

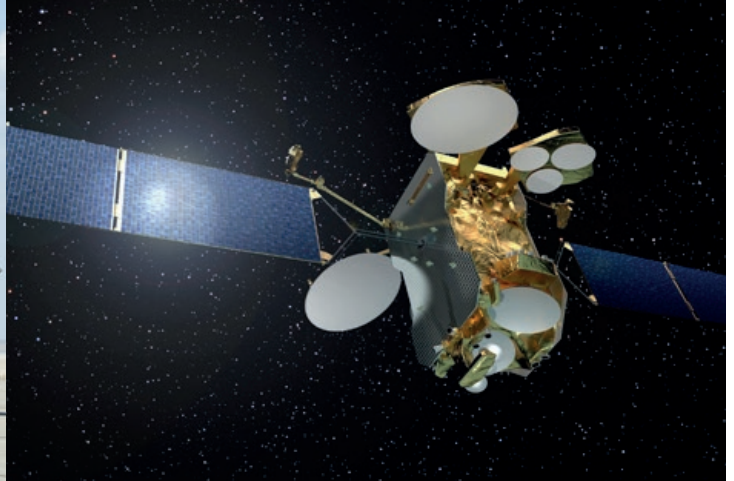
Optical Transceivers

The most rugged high-performance embedded parallel optics for defence, space, commercial aerospace, and industrial markets.



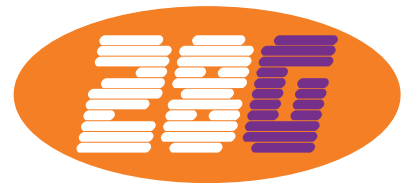
New product highlights

28 Gbps per channel rugged optical modules



The new line of Reflex Photonics 28 Gbps transceivers and VPX interconnects are based on a low profile module that mounts to the board via an LGA connector.

They are offered as a 4TRX 4-lane transceiver, a 12TX 12-channel transmitter or 12RX 12-channel receiver that operate at up to 28 Gbps per channel from -40°C to 85°C at ultra-low bit error rates of 10^{-12} . The optical module occupies a very small volume and footprint of $27 \times 14 \times 6$ mm (including interposer).



LightABLE 28G and LightCONEX 28G

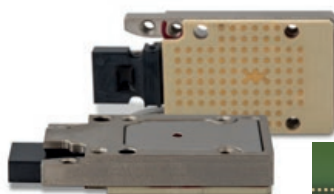
4TRX module (100G, full-duplex), 12TX and 12RX modules (300G, half-duplex)

- All-digital AESA radars
- VPX single board computers
- High I/O density, high BW communication links
- C4ISR embedded systems
- LightABLE mid-board mount or LightCONEX blind-mate optical interconnects for OpenVPX backplane

SpaceABLE 28G

Radiation-resistant 4TRX module (100G, full-duplex), 12TX and 12RX modules (300G, half-duplex)

- High-throughput communication satellites
- LEO satellite constellations and GEO satellites
- "Internet of space"
- Space VPX single board computers



LightABLE 28G LL Series



LightCONEX 28G LC Series



SpaceABLE 28G SL Series

**Radiation
resistant**

Backplane optical modules and connectors



Expanding on the successful *LightCONEX*® Style A compatible with VITA 66.4 apertures, Smiths Interconnect is launching its Reflex Photonics *LightCONEX* Style C and Style D, both compatible with VITA 67.3 Module C, D, and E standard apertures. These new *LightCONEX* active, optical blind-mate interconnects are compatible with the VITA 66.5 standard and aligned with the Sensor Open System Architecture (SOSA™) consortium standards.

In addition, Smiths Interconnect offers a new generation of FMC boards. These VITA 57.1- and 57.4-compliant optical FMC boards, which offer up to 120 Gbps of full-duplex throughput can be used with the latest generation of FPGA front-end processing boards.

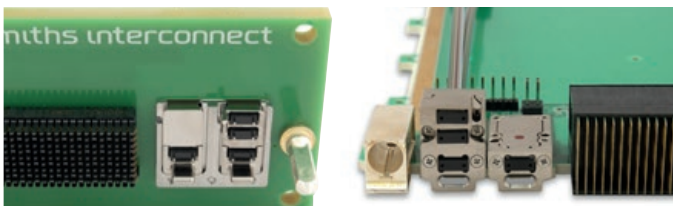
LightCONEX backplanes

VITA 66.5 backplane connector shells hold the insert modules and accommodate different VITA apertures.

- VITA 66.4
- VITA 67.3C, VITA 67.3D, and VITA 67.3E

LightCONEX plug-in modules

The plug-in module connectors are integrated with optical transceivers and can contain all optical or a combination of optical and RF coaxial connectors.



LightCONEX backplane connector *LightCONEX* plug-in module connector.

FMC boards

The LLF and SLF optical FMC mezzanine cards may be used in embedded VPX systems and industrial applications.

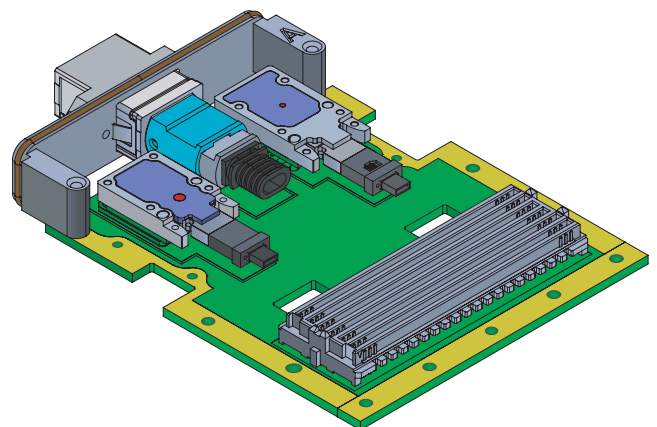
They may also be used as evaluation platforms for the *LightABLE*™ LL and the *SpaceABLE*® SL optical transceiver modules.

