

Product Brief

LightCONEX - VPX blind mate Active Optical Connector

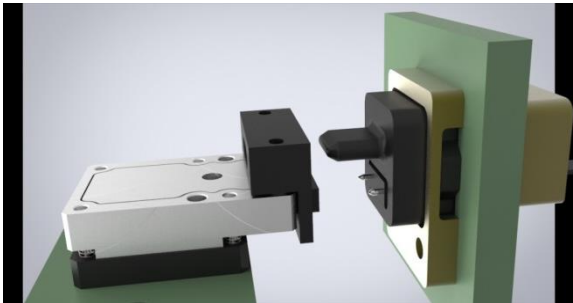


Figure 01: LightCONEX blind mate active connector

Reflex Photonics and Amphenol Aerospace introduce the first VPX Active Optical Connector for embedded computers. The *LightCONEX™* integrates the electro-optical transceiver into the plug-in module connector and requires no optical cable between the transceiver and the plug-in module connector. It simplifies assembly and frees up space used for fiber trays and cable management.

The backplane side connector is a drop-in replacement for standard VITA 66.4 connector.

The low profile *LightCONEX* (less than 6.5 mm high) is mounted to the board edge via an LGA connector to facilitate manufacturing standard SBCs with or without optics. It is offered as a 4-channel transceiver, a 12-channel transmitter or a 12-channel receiver.

LightCONEX operates at 12.5 Gbps per lane from $-40\text{ }^{\circ}\text{C}$ to $100\text{ }^{\circ}\text{C}$ at bit error rates of 10^{-15} (surpassing Ethernet requirement of 10^{-12}).

The *LightCONEX* includes equalizers and pre-emphasis to compensate long traces - these features can be turned off for short traces (less than 7.5 cm) to reduce power consumption.

Qualification

MIL-STD-883:

- ✓ Vibration tests, Method 2007.3
- ✓ Mech., shock tests, Method 2002.4
- ✓ Thermal shock tests, Method 1011.9
- ✓ Thermal cycling tests, Method 1010.8

MIL-STD-202:

- ✓ Damp heat tests, Method 103B

MIL-STD-810:

Cold storage tests, Method 502.5

Transceiver features

- ✓ Rugged: MIL STD 883 shock and vibration
- ✓ Sealed: moisture resistant
- ✓ Small (DxWxH): 14 mm x 23 mm x 6 mm
- ✓ 12.5 Gbps/ch from $-40\text{ }^{\circ}\text{C}$ to $100\text{ }^{\circ}\text{C}$
- ✓ Storage temperature: $-57\text{ }^{\circ}\text{C}$ to $125\text{ }^{\circ}\text{C}$
- ✓ BER: 10^{-15}
- ✓ Sensitivity up to -12 dBm
- ✓ Multimode 850 nm VCSEL
- ✓ Reach: Over 100 m reach on OM3 fiber
- ✓ Lower power consumption: 100 mw/ch
- ✓ CML high-speed electrical interface
- ✓ Serial control interface
- ✓ Data protocol agnostic
- ✓ LGA mount
- ✓ Configurations:
4 TRx, 12 Tx, 12 Rx, 12 TRx (Q1/2018)
- ✓ Uses rugged *LightABLE* technology

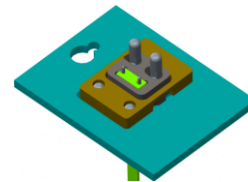


Figure 02 : Backplane connector

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Plug-in module active connector features

- ✓ VITA 66.4 drop-in replacement
- ✓ Spring-loaded MT – VITA 66.4 mating force
- ✓ Coarse and fine MT alignment pins

Applications

- ✓ VPX 3U/6U single board computers
- ✓ Phased array radars
- ✓ Single processing computer

