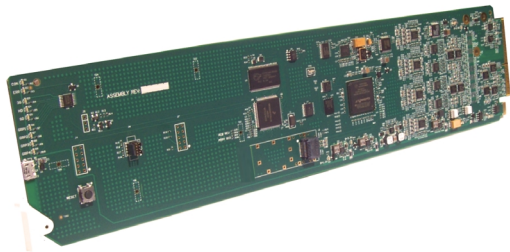


# 9433-EMDE-ADDA-EO • 3G/HD/SD-SDI Fiber-Optic EO Transmitter with 16-Channel AES / 8-Channel Analog Audio Embed / De-Embed



The Cobalt® 9433-EMDE-ADDA-EO 3G/HD/SD-SDI Fiber-Optic EO Transmitter with 16-Channel AES / 8-Channel Analog Audio Embed / De-Embed offers full-flexibility AES and analog audio embedding/de-embedding with SDI-to-fiber EO in a basic, economical, high-efficiency openGear® card. More than only a basic embedder/de-embedder, the 9433-EMDE-ADDA-EO offers the flexibility of SDI-to-fiber EO as well as providing fully flexible AES and analog audio embedding/de-embedding.

The 9433-EMDE-ADDA-EO provides full 16-channel embed / de-embed between AES, 8-channel analog audio, and all four groups of embedded audio. Audio embed adaptive SRC allows asynchronous 48 kHz AES audio to automatically sync with program video 48 kHz timing for glitch-free embedding. Individual, per-pair SRC auto-detects and disables SRC when a Dolby pair is detected on an input pair. Analog embed/de-embed conforms with professional balanced audio at 0 dBFS to pro 24 dBu levels using full 24-bit conversion. Fully error-free pathological pattern operation is fully compatible with professional fiber video interfaces. The 9433-EMDE-ADDA-EO is available with numerous CWDM wavelengths that allow the card to be used with CWDM systems.

Full audio crosspoint allows per-channel gain and routing controls, as well as built-in tone generators.

Full user DashBoard™ or Remote Control Panel remote control allows full status and control access locally or across a standard Ethernet network.

## FEATURES

EO fiber transmitter with fiber and coax as outputs

16-channel AES support and 8-channel analog audio support in one card. Individual per-pair embedding or de-embedding. Provides four-group SDI embed/de-embed and cross-conversions between analog and AES discrete audio.

DashBoard™ status display, audio meters, tone generators. GUI audio meters provide ready assessment of content presence and line-up.

Audio embed adaptive SRC allows asynchronous 48 kHz AES audio to automatically sync with video 48 kHz timing for glitch-free embedding. Individual, per-pair SRC auto-detects and disables SRC when a Dolby pair is detected on an input pair.

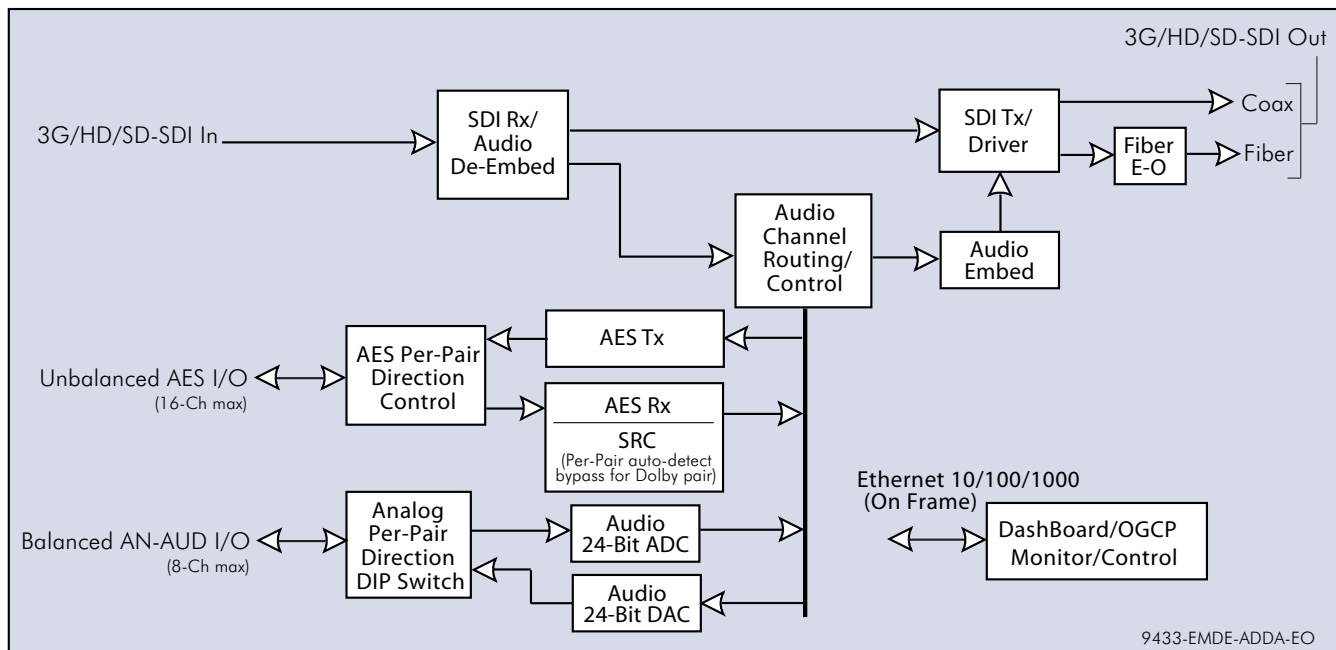
Low-power/high-density design – less than 18 Watts per card

Available with CWDM wavelength divisions allowing use in CWDM systems

Remote control/monitoring via DashBoard™ software or OGCP-9000 remote control panels

Hot-swappable

Five year warranty



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## SPECIFICATIONS

Note: Inputs/outputs are a function in some cases of rear I/O module used.

### Power

<18 Watts

### SDI/Fiber Inputs/Outputs

(1) 75Ω BNC input

(1) 75Ω BNC output

SDI Receive Cable Length (1694A): 120m/180m/360m (3G/HD/SD)

SDI Return Loss: >15 dB up to 1.485 GHz; >10 dB up to 2.970 GHz

Note: SDI Return loss and receive cable length are affected by rear I/O module used. Specifications represent typical performance.

Alignment Jitter: 3G/HD/SD: < 0.3/0.2/0.2 UI

Timing Jitter: 3G/HD/SD: < 2.0/1.0/0.2 UI

(1) Fiber output; LC connector

Fiber Wavelength, Tx: 1310 nm

Tx Power: -5.0 dBm (min)

SDI Formats Supported: SMPTE 259M, SMPTE 292M, SMPTE 424M

### Audio Conversion Format

48 kHz sampling, 24-bit. Auto-SRC bypass for Dolby inputs. Analog audio I/O conforms to +24 dBu <=> 0 dBFS.

### Analog Audio Specifications

Input Impedance: >10 kΩ

Reference Level: -20 dBFS

Nominal Level: +4 dBu

Input Clip Level: +24 dBu (0 dBFS)

Freq. Response: ±0.2 dB (20 Hz to 20 kHz)

SNR: 115 dB (A weighted)

THD+N: -96 dB (20 Hz to 10 kHz)

Crosstalk: -106 dB (20 Hz to 20 kHz)

Output Impedance: < 50 Ω

Max. Output Level: +24 dBu (0 dBFS)

### Discrete Audio Input/Output

(8) Unbalanced AES (AES-3id; 75Ω) with per-pair port direction controls

(8) Balanced Analog Audio with per-pair port direction controls

## ORDERING INFORMATION

**9433-EMDE-ADDA-EO** 3G/HD/SD-SDI Fiber-Optic Transceiver with 16-Channel AES / 8-Channel Analog Audio Embed / De-Embed

**9433-EMDE-ADDA-EO-CWDM-WX** 3G/HD/SD-SDI Fiber-Optic Transceiver with 16-Channel AES / 8-Channel Analog Audio Embed / De-Embed with Fiber Optic CWDM I/O

Use fiber wavelength codes below for card Fiber Optic Modules (FOMs) when ordering. Available wavelengths (in nm) are as follows: 1270, 1290, 1310, 1330, 1350, 1370, 1390, 1410, 1430, 1450, 1470, 1490, 1510, 1530, 1550, 1570, 1590, 1610.

In "WX" places in part number, substitute code for wavelengths in each place as listed below:

**-27:** 1270nm **-29:** 1290nm **-31:** 1310nm

**-33:** 1330nm **-35:** 1350nm **-37:** 1370nm

**-39:** 1390nm **-41:** 1410nm **-43:** 1430nm

**-45:** 1450nm **-47:** 1470nm **-49:** 1490nm

**-51:** 1510nm **-53:** 1530nm **-55:** 1550nm

**-57:** 1570nm **-59:** 1590nm **-61:** 1610nm

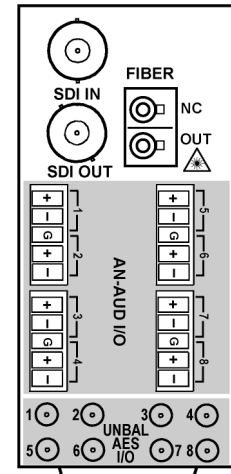
(Example: 9433-EMDE-ADDA-EO-CWDM-27 has 1270 nm FIBER OUT wavelength)

**RM20-9433EMDE-EO-C-DIN** 20-Slot Frame Rear I/O Module (Standard Width) (1) 3G/HD/SD-SDI Input BNC, (1) 3G/HD/SD-SDI Output BNC, (1) Fiber Output (LC connectors), (8) Balanced Analog Audio I/O, (8) Unbalanced AES I/O (coaxial; DIN 1.0/2.3)

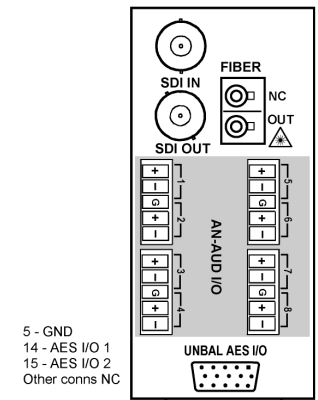
**RM20-9433EMDE-EO-C-HDBNC** 20-Slot Frame Rear I/O Module (Standard Width) (1) 3G/HD/SD-SDI Input BNC, (1) 3G/HD/SD-SDI Output BNC, (1) Fiber Output (LC connectors), (8) Balanced Analog Audio I/O, (8) Unbalanced AES I/O (coaxial; HD-BNC)

**RM20-9433EMDE-EO-D** 20-Slot Frame Rear I/O Module (Standard Width) (1) 3G/HD/SD-SDI Input BNC, (1) 3G/HD/SD-SDI Output BNC, (1) Fiber Output (LC connectors), (8) Balanced Analog Audio I/O, Unbalanced AES I/O (via HD-15 connector)

**Note:** Rear module(s) have been available in two manufacturing versions (with correspondingly different MPN numbers). New cards with SN: 450452R or greater use the current/latest rear module version. Earlier-version and latest-version rear modules and cards are mutually incompatible. Manufacturing Part Number (MPN) is screened on the rear module PCB. See card web page for more information.



**RM20-9433EMDE-EO-C-DIN**  
**RM20-9433EMDE-EO-C-HDBNC**



**RM20-9433EMDE-EO-D**