

9904-UDX-4K • 12G/6G/3G/HD/SD UHD Up/Down/Cross Converter / Frame Sync / Embed/De-Embed Audio Processor



The Cobalt® **9904-UDX-4K 12G/6G/3G/HD/SD UHD Up/Down/Cross Converter/Frame Sync/Embed/De-Embed Audio Processor** is Cobalt's next generation of advanced scaler/frame synchronizers for the openGear® platform. The 9904-UDX-4K upconverts 12G/6G/3G/HD/SD to either UHD1 3840x2160 Square Division Multiplex (SDM) or Two-Sample Interleave (2SI) quad 3G-SDI based formats, or can output ST 2082 12G-SDI for single-wire 4K transport. With both 12G-SDI and quad 3G-SDI inputs, the 9904-UDX-4K can downconvert 12G and quad UHD. The 9904-UDX-4K provides an HDMI 2.0 output for economical 4K video monitoring. The 9904-UDX-4K offers numerous options, including SDR-to-HDR conversion and color correction.

The 9904-UDX-4K-IP model offers the same functionality as the 9904-UDX-4K SDI-based model, but additionally also provides dual 10GigE ports providing support for the emerging uncompressed video/audio/data over IP standards.

The 9904-UDX-4K-DSP model provides the same functionality as the 9904-UDX-4K SDI-based model, and also offers a DSP-based platform that supports multiple audio DSP options, including Dolby® Real-Time Loudness Leveling

automatic loudness processing, Dolby® E/D/D+ encode/decode, and Linear Acoustic® UPMAX™ automatic upmixing.

The high-density openGear® design allows for up to five 9904-UDX-4K cards to be installed in one 2RU openGear® frame. Card control/monitoring is available via DashBoard user interface, or Cobalt's RESTful-based Reflex protocol.

Alternate Models:

- 9904-UDX-4K-IP** 12G/6G/3G/HD/SD UHD Up/Down/Cross Converter/Frame Sync/Embed/De-Embed Audio Processor with Dual 10GigE IP Ports
- 9904-UDX-4K-DSP** 12G/6G/3G/HD/SD UHD Up/Down/Cross Converter/Frame Sync with DSP Advanced Audio Processing



FEATURES

High-density openGear comprehensive UHD UDX solution

Supports all popular formats: 480i, 576i, 720p, 1080i, 1080pSF, 1080p

Full up/down conversion between HD/3G, ST 2082 12G-SDI single-wire, and SDQS/2SI quad 3G-SDI based formats, with ST 2082 12G-SDI single-wire and quad 3G UHD available at both input and output

Supports Square Division Multiplex (SDM) and Two-Sample Interleave (2SI) quad UHD

12G-SDI and quad 3G frame sync and user delay

Supports Cobalt's Reflex (JSON) Protocols

Noise Reduction and Detail Enhancement provide image quality optimization

Remote control/monitoring via Dashboard™ software, OGCP-9000 remote control panels, or Cobalt's RESTful-based Reflex protocol

Hot-swappable

Five year warranty

OPTIONS

SDR/HDR Conversion Options (**+HDR-TCHCLR-4K, +HDR-TCHCLR**) – Provides real-time intelligent HDR conversion powered by Technicolor®. Contains SDR-to-HDR, HDR-to-SDR, and HDR-to-HDR conversion with dynamic metadata creation. Technicolor toolkits include SL-HDR encode, SL-HDR decode, and ITM Intelligent Tone Management.

3D LUT Options (**+3DLUT-PRO-4K, +3DLUT-PRO**) – 3D LUT (Look-Up Table) options provide 33 LUT mapping between 10-bit RGB and HDR color spaces.

3D LUT Option (**+3D-LUT-BBC**) – Licensed product developed by the BBC, provides BBC 3D LUTS as optional SDR-to-HDR and HDR-to-SDR profiles.

Audio LTC I/O Option (**+LTC**)

Logo Insertion Option (**+LOGO-4K, +LOGO**) – Provides file-based insertion for branding local or destination branding/ID requirements.

