



050-207

Data Sheet

4 Channel SMPTE Copper to Fiber Media Converter 28VDC

REV	DESCRIPTION	DATE	APPROVED
3	Preliminary	1/7/2016	MF

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050-207
4-Channel SMPTE Copper to Fiber Media Converter
HD-SDI and 3G-SDI



4 Channel SMPTE Copper to Fiber Media Converter



The Glenair 050-207 is a 4-Channel SMPTE Copper to Fiber Optic Media Converter which extends the reach between the camera and the video display or data recorder. This media converter is configured as either transmitter, converting electrical SMPTE signals to fiber, or as a receiver, converting fiber optic signals into the electrical SMPTE signals. The media converter incorporates a power supply which has been designed to accept a wide DC input voltage range, 18V to 36V. The 050-207 is designed for harsh environments and incorporates electronics in an environmentally sealed enclosure that incorporates two (2) D38999 connectors to support Electrical connections and Glenair High Density (GHD) connector for the fiber optic interconnect. Signal I/O and BIT functionality is supplied through one D38999 connector and power is provided through a separate D38999 connector. The Fiber Optics pass through Glenair GHD connector.

KEY FEATURES/BENEFITS

- 850nm Lasers for MMF up to 500m links
- GaAs PIN PD for MMF up to 500m Links
- SMPTE EG 34:2004 Compliant to Pathological Conditions CASE 1, CASE 2 and CASE 3.
- SMPTE ST 297:2006 (3G-SDI & HD-SDI)
- SMPTE 424 Compliant (3G-SDI)
- SMPTE 292 Compliant (HD-SDI)
- Electronic Circuitry
- Wide Input Voltage Range: 18-36V
- IP67 in mated condition

- D38999 with Quadrax and #22 Pin contacts for Signal and BIT I/O
- D38999 with #22 Pin contacts for Power
- GHD Fiber Optic connector

