

LIGHTCONEX™

BANDWIDTH UNLEASHED



DESCRIPTION

Amphenol Aerospace introduces LightConex™ blind mate optical interconnect for VPX embedded computers. LightConex™ integrates a 40Gbps optical transceiver, 120G optical transmitter, and 120G optical receiver into the module connector saving board space and eliminating cables.

The low profile backplane connector is a drop in replacement for the standard Vita 66.4 connector. It includes springs to ensure a solid MT to MT connection under extreme shock and vibration.

The low profile module connector (6.5mm) mounts to the board via an LGA connector to facilitate optics as an option. It is offered as a 4 channel transceiver, a 12 channel transmitter or a 12 channel receiver. All module connectors operate at up to 10.3125 Gbps per lane from -40 to +85°C at ultra-low bit error rates of 10⁻¹⁵. As well, the module connector includes equalizers and pre-emphasis to compensate trace impedance.

Module Connector Features:

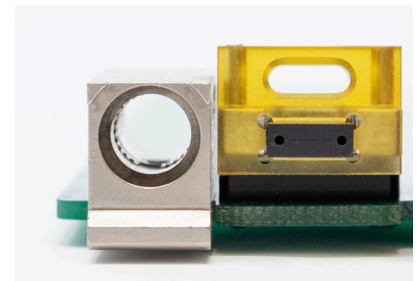
- **Rugged:** MIL STD 883
- **Moisture resistant:** Sealed
- **Small (DXWXH):** 14 X 23 X 6 mm
- **Bandwidth:** 10.3125 Gbps/ch
- **Temperature:** -40°C to +85°C
- **Reach:** 300m, multi-mode
- **BER:** 10⁻¹⁵
- **Lower power:** 1.2W
- **Data interface:** CML
- **Board Mount:** LGA
- **Configurations:**
4TRx, 12Tx, 12Rx, 12TRx

Backplane Connector Features:

- Vita66.4 drop in replacement
- Spring loaded MT
- Coarse and fine alignment
- Low Profile - 10mm

Applications:

- VPX Single Board Computers
- Phased Array Radars
- Single processing computer



QUALIFICATION TESTS

Vibration

- Sine Vibration Sweep - 10 minute sine vibration sweep of 5 g between 50 and 2000 Hz
- Shock - MIL-STD-1344A, Method 2004.1, Test Condition A (1/2 sine, 50 g in perpendicular axis, 80 g in other axes, 11 ms, 3 hits from both directions in each of 3 mutually perpendicular axes for a total of 18 hits)
- Random Vibration
 - Sample 1 - Test Condition V, letter D (0.1 G²/Hz max., 1.5 hours per axis)
 - Sample 2 - Step stress 0.125 G²/Hz for 15 minutes, 0.15 G²/Hz for 15 minutes, 0.175 G²/Hz for 15 minutes, and 0.2 G²/Hz for 45 minutes

Bench Handling

- The sample under test was raised on one edge using the opposite edge as a hinge 4 inches or 45 degrees (whichever is less). The other edges were tested the same

Vibration over Temperature

- MIL-STD-1344A, Method 2005.1, Test Condition V, Letter D (0.1 G²/Hz max., 1.5 hours per axis, see Fig. 2 solid line), with simultaneous temperature exposure of -40 to 85°C.

Humidity

- Expose to humidity and temperature cycling per MIL-STD-1344A, Method 1002.2, Type III (240 hrs.). The sample shall be mated.

Salt Fog

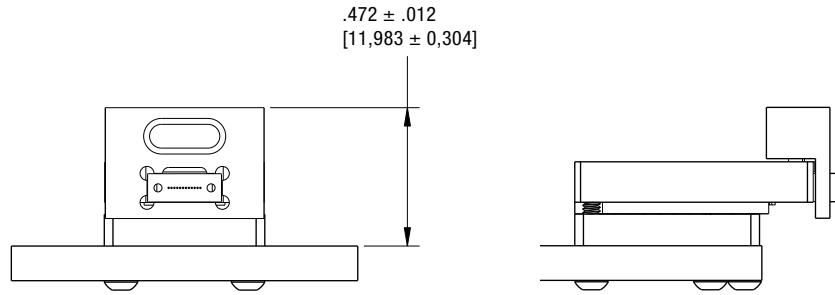
- Salt Fog with SO₂ per ASTM G85 (Annex A4, Cycle A4.4.4.1). The test sample shall be exposure in the mated condition in a sheet metal container.