Color Correction Options (**+COLOR-4K, +COLOR**) – Provides full RGB color corrector (offset, gain, gamma) with extended YCbCr proc controls with white hard clip, white soft clip, black hard clip, and saturation clip.

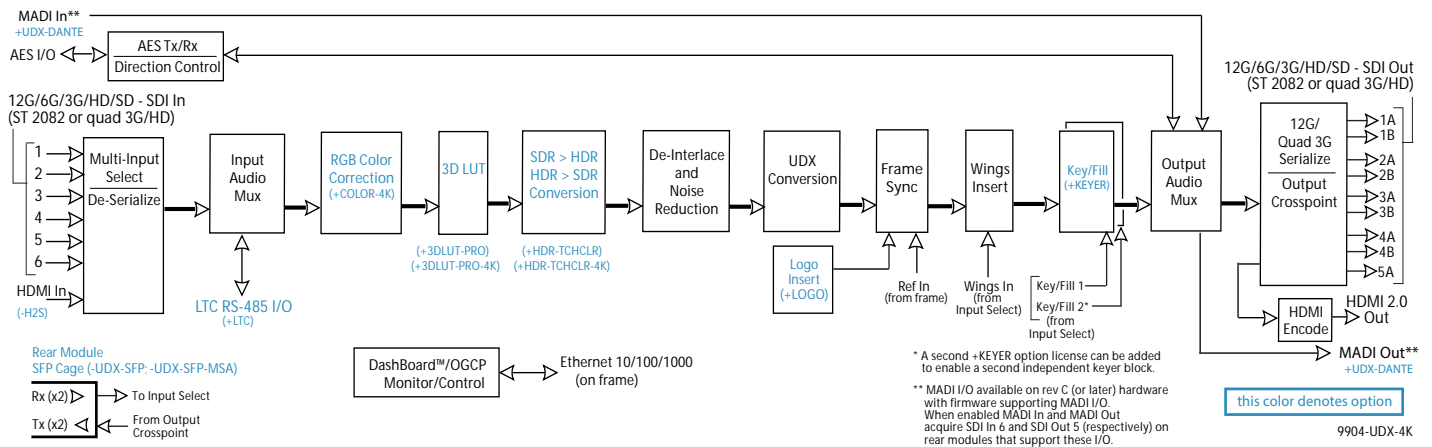
Key/Fill Keyer Option (**+KEYER-4K, +KEYER**) – Provides keying using SDI inputs for key and fill signals. Alpha Threshold mode allows full-color key/fill using low-cost PC-based graphics host where the same signal provides a shared key/fill input. (A second +KEYER option license can be added to enable a second independent keyer block.)

-UDX-SFP Options – Adds daughter card supporting externally-accessible dual SFP cage. (See Ordering Information for SFP types available, descriptions, and further info.)

-H2S Option – Adds daughter card supporting externally-accessible HDMI input

+UDX-DANTE-16x16 16x16 Dante 16 channel input 16 channel output option (Cannot be used simultaneously with +HDR-TCHCLR and +LOGO).

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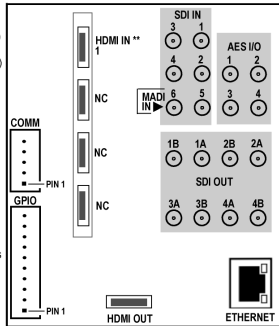
COMM PINOUTS

- 1 - GND
- 2 - *COM A_TX2 / 422(+)
- 3 - *COM A_TX1 / 422(-)
- 4 - *COM A_RX2 / 422(+)
- 5 - *COM A_RX1 / 422(-)

GPIO PINOUTS

- 1 - GPO OUT 2
- 2 - GPO OUT 1
- 3 - GPO CMN
- 4 - GND
- 5 - GPI IN 6
- 6 - GPI IN 5
- 7 - GPI IN 4
- 8 - GPI IN 3
- 9 - GPI IN 2
- 10 - GPI IN 1

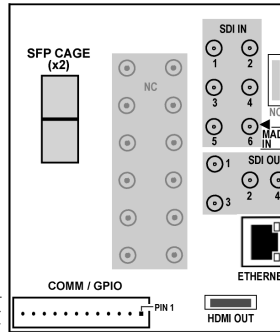
* Port can be GUI-configured as two RS-232 ports (Tx and Rx), or as RS-422 port.
 ** HDMI IN port only present in conjunction with option -H2S. Although multiple ports may be present, only HDMI IN 1 is active.