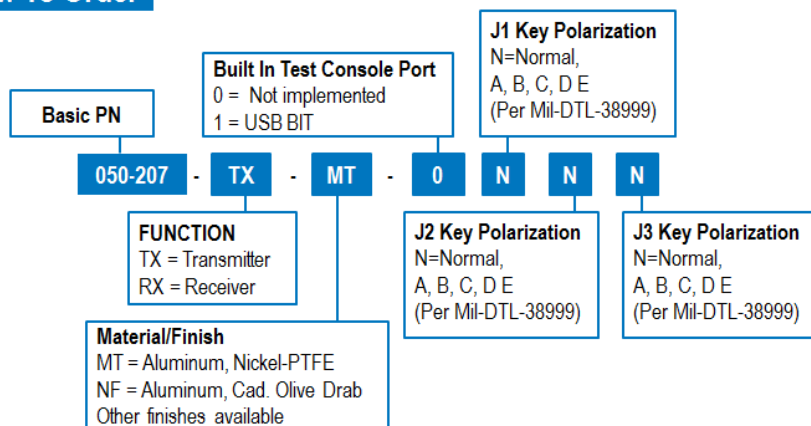
OPTIONAL FEATURES

- Built In Test Console Port accessible via USB2.0

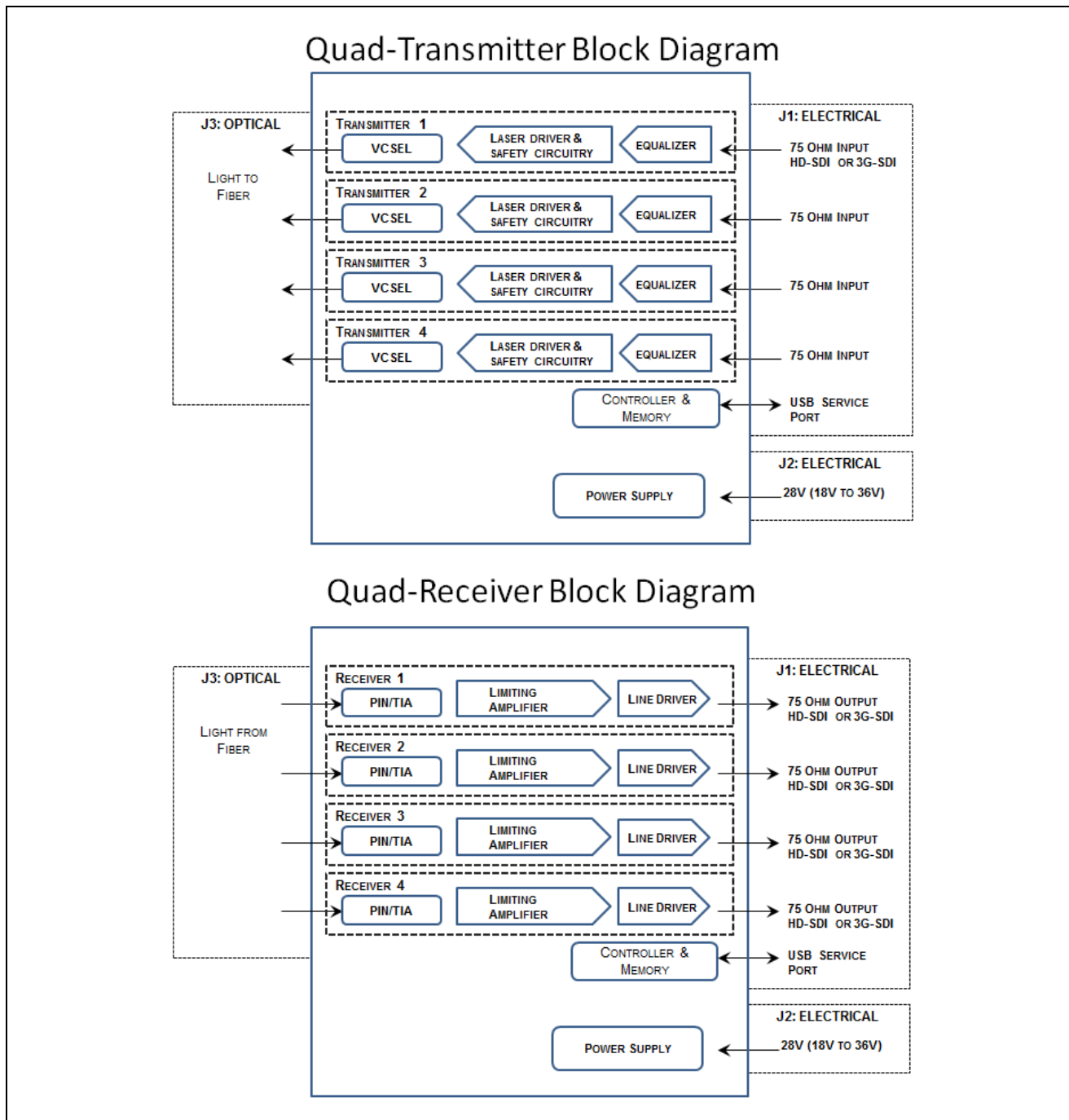
APPLICATIONS

- Harsh Environment such as: Airborne, Tactical, Railway, Industrial, Oil and Gas and Shipboard applications

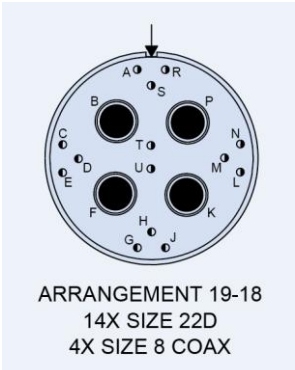
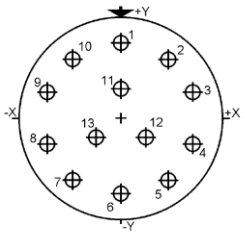
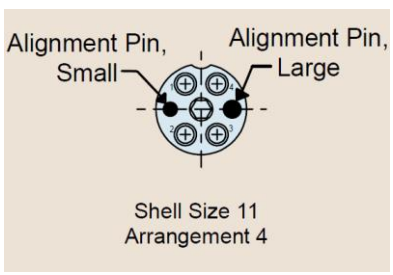
How To Order



Functional Block Diagram



Connectors

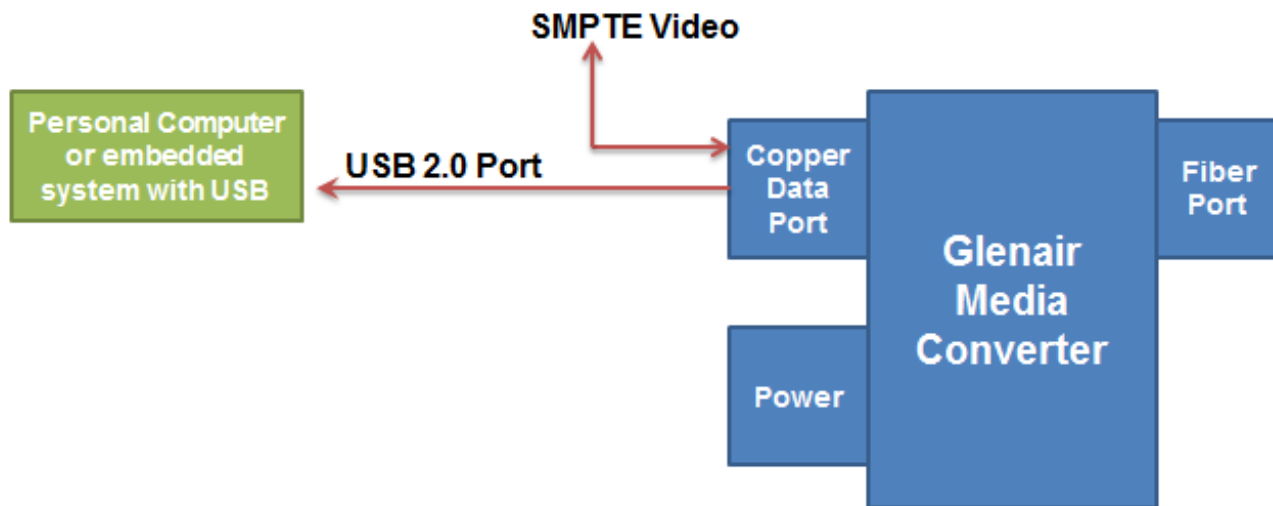
NAME	Insert Arrangement	Function	Media Converter	Mating PLUG Connector
J1	 ARRANGEMENT 19-18 14X SIZE 22D 4X SIZE 8 COAX	Electrical Signal, Power, and Built In Test (BIT)	D38999 Series III type, 19C-18 14X SIZE 22D Pins 4X SIZE 8 Pins (AS39029/119)	Generic PN D38999/26#F18SN type Glenair PN 257-606-G6##19-18SN Coax Socket Contacts 852-083-01 Socket Contacts M39029/56-348
J2		Power	D38999 Series III type, 11-35 13X SIZE 22D Pins	Generic PN D38999/26#B35SN Glenair PN 233-105-G6##11-35SN Socket Contacts M39029/56-348
J3	 Alignment Pin, Small Alignment Pin, Large Shell Size 11 Arrangement 4	Fiber Optic Signal	GHD Shell Size 11 Arrangement 4 <u>CONTACTS</u> 180-056	Glenair PN 180-122-#06-11-4N <u>CONTACTS:</u> 180-051-1260C

Note: # = Environmental Class (Material/Finish)

Built In Test (BIT) Functionality – USB 2.0

This media converter can be offered with built in test functionality accessible through a Console Port via Universal Serial Bus 2.0 (USB 2.0)

Functional block diagram for this is shown below.



Universal Serial Bus (2.0) BIT

- Presents itself as a "Virtual" Communications Port
- Compatible with Microsoft Windows, Mac, and Linux OS's.
- On the computer side, open any terminal application (PuTTY, HyperTERM, TeraTERM, etc.) to communicate with the media converter hardware.
- Simple "Human Readable" status messages.

ALARM STATUS MESSAGES

Unit Identification Information

- Unit Serial Number
- Unit Product Code

Fiber Side Alarm/Status

- Temperature
- Transmitter TX Fault
- Transmitter Disable Status
- Receiver loss of signal (LOS) or signal Detect (SD) Status

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HD-SDI and 3G-SDI



TYPICAL CONSOLE PORT WINDOW (PuTTY)

A screenshot of a PuTTY terminal window titled 'COM1 - PuTTY'. The window has a black background with white text. The text is organized into sections separated by lines of asterisks. The first section is the header 'Glenair Media Converter Service Port'. The second section is 'Unit Identification Information', which lists: Product Code: 050-207, Unit Serial Number: 1234, Firmware Revision: 1.2.0, and Product Description: SMPTE Copper to Fiber Media Converter - Transmitter. The third section is 'Unit Status', which lists: Temperature: 45 degrees C, Power Supply Status: Good, and four lines of 'Transmitter FO Fault, TX_Channel 1: False' through 'TX_Channel 4: False'.

```
COM1 - PuTTY
*****
Glenair                                     *
Media Converter Service Port              *
*****
Unit Identification Information
*****
Product Code: 050-207
Unit Serial Number: 1234
Firmware Revision: 1.2.0
Product Description: SMPTE Copper to Fiber Media Converter -
Transmitter

*****
Unit Status
*****
Temperature: 45 degrees C
Power Supply Status:  Good
Transmitter FO Fault, TX_Channel 1:  False
Transmitter FO Fault, TX_Channel 2:  False
Transmitter FO Fault, TX_Channel 3:  False
Transmitter FO Fault, TX_Channel 4:  False
```



Ratings and Specifications –

OPERATING CONDITIONS

Parameter	Symbol	Min	Typ	Max	Units	Notes
Operating Temperature	T_{op}	-40		+85	°C	
Supply Voltage	V_{cc}	18	28	36	V	
Supply Current	I_{cc}		100	150	mA	

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Min	Typ	Max	Units	Notes
Storage Temperature	T_s	-55		+100	°C	
Supply Voltage	V_{cc}	-0.4		40	V	$V_{cc}T$ may not differ by more than 0.5V

OPERATING CONDITIONS

Parameter	Symbol	Min	Typ	Max	Units	Notes
Operating Temperature	T_{op}	-40		+85	°C	
Supply Voltage	V_{cc}	18	28	36	V	
Supply Current	I_{cc}		100	150	mA	

ELECTRO-OPTICAL CHARACTERISTICS – TRANSMITTER

Parameter	Symbol	Min	Typ	Max	Units	Notes
Optical Output Power	P_{OUT}	-8	-5	-3	dBm	850nm VCSEL, 1.5Gbps & 2.97Gbps
Extinction Ratio	E_r	8	10		dB	1.5Gbps & 2.97Gbps
Optical Wavelength	λ_{OUT}	830	850	860	nm	
Spectral Width, rms	$\Delta\lambda$			0.85	nm	
Relative Intensity Noise	RIN			-117	dB/Hz	
Timing Jitter	T_J			1	UI	SMPTE 292, 1.5 Gbps, Color bar
Alignment Jitter	A_J			0.2	UI	SMPTE 292, 1.5 Gbps, Color bar
Timing Jitter	T_J			2	UI	SMPTE 424, 2.97Gbps, Color bar
Alignment Jitter	A_J			0.2	UI	SMPTE 424, 2.97Gbps, Color bar
Transmitter Differential Input Impedance	Z_{in}		100		Ohms	AC coupled Internally
Differential Input Voltage	V_{in_d}	250		2200	mV _{p-p}	CML, 100 ohm

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4-Channel SMPTE Copper to Fiber Media Converter
HD-SDI and 3G-SDI



Ratings and Specifications - (continued)

ELECTRO-OPTICAL CHARACTERISTICS - RECEIVER

Parameter	Symbol	Min	Typ	Max	Units	Notes
050-332-1						
Sensitivity, BER 10^{-12} , PRBS 2^7-1 , Er 10 dB	P_{IN}		-22	-20	dBm	PIN PD @ 1.485 Gbps
050-332-2						
Sensitivity, BER 10^{-12} , PRBS 2^7-1 , Er 10 dB	P_{IN}		--19	-17	dBm	PIN PD @ 2.970 Gbps
Overload, BER 10^{-12} , PRBS 2^7-1	P_{IN}	-1			dBm	@1.485 Gbps or @ 2.970 Gbps
Optical Wavelength	λ_{IN}	830		860	nm	
Receiver Differential Output Impedance	R_{out}		100		Ohms	AC coupled internally
Differential Output Voltage Swing	V_{out_d}	600		1200	mV	CML, 100 ohm
LOS Assert Level	LOS		-23	-21	dBm	@1.485 Gbps or @ 2.970 Gbps
LOS Hysteresis	LOS_{HYS}	1.5	2.3		dB	@1.485 Gbps or @ 2.970 Gbps



Ratings and Specifications - (continued)

COMPLIANCE SPECIFICATIONS

CHARACTERISTIC	Standard	Condition	Notes
Mechanical Shock	MIL-STD-810	40g	6-9rms
Mechanical Vibration	MIL-STD-810	30g rms	
ESD	MIL-STD-883	Class II	2200V HBM
Conducted Emissions, Power Leads, 30 Hz to 10 kHz	MIL-STD-461F	CE101	
Conducted Emissions, Power Leads, 10 kHz to 10 MHz	MIL-STD-461F	CE102	
Conducted Susceptibility, Power Leads, 30 Hz to 150KHz	MIL-STD-461F	CS101	
Conducted Susceptibility, Transients, Power Leads	MIL-STD-461F	CS106	
Conducted Susceptibility, Structure Current, 60 Hz to 100 kHz	MIL-STD-461F	CS109	
Conducted Susceptibility, Bulk Cable Injection, 10 kHz to 200 MHz	MIL-STD-461F	CS114	
Radiated Susceptibility, Magnetic Field, 30 Hz to 100 kHz	MIL-STD-461F	RS101	
Radiated Susceptibility, Electric Field, 2 MHz to 18 GHz	MIL-STD-461F	RS103	
Radiated Emissions, Magnetic Field, 30 Hz to 100 kHz	MIL-STD-461F	RE101	
Radiated Emissions, Electric Field, 10 kHz to 18 GHz	MIL-STD-461F	RE102	
Mating Durability	MIL-DTL-38999/20	500 Cycles	
Flame Resistance	EIA364-104		30 seconds
Damp Heat	EIA364-321		240 hours
Aircraft Electrical Power Characteristics	MIL-STD-704F		28V DC Systems
Eye Safety	CDRH and IEC-825	Class 1 Laser Product	

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4-Channel SMPTE Copper to Fiber Media Converter
HD-SDI and 3G-SDI



Ratings and Specifications - (continued)

Material/Finish

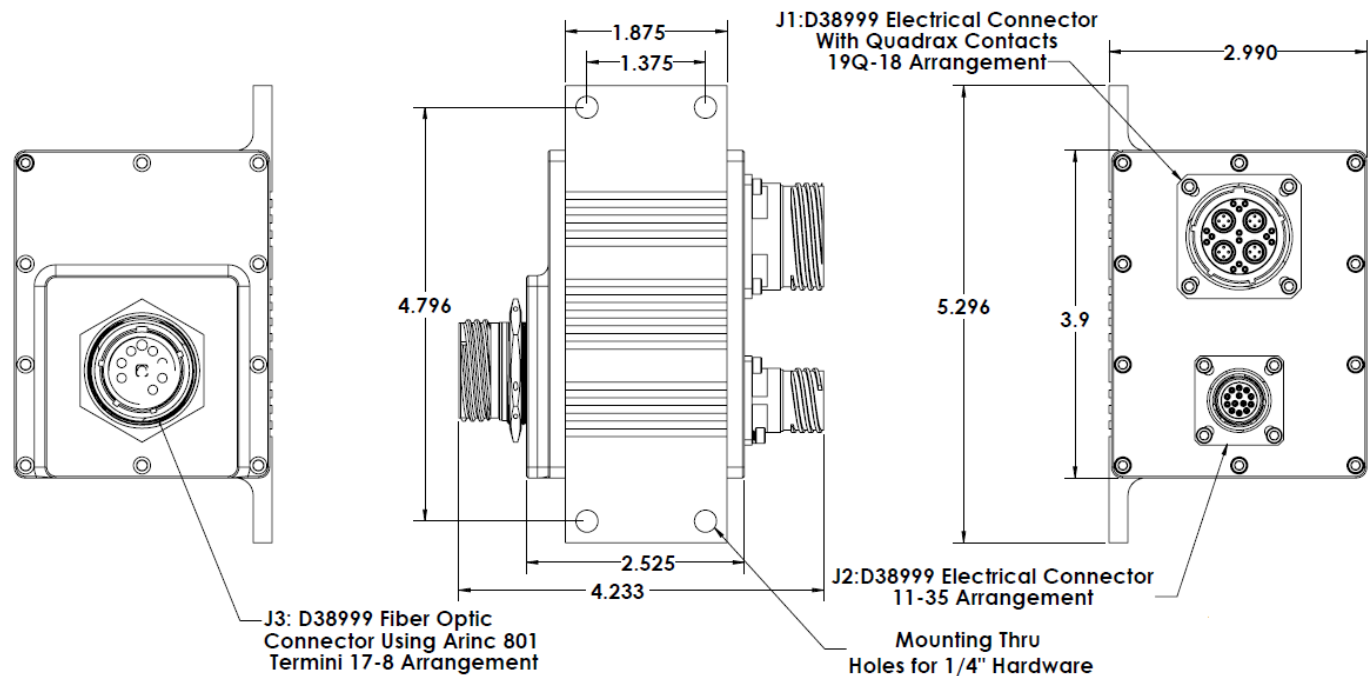
Item	Material/Finish
Housing & Connector Shell	Aluminum
Plating Finish: M	Nickel
Plating Finish: MT	Nickel PTFE
Plating Finish: NF	Olive Drab Cadmium
Contacts	Copper alloy, 50 µInch gold plated
D38999 Inserts	Thermoplastics
Interfacial Seals, 38999 only	Elastomer, Fluorosilicon
Optical Ferrules & Sleeves	Zirconia, Ceramic
Insulators	Liquid crystal polymer (LCP)
Contact retention clip	Beryllium copper alloy
Seal, O-rings	Fluorosilicone rubber
Seal	Silicone elastomer
Spring	Nickel-plated beryllium copper
PC tail contacts	Copper alloy/gold plated
PCB flex	FR4 & Polyimide
Encapsulant	HYSOL EE4215
Solder type	RoHS compliant Sn95/Sb5 (232°C melting temp) & RoHS compliant Sn96.5/Ag3.0/Cu0.5 (217° melting)

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4-Channel SMPTE Copper to Fiber Media Converter
HD-SDI and 3G-SDI



OUTLINE DRAWING & PANEL CUT OUT

Outline Drawing



Dimensions inches
x.x ± 0.1 "
x.xx ± 0.03 "
x.xxx ± 0.0015 "

Please contact Factory for other configurations

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4-Channel SMPTE Copper to Fiber Media Converter HD-SDI and 3G-SDI

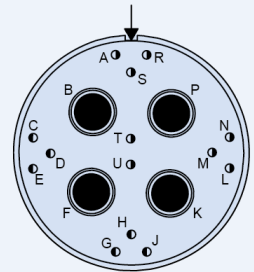


Input/Output Definition

J1 – ELECTRICAL SIGNAL CONNECTOR

J1- Transmitter Configuration

PIN	NAME	DESCRIPTION	I/O	*
A	NC			
B	Channel 1	SMPTE HD-SDI or 3G-SDI	Input	
C	USB Service Port, D+	USB Data Positive	Input / Output	
D	USB Service Port, D-	USB Data Negative	Input/Output	
E	NC			
F	Channel 2	SMPTE HD-SDI or 3G-SDI	Input	
G	NC			
H	USB Service Port, Ground	USB, Ground	---	
J	Reset_F		Input	
K	Channel 3	SMPTE HD-SDI or 3G-SDI	Input	
L, M, N	NC			
P	Channel 4	SMPTE HD-SDI or 3G-SDI	Input	
R, S	NC			
T	Ground	Signal Ground	---	
U	USB Service Port, VBUS	5V	Input	

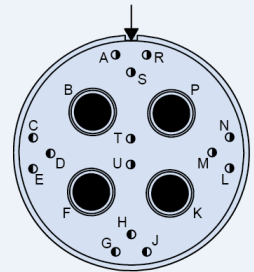


ARRANGEMENT 19-18
14X SIZE 22D
4X SIZE 8 COAX

38999 Series III
Mating face for PIN shown

J1- Receiver Configuration

PIN	NAME	DESCRIPTION	I/O	*
A	NC			
B	Channel 1	SMPTE HD-SDI or 3G-SDI	Input	
C	USB Service Port, D+	USB Data Positive	Input / Output	
D	USB Service Port, D-	USB Data Negative	Input/Output	
E	NC			
F	Channel 2	SMPTE HD-SDI or 3G-SDI	Output	
G	NC			
H	USB Service Port, Ground	USB, Ground	---	
J	Reset_F		Input	
K	Channel 3	SMPTE HD-SDI or 3G-SDI	Output	
L, M, N	NC			
P	Channel 4	SMPTE HD-SDI or 3G-SDI	Output	
R, S	NC			
T	Ground	Signal Ground	---	
U	USB Service Port, VBUS	5V	Input	



ARRANGEMENT 19-18
14X SIZE 22D
4X SIZE 8 COAX

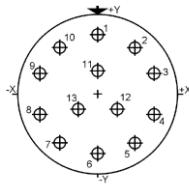
38999 Series III
Mating face for PIN shown

Input/Output Definition (continued)

J2 – POWER CONNECTOR

J2 PIN FUNCTION ASSIGNMENTS

PIN	NAME	DESCRIPTION	NOTES
1-10	No Connect		
12	No Connect		
11	Vcc	18-36VDC	
13	VDC Return		

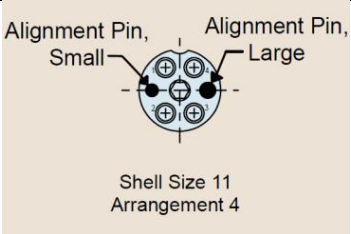


38999 Series
III, 11-35
Mating face for
PIN shown
11X SIZE 22D

J3 – OPTICAL CONNECTOR

J3- Transmitter Configuration

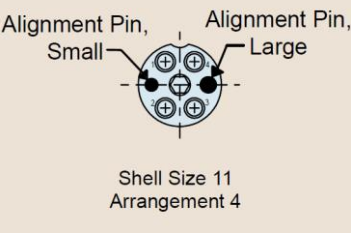
PIN	NAME	DESCRIPTION	INPUT / OUTPUT
1	TX1	Channel 1 SMPTE HD-SDI or 3GSDI	Input
2	TX2	Channel 2 SMPTE HD-SDI or 3GSDI	Input
3	TX3	Channel 3 SMPTE HD-SDI or 3GSDI	Input
4	TX4	Channel 4 SMPTE HD-SDI or 3GSDI	Input



GHD

J3- Receiver Configuration

PIN	NAME	DESCRIPTION	INPUT / OUTPUT
1	RX1	Channel 1 SMPTE HD-SDI or 3GSDI	Output
2	RX2	Channel 2 SMPTE HD-SDI or 3GSDI	Output
3	RX3	Channel 3 SMPTE HD-SDI or 3GSDI	Output
4	RX4	Channel 4 SMPTE HD-SDI or 3GSDI	Output



GHD