Sand and Dust

- MIL-STD-810F, Method 510.4, Procedure I (Blowing Dust, particle size < 150 µm, velocity 1750 ft/min). The sample will be mated. The dust test on these two samples will be followed by a Blowing Sand test, also per MIL-STD-810F, Method 510.4, Procedure II (Blowing Sand, particle size > 150 µm but < 850 µm, velocity 5700 ft/min).

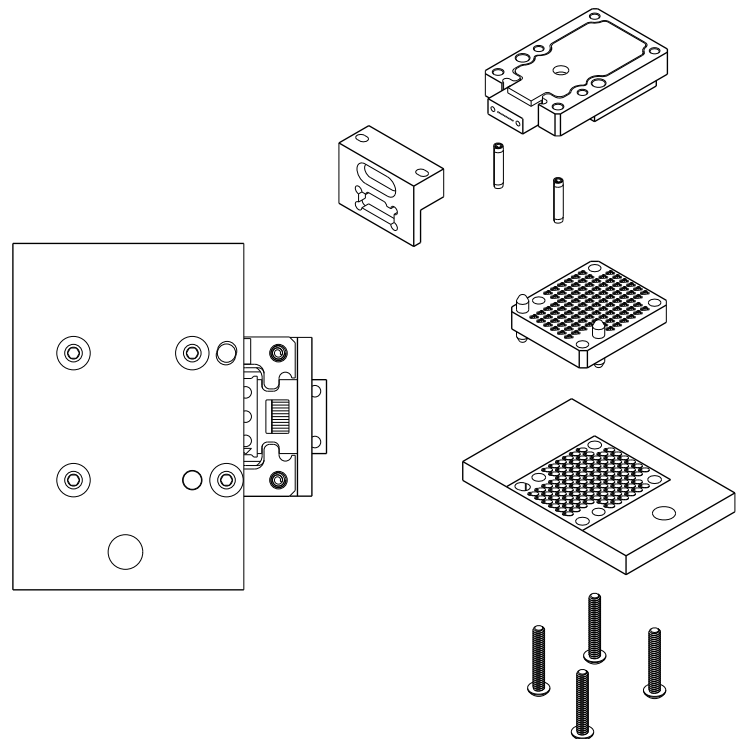
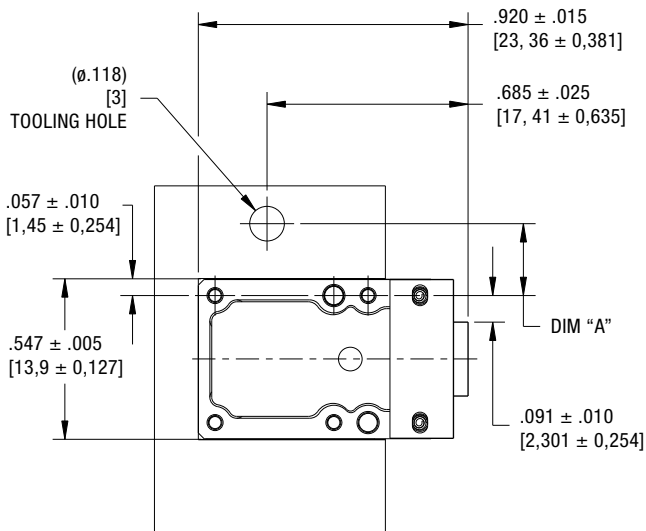
Durability

- 500 mate/un-mate cycles. VI, RNT shall be performed after 500 mate/un-mate cycles.

