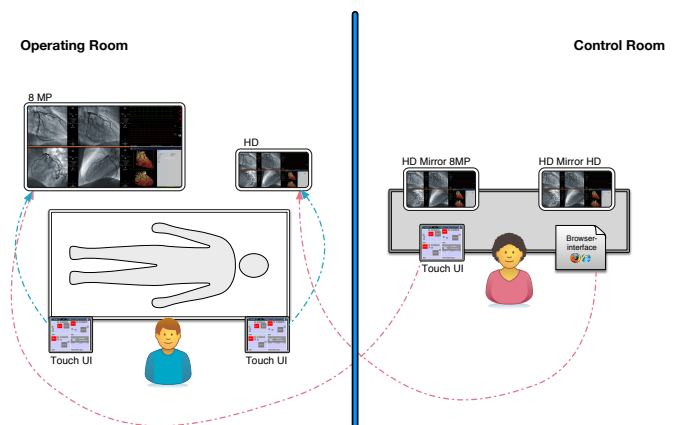
REST Interface

The REST Interface provides OEM partners to fully integrate the configuration of a MDM into their management environment. A well documented and standardized interface language keeping implementation efforts on a very low level.

Touch Panel PC

The latest development is a network attached Touch PanelPC which is able to switch the layout of a display which is attached to a Multi Display Manager. It is possible to have multiple Touch Panel PC connected to one MDM.

Power Supply

non redundant 400W

Input Voltage	90 - 264VAC
Input Frequency	47 to 63Hz
Inrush Current	20A max. @115VAC / 40A max. @230VAC
Isolation	3100VAC
Leakage Current	<1.5mA
Input Connector	EC320/C14
Efficiency	>80%
Input Current	Max. 6A@115VAC / 3A @ 230VAC Typ. 3A@115VAC / 1.5A@230VAC
Power Consumption	Typ. 340W
Power switch	Power switch at the back, no other hardware power off/on switch.

Electrical Safety & EMC Specifications

Electrical Safety:	Power supply according EN62368, UL62368, IEC62368
EMC:	According EN55022 and EN55024.
Radiated Emissions:	IEC61000-3-2/EN61000-3-2 (Harmonic Current Emissions) IEC61000-3-3/EN61000-3-3 (Voltage Changes) CISPR 22/ EN55022 or CISPR 11/ EN55011 Level B Radiated & Conducted Emissions. FCC class A.
Immunity:	IEC61000-4-2/EN61000-4-2 Level 2 (ESD) IEC61000-4-3/EN61000-4-3 Level 2 (EM Field Immunity) IEC61000-4-4/EN61000-4-4 Level 2 (Fast Transient/Burst Immunity) IEC61000-4-5/EN61000-4-5 Level 2 (Surge Immunity) IEC61000-4-6/EN61000-4-6 Level 2 (Conducted Disturbances) IEC61000-4-8/EN61000-4-8 Level 2 (Power Freq Magnetic Immunity) IEC61000-4-11/EN61000-4-11 Level 3 (Voltage Dips, Short Interrupt, Voltage Variations Immunity).
Marking	CE, FCC, RoHS, UL, WEEE

Reliability

MTBF	55.000h

Environmental Specifications

Unpackaged Operating	Temperature 5 °C according EN 60068-2-1 Temperature 40 °C according EN 60068-2-2.
Unpackaged Operating Humidity	Damp heat, 25°C, 10 to 80% RH (non condensing) according EN 60068-2-38.
Unpackaged Operating Pressure	700-1060 hPa (525 -795 mmHg) or up to 3050m (10,000ft).
Packaged Non-Operating Temperature (Storage, Transportation	Temperature -40 °C according EN 60068-2-1 Temperature +70°C according EN 60068-2-2.
Packaged Non-Operating Humidity	+25°C 10 to 95% RH (non-condensing) according 60068-2-38.
Packaged Non-Operating Pressure	500 -1060 hPa (375 -795 mmHg) or up to 5,050m (18,000 ft).
Packaged Tests Continuous Shock	according EN 60068-2-29 and EN60721-3-2, class 2M2.
Package Drop Test	according EN 24180-2.
Degree of protection	IP 20

Dimensions

Model	MDM-1-EL	
Chassis	19" 4U	Desksite
Size unpacked (WxHxD)	483x177x500mm	175x440x575mm
Weight unpa.	15kg	16kg
Size packed (WxHxD)	800x460x800mm	800x460x800mm
Weight pack.	24kg	25kg

Other Inputs / Outputs

Networking:	Ethernet	10/100/1000Mbit/s
	Connector	RJ45
USB	2x KVM Support 2x Power DP-Converter	
Other	All other inputs/outputs should not be connected.	

ADIO-1 Extension Box

Video signal repeater and converter with <u>one</u> device only.

DVI

HDMI　　　　SDI

DisplayPort

S-Video　　Component Video

Analog VGA　　Composite Video (CVBS/FBAS)

MultiDisplayManager

or

Any other video grabbing board with HDMI inputs

ADIO-1 Extension Box

Order Number	Optical Isolation	Output Connector	Repeater Outputs	Inputs	Packaging list
ADIO-1H-AH	No	HDMI	yes	HDMI, VGA, analog	ADIO-1H TX Unit
ADIO-1H- AHDUS	No	HDMI	yes	DVI, DP, HDMI, VGA, analog, USB, SDI	ADIO-1H-AHDUS TX Unit
ADIO-1H-VHDS	No	HDMI	no	DVI, DP, HDMI, VGA, SDI	ADIO-1H-VHDS TX Unit
ADIO-1O-AH	yes	HDMI	yes	HDMI, VGA, analog	ADIO-1H TX Unit, Optical Bundle$_1$
ADIO-1O-AHDUS	yes	HDMI	yes	DVI, DP, HDMI, VGA, analog, USB, SDI	ADIO-1H-AHDUS TX Unit, Optical Bundle$_1$
ADIO-1O-VHDS	yes	HDMI	no	DVI, DP, HDMI, VGA, SDI	ADIO-1H-VHDS TX Unit, Optical Bundle$_1$
ADIO-1-PSU	Power supply				One power supply with adapter cable

(1) Optical bundle includes: Power Supply for ADIO unit, optical transmitter, 36m Optical Cable, Optical Receiver, cable to supply Optical Receiver with power from MDM Power Break Out Board, cable to connect the Optical Receiver to the MDM HDMI input connector with lock.

ADIO-1H-VHDS	ADIO-1H-AHDUS

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