VMDA-H-6-X Optical/Electrical SMPTE 292M/297M/259M & DVB/ASI
6 Channel Video Media Converters Distribution Amplifier

FEATURES

- Compatible with SMPTE 292M/297M/259M/305M/310M and DVB/ASI standards
- One "ST" single mode optical input (SMPTE 297M)
- One "ST" single mode optical output (SMPTE 297M)
- One 75Ω BNC Electrical Input (SMPTE 292M/259M/ DVB/ASI)
- Six 75Ω BNC Identical Electrical Outputs (SMPTE 292M/259M/DVB/ASI)
- 3 user slectable modes
- Arbitrated electrical and optical inputs (if both present, optical input has priority)
- Error free pathological pattern operation
- Internally calibrated Digital Diagnostics Monitoring Interface (DDMI)
- Status indicating LEDs
- Typical wall plug or 12V battery supply (Mini-XLR)

ORDERING INFORMATION

VMDA - H - 6 - X

TX/RX COMBINATION
2 = 1310nm FP Tx/PIN Rx
2M = 1310nm DFB Tx/PIN Rx
2L = 1310nm DFB Tx/APD Rx
3 = 1550nm DFB Tx/PIN Rx
3L = 1550nm DFB Tx/APD Rx
3-XX* = CWDM Tx/PIN Rx
3L-XX* = CWDM Tx/APD Rx
***where "XX" =** CWDM Wavelengths
47 = 1470nm **55 =** 1550nm
49 = 1490nm **57 =** 1570nm
51 = 1510nm **59 =** 1590nm
53 = 1530nm **61 =** 1610nm

DA OUTPUTS
6 = Six 75Ω Identical Elec. Outputs

PROTOCOL
H = SMPTE 292M/297M/259M/305M/ 310M and DVB/ASI (143Mbps to 1.485Gbps)

STRATOS
optical technologies

APPLICATIONS

- Studio and OB production events
- Any time additional electrical outputs from a fiber feed are required

PRODUCT OVERVIEW

The VMDA-H-6-X is the latest Product offering from the Stratos Video Optic Line. This unique Distribution Amplifier and Media Converter offers the end user the flexibility needed for todays HD/SD Field Production work.

The VMDA-H-6-X is a unique device in that it offers the end-user selectable modes for media conversion and distribution of SMPTE 297M Compatible HD/SD Traffic. Based on 3 efficient configurations, this device accommodates situations most common to production work. *Mode 1* allows for a Fiber Signal input reclocked to Fiber out and Media converted to a distributed 6 Channel Electrical output. *Mode 2* allows an Electrical input to be media converted to Fiber out, while accepting a Fiber input, media converted to a distributed 6 channel Electrical output. *Mode 3* distributes an Electrical input to a 6 channel Electrical output while media converting the signal for Fiber output. All signals are internally reclocked for added signal integrity.

RECOMMENDED OPERATING CONDITIONS

PARAMETER	SYMBOL	MIN	MAX	UNITS	NOTES
Operating Ambient Temperature	Ta	0	+70	ºC	
Supply Voltage	Vcc	+4.5	+16	VDC	Typical wall plug/12V battery -- 16V charging level
Power Dissipation			TBD	W	
Baud Rate	Brate	143	1485	Mbps	

ELECTRICAL INPUT SPECIFICATION:

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	NOTES
Input Signal		SMPTE 259M/292M				
		DVB/ASI				
Input Impedance (Differential)	Zin		75		ohms	Note 1
Return Loss		15			dB	
Propagation Delay				1.5	ns	

Note 1: Equalized for 140m Beldon 1694A @ 1.485Gb/s and 350m Beldon 1694A @ 270Mb/s