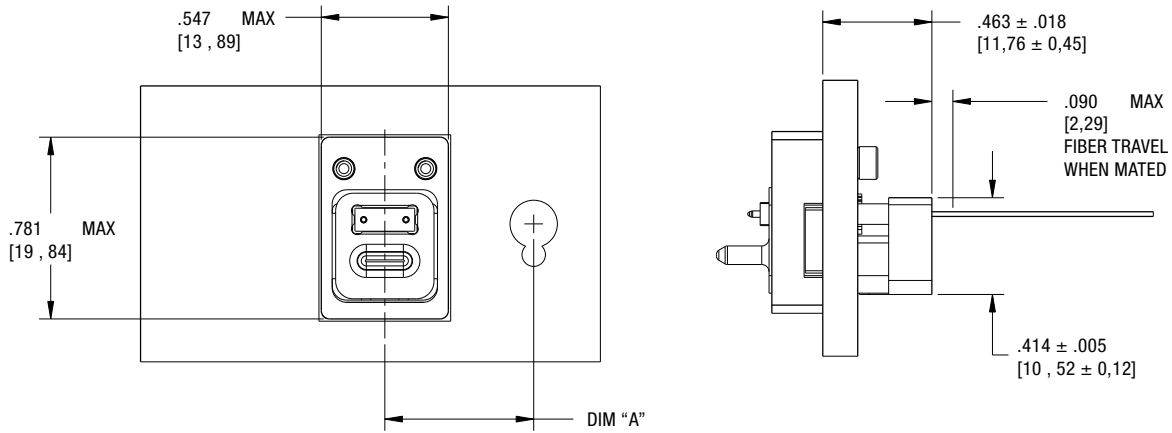


| Part Number | Optical Active Device P/N (POS 5) | Optical Active Device Description |
|----------------|-----------------------------------|---|
| 10-743008-003* | NONE | NONE |
| 10-743008-004 | 10-743017-004 | 4TX/4RX, Transceiver, 10.3125-Gbps/CH, SENS: -12.0dBm, -40°C to +85°C |
| 10-743008-005 | 10-743017-005 | 12TX, Transmitter, 10.3125-Gbps/CH, -40°C to +85°C |
| 10-743008-006 | 10-743017-006 | 12RX, Receiver, 10.3125-Gbps/CH, SENS: -12.0dBm, -40°C to +85°C |
| 10-743008-007 | 10-743017-007 | 4TX/4RX, Transceiver, 10.3125-Gbps/CH, SENS: -12.0dBm, -0°C to +70°C |
| 10-743008-008 | 10-743017-008 | 12TX, Transmitter, 10.3125-Gbps/CH, -0°C to +70°C |
| 10-743008-009 | 10-743017-009 | 12RX, Receiver, 10.3125-Gbps/CH, SENS: -12.0dBm, -0°C to +70°C |

* 10-743008-003 includes all the components to connect an optical device to a PCB without the optical device itself.



