

Magnum Series

Size 8 Cavity Optoelectronic PCB Insert, *ELIO®, Front Release, 850nmM - Arinc 818, 803 & 804 Compliant

Optical Receiver Unit

FEATURES

- Compliant with Arinc 664, 818, 803 & 804
- Suitable for Fast Ethernet, Gigabit Ethernet, 1x/2x/4xFibre Channel and sFPDP applications from 50Mbps to 5.0Gbps
- Maximum optical channel bit error rate less than 1×10^{-12}
- Operating temperature range from -55°C to $+85^{\circ}\text{C}$
- Shock and vibration resistant per RTCA / D0-160E
- Arcap contact insert material meets stringent EMI / RFI / ESD & EMP performance specifications
- Six pin PCB footprint with Loss of Signal (LOS) functions
- ELIO® 2.5mm ceramic optical fiber ferrule connector interface per EN 4531*
- Compatible with Arinc 600 size 8 (Quadrx) insert cavities

APPLICATIONS

Magnum series printed circuit board mounted optical receivers enable high speed network communications over long distances in harsh environments.

- Fast or Gigabit Ethernet switches and peripherals
- Fibre Channel switches and peripherals
- PCI Express links
- sFPDP data links
- Video displays

This size 8 Optoelectronic cavity insert provides a rugged optical interface that is compliant with ELIO® 2.5mm ceramic optical ferrules*.

The multimode optical fiber interface supports applications where copper cable link distance, bandwidth, weight or bulk make the use of twisted pair, twinax or quadrx copper conductors unacceptable.

*ELIO® is a registered trademark of Esterline Souriau

US Pat. # 7,690,849



One RX Channel Operating from 100Mbps to 5.0Gbps

DESCRIPTION

Magnum series Optoelectronic size 8 cavity PCB insert receivers consist of optoelectronic receiver functions integrated into a printed circuit board mounted pin contact. The optical receivers are 850nm PIN diodes + integrated limiting amplifiers. Outputs from the receivers consist of differential CML data signals on the receiver (RX+ and RX-) lines. A CMOS output signal is generated on the Loss of Signal (LOS) line upon loss of a valid incoming optical data. The receiver data lines are squelched upon LOS assertion, preventing errant data generation when an invalid incoming optical signal is presented to the optical receiver.

The optical mating interface to the Magnum series size 8 cavity insert optical receivers is an ELIO® 2.5mm ceramic fiber optic ferrule stub per EN 4531. The ferrule stub has an integral 62.5/125µ multimode optical fiber enabling it to interface to either 62.5/125µ or 50/125µ optical fiber cable.

The electrical interface to the Magnum series size 8 cavity insert optical receivers is an six position solder pin header suitable for thru-hole soldering to a flexible or rigid printed circuit.

Magnum series size 8 cavity insert optical receivers are vibration isolated, environmentally hardened components designed for use in harsh environment applications.

ORDERING INFORMATION

Application	Part Number
50Mbps to 3.19Gbps	P44F-RS1E-EK
3.2Gbps to 5.0Gbps	P44F-RS1G-EK

Magnum Series, 2.5mm Ferrule, Size 8 Cavity Insert, Optical Receiver,
Multimode, 850nm, Arinc 664, 818, 803 & 804 Compliant

ABSOLUTE MAXIMUM RATINGS

Absolute maximum limits mean that no catastrophic damage will occur if the product is subjected to these ratings for short periods, provided each limiting parameter is in isolation and all other parameters have values within the performance specification. It should not be assumed that limiting values of more than one parameter can be applied to the product at the same time.