VMDA-H-6-2 OPTICAL SPECIFICATIONS (1310nm FP/PIN) 0ºC<Tc<+70ºC

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	NOTES
Link Distance (9.0µm Core Diameter SMF)		10			km	1.485Gbps (note 2)
		15			km	143/177/270/360Mbps (note 2)
TRANSMITTER						
Optical Center Wavelength	λ	1290	1310	1330	nm	Tcase = +25ºC
Spectral Width	$\delta\lambda$			2.5	nm	RMS
Optical Transmit Power	Popt	-9		-3	dBm	Average @ 1310nm
Extinction Ratio	ER	9			dBm	P1/P0
Relative Intensity Noise	RIN			-117	dB/Hz	
Total Jitter [Pk - Pk]	TJ		120	135	ps	Measured with Color Bar Test Signal @1.485Gbps
				740	ps	Measured with Color Bar Test Signal @143/177/270/360MBaud
Output Rise/Fall Time	t_R, t_F		80	120	ps	20%-80%; Measured unfiltered @143/177/270/360/1485MBaud
			240	270	ns	
RECEIVER						
Optical Input Wavelength	λ	1270		1610	nm	
Optical Input Power	Pr	-20		-1	dBm	Note 3
Optical Return Loss	ORL	29			dB	
RX_LOS --- Asserted	Pa	-29			dBm	No Signal Pins Designated for RX_LOS. Assert/Deassert Levels can be Monitored via Digital Diagnostics Interface.
RX_LOS --- Deasserted	Pd			-20	dBm	
RX_LOS --- Hysteresis	Pa - Pd		1.5	5	dB	

Note 2 The specified minimum link distances are based on IEEE link budget models. Assumes minimum transmitter output power and extinction ratio and worst case receiver sensivitity with color bar test signal at 140/177/270/360/1485Mbps. The minimum link distances will be reduced with SDI test matrix. Please contact factory to discuss specific applications.

Note 3: Minimum receiver input power is defined for line BER < 1 x 10^{-10} running PRBS 2^{23} - 1 at 140/177/270/360/1485Mbps

VMDA-H-6-2M OPTICAL SPECIFICATIONS (1310nm DFB/PIN) 0ºC<Tc<+70ºC

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	NOTES
Link Distance (9.0µm Core Diameter SMF)		30			km	1.485Gbps (note 2)
		35			km	143/177/270/360Mbps (note 2)
TRANSMITTER						
Optical Center Wavelength	λ	1300	1310	1320	nm	Tcase = +25ºC
		1280		1335		Tcase = 0ºC<Tc<+70ºC
Side Mode Suppression Ratio	SMSR	30	40		dB	
Optical Transmit Power	Popt	0		+3	dBm	Average @ 1310nm
Extinction Ratio	ER	9			dBm	P1/P0
Relative Intensity Noise	RIN			-117	dB/Hz	
Total Jitter [Pk - Pk]	TJ		120	135	ps	Measured with Color Bar Test Signal @1.485Gbps
				740	ps	Measured with Color Bar Test Signal @143/177/270/360MBaud
Output Rise Time	t_R		80	120	ps	20%-80%; Measured unfiltered @143/177/270/360/1485MBaud
Output Fall Time	t_F		240	270	ps	
RECEIVER						
Optical Input Wavelength	λ	1270		1610	nm	
Optical Input Power	Pr	-20		-1	dBm	Note 3
Optical Return Loss	ORL	29			dB	
RX_LOS --- Asserted	Pa	-29			dBm	No Signal Pins Designated for RX_LOS. Assert/Deassert Levels can be Monitored via Digital Diagnostics Interface.
RX_LOS --- Deasserted	Pd			-20	dBm	
RX_LOS --- Hysteresis	Pa - Pd		1.5	5	dB	

VMDA-H-6-2L OPTICAL SPECIFICATIONS (1310nm DFB/APD) 0ºC<Tc<+70ºC

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	NOTES
Link Distance (9.0µm Core Diameter SMF)		50			km	1.485Gbps (note 2)
		55			km	143/177/270/360Mbps (note 2)
TRANSMITTER						
Optical Center Wavelength	λ	1300	1310	1320	nm	Tcase = +25ºC
		1280		1335		Tcase = 0ºC<Tc<+70ºC
Side Mode Suppression Ratio	SMSR	30	40		dB	
Optical Transmit Power	Popt	0		+3	dBm	Average @ 1310nm
Extinction Ratio	ER	9			dBm	P1/P0
Relative Intensity Noise	RIN			-117	dB/Hz	
Total Jitter [Pk - Pk]	TJ		120	135	ps	Measured with Color Bar Test Signal @1.485GBaud.
				740	ps	Measured with Color Bar Test Signal @143/177/270/360MBaud.
Output Rise Time	tR		80	120	ps	20%-80%; Measured unfiltered @143/177/270/360/1485MBaud
Output Fall Time	tF		240	270	ns	
RECEIVER						
Optical Input Wavelength	I	1270		1620	nm	
Optical Input Power	Pr	-30	-32	-9	dBm	Typical value @Tc=+25ºC; Note 3
Optical Return Loss	ORL	29			dB	
RX_LOS --- Asserted	Pa	-36			dBm	No Signal Pins Designated for RX_LOS. Assert/Deassert Levels can be Monitored via Digital Diagnostics Interface.
RX_LOS -- De-sserted				-29	dBm	
RX_LOS --- Hysteresis	Pa - Pd		1.5	5	dB	

VMDA-H-6-3 OPTICAL SPECIFICATIONS (1550nm DFB/PIN) 0ºC<Tc<+70ºC

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	NOTES
Link Distance (9.0µm Core Diameter SMF)		55			km	BER<1E-10 @ 360/1485Mbps (Note 2)
		65			km	BER<1E-10 @ 143/177/270Mbps (Note 2)
TRANSMITTER						
Optical Center Wavelength	λ	1540	1550	1565	nm	@ Tc=+25ºC
	λ	1480		1580	nm	@ 0ºC<Tc<+70ºC
Spectral Width	SMSR	30	40		dB	
Optical Transmit Power	Popt	0		+3	dBm	Average power coupled into SMF
Extinction Ratio	ER	9			dBm	P1/P0
Relative Intensity Noise	RIN			-117	dB/Hz	
Total Jitter [Pk - Pk]	TJ			135	ps	Measured with Color Bar Test Signal @1.485Gbps
				740	ps	Measured with Color Bar Test Signal @143/177/270/360MBaud
Output Rise/Fall Time	t_R, t_F		80	120	ps	20%-80%; Measured unfiltered @1.485GBaud
			240	270	ns	20%-80%; Measured unfiltered @143/177/270/360MBaud
RECEIVER						
Optical Input Wavelength	λ	1270		1620	nm	
Optical Input Power	Pr	-20		-1	dBm	Note 3
Optical Return Loss	ORL	29			dB	
RX_LOS --- Asserted	Pa	-29			dBm	No Signal Pins Designated for RX_LOS. Assert/Deassert Levels can be Monitored via Digital Diagnostics Interface.
RX_LOS -- De-sserted				-20	dBm	
RX_LOS --- Hysteresis	Pa - Pd		1.5	5	dB	

VMDA-H-6-3L OPTICAL SPECIFICATIONS (1550nm DFB/APD) 0ºC<Tc<+70ºC

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	NOTES
Link Distance (9.0µm Core Diameter SMF)		75			km	@ 360/1485Mbps (Note 2)
		100			km	@ 143/177/270Mbps (Note 2)
TRANSMITTER						
Optical Center Wavelength	λ	1540	1550	1565	nm	@ Tc=+25ºC
	λ	1480		1580	nm	@ 0ºC<Tc<+70ºC
Spectral Width	SMSR	30	40		dB	
Optical Transmit Power	Popt	0		+3	dBm	Average power coupled into SMF
Extinction Ratio	ER	9			dBm	P1/P0
Relative Intensity Noise	RIN			-117	dB/Hz	
Total Jitter [Pk - Pk]	TJ			135	ps	Measured with Color Bar Test Signal @1.485Gbps
				740	ps	Measured with Color Bar Test Signal @143/177/270/360MBaud
Output Rise/Fall Time	t_R, t_F		80	120	ps	20%-80%; Measured unfiltered @1.485GBaud
			240	270	ns	20%-80%; Measured unfiltered @143/177/270/360MBaud
RECEIVER						
Optical Input Wavelength	λ	1270		1620	nm	
Optical Input Power	Pr	-30	-32	-9	dBm	Typical value @ Tc=+25ºC; Note 3
Optical Return Loss	ORL	29			dB	
RX_LOS --- Asserted	Pa	-36			dBm	No Signal Pins Designated for RX_LOS. Assert/Deassert Levels can be Monitored via Digital Diagnostics Interface.
RX_LOS -- De-sserted				-29	dBm	
RX_LOS --- Hysteresis	Pa - Pd		1.5	5	dB	

VMDA-H-6-3-XX OPTICAL SPECIFICATIONS (CWDM/PIN) 0ºC<Tc<+70ºC

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	NOTES
Link Distance (9.0µm Core Diameter SMF)		55			km	1.485Gbps (note 2)
		65			km	143/177/270/360Mbps (note 2)
TRANSMITTER						
Optical Center Wavelength	λ	X-2		X+2	nm	X = Center Wavelength @ Tc = +25ºC
	λ	X-5		X+7	nm	X = Center Wavelength @ 0ºC<Tc<+70ºC
Side Mode Suppression Mode	SMSR	30	40		dB	
Optical Transmit Power	Popt	0		+3	dBm	Average power coupled into SMF
Extinction Ratio	ER	9			dBm	P1/P0
Relative Intensity Noise	RIN			-117	dB/Hz	
Total Jitter [Pk - Pk]	TJ		120	135	ps	Measured with Color Bar Test Signal @1.485Gbps
				740	ps	Measured with Color Bar Test Signal @143/177/270/360MBaud
Output Rise/Fall Time	tR, tF		80	120	ps	20%-80%; Measured unfiltered
			240	270	ns	@143/177/270/360/1485MBaud
RECEIVER						
Optical Input Wavelength	λ	1270		1620	nm	
Optical Input Power	Pr	-20		-1	dBm	Note 3
Optical Return Loss	ORL	29			dB	
RX_LOS --- Asserted	Pa	-29			dBm	No Signal Pins Designated for RX_LOS.
RX_LOS --- Deasserted	Pd			-20	dBm	Assert/Deassert Levels can be Monitored via
RX_LOS --- Hysteresis	Pa - Pd		1.5	5	dB	Digital Diagnostics Interface.

VMDA-H-6-3L-XX OPTICAL SPECIFICATIONS (CWDM/APD) 0ºC<Tc<+70ºC

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	NOTES
Link Distance (9.0µm Core Diameter SMF)		75			km	1.485Gbps (Note 2)
		100			km	143/177/270/360Mbps (note 2)
TRANSMITTER						
Optical Center Wavelength	λ	X-2		X+2	nm	X = Center Wavelength @ Tc = +25ºC
	λ	X-5		X+7	nm	X = Center Wavelength @ 0ºC<Tc<+70ºC
Side Mode Suppression Mode	SMSR	30	40		dB	
Optical Transmit Power	Popt	0		+3	dBm	Average power coupled into SMF
Extinction Ratio	ER	9			dBm	P1/P0
Relative Intensity Noise	RIN			-117	dB/Hz	
Total Jitter [Pk - Pk]	TJ		120	135	ps	Measured with Color Bar Test Signal @1.485Gbps
				740	ps	Measured with Color Bar Test Signal @143/177/270/360MBaud
Output Rise/Fall Time	tR, tF		80	120	ps	20%-80%; Measured unfiltered
			240	270	ns	@143/177/270/360/1485MBaud
RECEIVER						
Optical Input Wavelength	λ	1270		1620	nm	
Optical Input Power	Pr	-30	-32	-9	dBm	Typical value @ Tc=+25ºC; Note 3
Optical Return Loss	ORL	29			dB	
RX_LOS --- Asserted	Pa	-29			dBm	No Signal Pins Designated for RX_LOS.
RX_LOS --- Deasserted	Pd			-20	dBm	Assert/Deassert Levels can be Monitored via
RX_LOS --- Hysteresis	Pa - Pd		1.5	5	dB	Digital Diagnostics Interface.

User Friendly Intuitive Display

The VMDA-H-6-X top cover display enables the user to quickly Configure & Identify mode of operation. With Signal present LED's and under lit signal flow arrows, setup is easy and can be identified at a glance.

MODE OPERATION INSTRUCTION

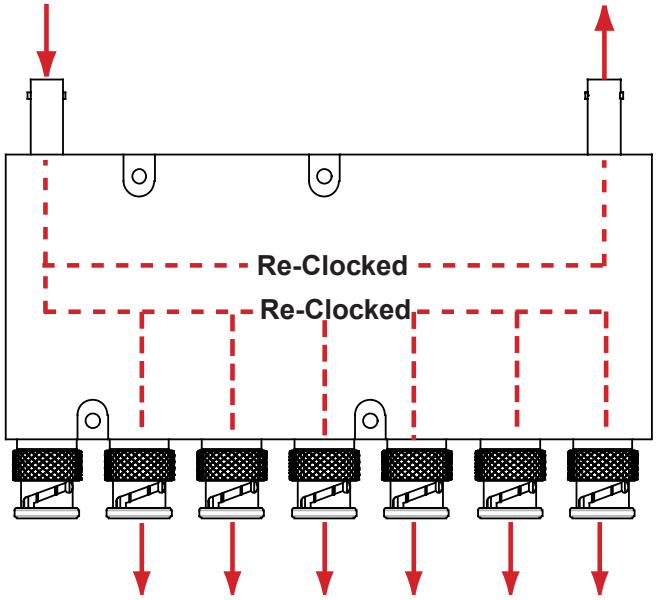
1) To Enter Mode Select, press and hold *"Mode"* button for 4 seconds. Panel Arrows will flash, indicating current Video & Fiber traffic pattern.

2) Momentarily press *"Mode"* Button to select 1 of 3 available traffic patterns. Arrows report associated Video & Fiber traffic pattern.

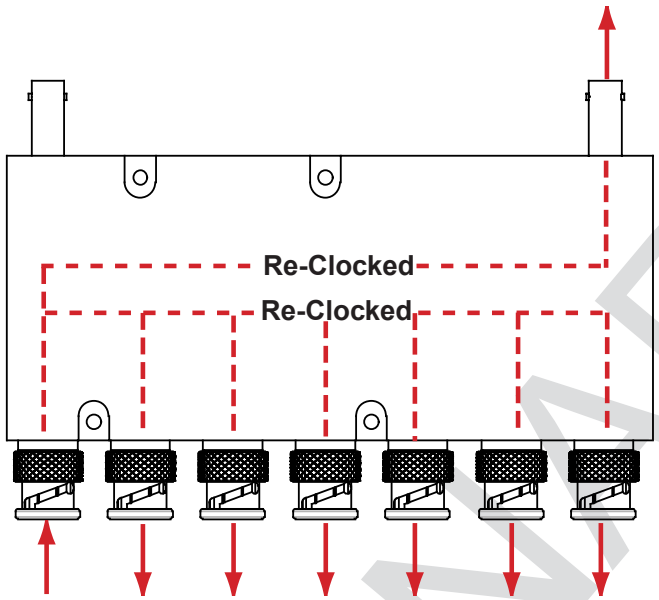
3) When you have arrived at the user mode of choice, the unit will time out in 4 seconds and lock into the chosen mode.

4) After Mode has been selected, Indicator Arrows return to a *"Status"* mode of operation. *"Green"*- Signal Present, *"Red"* Signal not detected or Laser Faulty, *"Amber"* Input/Output not in use, *"Flashing Green"* non-standard signal detected or clocking disabled

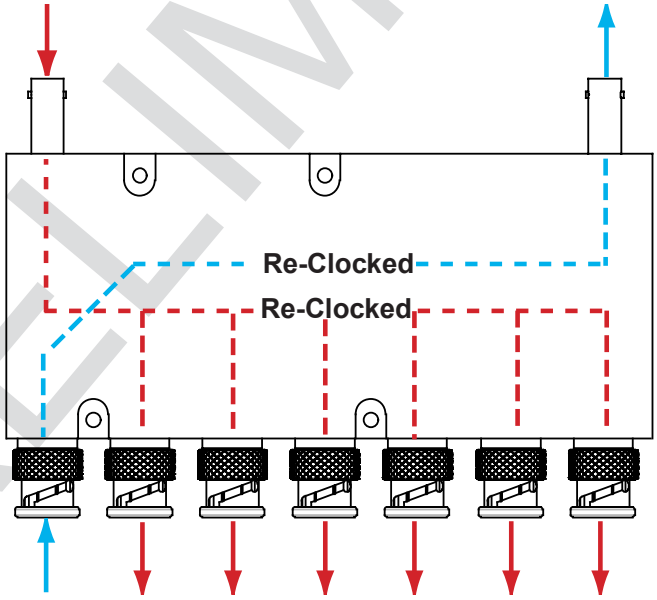
5) User Note: The VMDA-H-6-X incorporates nonvolatile memory. As long as the unit does not loose power before a mode has been selected, unit will retain the last chosen *"Mode"* setting.