RM20-9904-A-HDBNC

GPIOCOMM

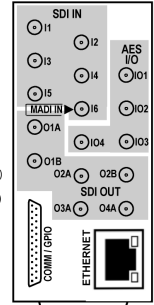
- 1 - GPI IN 1
- 2 - GPI IN 2
- 3 - GPI IN 3
- 4 - GPI IN 4
- 5 - GPI IN 5
- 6 - GPI IN 6
- 7 - GND
- 8 - GND
- 9 - COMM A RX1/-
- 10 - COMM A RX2/+
- 11 - COMM A TX1/-
- 12 - COMM A TX2/+



RM20-9904-C-HDBNC

- 13 - COMM_RX2(422+)
- 12 - GND
- 11 - COMM_A_TX2(422+)
- 10 - GND
- 9 - GPO 2
- 8 - GND
- 7 - GPI_IN 3
- 6 - GPI_IN 1
- 5 - GPO COM
- 4 - NC
- 3 - GND
- 2 - NC
- 1 - GPI IN 5

- 25 - COMM_A_RX1(422-)
- 24 - GND
- 23 - COMM_A_TX1(422-)
- 22 - GND
- 21 - GPO 1
- 20 - GPI_IN 4
- 19 - GPI_IN 2
- 18 - GND
- 17 - NC
- 16 - NC
- 15 - NC
- 14 - GPI IN 6



RM20-9904-D-HDBNC

Note: MADI I/O is available on rev C (or later) hardware with firmware supporting MADI I/O. When enabled MADI In and MADI Out acquire SDI In 6 and SDI Out 5 (respectively) on rear modules that support these I/O. Rear modules that support MADI I/O show the MADI port locations that are SDI IN 6 and SDI OUT 5 alternatives (as shown in illustrations here).

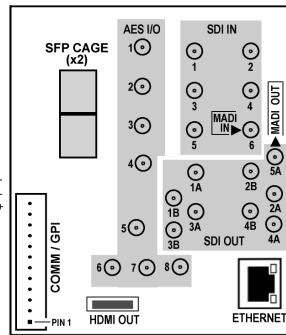
Note: Due to the alignment of the 9904 card and the -D rear module, the combination of the card and rear module will consume the adjacent odd frame slot in addition to the even slot occupied by the card.

Note: This rear module cannot be installed in frame slots 19/20 location. The 9904-UDX card, when installation is attempted, will clash/interfere with the frame network controller card.

Note: (8) AES ports supported on card hardware rev -E and later. Earlier card versions support (4) AES ports (max).

GPIOCOMM

- 12 - COMM A TX2/+
- 11 - COMM A TX1/-
- 10 - COMM A RX2/+
- 9 - COMM A RX1/-
- 8 - GND
- 7 - GND
- 6 - GPI IN 6
- 5 - GPI IN 5
- 4 - GPI IN 4
- 3 - GPI IN 3
- 2 - GPI IN 2
- 1 - GPI IN 1

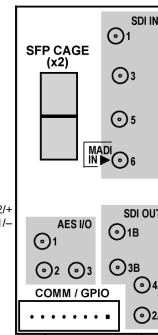


RM20-9904-F-HDBNC

GPIOCOMM

- 1 - COMM A TX2/+
- 2 - COMM A TX1/-
- 3 - GPI IN 1
- 4 - GPI IN 2
- 5 - GND
- 6 - GPO COM
- 7 - GPO OUT 1
- 8 - GPO OUT 2

Note: Pin 1 is in illustration.



