



050-207

## Data Sheet

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# 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

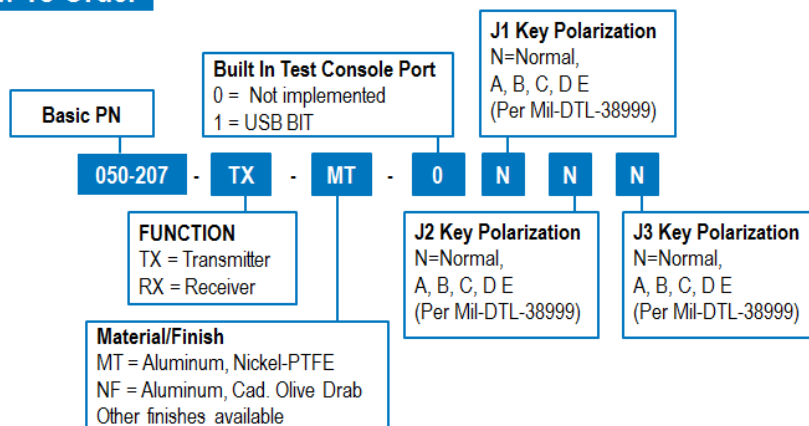
### OPTIONAL FEATURES

- Built In Test Console Port accessible via USB2.0

### APPLICATIONS

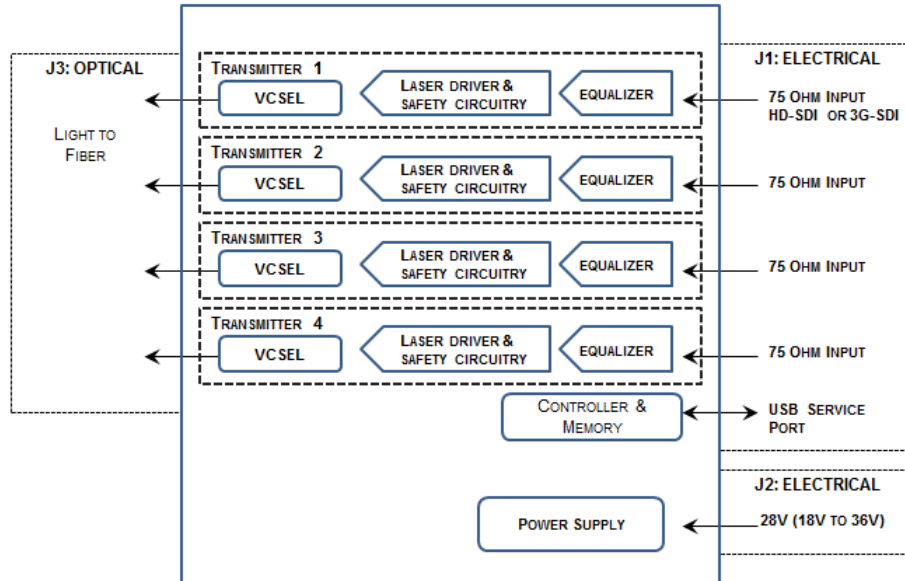
- Harsh Environment such as: Airborne, Tactical, Railway, Industrial, Oil and Gas and Shipboard applications

### How To Order

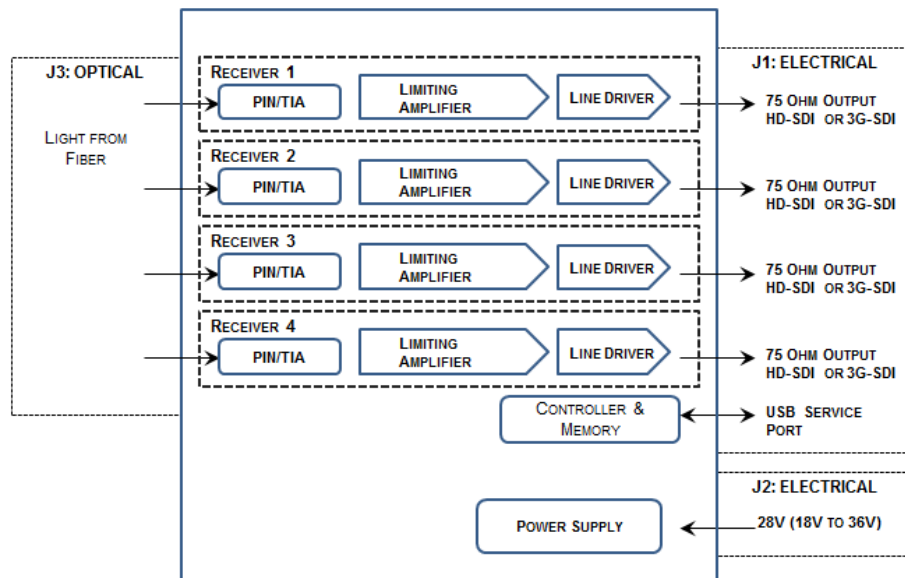


## Functional Block Diagram

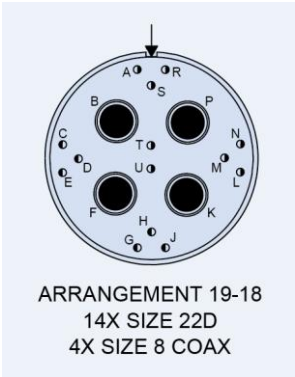
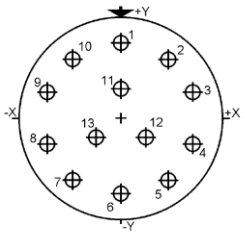
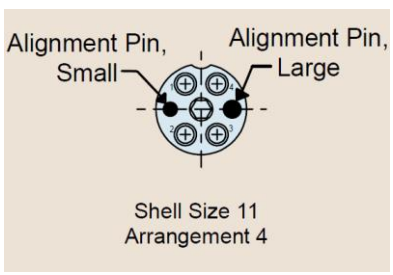
### Quad-Transmitter Block Diagram



### Quad-Receiver Block Diagram



## Connectors

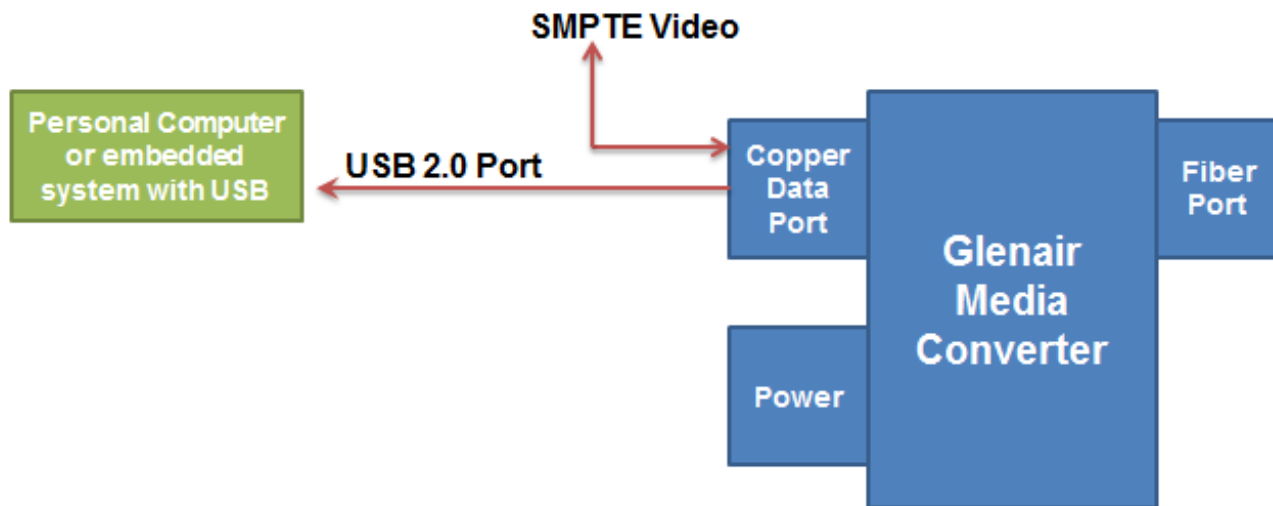
| NAME | Insert Arrangement                                                                                                                                                               | Function                                          | Media Converter                                                                            | Mating PLUG Connector                                                                                                                                                |
|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|--------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| J1   |  <p>ARRANGEMENT 19-18<br/>14X SIZE 22D<br/>4X SIZE 8 COAX</p>                                   | Electrical Signal, Power, and Built In Test (BIT) | D38999 Series III type, 19C-18<br><br>14X SIZE 22D Pins<br>4X SIZE 8 Pins<br>(AS39029/119) | Generic PN<br>D38999/26#F18SN type<br><br>Glenair PN<br><b>257-606-G6##19-18SN</b><br><br>Coax Socket Contacts<br>852-083-01<br><br>Socket Contacts<br>M39029/56-348 |
| J2   |                                                                                                | Power                                             | D38999 Series III type, 11-35<br>13X SIZE 22D Pins                                         | Generic PN<br>D38999/26#B35SN<br><br>Glenair PN<br>233-105-G6##11-35SN<br><br>Socket Contacts<br>M39029/56-348                                                       |
| J3   |  <p>Alignment Pin, Small      Alignment Pin, Large</p> <p>Shell Size 11<br/>Arrangement 4</p> | Fiber Optic Signal                                | GHD<br>Shell Size 11<br>Arrangement 4<br><br><u>CONTACTS</u><br>180-056                    | Glenair PN<br><b>180-122-#06-11-4N</b><br><br><u>CONTACTS:</u><br>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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4-Channel SMPTE Copper to Fiber Media Converter  
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 displays the following information: a header with asterisks, the company name 'Glenair', the service port, another header with asterisks, 'Unit Identification Information', another header with asterisks, 'Product Code: 050-207', 'Unit Serial Number: 1234', 'Firmware Revision: 1.2.0', 'Product Description: SMPTE Copper to Fiber Media Converter - Transmitter', another header with asterisks, 'Unit Status', another header with asterisks, 'Temperature: 45 degrees C', 'Power Supply Status: Good', and a list of four transmitter fault status checks, all showing '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,<br>1.5Gbps & 2.97Gbps |
| Extinction Ratio                         | $E_r$           | 8   | 10  |      | dB                | 1.5Gbps & 2.97Gbps                 |
| Optical Wavelength                       | $\lambda_{OUT}$ | 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 <sub>p-p</sub> | CML, 100 ohm                       |

**050-207**  
**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                                    | $\lambda_{IN}$ | 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,<br>Power Leads, 30 Hz to 10 kHz                 | MIL-STD-461F     | CE101                 |                |
| Conducted Emissions,<br>Power Leads, 10 kHz to 10 MHz                | MIL-STD-461F     | CE102                 |                |
| Conducted Susceptibility,<br>Power Leads, 30 Hz to 150KHz            | MIL-STD-461F     | CS101                 |                |
| Conducted Susceptibility, Transients,<br>Power Leads                 | MIL-STD-461F     | CS106                 |                |
| Conducted Susceptibility, Structure Current,<br>60 Hz to 100 kHz     | MIL-STD-461F     | CS109                 |                |
| Conducted Susceptibility,<br>Bulk Cable Injection, 10 kHz to 200 MHz | MIL-STD-461F     | CS114                 |                |
| Radiated Susceptibility,<br>Magnetic Field, 30 Hz to 100 kHz         | MIL-STD-461F     | RS101                 |                |
| Radiated Susceptibility,<br>Electric Field, 2 MHz to 18 GHz          | MIL-STD-461F     | RS103                 |                |
| Radiated Emissions, Magnetic Field,<br>30 Hz to 100 kHz              | MIL-STD-461F     | RE101                 |                |
| Radiated Emissions, Electric Field,<br>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**

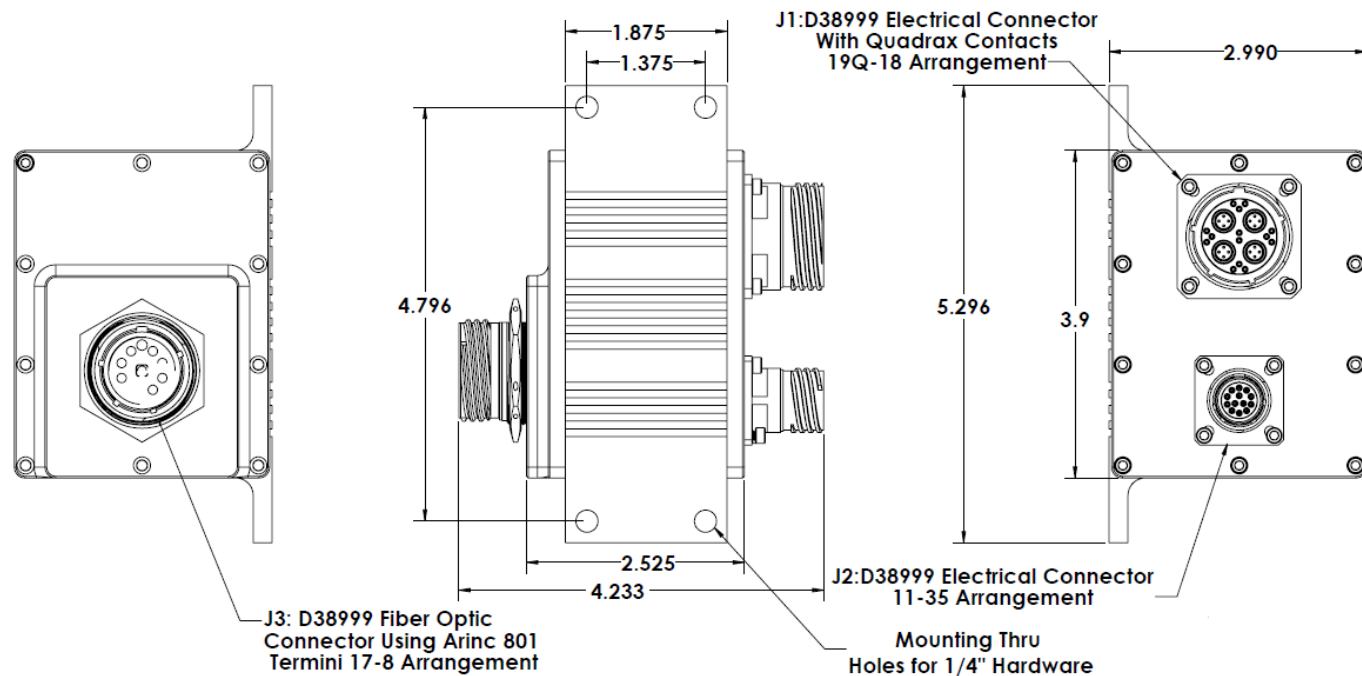
| Item                          | Material/Finish                                                                                    |
|-------------------------------|----------------------------------------------------------------------------------------------------|
| Housing & Connector Shell     | 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) &<br>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  $\pm 0.1$ "  
x.xx  $\pm 0.03$ "  
x.xxx  $\pm 0.0015$ "

Please contact Factory for other configurations

050-207

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

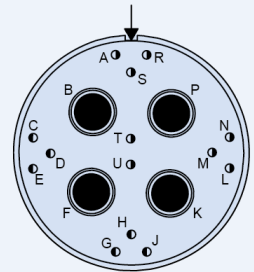


## Input/Output Definition

### 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          |   |

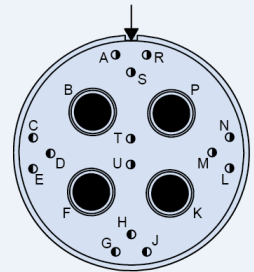


ARRANGEMENT 19-18  
14X SIZE 22D  
4X SIZE 8 COAX

**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

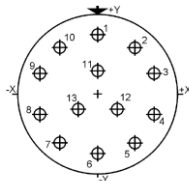
**38999 Series III**  
Mating face for PIN shown

## 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 |             |       |

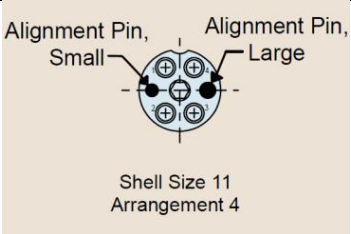


38999 Series  
III, 11-35  
Mating face for  
PIN shown  
11X SIZE 22D

### J3 – OPTICAL CONNECTOR

#### J3- Transmitter Configuration

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



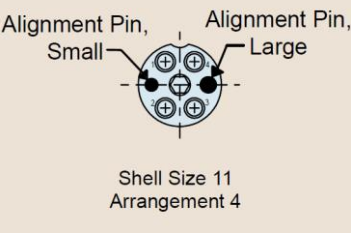
Alignment Pin, Small      Alignment Pin, Large

Shell Size 11  
Arrangement 4

GHD

#### J3- Receiver Configuration

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



Alignment Pin, Small      Alignment Pin, Large

Shell Size 11  
Arrangement 4

GHD

Компания «Океан Электроники» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Поставка оригинальных импортных электронных компонентов напрямую с производств Америки, Европы и Азии, а так же с крупнейших складов мира;
- Широкая линейка поставок активных и пассивных импортных электронных компонентов (более 30 млн. наименований);
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Помощь Конструкторского Отдела и консультации квалифицированных инженеров;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Поставка электронных компонентов под контролем ВП;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- При необходимости вся продукция военного и аэрокосмического назначения проходит испытания и сертификацию в лаборатории (по согласованию с заказчиком);
- Поставка специализированных компонентов военного и аэрокосмического уровня качества (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Actel, Aeroflex, Peregrine, VPT, Syfer, Eurofarad, Texas Instruments, MS Kennedy, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

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## JONHON

«JONHON» (основан в 1970 г.)

Разъемы специального, военного и аэрокосмического назначения:

(Применяются в военной, авиационной, аэрокосмической, морской, железнодорожной, горно- и нефтедобывающей отраслях промышленности)

«FORSTAR» (основан в 1998 г.)

ВЧ соединители, коаксиальные кабели,  
кабельные сборки и микроволновые компоненты:

(Применяются в телекоммуникациях гражданского и специального назначения, в средствах связи, РЛС, а так же военной, авиационной и аэрокосмической отраслях промышленности).



Телефон: 8 (812) 309-75-97 (многоканальный)

Факс: 8 (812) 320-03-32

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