Amphenol
Active Optics
Products

Case Studies & Applications

Mil-grade next-gen fiber optic on-board transceivers

MIL-AERO
GRADE
-40°C TO +85°C
STD-883 SHOCK & VIBE

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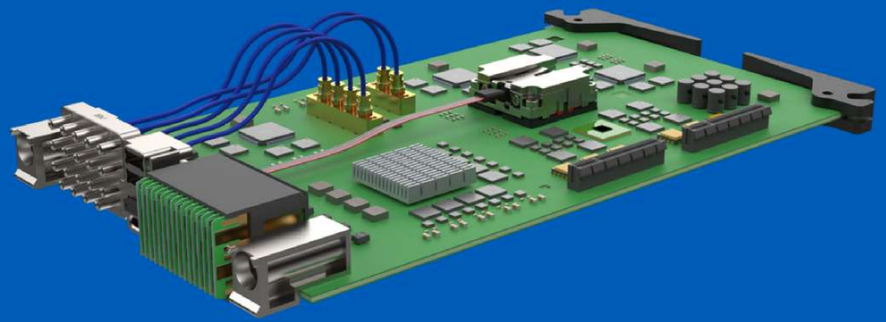
Content



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Portfolio Snapshot

MIL-AERO GRADE
-40°C TO +85°C
STD-883 SHOCK & VIBE

SCFF

UP TO 28 GBPS

Small Cubic Form Factor

- 1 TX + RX
- Multimode - 850nm
- 10 & 25 Gbps /channel
- Half size of SFP+
- LC connection
- Solderable

QEPT

UP TO 200 GBPS

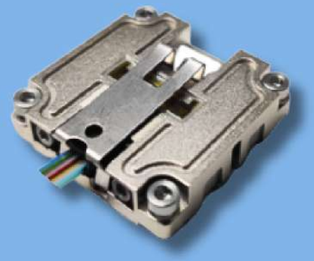
Quad Embedded Pluggable Transceiver

- 4 TX + RX
- Multimode - 850nm
- 28 & 56 Gbps /channel
- Hot pluggable
- Fiber removable
- Easy path to PAM4

LEAP® OBT

UP TO 300 GBPS

On-board Transceiver



- 12 TX + RX
- Multimode - 850nm
- 16 & 25 Gbps /channel
- World's Fastest & Smallest
- Fiber Removable
- BGA Mountable

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Current Focus Areas

MILITARY & AEROSPACE

- Ground Vehicle
- Maritime
- Radar
- Avionics
- Missiles
- Sattelites
- IFE
- Electronic Warfare

and more.

INDUSTRIAL

- Telescopes
- AI Supercomputers
- Particle Accelerators
- Hardware Emulation
- AOI Systems
- Server Networking
- Industrial Instrumentation

and more.

COMMERCIAL

- AI Desktop PC
- Perconal Computer
- Datacom Networking
- Datacentre
- Storage
- 5G

and more.

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Case Studies & Applications

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Ground Radar

PRODUCT	SCFF 10 Gbps LEAP OBT 192 Gbps (rugged)
KEY FEATURES	High density & high-bandwidth Rugged small form factor Each channel works independently Very low power consumption
APPLICATION	Ground-based & mobile radar for system's mast-mounted antenna communication
MARKET	Military Ground Vehicle
WHY	Fiber is lighter and safe against EMI, able to carry much more data without loss - end to end solution

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Airborne Radar

PRODUCT	SCFF 10 Gbps LEAP OBT 192 Gbps (rugged)
KEY FEATURES	Operating temperature Light weight & high-speed data Protocols & Interoperability Very low power consumption
APPLICATION	Antenna and cockpit communication integration to detect, track, and identify airborne threats enemy aircraft, missiles, and unmanned aerial vehicles (UAVs)
MARKET	Airborne Radar Naval Radar
WHY	Lighter (less fuel consumption), higher bandwidth and safe against EMI, shock & vibe MIL-833 - end to end solution

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Naval Systems

PRODUCT	LEAP OBT 192 Gbps (rugged)
KEY FEATURES	High density & high-bandwidth Electrical & optical capabilities Protocols & Interoperability Versatility
APPLICATION	VITA/SOSA friendly and rack mounted networking and communication solution (VPX)
MARKET	Naval
WHY	Better optical and electrical performance against COTS solutions - end to end solution

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Avionics

PRODUCT	LEAP OBT 192 Gbps (rugged) QEPT 100 Gbps
KEY FEATURES	Protocol independent Light weight & high-speed data Very low power consumption EMI & RFI immune
APPLICATION	Communication between various onboard system (navigation systems, flight control systems, radar systems, sensors), TCAS & ADS-B
MARKET	Avionics
WHY	Lighter (less fuel consumption), higher bandwidth and safe against EMI, shock & vibe MIL-833 - end to end solution

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Cabin Management System

PRODUCT	SCFF 10 Gbps /25 Gbps DUAL SCFF 50 Gbps
KEY FEATURES	Protocol independent Light weight & high-speed data Operating Temperature Very low power consumption
APPLICATION	Communication hub, transmitting and receiving data between the CMS and various cabin subsystems (lighting, IFE, climate control & connectivity services)
MARKET	Commercial Aviation
WHY	Upgrade aircraft's copper CMS to a lighter (less fuel consumption), more reliable & higher bandwidth solution

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Electronic Warfare

PRODUCT	SCFF 25 Gbps LEAP OBT 192 Gbps (rugged) QEPT 100 Gbps
KEY FEATURES	Rugged Easy to install and maintain Protocols & Interoperability EMI & RFI immune
APPLICATION	VITA friendly, high speed data for SOSA modules used for communication on the various combat fields
MARKET	Electronic Warfare
WHY	Instant & reliable transmission, rugged small form factor, light weight & immune against EMI - end to end solution

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Missiles & Torpedos

PRODUCT	SCFF 10 Gbps
KEY FEATURES	Cost friendly Very low power consumption Instant and reliable communication
APPLICATION	Light sensor for application's start at ground and marine based stations
MARKET	Missiles
WHY	High receiver sensitivity, real-time response, immune to EMI/RFI & cost effective

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Satellites

PRODUCT	QEPT 100 Gbps
KEY FEATURES	Radiation hardened Very low power consumption Small form factor Protocol compatibility
APPLICATION	Communication between the satellite and ground stations or other satellites
MARKET	Satellites
WHY	Real-time data processing, analysis & integration with data networks, scalable bidirectional communication solution

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Telescopes

PRODUCT	LEAP OBT 300 Gbps
KEY FEATURES	High density & high bandwidth Very low power consumption Protocol compatibility Small form factor
APPLICATION	Facilitates data transmission from modern imaging sensors and spectrographs to data processing and storage systems
MARKET	Telescopes
WHY	Real-time data processing, analysis & integration with data networks

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High Speed Mega Switches

PRODUCT	LEAP OBT 300 Gbps LEAP OBT 192 Gbps (rugged) QEPT 100 Gbps
KEY FEATURES	Placed close to the FPGA Allows airflow optimization Low latency Board design flexibility
APPLICATION	High-speed data communication between the FPGA and other system components or external devices - VITA/SOSA friendly
MARKET	Switches & Mission Computers
WHY	Scalable, combines high speed, layout optimisation, low latency, power consumption & cooling capabilities

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AI Super-computing

PRODUCT	LEAP OBT 300 Gbps
KEY FEATURES	Placed close to the FPGA Allows airflow optimization Low latency Board design flexibility
APPLICATION	Multiples modules delivering high-speed data communication between the FPGA and other system components and external devices
MARKET	Artificial Intelligence
WHY	Scalable, combines high speed, layout optimisation, low latency, power consumption & cooling capabilities

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AI Personal Computer

PRODUCT	SCFF 10 Gbps
KEY FEATURES	Placed close to the FPGA Upgrade to 25G w/ same board layout Low latency Board design flexibility
APPLICATION	Powering next generation of personal computers processing and analysing intense quantity of real-time data
MARKET	Artificial Intelligence
WHY	Scalable, combines high speed, layout optimisation, low latency, power consumption & cooling capabilities

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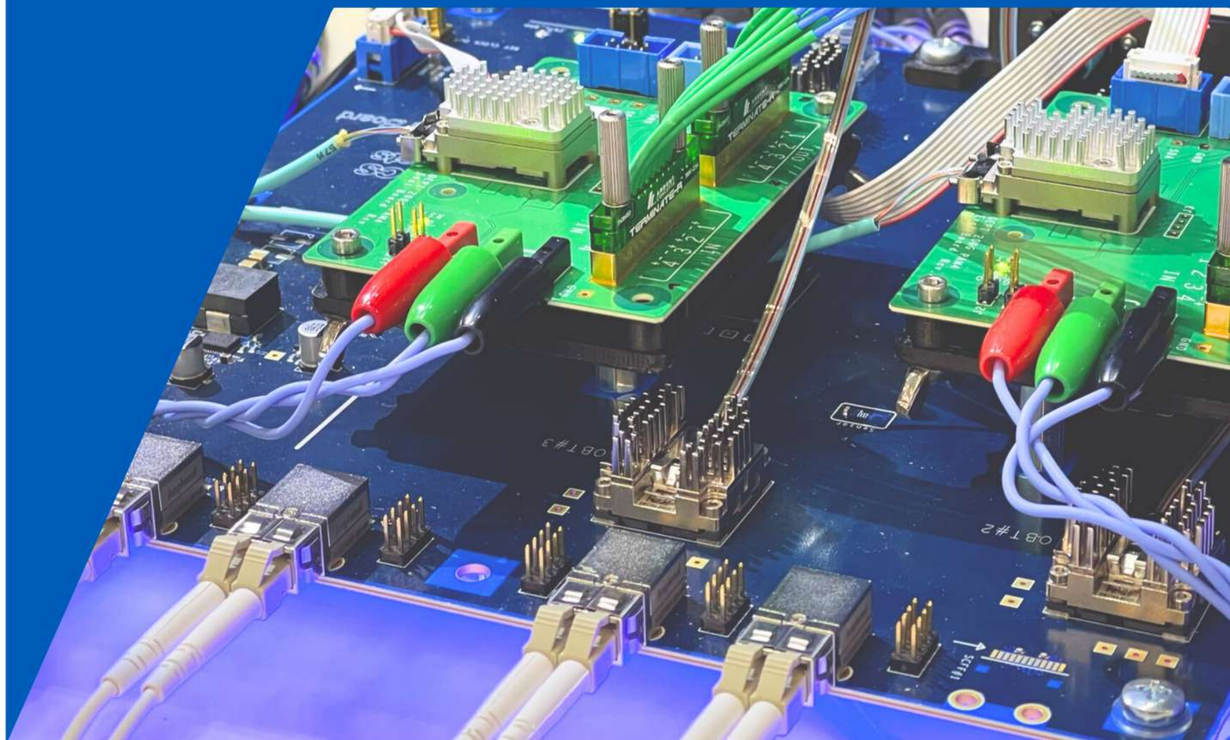
	SCFF	DUAL SCFF	QEPT 100	QEPT 200	QEPT TX/RX	LEAP RUGGED	LEAP OBT
TX / RX	TX+RX	TX+RX	TX+RX	TX+RX	TX or RX	TX+RX	TX+RX
Number of Channels	1 + 1	2 + 2	4 + 4	4 + 4	8	12 + 12	12 + 12
Aggregated Data Rate (Gbps)	10 or 25	20 or 50	100	200	100	192	300
Size LxWxH (mm)	26x14x10	36x30x12	29x18x9	29x18x9	29x18x9	24x24x8	24x24x8
Multimode	✓	✓	✓	✓	✓	✓	✓
Wavelength (nm)	850	850	850	850	850	850	850
Modulation	NRZ	NRZ	NRZ	PAM4	NRZ	NRZ	NRZ
Operating Temperature Minimum, Maximum (°C)	-40, +85	-40, +85	-40, +85	0, +70	-40, +85	-40, +85	0, +70
Vibe MIL-883	✓	✓	✓	✓	✓	✓	✓ *
Shock MIL-883	✓	✓	✓	✓	✓	✓	✓ *
Power Dissipation (W)	10G: 0.45 25G: 0.65	20G: 0.90 50G: 1.30	1.5	3.0	1.5	3.5	5.8
Mounting	Soldering	Daughter card	Mezzanine connector	Mezzanine connector	Mezzanine connector	BGA socket	BGA socket
Heat Dissipation	Die-cast housing	Die-cast housing	Heatsink, coldplate	Heatsink, coldplate	Heatsink, coldplate	Heatsink, coldplate	Heatsink, coldplate
Fiber Connection	LC	LC	MT-12 ferrule	MT-12 ferrule	MT-12 ferrule	MT-24 ferrule	MT-24 ferrule
Hot-Pluggable	✗	✗	✓	✓	✓	✗	✗
Fiber cable can be replaced	✓	✓	✓	✓	✓	✓	✓
Bit Error Rate (BER)	$< 10^{-12}$	$< 10^{-12}$	$< 10^{-12}$	$<2.4*10^{-4}$	$< 10^{-12}$	$< 10^{-12}$	$< 10^{-12}$
Two-wire serial interface (i²c)	✓	✓	✓	✓	✓	✓	✓
CDR (Clock Data Recovery)	✓	✓	✓	✓	✓	✗	✓
Input Equalization, Output Amplitude & Pre-Emphasis	✓	✓	✓	✓	✓	✓	✓
Digital Monitoring (Voltage, Temperature, RSSI)	✓	✓	✓	✓	✓	✓	✓
Evaluation Kit Available	✓	✓	✓	✓	coming soon	✓	✓
Parts Available	✓	✓	✓	coming soon	coming soon	✓	✓
Packaging (pcs)	10	10	10	10	10	1 or 10	1 or 10