Mode 1: Optical repeater function (O-O) with DA outputs

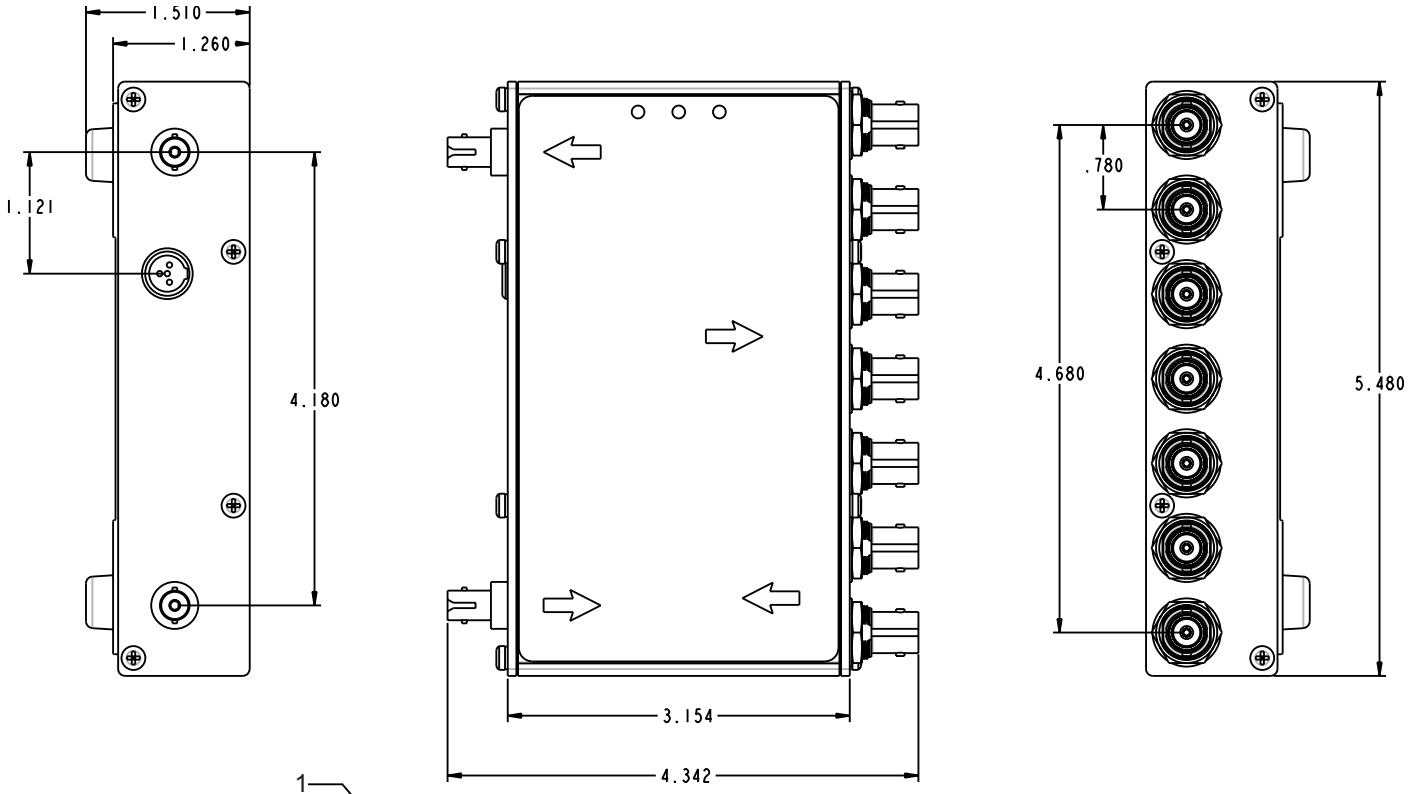


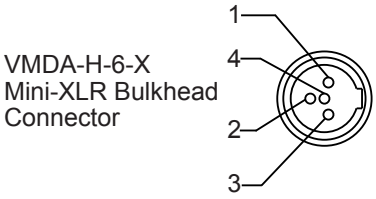
Mode 2: Independent optical output and DA outputs from electrical input



Mode 3: Independent Optical Output from Electrical Input and DA outputs from Optical input

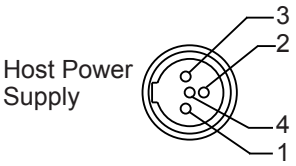
MECHANICAL DIMENSION DRAWING





VMDA-H-6-X
Mini-XLR Bulkhead
Connector

PIN 1 = Ground
PIN 2 = SDA
PIN 3 = SCL
PIN 4 = Vcc



Host Power
Supply

Looking into Connector

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