VITA 57.4

- 24TX or 24RX (240G, half-duplex)
- 12TRX (120G, full-duplex)

VITA 57.1

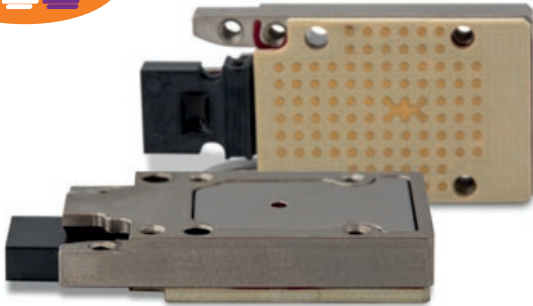
- 10TRX (100G, full-duplex)



VITA 57.1 10TRX card

LightABLE 28G LL Series

High-speed rugged transceivers for defence applications



Key advantages

- **Small:** Less than 6 mm high (module and interposer)
- **Rugged:** Qualified per MIL-STD 883 for shock and vibration
- **Sealed:** Moisture and thermal shock resistant
- **Storage temperature:** -57°C to 100°C
- **Performance:** up to 28 Gbps/channel over a recommended operating temperature range of -40°C to 85°C
- **Low power consumption:** 180 mW/channel

Applications

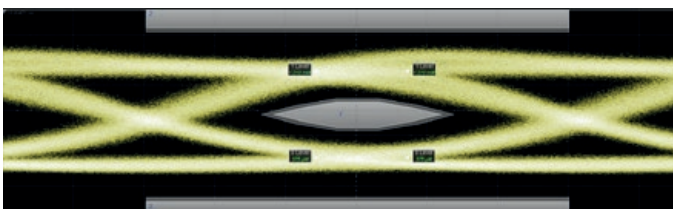
- Sensor connectivity including all-digital AESA radars
- High I/O density, high BW communication links
- C4ISR embedded systems

The low profile *LightABLE™* 28G LL Series module mounts to the board via an LGA connector (interposer). It is offered as either a four-lane transceiver (100G full-duplex) or as separate 12-channel transmitter and 12-channel receiver modules (300G half-duplex) that operate at up to 28 Gbps per channel.

The optical modules include clock and data recovery, equalizers, and pre-emphasis to compensate for long traces; these features can be turned off for short traces (less than 10 cm) to reduce power consumption.

LightABLE 28G LL Series features

- Multimode 850 nm laser
- Over 70 m reach on OM3 ribbon fibre
- Standard MT parallel fibre connector
- RoHS
- Clock and data recovery, pre-emphasis, and adjustable output
- Monitoring: LOS, RSSI, temperature, etc.
- Integrated microcontroller
- Attaches to system board with LGA interposers and screws

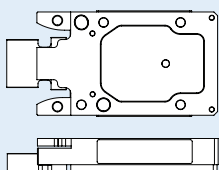


Typical optical eye of *LightABLE* 28G LL (6.5 ps per division)

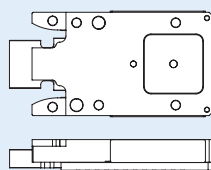


LGA interposer for *LightABLE* 28G LL

Module actual size



LightABLE 28G SL
4TRX



LightABLE 28G SL
12TX and 12RX

Configurations

- 4 TRX (100G, full-duplex)
- 12 TX or 12 RX (300G, half-duplex)

LightABLE 10G LM and LL Series

Rugged transceivers for defence applications



Key advantages

- **Rugged:** Qualified per MIL-STD 883 for shock and vibration
- **Sealed:** Moisture and thermal shock resistant
- **Operating temperature:** -40 °C to 85 °C
- **Storage temperature:** -57 °C to 100 °C
- **Performance:** up to 10.3125 Gbps/channel over a recommended operating temperature range of -40 °C to 85 °C
- **Proven:** Used in many defence applications
- **Power consumption (mW/channel):** 100

	LM	LL
Height (mm)	<5 (SMT)	5.5*
Sensitivity (dBm for BER 10 ⁻¹²)	-12 or -9	-12 or -9

* with interposer

Applications

- Sensor connectivity including all-digital AESA radars
- High I/O density, high BW communication links
- C4ISR embedded systems
- CCD/CMOS imaging sensor
- FPGA SerDes application

These modules offer flexibility, light weight, high bandwidth, and forward compatibility.

Flexible mounting options

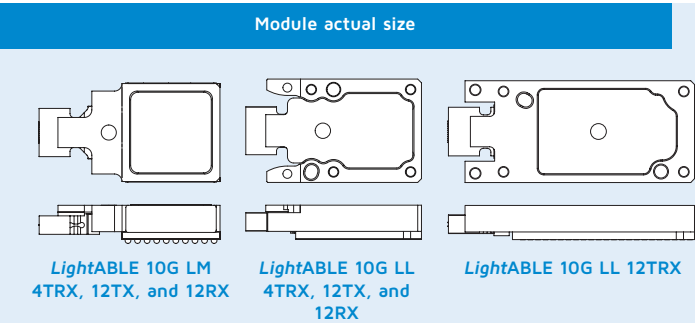
The low profile *LightABLE*™ 10G LM Series module can be mounted directly upon a high-speed printed circuit board via surface mountable 1.27 mm pitch BGA or via a MEG-array connector, whereas the *LightABLE* 10G LL Series low profile screw-in modules mount to the board via an LGA connector (interposer).

All modules operate at up to 10.3125 Gbps per channel over a recommended operating temperature range of -40 °C to 85 °C at ultra-low bit error rates of 10⁻¹². The optical modules include equalizers and pre-emphasis to compensate for long traces; these features can be turned off for short traces (less than 10 cm) to reduce power consumption.

LightABLE 10G features

- Multimode 850 nm laser
- Over 100 m reach on OM3 ribbon fibre
- Standard MT parallel fibre connector
- Equalizer, pre-emphasis, adjustable output
- Monitoring: LOS, RSSI, temperature, etc.
- Integrated microcontroller

	LM	LL
Mounting	BGA or MEG-Array	LGA interposer
Soldering	RoHS or tin-lead	n.a.