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Storage Temperature	T_s	-55		+100	°C
Supply Voltage	V_{cc}	-0.5		+4.5	V
RX Output Current	I_o			50	mA

RECOMMENDED OPERATING CONDITIONS

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Operating Temperature	T_A	-55		+85	°C
Power Supply Voltage	V_{cc}	+3.135		+3.465	V
Power Supply Noise (p-p)	N_p			200	mV

SPECIFICATIONS COMPLIANCE

Requirement	Feature	Condition	Notes
RTCA / D0-160E	ESD	Class II	2200V
RTCA / D0-160E	Vibration	3.8g ² /Hz	43G rms
RTCA / D0-160E	Shock	40.0g	6-9mS
RTCA / D0-160E	Flame Resistance	Method 1012	30 Seconds
RTCA / D0-160E	Damp Heat	10 Cycles	24 Hours
ARINC 801	Mating Durability	500 Cycles	<0.5dB Change
FDA / CDRH / IEC-825-1	Eye Safety	Class 1	No Safety Interlocks Required

MATERIALS

Item	Detail	Notes
Insert	Arcap	
Solder Pins	Brass	
Solder Pin Plating	Gold	
Ferrule	Ceramic	
Printed Circuits	Polyimide / FR-4	

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OPTICAL RECEIVERS T_A = Operating Temperature Range, V_{CC} = 3.135V to 3.465V

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Optical Sensitivity (BER<10 ⁻¹² , ER=9.0) xxxx-xxxE-xx @ 50Mbps to 1.25Gbps xxxx-xxxE-xx @ 2.125Gbps xxxx-xxxE-xx @ 2.5Gbps to 3.19Gbps xxxx-xxxG-xx @ 3.2Gbps to 5.0Gbps	P_I	-17.0 -15.0 -15.0 -14.0		0.0	dBm
Optical Wavelength	λ_{IN}	830		860	nM
Optical Modulation Amplitude (ER=9.0, p-p) xxxx-xxxE-xx @ 50Mbps to 1.25Gbps xxxx-xxxE-xx @ 2.125Gbps xxxx-xxxE-xx @ 2.5Gbps to 3.19Gbps xxxx-xxxG-xx @ 3.2Gbps to 5.0Gbps	OMA	31 49 56 61			μ W
CML Differential Output Voltage (p-p)	V_{Diff}	600	780	1200	mV
Loss of Signal (LOS) Deassert Level	P_{OFFr}	-28.0			dBm
Loss of Signal (LOS) Hysteresis	HYS	1.5	2.25	3.5	dB

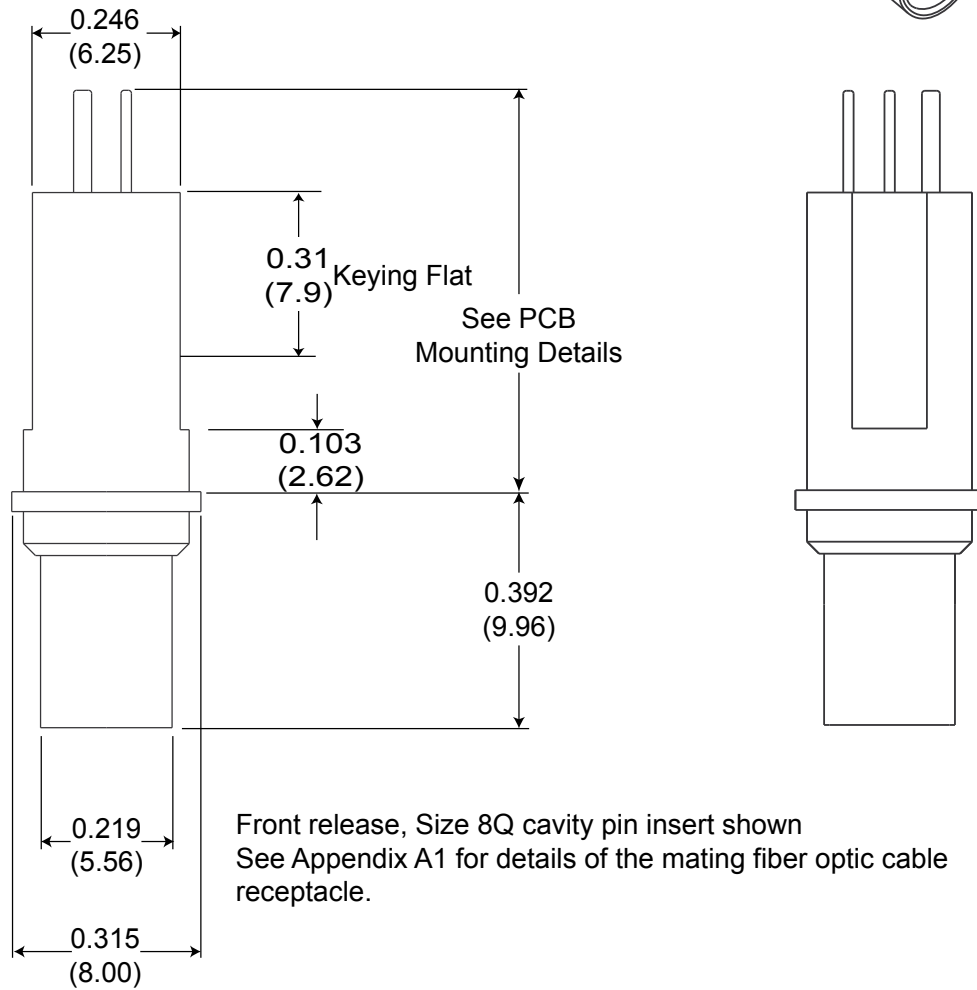
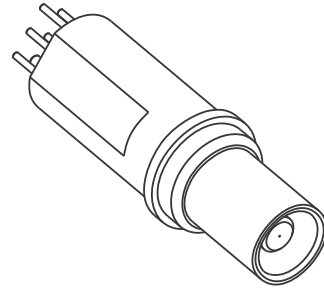
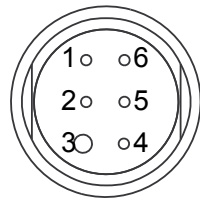
POWER SUPPLY CURRENT T_A = Operating Temperature Range, V_{CC} = 3.135V to 3.465V