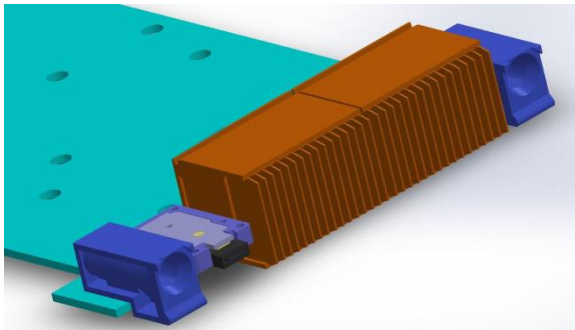
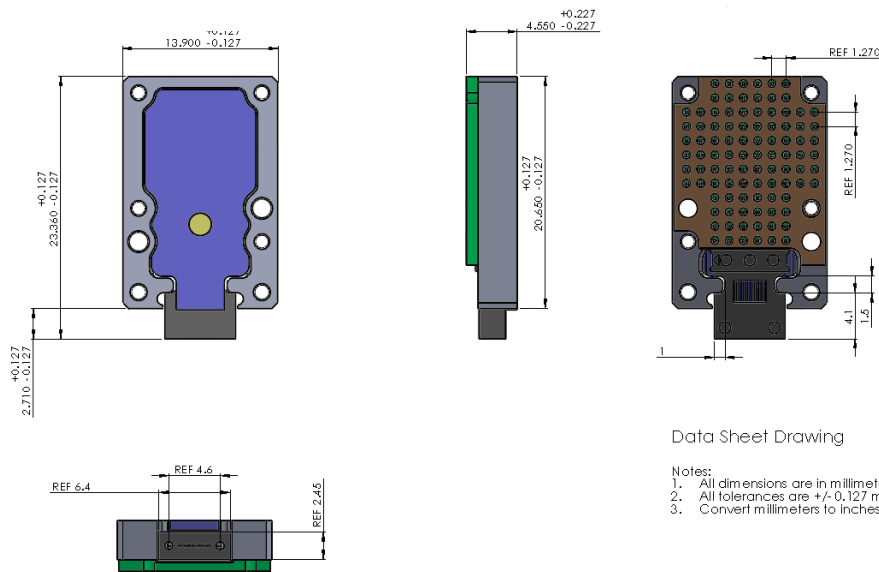


Figure 03: VITA 66.4 drop-in

Transceiver dimensions (mm)

Optical Interface Direction										
	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	DN1	DN1	GND	GND		C
D			ND06	DO6	GND	GND	ND07	DO7		D
E	ND05	DO5	GND	GND	GND	DN2	GND	GND	ND08	DO8
F	VCC	VCC	GND	GND	C2D	C2DCK	GND	GND	VCC	GND
G	ND04	DO4	GND	GND	VCC	VCC	VCC	GND	ND09	DO9
H	GND	GND	GND	GND	VCC	VCC	GND	GND	GND	GND
I	DO1	GND	DO2	GND	VCC	VCC	GND	ND011	GND	ND012
J	ND01	GND	ND02	GND	GND	GND	GND	DO11	GND	DO12
K			GND	GND	GND	GND	GND	GND		K
L			ND03	DO3	GND	GND	ND010	DO10		L
	1	2	3	4	5	6	7	8	9	10

Figure 04: Transceiver signals



Data Sheet Drawing

- Notes:
1. All dimensions are in millimeters
 2. All tolerances are +/- 0.127 mm (unless otherwise stated)
 3. Convert millimeters to inches: 25.4mm = 1 inch

Figure 05: LightCONEX drawings

Table 10 – Part Number Description

Part Number	Description
LCT12P418L33001	LightCONEX™ SR12, Transmitter , 10.3125-Gbps/ch., cLGA, BER E-12, RoHS, Industrial Temp -40 to +85 °C
LCR12418L303001	LightCONEX™ SR12, Receiver , 10.3125-Gbps/ch., cLGA, BER E-12, RoHS, Industrial Temp -40 to +85 °C / -12 dBm sensitivity
LCT12P418L13001	LightCONEX™ SR12, Transmitter , 10.3125-Gbps/ch., cLGA, BER E-12, RoHS, Commercial Temp 0 to +70 °C
LCR12418L103001	LightCONEX™ SR12, Receiver , 10.3125-Gbps/ch., cLGA, BER E-12, RoHS, Commercial Temp 0 to +70 / -12 dBm sensitivity

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