10-743007

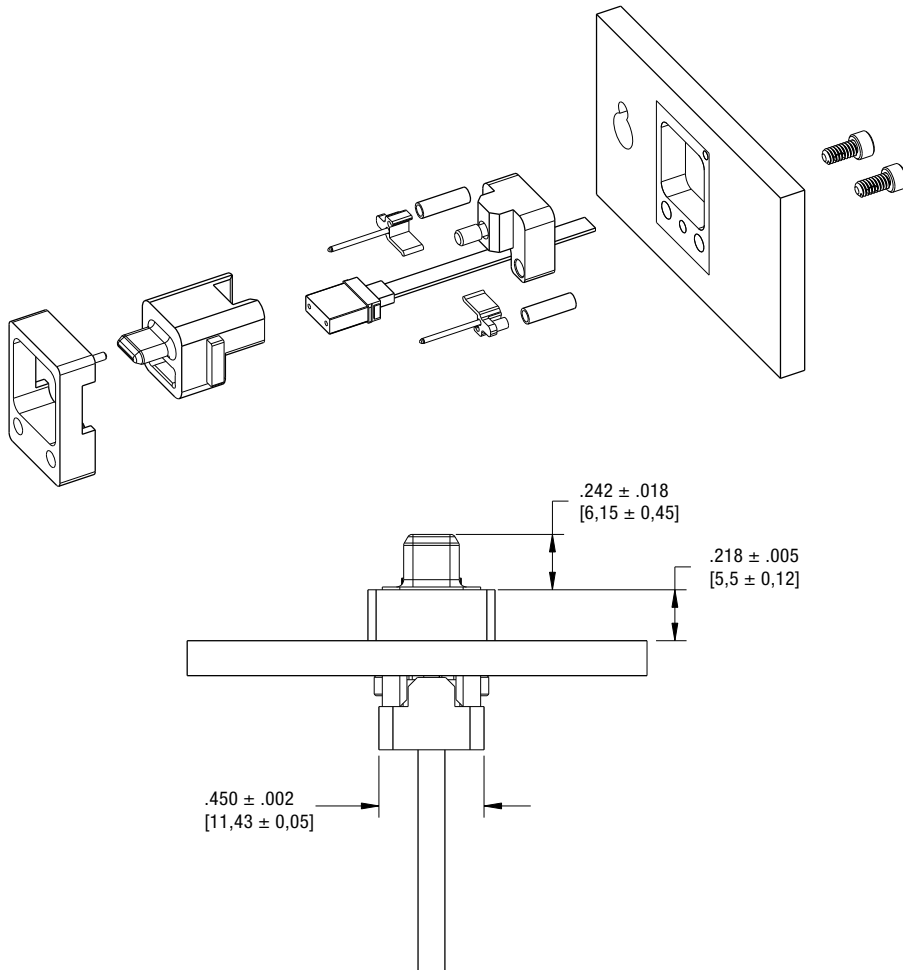


Part Number

Optical Active Device Description

10-743007-002

Passive Backplane Connector



4TX/RX

10-743008-004, 10-743008-007

| | | | | | | | | | | | |
|---|------|-----|------|-----|------|-------|------|------|-----|------|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | |
| A | | | VCC | GND | GND | GND | VCC | VCC | | | A |
| B | | | SDA | GND | SCL | SS | VCC | VCC | | | B |
| C | | | GND | GND | LDIS | NINT | GND | GND | | | C |
| D | | | DNC | DNC | GND | GND | DNC | DNC | | | D |
| E | ND04 | D04 | GND | GND | GND | DNC | GND | GND | DI4 | NDI4 | E |
| F | VCC | VCC | GND | GND | C2D | C2DCK | GND | GND | VCC | GND | F |
| G | DNC | DNC | GND | GND | VCC | VCC | VCC | GND | DNC | DNC | G |
| H | GND | GND | GND | GND | VCC | VCC | GND | GND | GND | GND | H |
| I | D01 | GND | D02 | GND | VCC | VCC | GND | DI2 | GND | DI1 | I |
| J | ND01 | GND | ND02 | GND | GND | GND | GND | NDI2 | GND | NDI1 | J |
| K | | | GND | GND | GND | GND | GND | GND | | | K |
| L | | | ND03 | D03 | GND | GND | NDI3 | DI3 | | | L |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | |

12TX

10-743008-005, 10-743008-008

| | | | | | | | | | | | |
|---|------|-----|------|-----|------|-------|-------|-------|------|-------|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | |
| A | | | VCC | GND | GND | GND | VCC | VCC | | | A |
| B | | | SDA | GND | SCL | SS | VCC | VCC | | | B |
| C | | | GND | GND | LDIS | NINT | GND | GND | | | C |
| D | | | NDI6 | DI6 | GND | GND | NDI7 | DI7 | | | D |
| E | NDI5 | DI5 | GND | GND | GND | DNC | GND | GND | NDI8 | DI8 | E |
| F | VCC | VCC | GND | GND | C2D | C2DCK | GND | GND | VCC | GND | F |
| G | NDI4 | DI4 | GND | GND | VCC | VCC | VCC | GND | NDI9 | DI9 | G |
| H | GND | GND | GND | GND | VCC | VCC | GND | GND | GND | GND | H |
| I | DI1 | GND | DI2 | GND | VCC | VCC | GND | NDI11 | GND | NDI12 | I |
| J | NDI1 | GND | NDI2 | GND | GND | GND | GND | DI11 | GND | DI12 | J |
| K | | | GND | GND | GND | GND | GND | GND | | | K |
| L | | | NDI3 | DI3 | GND | GND | NDI10 | DI10 | | | L |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | |

12RX

10-743008-006, 10-743008-009

| | | | | | | | | | | | |
|---|------|-----|------|-----|-----|-------|-------|-------|------|-------|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | |
| A | | | VCC | GND | GND | GND | VCC | VCC | | | A |
| B | | | SDA | GND | SCL | SS | VCC | VCC | | | B |
| C | | | GND | GND | DNC | NINT | GND | GND | | | C |
| D | | | ND06 | D06 | GND | GND | ND07 | D07 | | | D |
| E | ND05 | D05 | GND | GND | GND | DNC | GND | GND | ND08 | D08 | E |
| F | VCC | VCC | GND | GND | C2D | C2DCK | GND | GND | VCC | GND | F |
| G | ND04 | D04 | GND | GND | VCC | VCC | VCC | GND | ND09 | D09 | G |
| H | GND | GND | GND | GND | VCC | VCC | GND | GND | GND | GND | H |
| I | D01 | GND | D02 | GND | VCC | VCC | GND | ND011 | GND | ND012 | I |
| J | ND01 | GND | ND02 | GND | GND | GND | GND | D011 | GND | D012 | J |
| K | | | GND | GND | GND | GND | GND | GND | | | K |
| L | | | ND03 | D03 | GND | GND | ND010 | D010 | | | L |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | |