

EMR Audio Router (Hybrid Router)

High Density Modular Audio Router (AES, Analog, MADI, Time Code, Data)



The EMR is a multi-format modular router that provides a high density solution without compromising functionality. The EMR provides a unified platform for routing digital audio, analog audio, MADI audio, A-LINK audio, data, and time code. The EMR uses a packet routing core that allows for highly dense applications and also provides the flexibility for expansion as demands grow.

A single 6RU frame can accommodate 288x288 AES, 288 data ports, 288x288 time code signals, or a mix of everything in between. Expansion beyond this is as easy as adding another frame. With two 6RU frames, the EMR can accommodate 576x576 AES signals with full redundancy.

The modular design of the EMR means that there are no limitations to the signal formats that can be added to the router, or limitations to the size at which it can be expanded to. Other products that can be combined with the EMR are master control switchers, multi-viewers and more.

Configuration

The EMR allows any mix of formats within a frame. The inputs and outputs are scalable in blocks of 96 or 48 depending on the format. A system consists of the input stage, the crosspoint, and the output stage. Each input and output device is connected to the crosspoint through a proprietary TDM connection. It is the use of this connection that provides the flexibility for the system to scale and evolve with changing needs.

Scalability

The EMR can be scaled well beyond a single frame. A single crosspoint module can support up to 16 input modules and 16 output modules, allowing a system to scale to 1536 x 1536 AES. For larger requirements, multiple crosspoint modules can be combined to scale even further. There really is no limit to the range of the EMR.



Redundancy

Each input and output card in the EMR contains multiple TDM interfaces that allow connections to multiple crosspoints. Each input card provides multiple TDM outputs that can be used for redundant connections, and each output card provides multiple TDM inputs that can be setup to automatically failover if the primary connection fails. The redundancy structure of the EMR minimizes the chances of any failure to the system.

Control

When combined with MAGNUM, the EMR can be controlled using a wide range of control panels and interfaces. The EMR also provides a SNMP interface to control various configuration options.

System Integration

When combined with the EQX, the EMR provides the ability to route audio universally across various formats. Embedded audio from EQX video sources can be de-embedded and routed to AES, analog, MADI destinations or A-LINK. The system also allows discrete audio sources from AES, analog, MADI or A-LINK to audio embedders on the EQX. This unique system provides maximum flexibility for routing any audio source to any audio destination.

►Features & Benefits

Audio Routing

- Support for unbalanced/balanced AES, analog, MADI audio and Studer A-LINK formats
- Sample rate conversion
- Processing capabilities for per channel gain, inversion, mono-mixing, quad-mixing and per channel audio delay
- Advanced audio monitoring for loss, silence, over, phase and mono
- Unique HD video output with audio level display for all audio inputs
- Mono breakaway mode support in panels, L and R channels can be routed to different outputs
- Mono mixing between L and R channels, swapping, L to both, R to both, analog phase inversion and gain

Port Data Routing

- Support for RS-232 and RS-422 devices (selectable)
- Conversion between RS-232 and RS-422 devices
- Manual or automatic sensing of controlling and controlled devices
- Sony interface for detecting controlling or controlled devices

Time Code Routing

- Decoding and encoding capabilities for advanced monitoring
- Handles shuffle speeds up to 70x

Advanced System Control & Interfacing

- Supports the full range of Quartz remote control panels
- Full VistaLINK® PRO command & control, SNMP
- Supports a wide selection of control protocols
- Ethernet, Serial RS-422/RS-232 connections
- Full integration with 3rd party automation systems

High Availability, 24/7 Design

- Full modular design
- All modules are hot swappable
- All components are front accessible
- Passive I/O
- External MI connection
- Redundant crosspoint
- Redundant power supply
- Comprehensive system monitoring bus
- VistaLINK® PRO SNMP monitoring of I/O modules

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Specifications

Configuration:

AES inputs:	Selectable in blocks of 96 or 48
AES outputs:	Selectable in blocks of 96 or 48
Analog inputs:	Selectable in blocks of 48 (stereo)
Analog outputs:	Selectable in blocks of 48 (stereo)
MADI inputs:	Selectable in blocks of 8 or 16
MADI outputs:	Selectable in blocks of 8 or 16
A-link (bidirectional)	Selectable in blocks of 2
LTC inputs:	Selectable in blocks of 96 or 48
LTC outputs:	Selectable in blocks of 96 or 48
RS-232/RS-422 ports:	Selectable in blocks of 48 (RS-232 and RS-422 selectable)

Audio Inputs - AES:

Sample Rates: 44.1kHz, 48kHz

Balanced Version:

Standard: AES3-1992
Signal Level: 0.2 – 7.0V p-p
Impedance: 110Ω ±20%, transformer coupled
DC on Input: ±50V
Connectors: D50 female

Unbalanced Version:

Standard: SMPTE ST 276-1
Impedance: 75Ω
Return Loss: 25dB, 0.1 - 6.0kHz
Connectors: DIN 1.0/2.3

Audio Outputs - AES:

Sample Rates: 44.1kHz, 48kHz

Balanced Version:

Signal Level: 2.0 – 7.0V p-p
Impedance: 110Ω, transformer coupled
DC Isolation: ±50V
Rise/fall Time: 3.5 – 10ns
Connectors: D50 female

Unbalanced Version:

Signal Level: 1.0 V p-p ±50%,
Impedance: 75Ω
Return Loss: 25dB, 0.1 - 6.0kHz
Jitter: Conforms to ANSI S4.40-1992
Connectors: DIN 1.0/2.3

Analog Audio:

Sampling Freq: 48kHz
Freq Response: ±0.08dB (20Hz-20kHz range)
Output Impedance: 400Ω
Input Impedance: 12kΩ minimum
Signal Level: 0dBfs = 18dBu or 24dBu
Noise: -110dB A-weighted
THD+N: >95dB (typically > 98dB)
DC Offset: >±30mV
Crosstalk: <-95dB
I/O Delay: 1.3ms @ 48kHz
Dynamic Range: 24 bits
Connectors: D50 female

Analog to Digital Conversion:

Sampling Freq: 48kHz
Freq Response: ±0.05dB (20Hz-20kHz range)
Input Impedance: 12kΩ minimum
Signal Level: 0dBu to 18dBu or 24dBu
Noise: -113dB A-weighted
THD+N: >95dB (typically > 98dB)
CMRR: >85dB @ 1kHz
Crosstalk: <-95dB
I/O Delay: 0.85ms @ 48kHz
Connectors: D50 female

Digital to Analog Conversion:

Sampling Freq: 48kHz
Freq Response: ±0.06dB (20Hz-20kHz range)
Output Impedance: 400Ω
Signal Level: 0dBfs to 18dBu or 24dBu
Noise: -115dB A-weighted
THD+N: >95dB (typically > 98dB)
DC Offset: >±30mV
Crosstalk: <-95dB
I/O Delay: 1.3ms @ 48kHz
Dynamic Range: 24 bits
Connectors: D50 female

Data Input Port:

Type: RS-232 and RS-422, selectable
Signal Level: 0.2 – 7V p-p
Connectors: D50 female

Data Output Port:

Type: RS-232 and RS-422, selectable
Signal Level: 2 – 7V p-p
Impedance: 110Ω
Connectors: D50 female

LTC Reader:

Standard: SMPTE ST 12-1
Level: 2 – 4V p-p, unbalanced or balanced
Speed: 1/30th to 70x play speed, fwd and rev, machine dependent
Connectors: DIN 1.0/2.3 (unbalanced), D50 female (balanced)

LTC Generator:

Standard: SMPTE ST 12-1
Rise Time: 40±10ms
Jitter: <2ms
Connectors: DIN 1.0/2.3 (unbalanced), D50 female (balanced)

Switching Reference:

Reference Inputs: 2x BNC, analog 525/625 or DARS
Impedance: 75Ω terminating
Connectors: BNC per IEC 61169-8 Annex A

Control:

Ethernet: 2x RJ45
Serial: RS-232/RS-422 2x D9 female

Electrical:

EMX6-FR:
AC Mains Input: Auto ranging, 100 ↔ 240 VAC, 50/60 Hz
Max Operating Current: 9.5 A (@ 115 VAC nominal), 4.0 A (@ 220 VAC nominal)
Max Power Consumption: 850 W
Max Module Load: 650 W (40 W per slot)
Power Supply Configuration: 1 supply standard, optional redundant supply requires separate inlet
Connector: IEC 60320 - 1 per power supply

EMX3-FR:

AC Mains Input: Auto ranging, 100 ↔ 240 VAC, 50/60 Hz
Max Operating Current: 4.6 A (@ 100 V/60Hz), 1.85A (@ 240 V/50Hz)
Max Power Consumption: 450 W
Max Module Load: 360 W (24 W per slot)
Power Supply Configuration: 1 supply standard, optional redundant supply requires separate inlet
Connector: IEC 60320 - 1 per power supply

Maximum Module Load:

EMX3-FR: 360W (72W per slot)
EMX6-FR: 650W (43W per slot)
Fuses: 6.3 amps, 250 Volt ceramic time delay 5 x 20 mm – 2 per power supply

Physical:

Dimensions:
EMX3-FR: 19"W x 5.25"H x 15.75"D (483mm W x 133mm H x 400mm D)
EMX6-FR: 19"W x 10.5"H x 15.75"D (483mm W x 266mm H x 400mm D)
Temperature: 0-40°C
Module Capacity:
EMX3-FR: 5 single slot modules
EMX6-FR: 15 single slot modules
Weight:
EMX3-FR: 32lbs (14.5kg) Full
17.4lbs (8kg) Empty
EMX6-FR: 64lbs (29g) Full
34.8lbs (16kg) Empty

EMR Audio Router (Hybrid Router)

High Density Modular Audio Router (AES, Analog, MADI, Time Code, Data)



Ordering Information - EMR Audio Router

EMX6-FR	EMX 6RU Router Chassis with 15 slots
EMX3-FR	EMX 3RU Router Chassis with 5 slots
EMX-FC	EMX frame controller
EMR-IP96-AESU	96 Unbalanced AES inputs with TDM outputs
EMR-IP48-AESU	48 Unbalanced AES inputs with TDM outputs
EMR-IP96-AESB	96 Balanced AES inputs with TDM outputs
EMR-IP48-AESB	48 Balanced AES inputs with TDM outputs
EMR-IP48-AA	48 Analog stereo inputs with TDM outputs
EMR-IP96-LTC	96 LTC inputs with TDM outputs
EMR-IP48-LTC	48 LTC inputs with TDM outputs
EMR-IP16-MADI	16 MADI inputs with TDM outputs
EMR-OP96-AESU	96 Unbalanced AES outputs with TDM inputs
EMR-OP48-AESU	48 Unbalanced AES outputs with TDM inputs
EMR-OP96-AESB	96 Balanced AES outputs with TDM inputs
EMR-OP48-AESB	48 Balanced AES outputs with TDM inputs
EMR-OP48-AA	48 Analog stereo outputs with TDM inputs
EMR-OP96-LTC	96 LTC outputs with TDM inputs
EMR-OP48-LTC	48 LTC outputs with TDM inputs
EMR-OP16-MADI	16 MADI outputs with TDM inputs
EMR-IO8-MADI	8 MADI inputs with TDM outputs, and 8 MADI outputs with TDM inputs
EMR-ADMX-48x48	48 TDM inputs and 48 TDM outputs
EMR-ADMX-16x16A	16 TDM inputs and 16 TDM outputs

7800EMR-ALINK2	STUDER A-LINK - Evertz TDM Audio Router module
7800FR	3RU Multiframe (holds up to 15 single slot modules with AC power supply)
7800FR-QT	3RU Quiet Multiframe (holds up to 15 single slot modules with AC power supply)
7801FR	1RU Multiframe (holds up to 4 single or 2 dual slot modules with AC power supply)
7800FR-48VDC	3RU Multiframe (holds up to 15 single slot modules with 48V DC power supply)
7800FR-ACDC	3RU Multiframe (holds up to 15 single slot modules with AC and 48V DC power supply)

Ordering Options (EMX)

+6PS	Redundant Power Supply for EMX6-FR
+3PS	Redundant Power Supply for EMX3-FR
+DLY	Audio delay

Ordering Options (7800FR)

+78P	Redundant power supply for 7800FR
+78PQT	Redundant power supply for 7800FR-QT
+781PS	Redundant power supply for 7801FR
+78PDC	Redundant power supply for 7800FR-48VDC

Accessories

7800PS	Additional power supply for 7800FR
7800PS-QT	Additional power supply for 7800FR-QT
7801PS	Additional power supply for 7801FR
7800PS-48VDC	Additional power supply for 7800FR-48VDC
7800RS-15	Rear 15" support kit for 3RU 7800 series frames
7700FC/7800FC	VistaLINK Frame Controller for 3RU 7800 series frames
7800FR-QT-KIT1	Kit to convert 7800FR with single power supply to 7800FR-QT
7800FR-QT-KIT2	Kit to convert 7800FR with dual power supply to 7800FR-QT

The Complete Solution Provider



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Port Data Routing

- Support for RS-232 and RS-422 devices (selectable)
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Time Code Routing

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- Ethernet, Serial RS-422/RS-232 connections
- Full integration with 3rd party automation systems

High Availability, 24/7 Design

- Full modular design
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- All components are front accessible
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- Redundant power supply
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Specifications

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AES outputs:	Selectable in blocks of 96 or 48
Analog inputs:	Selectable in blocks of 48 (stereo)
Analog outputs:	Selectable in blocks of 48 (stereo)
MADI inputs:	Selectable in blocks of 8 or 16
MADI outputs:	Selectable in blocks of 8 or 16
A-link (bidirectional)	Selectable in blocks of 2
LTC inputs:	Selectable in blocks of 96 or 48
LTC outputs:	Selectable in blocks of 96 or 48
RS-232/RS-422 ports:	Selectable in blocks of 48 (RS-232 and RS-422 selectable)

Audio Inputs - AES:

Sample Rates: 44.1kHz, 48kHz

Balanced Version:

Standard: AES3-1992
Signal Level: 0.2 – 7.0V p-p
Impedance: 110Ω ±20%, transformer coupled
DC on Input: ±50V
Connectors: D50 female

Unbalanced Version:

Standard: SMPTE ST 276-1
Impedance: 75Ω
Return Loss: 25dB, 0.1 - 6.0kHz
Connectors: DIN 1.0/2.3

Audio Outputs - AES:

Sample Rates: 44.1kHz, 48kHz

Balanced Version:

Signal Level: 2.0 – 7.0V p-p
Impedance: 110Ω, transformer coupled
DC Isolation: ±50V
Rise/fall Time: 3.5 – 10ns
Connectors: D50 female

Unbalanced Version:

Signal Level: 1.0 V p-p ±50%,
Impedance: 75Ω
Return Loss: 25dB, 0.1 - 6.0kHz
Jitter: Conforms to ANSI S4.40-1992
Connectors: DIN 1.0/2.3

Analog Audio:

Sampling Freq: 48kHz
Freq Response: ±0.08dB (20Hz-20kHz range)
Output Impedance: 400Ω
Input Impedance: 12kΩ minimum
Signal Level: 0dBfs = 18dBu or 24dBu
Noise: -110dB A-weighted
THD+N: >95dB (typically > 98dB)
DC Offset: >±30mV
Crosstalk: <-95dB
I/O Delay: 1.3ms @ 48kHz
Dynamic Range: 24 bits
Connectors: D50 female

Analog to Digital Conversion:

Sampling Freq: 48kHz
Freq Response: ±0.05dB (20Hz-20kHz range)
Input Impedance: 12kΩ minimum
Signal Level: 0dBu to 18dBu or 24dBu
Noise: -113dB A-weighted
THD+N: >95dB (typically > 98dB)
CMRR: >85dB @ 1kHz
Crosstalk: <-95dB
I/O Delay: 0.85ms @ 48kHz
Connectors: D50 female

Digital to Analog Conversion:

Sampling Freq: 48kHz
Freq Response: ±0.06dB (20Hz-20kHz range)
Output Impedance: 400Ω
Signal Level: 0dBfs to 18dBu or 24dBu
Noise: -115dB A-weighted
THD+N: >95dB (typically > 98dB)
DC Offset: >±30mV
Crosstalk: <-95dB
I/O Delay: 1.3ms @ 48kHz
Dynamic Range: 24 bits
Connectors: D50 female

Data Input Port:

Type: RS-232 and RS-422, selectable
Signal Level: 0.2 – 7V p-p
Connectors: D50 female

Data Output Port:

Type: RS-232 and RS-422, selectable
Signal Level: 2 – 7V p-p
Impedance: 110Ω
Connectors: D50 female

LTC Reader:

Standard: SMPTE ST 12-1
Level: 2 – 4V p-p, unbalanced or balanced
Speed: 1/30th to 70x play speed, fwd and rev, machine dependent
Connectors: DIN 1.0/2.3 (unbalanced), D50 female (balanced)

LTC Generator:

Standard: SMPTE ST 12-1
Rise Time: 40±10ms
Jitter: <2ms
Connectors: DIN 1.0/2.3 (unbalanced), D50 female (balanced)

Switching Reference:

Reference Inputs: 2x BNC, analog 525/625 or DARS
Impedance: 75Ω terminating
Connectors: BNC per IEC 61169-8 Annex A

Control:

Ethernet: 2x RJ45
Serial: RS-232/RS-422 2x D9 female

Electrical:

EMX6-FR:
AC Mains Input: Auto ranging, 100 ↔ 240 VAC, 50/60 Hz
Max Operating Current: 9.5 A (@ 115 VAC nominal), 4.0 A (@ 220 VAC nominal)
Max Power Consumption: 850 W
Max Module Load: 650 W (40 W per slot)
Power Supply Configuration: 1 supply standard, optional redundant supply requires separate inlet
Connector: IEC 60320 - 1 per power supply

EMX3-FR:

AC Mains Input: Auto ranging, 100 ↔ 240 VAC, 50/60 Hz
Max Operating Current: 4.6 A (@ 100 V/60Hz), 1.85A (@ 240 V/50Hz)
Max Power Consumption: 450 W
Max Module Load: 360 W (24 W per slot)
Power Supply Configuration: 1 supply standard, optional redundant supply requires separate inlet
Connector: IEC 60320 - 1 per power supply

Maximum Module Load:

EMX3-FR: 360W (72W per slot)
EMX6-FR: 650W (43W per slot)
Fuses: 6.3 amps, 250 Volt ceramic time delay 5 x 20 mm – 2 per power supply

Physical:

Dimensions:
EMX3-FR: 19"W x 5.25"H x 15.75"D (483mm W x 133mm H x 400mm D)
EMX6-FR: 19"W x 10.5"H x 15.75"D (483mm W x 266mm H x 400mm D)
Temperature: 0-40°C
Module Capacity:
EMX3-FR: 5 single slot modules
EMX6-FR: 15 single slot modules
Weight:
EMX3-FR: 32lbs (14.5kg) Full
17.4lbs (8kg) Empty
EMX6-FR: 64lbs (29g) Full
34.8lbs (16kg) Empty

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EMX3-FR	EMX 3RU Router Chassis with 5 slots
EMX-FC	EMX frame controller
EMR-IP96-AESU	96 Unbalanced AES inputs with TDM outputs
EMR-IP48-AESU	48 Unbalanced AES inputs with TDM outputs
EMR-IP96-AESB	96 Balanced AES inputs with TDM outputs
EMR-IP48-AESB	48 Balanced AES inputs with TDM outputs
EMR-IP48-AA	48 Analog stereo inputs with TDM outputs
EMR-IP96-LTC	96 LTC inputs with TDM outputs
EMR-IP48-LTC	48 LTC inputs with TDM outputs
EMR-IP16-MADI	16 MADI inputs with TDM outputs
EMR-OP96-AESU	96 Unbalanced AES outputs with TDM inputs
EMR-OP48-AESU	48 Unbalanced AES outputs with TDM inputs
EMR-OP96-AESB	96 Balanced AES outputs with TDM inputs
EMR-OP48-AESB	48 Balanced AES outputs with TDM inputs
EMR-OP48-AA	48 Analog stereo outputs with TDM inputs
EMR-OP96-LTC	96 LTC outputs with TDM inputs
EMR-OP48-LTC	48 LTC outputs with TDM inputs
EMR-OP16-MADI	16 MADI outputs with TDM inputs
EMR-IO8-MADI	8 MADI inputs with TDM outputs, and 8 MADI outputs with TDM inputs
EMR-ADMX-48x48	48 TDM inputs and 48 TDM outputs
EMR-ADMX-16x16A	16 TDM inputs and 16 TDM outputs

7800EMR-ALINK2	STUDER A-LINK - Evertz TDM Audio Router module
7800FR	3RU Multiframe (holds up to 15 single slot modules with AC power supply)
7800FR-QT	3RU Quiet Multiframe (holds up to 15 single slot modules with AC power supply)
7801FR	1RU Multiframe (holds up to 4 single or 2 dual slot modules with AC power supply)
7800FR-48VDC	3RU Multiframe (holds up to 15 single slot modules with 48V DC power supply)
7800FR-ACDC	3RU Multiframe (holds up to 15 single slot modules with AC and 48V DC power supply)

Ordering Options (EMX)

+6PS	Redundant Power Supply for EMX6-FR
+3PS	Redundant Power Supply for EMX3-FR
+DLY	Audio delay

Ordering Options (7800FR)

+78P	Redundant power supply for 7800FR
+78PQT	Redundant power supply for 7800FR-QT
+781PS	Redundant power supply for 7801FR
+78PDC	Redundant power supply for 7800FR-48VDC

Accessories

7800PS	Additional power supply for 7800FR
7800PS-QT	Additional power supply for 7800FR-QT
7801PS	Additional power supply for 7801FR
7800PS-48VDC	Additional power supply for 7800FR-48VDC
7800RS-15	Rear 15" support kit for 3RU 7800 series frames
7700FC/7800FC	VistaLINK Frame Controller for 3RU 7800 series frames
7800FR-QT-KIT1	Kit to convert 7800FR with single power supply to 7800FR-QT
7800FR-QT-KIT2	Kit to convert 7800FR with dual power supply to 7800FR-QT

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