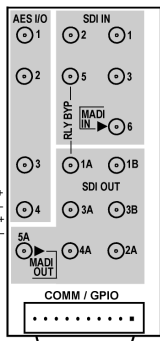
RM20-9904-G-HDBNC

Note: Mates to card in odd slot.

GPIOCOMM

- 1 - COMM A TX2/+
- 2 - COMM A TX1/-
- 3 - COMM A RX2/+
- 4 - COMM A RX1/-
- 5 - GND
- 6 - GPO COM
- 7 - GPO OUT 1
- 8 - GPI IN 3
- 9 - GPI IN 2
- 10 - GPI IN 1

Note: Pin 1 is in illustration.

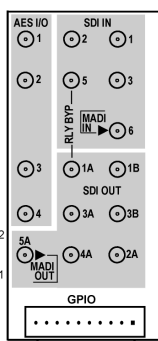


RM20-9904-H-HDBNC

GPIO

- 1 - GPI IN 6
- 2 - GPI IN 5
- 3 - GPI IN 4
- 4 - GPO OUT 2
- 5 - GND
- 6 - GPO COM
- 7 - GPO OUT 1
- 8 - GPI IN 3
- 9 - GPI IN 2
- 10 - GPI IN 1

Note: Pin 1 is in illustration.

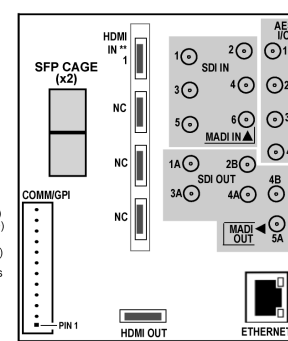


RM20-9904-J-HDBNC

COMM/GPI PINOUTS

- 1 - GPI IN 1
- 2 - GPI IN 2
- 3 - GPI IN 3
- 4 - GPI IN 4
- 5 - GPI IN 5
- 6 - GPI IN 6
- 7 - GND
- 8 - GND
- 9 - *COM A_RX1 / 422(-)
- 10 - *COM A_RX2 / 422(+)
- 11 - *COM A_TX1 / 422(-)
- 12 - *COM A_TX2 / 422(+)

* Port can be GUI-configured as two RS-232 ports (Tx and Rx), or as RS-422 port.
 ** HDMI IN port only present in conjunction with option -H2S. Although multiple ports may be present, only HDMI IN 1 is active.



RM20-9904-K-HDBNC

Note: 12G signals over relay bypass path stipulates maximum cable length not to exceed 10m for total of both input and output cable lengths.

9904-UDX-4K • 12G/6G/3G/HD/SD UHD Up/Down/Cross Converter / Frame Sync / Embed/De-Embed Audio Processor

SPECIFICATIONS

12G/6G/3G/HD/SD-SDI Input/Outputs

(6) 75Ω inputs (max)

(8) 75Ω outputs (max)

SDI Formats Supported: SMPTE ST2082-1,10, 424M, 292M, SMPTE 259M-C. All inputs/outputs 12G compliant and SDQS/2SI quad 3G compliant.

Return Loss:

> 15 dB up to 1.485 GHz

> 10 dB up to 3 GHz

> 7 dB up to 6 GHz

> 5 dB up to 12 GHz

Input Cable Length:

45m Belden 1694A cable at 11.88 Gbps / 120m Belden 1694A cable at 2.97 Gbps /

240m Belden 1694A cable at 1.485 Gbps / 400m Belden 1694A cable at 270 Mbps

Output Signal Level: 800 mV ± 10%

DC Offset: 0 V ± 50 mV

Rise and Fall Time @ 11.88 Gbps: < 45 ps

Alignment Jitter (12G/3G/HD/SD): < 0.3/0.3/0.2/0.2 UI

Frame Sync Audio/Video Delay

Max offset: 20 frames

Latency (min): 1 frame

User Audio Delay Offset from Video

Bulk delay control: -33 msec to +3000 msec.

Per-channel delay controls: -800 msec to +800 msec

AES Audio Inputs/Outputs

(8) AES-3id 75Ω coaxial ports (max); port direction assignable as inputs or outputs in groups of 4 ports.

Note: Hardware rev -E and later has 8 AES ports; earlier versions have 4 port max.

MADI Audio Inputs/Outputs

(2) 75Ω coaxial ports (max)

Note: Not all rear modules support full MADI I/O. MADI I/O is a function of Rear Module used and is available only on card with on rev C (or later) hardware with firmware supporting MADI I/O. See Rear Module illustrations for specific information.

HDMI Output

HDMI 2.0 Output; type A standard connector

HDMI Input (Option -H2S only)

HDMI 2.0 Input; mini connector

GPIO

(6) GPI (max); (2) GPO (max)

Note: GPIO max capacity is a function of Rear Module used. See Rear Module illustrations for specific information.

Frame Reference Input

(2) reference from frame bus. SMPTE 170M/318M "Black Burst", SMPTE 274M/296M "Tri-Level"

Frame Loading (Max. recommended number of 9904 cards supported per Frame Model)

· OG3 Frame: (5) cards

· HPF-9000 Frame: (5) cards

· oGx Frame: (7) cards

Note: In all cases, it is recommended to leave a 1RU gap above the frame and set frame Network Controller Card to run the frame cooling fans at full (max.) speed.

9904-UDX-4K • 12G/6G/3G/HD/SD UHD Up/Down/Cross Converter / Frame Sync / Embed/De-Embed Audio Processor

ORDERING INFORMATION

9904-UDX-4K 12G/6G/3G/HD/SD UHD Up/Down/Cross Converter/Frame Sync/Embed/De-Embed Audio Processor

Rear Modules:

Note: • MADI I/O is available on rev C (or later) hardware with firmware supporting MADI I/O. When enabled MADI In and MADI Out acquire SDI In 6 and SDI Out 5 (respectively) on rear modules that support these I/O. Rear modules that support MADI I/O show the MADI port locations that are SDI IN 6 and SDI OUT 5 alternatives. Rear modules that support MADI are identified below as **MADI Compatible**.

- Rear modules with SFP access do not come standard with any SFP functionality. Appropriate SFP option must be provisioned for rear module SFP functionality.
- SFP port-type availability depends upon SFP Type, rear IO module, and 9904-UDX host card rev as follows:

• **Option -UDX-SFP (non-MSA); Card Rev E and earlier with -C, -F, -G rear IO module:**

- Top SFP port supports up to 2 Fiber inputs and up to 2 Fiber outputs.
- Bottom SFP port supports up to 2 Fiber inputs.

• **Option -UDX-SFP (non-MSA); Card Rev F and later with -C, -F, -G rear IO module:**

- Top SFP port supports up to 2 Fiber inputs and up to 2 Fiber outputs.
- Bottom SFP port supports up to 2 Fiber inputs and up to 2 Fiber outputs.

• **Option -UDX-SFP (non-MSA); Card Rev E and earlier with -K rear IO:**

- Top SFP port supports up to 2 Fiber inputs and up to 2 Fiber outputs.
- Bottom SFP port is unused (NC).

• **Option -UDX-SFP (non-MSA); Card Rev F and later with -K rear IO:**

- Top SFP port supports up to 2 Fiber inputs and up to 2 Fiber outputs.
- Bottom SFP port support up to 2 Fiber outputs.

• **Option -UDX-SFP-MSA (no card restrictions):**

- Top SFP port supports 1 Fiber input and 1 Fiber output.
- Bottom SFP port supports 1 Fiber input and 1 Fiber output.

RM20-9904-A-HDBNC 20-Slot Frame Rear I/O Module (Double-Width) (6) 12G/6G/3G/HD/SD/SD-SDI Inputs, (8) 12G/6G/3G/HD/SD/SD-SDI Processed Outputs, (4) AES I/O (User Selectable), GPIO/COMM, HDMI 2.0 Output (type A standard connector), 100/1000 BaseT Ethernet Port. **MADI Compatible.** (All coaxial connectors HD-BNC.)