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Supply Current per receiver	I_{cct}		80	110	mA

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OUTLINE DRAWING

Dimensions are shown as: inches (mm)



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ELECTRICAL PIN ASSIGNMENTS

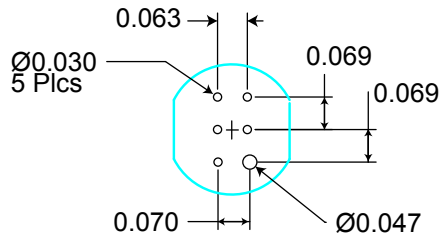
Magnum Size 8 Cavity Insert

Pin Number	Symbol	Description	Logic Family
1	GND	Ground	N/A
2	V _{cc}	Power Supply - Input	N/A
3	GND	Ground	N/A
4	LOS	Loss of Signal - Output Satisfactory Optical Input: Logic "0" Output Unsatisfactory Optical Input: Logic "1" Output	Open Drain CMOS
5	RX-	Receiver Data - Input	CML
6	RX+	Receiver Data - Input	CML

PRINTED CIRCUIT BOARD FOOTPRINT

Dimensions are shown as: inches

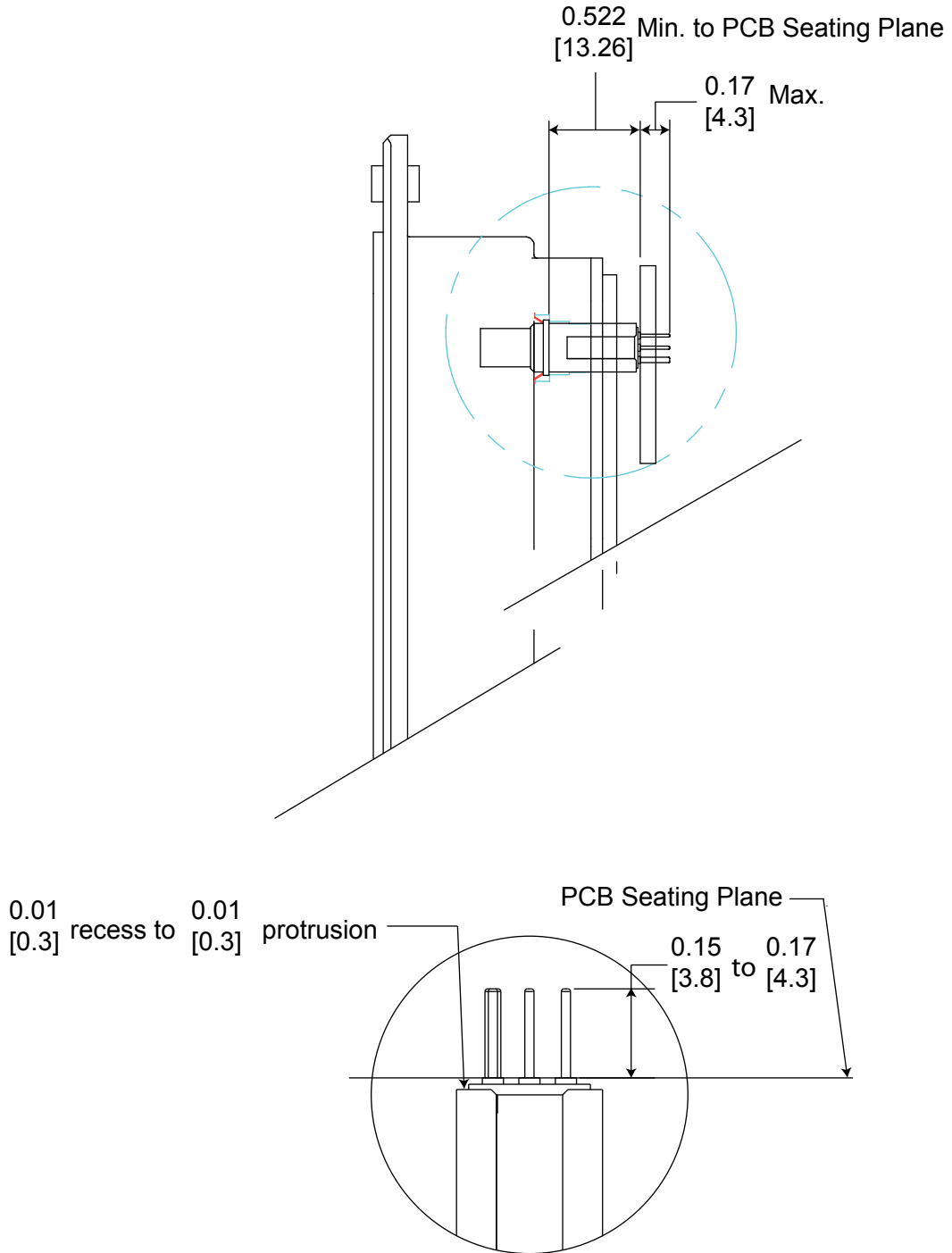
PCB Hole Pattern Mounting Side View



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PCB MOUNTING DETAILS

Dimensions are shown as: inches [mm]

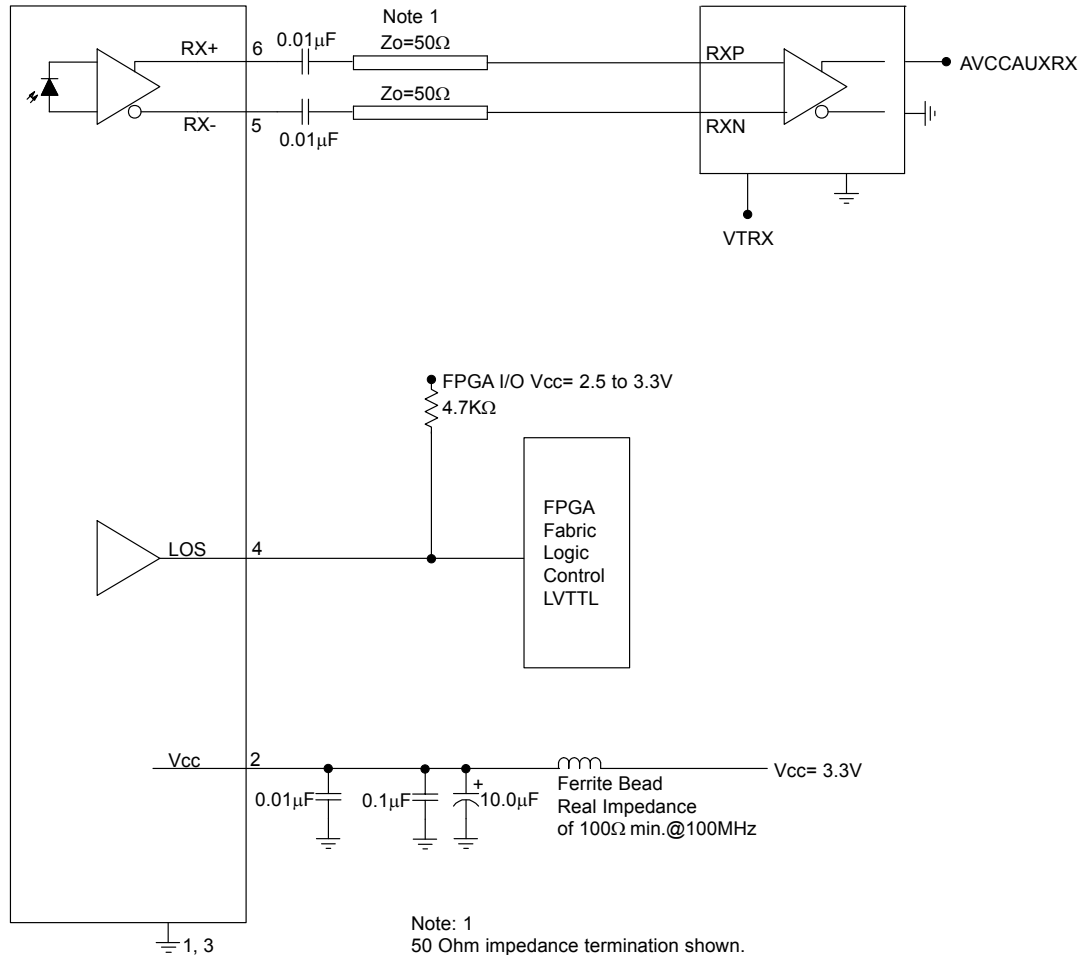


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APPLICATION SCHEMATIC
For Xilinx Rocket I/O Interfaces

Optical Receivers

Xilinx Rocket I/O



Typical application schematic shown
For alternate applications or termination
techniques, please consult the Factory

Note: 1
50 Ohm impedance termination shown.
For alternate impedance requirements,
please consult the Factory.

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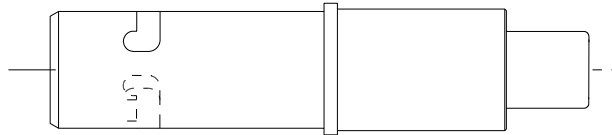
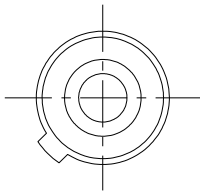
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APPENDIX A1

SOURIAU ELIO® FIBER OPTIC CABLE ADAPTERS



ELIO® 8 Adapter for Quadrax # 8 Cavity in Female Inserts
Ordering Information: ELIO AQ0S



ELIO® multimode contact
Ordering information

ELIO	09N	G	L	A
Cable external diameter & Contact sealing:				
09N: 0.9 ^{±0.1} mm. Non waterproof				
18N: from 1.5mm to 1.9mm. Non waterproof				
18W: 1.8 ^{±0.1} mm. Waterproof				
20N: from 1.7mm to 2.1mm. Non waterproof				
20W: 2.0 ^{±0.1} mm. Waterproof				
Fibre type:				
G: ELIO® Multimode				
Boot type:				
L: Long boot				
S: Short boot				
N: No boot (non waterproof version only)				
Contact version index				



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