✓ * : qualified per similarity

Product Matrix Comparison



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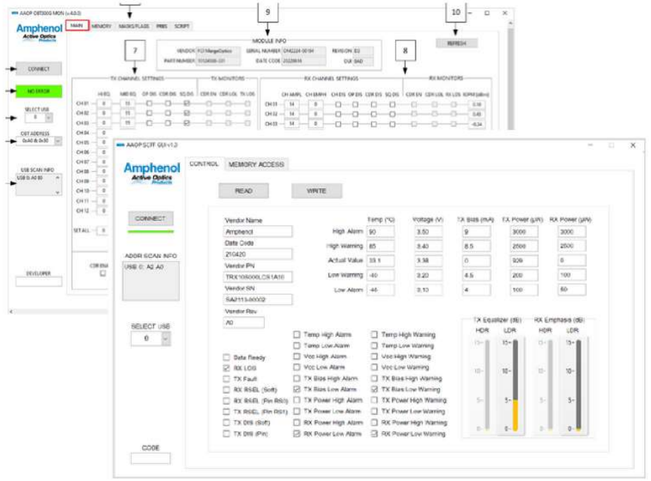
Evaluation Kits

EVALUATION BOARDS

Designed to streamline your product development journey, these boards offer a plug-and-play solution for bringing your ideas to life in record time. Convenient and efficient platform for engineers during the design phase, providing rapid prototyping capabilities, reduced development time, and components in real-world scenarios.

GUI - GRAPHICAL USER INTERFACE

Our user-friendly GUI empowers you to interact with your prototype like never before, offering real-time data visualization, easy parameter adjustments, and streamlined configuration options.



CABLES

With our premium cable set included with every evaluation board, they are engineered for reliability and versatility. Our cable set ensures seamless connectivity and compatibility with a wide range of devices and interfaces.

ARDENT CONCEPTS
An Amphenol Company

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