Configurations

10G LM Series

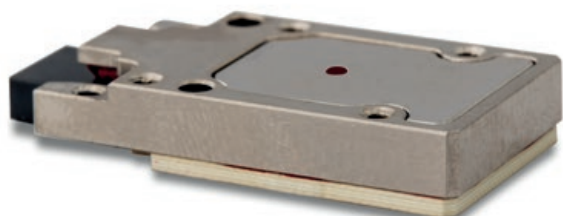
- 4 TRX (40G, full-duplex)
- 12 TX or 12 RX channel (120G, half-duplex)

10G LL Series

- 4 TRX (40G, full-duplex)
- 2 TX or 12 RX channel (120G, half-duplex)
- 12TRX (120G, full-duplex)

SpaceABLE 28G SL Series

High-speed radiation-resistant optical transceivers for space applications



**Radiation
resistant**

Key advantages

- **Small:** less than 6 mm high (module and interposer)
- **Rugged:** withstand radiation doses >100 krad (Si) and qualified per MIL-STD 883 for shock and vibration.
- **Expected life:** up to 20 years
- **Performance:** up to 28 Gbps/channel over a recommended operating temperature range of -40 °C to 85 °C
- **Link budget:** >7 dB with BER 10⁻⁹ (measured at 25.7 Gbps).
- **Low power consumption:** 160 mW/channel (<6 pJ per bit)

	4TRX	12TX/12RX
Operating temperature	-40 to 85	-10 to 70

Applications

- High-throughput communication satellites
- LEO satellite constellations
- GEO satellites
- Board-to-board and payload-to-payload connections
- High I/O density, high BW communication links

The SpaceABLE® 28G SL Series radiation resistant transceivers are engineered to withstand radiation doses >100 krad (Si). The SpaceABLE 28G SL low profile screw-attached module mounts to the board via an LGA connector. It is offered as either a four-lane transceiver (100G full-duplex) or as separate 12-channel transmitter and 12-channel receiver modules (300G half-duplex as a pair) that operate at up to 28 Gbps per channel from -40 °C to 85 °C at ultra-low bit error rates of 10⁻⁹.

Furthermore, all our devices are tested following ECSS process and lot acceptance testing. Component pre-screening is offered for every manufacturing lot of transceivers.

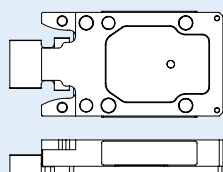
SpaceABLE 28G SL Series features

- Multimode 850 nm laser
- Over 60 m reach on OM3 or OM4 ribbon fibre
- Standard MT parallel fibre connector
- RoHS
- Monitoring: LOS, RSSI, temperature, etc.

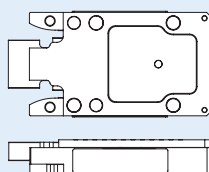
Space qualification tests summary

- **Proton testing:** Total Non-Ionizing Dose (TNID)
- **Heavy ion testing:** Single Event Effect & Latch-up (SEE and SEL)
- **Gamma Ray using Cobalt-60:** Total Ionizing Dose (TID)
- **Random vibration:** NASA GEVS, GSFC-STD-7000A
- **TVAC:** Vacuum < 5E-5 hPa
- **Outgassing:** ECSS-Q-ST-70-02C

Module actual size



SpaceABLE 28G SL
4TRX



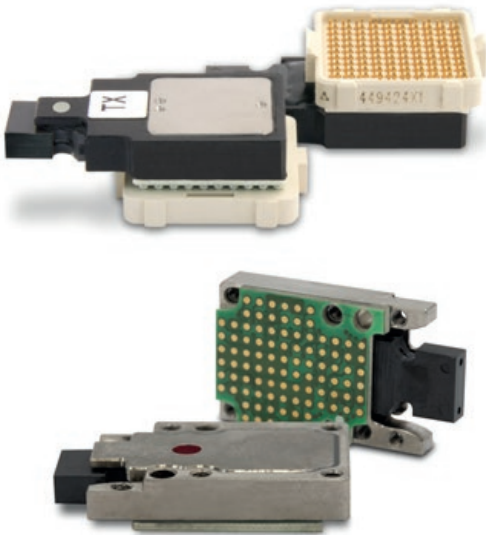
SpaceABLE 28G SL
12TX and 12RX

Configurations

- 4 TRX (100G, full-duplex), in development
- 12 TX or 12 RX (300G, half-duplex), in development

SpaceABLE 10G SM and SL Series

Radiation-resistant optical transceivers for space applications



Key advantages

- **Rugged**: withstand radiation doses >100 krad (Si) and qualified per MIL-STD 883 for shock and vibration.
- **Expected life**: up to 20 years.
- **Performance**: up to 10.3125 Gbps/channel over a recommended operating temperature range of -40 °C to 85 °C
- **Sensitivity**: -9 dBm for BER 10⁻¹²
- **Low power consumption**: 85 mW/channel (<10 pJ per bit)

	LM	LL
Height (mm)	<5 (SMT)	5.5*

* with interposer

Applications

- High-throughput communication satellites
- LEO satellite constellations
- GEO satellites (with extended lifetime option)
- Board-to-board and payload-to-payload connections
- High I/O density, high BW communication links

The low profile SpaceABLE® 10G SM Series module can be mounted directly upon a high-speed printed circuit board via a MEG-array connector, whereas the low profile SpaceABLE 10G SL Series screw-attached module mounts to the board via an LGA connector.

These modules are offered as a four-lane transceiver, a 12-channel transmitter, or a 12-channel receiver. All modules operate at up to 10.3125 Gbps per channel over a recommended operating temperature range of -40 °C to 85 °C at ultra-low bit error rates of 10⁻¹². The optical modules include equalizers and pre-emphasis to compensate for long traces; these features can be turned off for short traces (less than 10 cm) to reduce power consumption.

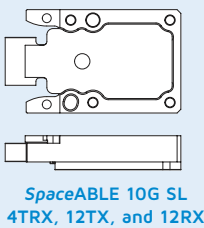
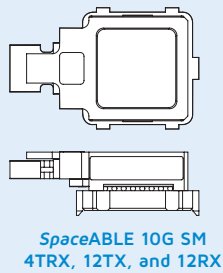
SpaceABLE 10G features

- Multimode 850 nm laser
- Over 100 m reach on OM3 ribbon fibre
- Standard MT parallel fibre connector
- RoHS
- Equalizer, pre-emphasis, adjustable output
- Monitoring: LOS, RSSI, temperature, etc.

Space qualification tests summary

- **Proton testing**: Total Non-Ionizing Dose (TNID)
- **Heavy ion testing**: Single Event Effect & Latch-up (SEE and SEL)
- **Gamma Ray using Cobalt-60**: Total Ionizing Dose (TID)
- **Random vibration**: NASA GEVS, GSFC-STD-7000A
- **TVAC**: Vacuum < 5E-5 hPa
- **Outgassing**: ECSS-Q-ST-70-02C

Module actual size

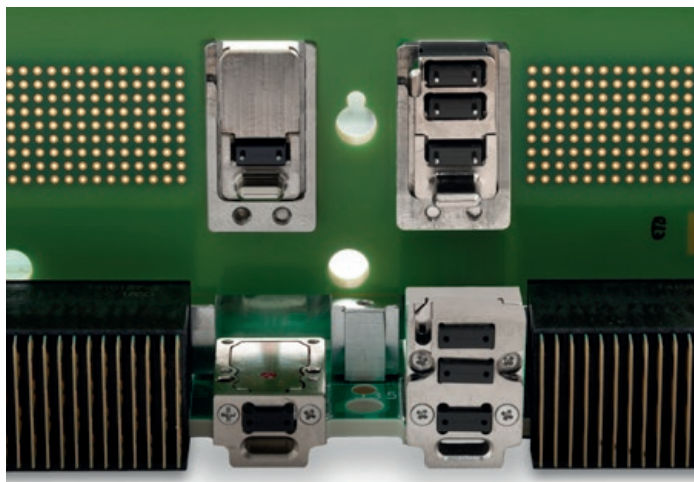


Configurations

- 4 TRX (40G, full-duplex)
- 12 TX or 12 RX (120G, half-duplex)

LightCONEX 10G and LightCONEX 28G LC Series

Rugged VPX blind-mate optical backplane connector for defence applications



Key advantages

- Increases volumetric density of 3U and 6U high-speed switch and payload VPX boards by integrating optical transceiver into plug-in connector.
- Intermateability with VITA 66.5-defined backplane connectors enables multiple sources and drives faster design cycles.
- Reduces optical interconnect SWaP with rugged, MIL-STD qualified, edge-mounted, optical interconnects.
- Enables ultra-high port bandwidth density of up to 720 Gbps full-duplex in a half-width slot.
- Simplifies VPX board assembly and rework by eliminating fibre pigtail on edge-mount transceiver.

Applications

- VPX single board computing
- C4ISR embedded systems
- AESA radars
- High-throughput Ethernet switches

The *LightCONEX*® 10G LC Series and *LightCONEX* 28G LC Series active blind-mate optical interconnect are revolutionary solutions for VPX systems that include a fixed plug-in module connector and a floating backplane connector that have been developed to be compliant with the forthcoming VITA 66.5 and in alignment with the SOSA™ Technical Standard. The low-profile active plug-in module connector is screwed on the board edge through an interposer, simplifying assembly and maintenance.

LightCONEX 10G and LightCONEX 28G LC Series plug-in module connector features

	LightCONEX 10G LC Series	LightCONEX 28G LC Series
Bandwidth	10.3125 Gbps/channel	28 Gbps/channel
Operating temperature	-40 °C to 85 °C	-40 °C to 85 °C
Sensitivity (for BER 10 ⁻¹²)	-12 dBm or -9 dBm	-7.5 dBm
Reach (OM3 fibre)	100 m	70 m
Power consumption	85 mW/channel	180 mW/channel

- **Data interface:** CML and LVDS
- **Board mount:** LGA connector
- Equalizer, pre-emphasis, and adjustable output

Configurations

28 Gbps

- 4 TRX (100G, full-duplex)
- 12TX or 12RX (300G, half-duplex), in development

10.3125 Gbps

- 4 TRX (40G, full-duplex)
- 12TX or 12RX (120G, half-duplex)
- 12TRX (120G, full-duplex)

LightCONEX Styles A, C, and D

The *LightCONEX*® optical backplane module connector consists of a connector shell and insert. The shell is designed to provide float for the insert in both the X- and Y-directions to enable alignment of the MT ferrule mating interfaces. The design complies with the ANSI/VITA 66.4 mating requirements with the MT ferrule displacement occurring within the backplane connector.

- Tab guiding feature provides coarse alignment
- Spring-loaded MT ferrule (12-channel or 24-channel)
- Compatible with 12-channel or 24-channel OM3 or OM4 fibre ribbon cable

Optical backplane module connector features

Connector shells

Different backplane connector shells are available to accommodate VITA 67.3 apertures:



Inserts

Backplane module inserts are available in the following configurations:



Style A

The *LightCONEX* backplane connector Insert Style A design is intended for active optical applications utilizing the 0.8 in. board pitch. It is designed to fit into the VITA 67.3 Module Type F aperture. The interface is standardized in VITA 66.5.

- 1x MT only.
- Module connector compatible with VITA 66.4 aperture (0.8 in. pitch).

The *LightCONEX* backplane connectors for the VITA 67.3 apertures are available in two versions:

Style C

The *LightCONEX* backplane connector Insert Style C design is intended for active optical applications utilizing the 1 in. board pitch. It is designed to fit into VITA 67.3 Module Types C, D, and E apertures. The interface is standardized in VITA 66.5.

- 1x MT only, or hybrid with 1x MT and 5 or 10 nanoRF above

Style D

The *LightCONEX* backplane connector Insert Style D design is intended for active optical applications utilizing the 1 in. board pitch. It is designed to fit into VITA 67.3 Module Types C, D, and E apertures. The interface is standardized in VITA 66.5.

- Up to 3x MT, in which case the lower MT ferrule mates with the plug-in module active MT, while the upper MT ferrules on the plug-in side are cabled to mid-board transceivers.

Optical plug-in module connector features

The *LightCONEX*® plug-in module connector contains the optical transceiver with its MT ferrule, an LGA interposer, and a connector shroud.

- Plug-in module connectors are secured with screws directly to the edge of the host board along with their dedicated LGA interposers.
- 5.6 mm transceiver height
- Up to two additional passive optical ports that are connected with detachable cables to mid-board mounted *LightABLE* transceivers.



Optical transceiver with connector shroud

Style A

The *LightCONEX* plug-in module connector Style A is dedicated for the VITA 66.4 aperture and is a unique style with the slot primary alignment feature located above the optical transceiver.

The *LightCONEX* plug-in module connector for the VITA 67.3 apertures are available in two versions. They have connector shrouds for each respective style with the slot primary guiding feature located below the optical transceiver.

Style C

- Style C has one optical transceiver, and, optionally, 5 or 10 nanoRFs above

Style D

- Style D has one optical transceiver and two cabled MT.

SNAP12

Rugged transceivers for commercial aerospace applications



Key advantages

- **Standard compatibility:** 850 nm short-reach OIF-VSR (OC-768)
- **Performance:** up to 10.3125 Gbps/channel over a recommended operating temperature range of 0 °C to 70 °C
- **Proven:** thousands used in IFEC and industrial applications
- **Reliable:** rugged construction to provide long life and consistent service
- **Easy to use:** plug & play – standard MPO/MTP® optical interconnect
- **Interoperable:** SNAP12 MSA- compliant

Applications

- In-flight entertainment systems and connectivity (IFEC)
- Advanced manufacturing, industrial automation, and machine vision
- Medical equipment
- High performance computer interconnects
- Server farms and mass storage interconnects

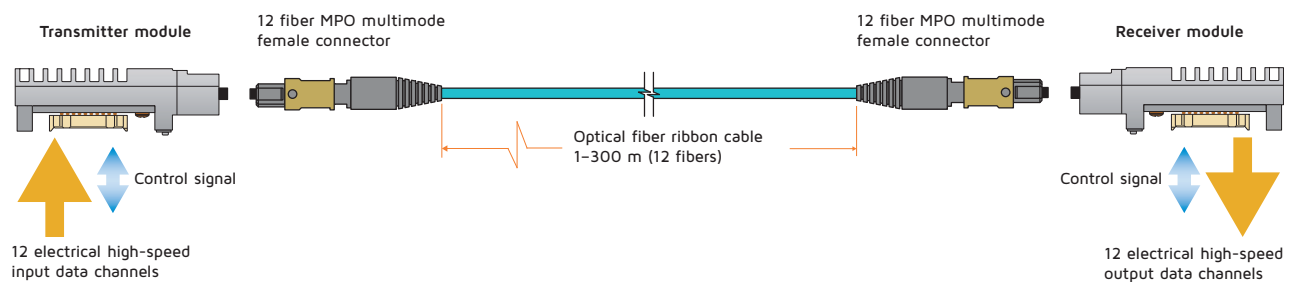
SNAP12 is a 12-channel, pluggable, parallel, optical transmitter or receiver module with an MSA-standard, chassis-mountable MPO interface. It is a self-contained, electrical-to-optical converter which requires no internal fibre management or handling. All modules include the state of the art Reflex Photonics *LightABLE™* optical packaging technology.

The high-speed, rugged SNAP12 modules are used extensively in commercial aerospace for IFEC (in-flight entertainment and connectivity) applications, high performance computers, and industrial equipment.

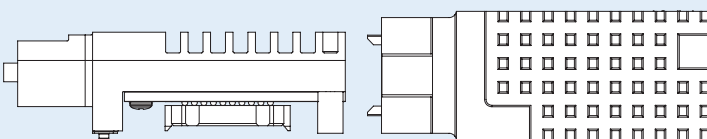
SNAP12 features

- 12 independent, parallel, optical channels
- Data rates: 3.125, 6.25, and 10.3125 Gbps per channel
- Commercial grade temperature range (0 °C to 70 °C)
- Standard MPO/MTP interconnect
- Support for OM3 and OM4 multimode fibre cables
- Data protocol-agnostic
- Single 3.3 V power supply
- 100 mW/channel typical power consumption
- CML/LVDS compatible electrical I/O
- Field-replaceable and board edge mountable

Complete, end-to-end, 12 channel, parallel, optical link



Module actual size

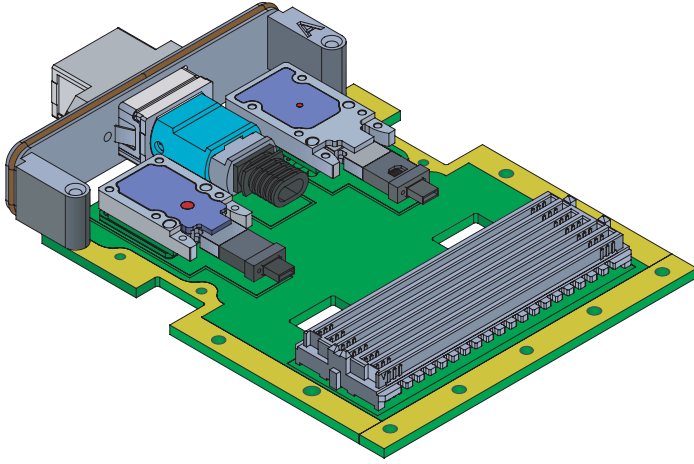


Configurations

- 12-channel transmitter
- 12-channel receiver

Optical FMC cards

VITA 57.1 and 57.4 Optical 10G FMC Cards



Key advantages

- Industrial temperature -40°C to 85°C
- Sensitivity up to -12 dBm
- 10 Gbps per channel
- Short-reach 850 nm VCSEL lasers
- Standard 1×12 MT optical interface or MPO interface with the MPO bracket
- Up to 24 differential CML pairs per card
- FMC+ electrical interface
- Link distance up to 100 m (OM3 fibre)
- I2C communication Interface
- Asynchronous channel operation
- Data protocol agnostic, balanced code

Applications

- Embedded VPX computing systems
- Phased array radar
- CCD/CMOS imaging sensors

The Smiths Interconnect *LightABLE* LLF and *SpaceABLE* SLF optical FMC mezzanine cards may be used in embedded VPX systems and industrial applications. They may also be used as evaluation platforms for the *LightABLE*™ LL and the *SpaceABLE*® SL optical transceiver modules. The electrical interfaces are based on CML logic levels and support 10 Gbps data rates per link, for a total bandwidth of 100 Gbps full-duplex (10-lane VITA 57.1) or 120 Gbps full-duplex (12-lane VITA 57.4) and 240 Gbps half-duplex (12-lane VITA 57.4) depending on the version.

The FMC cards are available for use in rugged applications using *LightABLE* optical transceivers (LLF models) or rugged applications in space using the *SpaceABLE* optical transceivers (SLF models). The cards are single-width conduction-cooled VITA 57.1 or VITA 57.4 cards. An optional MPO front panel bracket accessory is available for compatibility with air-cooled applications.

The LLF and SLF cards incorporate optical modules with preprogrammed parameters for configuration—only power and high-speed signalling is required. An I2C serial interface is provided to interrogate the module.

Optical module qualification

The single-width conduction-cooled and air-cooled FMC cards include Regions 2 and 3 as defined in the VITA 57.4x - FPGA Mezzanine Card Plus (FMC+) Draft Standard.

MIL-STD-883

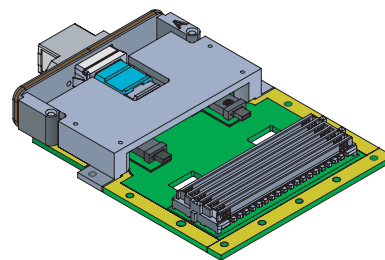
- Vibration tests, Method 2007.5
- Mechanical shock tests, Method 2002.4
- Thermal shock tests, Method 1011.9
- Thermal cycling tests, Method 1010.8

MIL-STD-202

- Damp heat tests, Method 103B

MIL-STD-810

- Cold storage tests, Method 502.5



FMC Card shown with optional conduction cooling bridge.

Configurations

VITA 57.4

- 24TX or 24RX (240G, half-duplex)
- 12TRX (120G, full-duplex)

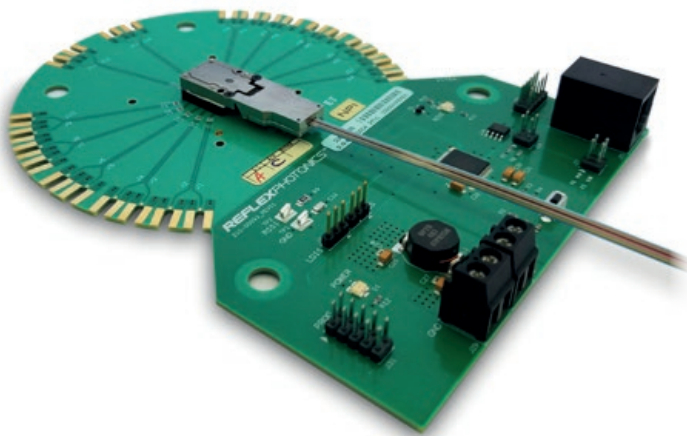
VITA 57.1

- 10TRX (100G, full-duplex)

Evaluation boards

The evaluation boards are the perfect vehicles for testing and evaluating optical modules and VPX optical interconnects.

Mid-board devices evaluation kit



Key advantages

- Designed to operate at up to 10.3125 or 28 Gbps per channel.
- All high-speed signal accessible through SMA
- AC coupled high-speed signals
- Single 3.3 V power supply
- Direct two-wire communication access to the module

Applications

- Optical device evaluation and system-level validation
- Optical eyes performance assessment

Configurations

Mid-board evaluation kits are available for the following modules:

- | | | |
|-----------------------------------|-----------------------------------|-----------------------------------|
| ■ <i>Light</i> ABLE 28G LL Series | ■ <i>Light</i> ABLE 10G LL Series | ■ <i>Space</i> ABLE 28G SL Series |
| ■ <i>Light</i> ABLE 10G LM Series | ■ <i>Space</i> ABLE 10G SM Series | ■ <i>Space</i> ABLE 10G SL Series |

Product ordering information

LightABLE 10G LM, LightABLE 10G LL, and LightABLE 28G LL

Part Number	Product Description	Channels or Lanes	Bandwidth (Gbps/ch.)	Sensitivity (dBm)	Mounting	RoHS?	Operating Temp. (°C)
LMT12P4182310AA	LightABLE 10G LM 12TX transmitter	12	10.3125	n.a.	Surface mount	Tin-lead	-40 to 85
LMT12P4182330AA	LightABLE 10G LM 12TX transmitter, hi-power	12	10.3125	n.a.	Surface mount	Tin-lead	
LMT12P4183310AA	LightABLE 10G LM 12TX transmitter	12	10.3125	n.a.	Pluggable	RoHS	
LMT12P4183330AA	LightABLE 10G LM 12TX transmitter, hi-power	12	10.3125	n.a.	Pluggable	RoHS	
LMT12P4184310AA	LightABLE 10G LM 12TX transmitter	12	10.3125	n.a.	Pluggable	Tin-lead	
LMT12P4184330AA	LightABLE 10G LM 12TX transmitter, hi-power	12	10.3125	n.a.	Pluggable	Tin-lead	
LMR12P4182301AA	LightABLE 10G LM 12RX receiver	12	10.3125	-9	Surface mount	Tin-lead	
LMR12P4182303AA	LightABLE 10G LM 12RX receiver	12	10.3125	-12	Surface mount	Tin-lead	
LMR12P4183301AA	LightABLE 10G LM 12RX receiver	12	10.3125	-9	Pluggable	RoHS	
LMR12P4183303AA	LightABLE 10G LM 12RX receiver	12	10.3125	-12	Pluggable	RoHS	
LMR12P4184301AA	LightABLE 10G LM 12RX receiver	12	10.3125	-9	Pluggable	Tin-lead	
LMR12P4184303AA	LightABLE 10G LM 12RX receiver	12	10.3125	-12	Pluggable	Tin-lead	
LMX04P4182321AA	LightABLE 10G LM 4TRX transmit/receive	4+4	10.3125	-9	Surface mount	Tin-lead	
LMX04P4182323AA	LightABLE 10G LM 4TRX transmit/receive	4+4	10.3125	-12	Surface mount	Tin-lead	
LMX04P4182353AA	LightABLE 10G LM 4TRX transmit/receive, hi-power	4+4	10.3125	-12	Surface mount	Tin-lead	
LMX04P4183321AA	LightABLE 10G LM 4TRX transmit/receive	4+4	10.3125	-9	Pluggable	RoHS	
LMX04P4183323AA	LightABLE 10G LM 4TRX transmit/receive	4+4	10.3125	-12	Pluggable	RoHS	
LMX04P4184323AA	LightABLE 10G LM 4TRX transmit/receive	4+4	10.3125	-12	Pluggable	Tin-lead	
LLT12P9185330AA	LightABLE 10G LL 12TX transmitter	12	10.3125	n.a.	LGA	n.a.	
LLR12P9185303AA	LightABLE 10G LL 12RX receiver	12	10.3125	-12	LGA	n.a.	
LLR12P9185301AA	LightABLE 10G LL 12RX receiver	12	10.3125	-9	LGA	n.a.	
LLX04P9185323AA	LightABLE 10G LL 4TRX transmit/receive	4+4	10.3125	-12	LGA	n.a.	
LLX04P9185321AA	LightABLE 10G LL 4TRX transmit/receive	4+4	10.3125	-9	LGA	n.a.	
LLX12P418532101	LightABLE 10G LL 12TRX transmit/receive	12+12	10.3125	-9	LGA	n.a.	
LLR12P618530101	LightABLE 10G LL MPO 12RX receive	12	10.3125	-9	LGA	n.a.	
LLT12P618533001	LightABLE 10G LL MPO 12TX transmit	12	10.3125	n.a.	LGA	n.a.	
LLX04P618532101	LightABLE 10G LL MPO 4TRX transmit/receive	4+4	10.3125	-9	LGA	n.a.	
LLT12P928523003	LightABLE 28G LL 12TR transmitter	12	28	n.a.	LGA	n.a.	
LLR12P928530502	LightABLE 28G LL 12RX receiver	12	28	-7.5	LGA	n.a.	
LLX04P928532502	LightABLE 28G LL 4TRX transmit/receive	4+4	28	-7.5	LGA	n.a.	
LLT12P628523003	LightABLE 28G LL 12TR transmitter, MPO	12	28	n.a.	LGA	n.a.	
LLR12P628530502	LightABLE 28G LL 12RX receiver, MPO	12	28	-7.5	LGA	n.a.	
LLX04P628532502	LightABLE 28G LL 4TRX transmit/receive, MPO	4+4	28	-7.5	LGA	n.a.	

SpaceABLE 10G SM, SpaceABLE 10G SL, and SpaceABLE 28G SL

Part Number	Product Description	Channels or Lanes	Bandwidth (Gbps/ch.)	Sensitivity (dBm)	BER	Mounting	Operating Temp. (°C)
SMX04P518332101	SpaceABLE 10G SM 4TRX transmit/receive	4+4	10.3125	-9	E ⁻¹²	RoHS Pluggable	-40 to 85
SMT12P518333001	SpaceABLE 10G SM 12TX transmitter	12	10.3125	n.a.	E ⁻¹²	RoHS Pluggable	
SMR12P518330101	SpaceABLE 10G SM 12RX receiver	12	10.3125	-9	E ⁻¹²	RoHS Pluggable	
SMX04P518432101	SpaceABLE 10G SM 4TRX transmit/receive	4+4	10.3125	-9	E ⁻¹²	Leaded Pluggable	
SMT12P518433001	SpaceABLE 10G SM 12TX transmitter	12	10.3125	n.a.	E ⁻¹²	Leaded Pluggable	
SMR12P518430101	SpaceABLE 10G SM 12RX receiver	12	10.3125	-9	E ⁻¹²	Leaded Pluggable	
SLT12P918533002	SpaceABLE 10G SL 12TX transmitter	12	10.3125	n.a.	E ⁻¹²	RoHS LGA	
SLR12P918530102	SpaceABLE 10G SL 12RX receiver	12	10.3125	-9	E ⁻¹²	RoHS LGA	
SLX04P918532102	SpaceABLE 10G SL 4TRX transmit/receive	4+4	10.3125	-9	E ⁻¹²	RoHS LGA	
SLX04P528532102	SpaceABLE 28G SL 4TRX transmit/receive	4+4	28	-9	E ⁻⁹	RoHS LGA	-10 to 70
SLT12P928533002	SpaceABLE 28G SL 12TX transmitter	12	28	n.a.	E ⁻⁹	LGA	
SLR12P928530102	SpaceABLE 28G SL 12RX receiver	12	28	-9	E ⁻⁹	LGA	

LightCONEX 10G LC and LightCONEX 28G LC plug-in module connectors

Part Number	Product Description	Channels or Lanes	Bandwidth (Gbps/ch.)	Sensitivity (dBm)	Style	Operating Temp. (°C)
LCX04A418532101	LightCONEX 10G 4TRX transmit/receive	4+4	10.3125	-9	A	-40 to 85
LCX04A418532301	LightCONEX 10G 4TRX transmit/receive			-12		
LCX04C418532101	LightCONEX 10G 4TRX transmit/receive			-9	C	
LCX04C418532302	LightCONEX 10G 4TRX transmit/receive			-12		
LCX04D418532101	LightCONEX 10G 4TRX transmit/receive			-9	D	
LCX04D418532301	LightCONEX 10G 4TRX transmit/receive			-12		
LCX12A418532101	LightCONEX 10G 12TRX transmit/receive	12+12	28	-9	A	
LCX12C418532101	LightCONEX 10G 12TRX transmit/receive				C	
LCX12D418532101	LightCONEX 10G 12TRX transmit/receive				D	
LCX04C428532502	LightCONEX 28G 4TRX transmit/receive	4+4		-7.5	C	
LCX04D428532502	LightCONEX 28G 4TRX transmit/receive				D	
LCT12C428532002	LightCONEX 28G 12TX transmitter	12			C	
LCR12C428530502	LightCONEX 28G 12RX receiver				D	
LCT12D428532002	LightCONEX 28G 12TX transmitter					
LCR12D428530502	LightCONEX 28G 12RX receiver					

LightCONEX backplane connectors

Part Number	Product Description	VITA Aperture compatibility			
		66.4	67.3D	67.3C	67.3E
Backplane inserts (order cables as needed)					
415-00025	VITA 66.5 Style A backplane insert	✓			
415-00032	VITA 66.5 Style C backplane insert		✓	✓	✓
415-00051	VITA 66.5 Style D backplane insert		✓	✓	✓
Backplane connector shells					
450-00066	Backplane shell, V66.5 Module C			✓	
450-00065	Backplane shell, V66.5 Module D		✓		
450-00104	Backplane shell, V66.5 Module E				✓
450-00067	Backplane shell, V66.5 Module E				✓
450-00070	Backplane shell, V66.5 Module F	✓			

Accessories for LightCONEX plug-in module connectors

Part Number	Description
415-00005	Interposer kit for LC Style A (4TRX, 12TX, and 12RX), includes: 1x 700-00018 interposer + 4x screws
415-00018	Interposer kit for LC Styles C and D (4TRX, 12TX, and 12RX), includes: 1x 700-00106 interposer + 4x screws
415-00019	Interposer kit for LC Styles A, C, and D (12RX), includes: 1x 700-00019 interposer + 4x screws
415-00041	Interposer kit for LC28 Styles C and D (4TRX, 12TX, and 12RX), includes: 700-00115 interposer, 4x screws

SNAP12

Part Number	Product Description	Channels	Bandwidth (Gbps/ch.)	Soldering	Operating Temp. (°C)
SNT12C0180123	SNAP12 transmitter	12	10.3125	RoHS	0 to 70
SNR12C0180123	SNAP12 receiver	12	10.3125	RoHS	0 to 70
SNT12C0100123	SNAP12 transmitter	12	6.25	RoHS	0 to 70
SNR12C0100123	SNAP12 receiver	12	6.25	RoHS	0 to 70
SNT12C0050123*	SNAP12 transmitter	12	3.125	RoHS	0 to 70
SNR12C0050123*	SNAP12 receiver	12	3.125	RoHS	0 to 70

* Fully MSA compliant

Optical FMC Cards

	Optical Interfaces	FMC Card Part Number	Includes this Optical Transmitter	Includes this Optical Receiver
<i>Light</i> ABLE 10G LL Series Optical FMC Cards (LLF)	10TRX	LLF10P918533102	LLT12P918533001	LLR12P918530101
	12TRX	LLF12P918533102	LLT12P918533001	LLR12P918530101
	24TX	LLF24P918533002	LLT12P918533001 (2x)	n.a.
	24RX	LLF24P918530102	n.a.	LLR12P918530101 (2x)
<i>Space</i> ABLE 10G SL Series Optical FMC Cards (SLF)	10TRX	SLF10P918533101	SLT12P918533001	SLR12P918530101
	12TRX	SLF12P918533101	SLT12P918533001	SLR12P918530101
	24TX	SLF24P918533001	SLT12P918533001 (2x)	n.a.
	24RX	SLF24P918530101	n.a.	SLR12P918530101 (2x)

Accessories for air-cooled, MPO bracket FMC cards

Part Number	Description
415-00046	FMC Bracket 24 MMF MPO Kit
415-00047	FMC Bracket 2x12 MMF MPO Kit
500-00260	Optical cable 2x12 MMF MT to 1x24 MMF MPO (with 415-00046)
500-00261	Optical cable 1x12 MMF MT to 1x12MMF MPO (two cables required for FMC card application with 415-00047)
415- 00048	Conduction cooling bridge kit

Cables and accessories



Smiths Interconnect carries a wide selection of multimode optical fibre cables and ribbons.

Multimode fibre (50/125) is used and can be terminated in multiple styles (MT, MPO, etc.). Lengths of up to 300 m are offered. Custom cables and ribbons are available.

Disclaimer

All of the information included in this catalogue is believed to be accurate at the time of printing. It is recommended, however, that users should independently evaluate the suitability of each product for their intended application and be sure that each product is properly installed, used and maintained to achieve desired results.

Smiths Interconnect makes no warranties as to the accuracy or completeness of the information, and disclaims any liability regarding its use.

Smiths Interconnect reserves the right to modify design and specifications, in order to improve quality, keep pace with technological development or meet specific production requirements.

No reproduction or use without express permission of editorial and pictorial content, in any manner.

Worldwide Support

Connectors

Americas

Sales

connectors.uscsr@smithsinterconnect.com

Technical Support

connectors.ustechsupport@smithsinterconnect.com

Europe

Sales

connectors.emeacsr@smithsinterconnect.com

Technical Support

connectors.emeatechsupport@smithsinterconnect.com

Asia

Sales

asiacsr@smithsinterconnect.com

Technical Support

asiatechsupport@smithsinterconnect.com

Fibre Optics & RF Components

Americas

Sales

focom.uscsr@smithsinterconnect.com

Technical Support

focom.techsupport@smithsinterconnect.com

Europe

Sales

focom.emeacsr@smithsinterconnect.com

Technical Support

focom.techsupport@smithsinterconnect.com

Asia

Sales

focom.asiacsr@smithsinterconnect.com

Technical Support

focom.techsupport@smithsinterconnect.com

Semiconductor Test

Americas

Sales

semi.uscsr@smithsinterconnect.com

Technical Support

semi.techsupport@smithsinterconnect.com

Europe

Sales

semi.emeacsr@smithsinterconnect.com

Technical Support

semi.techsupport@smithsinterconnect.com

Asia

Sales

semi.asiacsr@smithsinterconnect.com

Technical Support

semi.techsupport@smithsinterconnect.com

RF/MW Subsystems

Americas, Europe & Asia

Sales

subsystems.csr@smithsinterconnect.com

Technical Support

subsystems.techsupport@smithsinterconnect.com

Connecting Global Markets

more > smithsinterconnect.com | [in](#) [twitter](#) [youtube](#)

Copyright© 2023 Smiths Interconnect | All rights reserved | Version 1.0

The information contained within this document is subject at all times to applicable Export Control regulations and legal requirements.