RM20-9904-C-HDBNC 20-Slot Frame Rear I/O Module (Double-Width) (6) 12G/6G/3G/HD/SD/SD-SDI Inputs, (4) 12G/6G/3G/HD/SD/SD-SDI Processed Outputs, GPI/COMM, HDMI 2.0 Output (type A standard connector), (2) SFP cage receptacles (when used in conjunction with option -UDX-SFP or -UDX-SFP-MSA), 100/1000 BaseT Ethernet Port. **MADI Compatible.** (All coaxial connectors HD-BNC.)

RM20-9904-D-HDBNC 20-Slot Frame Rear I/O Module (Standard-Width) (6) 12G/6G/3G/HD/SD/SD-SDI Inputs, (6) 12G/6G/3G/HD/SD/SD-SDI Processed Outputs, (4) AES I/O, GPIO/COMM, 100/1000 BaseT Ethernet Port. **MADI Compatible.** (All coaxial connectors HD-BNC.)

RM20-9904-F-HDBNC 20-Slot Frame Rear I/O Module (Double-Width) (6) 12G/6G/3G/HD/SD/SD-SDI Inputs, (9) 12G/6G/3G/HD/SD/SD-SDI Processed Outputs, (8) AES I/O, GPI/COMM, HDMI 2.0 Output (type A standard connector), (2) SFP cage receptacles (when used in conjunction with option -UDX-SFP or -UDX-SFP-MSA), 100/1000 BaseT Ethernet Port. **MADI Compatible.** (All coaxial connectors HD-BNC.)

RM20-9904-G-HDBNC 20-Slot Frame Rear I/O Module (Standard-Width) (4) 12G/6G/3G/HD/SD/SD-SDI Inputs, (4) 12G/6G/3G/HD/SD/SD-SDI Processed Outputs, (3) AES I/O, (2) SFP cage receptacles (when used in conjunction with option -UDX-SFP or -UDX-SFP-MSA), GPIO/COMM **MADI Compatible** (All coaxial connectors HD-BNC.) (**Note:** Mates to card in odd frame slot.)

RM20-9904-H-HDBNC 20-Slot Frame Rear I/O Module (Standard-Width) (5) 12G/6G/3G/HD/SD/SD-SDI Inputs, (7) 12G/6G/3G/HD/SD/SD-SDI Processed Outputs (one 3G/HD/SDI Output with relay bypass failover), (4) AES I/O, GPIO/COMM **MADI Compatible** (All coaxial connectors HD-BNC.) (**Note:** Mates to card in odd frame slot.)

RM20-9904-J-HDBNC 20-Slot Frame Rear I/O Module (Standard-Width) (5) 12G/6G/3G/HD/SD/SD-SDI Inputs, (7) 12G/6G/3G/HD/SD/SD-SDI Processed Outputs (one 3G/HD/SDI Output with relay bypass failover), (4) AES I/O, GPIO **MADI Compatible** (All coaxial connectors HD-BNC.) (**Note:** Mates to card in odd frame slot.)

RM20-9904-K-HDBNC 20-Slot Frame Rear I/O Module (Double-Width) (6) 12G/6G/3G/HD/SD/SD-SDI Inputs, (6) 12G/6G/3G/HD/SD/SD-SDI Processed Outputs, (4) AES I/O, COMM/GPI, HDMI 2.0 Output (type A standard connector), (1) HDMI 2.0 Input (mini connector) (when used in conjunction with option -H2S), (2) SFP cage receptacles (when used in conjunction with SFP option), 100/1000 BaseT Ethernet Port **MADI Compatible** (All coaxial connectors HD-BNC.)

Options:

Note: • Options denoted as “+” are **software-based** options which are available on new product when ordered or can be customer field-installed as a software upload upgrade.
• Options or ordering line items denoted as “-” are **hardware-based** options/items. These options are available as factory-installed only on new product, or product returned to Cobalt for factory installation.

+**HDR-TCHCLR-4K** 4K SDR/HDR Conversion Option (This option includes SL-HDR encode, SL-HDR decode, and ITM Intelligent Tone Management.)

+**HDR-TCHCLR** SDR/HDR Conversion Option (This option includes SL-HDR encode, SL-HDR decode, and ITM Intelligent Tone Management.)

+**3DLUT-PRO-4K** 3D LUT 4K Option (compatible with up-mapping to HDR and processing for down-conversions to HD SDR color space)

+**3DLUT-PRO** 3D LUT Option (compatible with processing for down-conversions to HD SDR color space)

+**3D-LUT-BBC** BBC 3DLUT Option (Requires +3D-LUT-PRO or +3D-LUT-PRO-4K option to also be present to support this option)

+**COLOR-4K** 4K Color Correction Option

+**COLOR** Color Correction Option

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ORDERING INFORMATION (cont.)

- +**KEYER-4K** 4K Key/Fill Keyer (Alpha) Option (Additional second option license enables a second independent keyer block.)

- +**KEYER** Key/Fill Keyer (Alpha) Option (Additional second option license enables a second independent keyer block.)

- +**UDX-DANTE-16x16** 16x16 Dante 16 channel input 16 channel output option (Cannot be used simultaneously with +HDR-TCHCLR and +LOGO).

- +**LOGO-4K** 4K Logo Insertion Option

- +**LOGO** Logo Insertion Option

- +**LTC** Audio LTC I/O Option

- H2S** Adds daughter card supporting externally-accessible HDMI input port; orderable as new option. **Note:** To support HDMI input option -H2S, this option is required in addition to card fitted with rear module (such as RM20-9904-B-HDBNC) that allows access to the daughter card-located HDMI input connector.

- UDX-SFP-MSA** Adds daughter card supporting externally-accessible dual MSA SFP cage; orderable as new option. **Note:** To support SFP option(s), this option is required in addition to desired specific SFP options below. The SFP modules listed below are available for the 9904-UDX-4K card when also fitted with SFP option -UDX-SFP-MSA.
 - -**UDX-SFP-MSA-2S** is required where **2-slot** ("Standard-Width") rear module (such as RM20-9904-G-HDBNC) is to be fitted with SFP option.
 - -**UDX-SFP-MSA-4S** is required where **4-slot** ("Double-Width") rear module (such as RM20-9904-C-HDBNC, RM20-9904-F-HDBNC, or RM20-9904-K-HDBNC) is to be fitted with SFP option. Rear modules RM20-9904-C-HDBNC, RM20-9904-F-HDBNC, RM20-9904-G-HDBNC, or RM20-9904-K-HDBNC and option -UDX-SFP-MSA-2S or -UDX-SFP-MSA-4S are purchased and available separately.

- SFP-E00E-MSA-12G** 12G/6G/3G/HD/SD-SDI UHD Transceiver (LC female connectors)

- SFP-E0-MSA-12G** 12G/6G/3G/HD/SD-SDI UHD Transmitter (LC female connector)

- SFP-0E-MSA-12G** 12G/6G/3G/HD/SD-SDI UHD Receiver (LC female connector)

- SFP-E00E-MSA** Single-Channel Video Optical Transceiver (LC female connectors)

- SFP-E0-MSA** Single-Channel Video Optical Transmitter (LC female connector)

- SFP-0E-MSA** Single-Channel Video Optical Receiver (LC female connector)

- SFP-IP-SWD-MSA** Software-Defined MSA SFP 2011/2022-6 Encap/De-Encap Host. 10GigE Multi-Mode Optical Interface with Female LC Duplex Connectors. The following I/O purposing software options are available for cards using SFP type -SFP-IP-SWD-MSA (Up to 3 software licenses can be added to the -SFP-IP-SWD-MSA, but only 1 license can be active at a time):
 - +**ADD-SFP-IP-TO-SDI-2022-6** SFP Software License; Single-Channel De-Encapsulator IP-2022-6-to-SDI
 - +**ADD-SFP-IP-TO-SDI-2110** SFP Software License; Single-Channel De-Encapsulator IP-2110-to-SDI
 - +**ADD-SFP-SDI-TO-IP-2022-6** SFP Software License; Single-Channel Encapsulator SDI-to-IP-2022-6
 - +**ADD-SFP-SDI-TO-IP-2110** SFP Software License; Single-Channel Encapsulator SDI-to-IP-2110

- UDX-SFP** Adds daughter card supporting externally-accessible dual SFP cage; orderable as new option. **Note:** To support SFP option(s), this option is required in addition to desired specific SFP options below. The SFP modules listed below are available for the 9904-UDX-4K card when also fitted with SFP option -UDX-SFP.
 - -**UDX-SFP-MSA-4S** daughter card is used with **4-slot** ("Double-Width") rear module (such as RM20-9904-C-HDBNC, RM20-9904-F-HDBNC, or RM20-9904-K-HDBNC). UDX-SFP-MSA is **only** available for use in conjunction with **4-slot** rear modules and daughter card -UDX-SFP-MSA-4S). Rear modules RM20-9904-C-HDBNC, RM20-9904-F-HDBNC, RM20-9904-K-HDBNC and option -UDX-SFP-MSA-4S are available separately.

- SFP-E00E-12G** 12G/6G/3G/HD/SD-SDI UHD Transceiver (LC female connectors)

- SFP-E0-12G** 12G/6G/3G/HD/SD-SDI UHD Transmitter (LC female connector)

- SFP-0E-12G** 12G/6G/3G/HD/SD-SDI UHD Receiver (LC female connector)

- SFP-2E0-12G** 12G/6G/3G/HD/SD-SDI UHD Dual Transmitter (LC female connector)

- SFP-20E-12G** 12G/6G/3G/HD/SD-SDI UHD Dual Receiver (LC female connector)

- SFP-E00E** Single-Channel Video Optical Transceiver (LC female connectors)

- SFP-E0** Single-Channel Video Optical Transmitter (LC female connector)

- SFP-0E** Single-Channel Video Optical Receiver (LC female connector)

- SFP-2E0** Dual-Channel Video Optical Transmitter (LC female connector)

- SFP-20E** Dual-Channel Video Optical Receiver (LC female connector)

9904-UDX-4K • 12G/6G/3G/HD/SD UHD Up/Down/Cross Converter / Frame Sync / Embed/De-Embed Audio Processor**ORDERING INFORMATION (cont.)**

-SFP-IP-SWD Software-Defined EmSFP; 2011/2022-6 Encap/De-Encap Host. 10GigE Multi-Mode Optical Interface with Female LC Duplex Connectors. The following I/O purposing software options are available for cards using SFP type -SPF-IP-SWD (Up to 3 software licenses can be added to the -SFP-IP-SWD, but only 1 license can be active at a time):

- +ADD-SFP-2SDI-TO-IP-2022-6** SFP Software License; Dual-Channel Encapsulator 2SDI-to-IP-2022-6
- +ADD-SFP-2SDI-TO-IP-2110** SFP Software License; Dual-Channel Encapsulator 2SDI-to-IP-2110
- +ADD-SFP-IP-TO-2SDI-2022-6** SFP Software License; Dual-Channel De-Encapsulator IP-2022-6-to-2SDI
- +ADD-SFP-IP-TO-2SDI-2110** SFP Software License; Dual-Channel De-Encapsulator IP-2110-to-2SDI
- +ADD-SFP-IP-TO-SDI-2022-6** SFP Software License; Single-Channel De-Encapsulator IP-2022-6-to-SDI
- +ADD-SFP-IP-TO-SDI-2110** SFP Software License; Single-Channel De-Encapsulator IP-2110-to-SDI
- +ADD-SFP-SDI-TO-IP-2022-6** SFP Software License; Single-Channel Encapsulator SDI-to-IP-2022-6
- +ADD-SFP-SDI-TO-IP-2110** SFP Software License; Single-Channel Encapsulator SDI-to-IP-2110