

Dagger Series

D38999 Size 19-18 Optical Quad Receiver, *ELIO®, 850nm, ARINC 818, 803 & 804

Quad RX, Flange Mount

FEATURES

- Compliant with ARINC 818, 803 & 804
- Suitable for 1x/2x/4xFibre Channel and sFPDP applications from 50Mbps to 4.25Gbps
- Maximum optical channel bit error rate less than 1×10^{-12}
- Operating temperature range from -55°C to +85°C
- Shock and vibration resistant per RTCA / D0-160E
- Electroless nickel plating meets stringent corrosion resistance specifications
- ELIO® 2.5mm ceramic optical fiber ferrule connector interface per EN 4531, ABS 1379 and ARINC 801

APPLICATIONS

Dagger series D38999/19-18 optical receivers enable high speed network communications over long distances in harsh environments.

- Fibre Channel switches and peripherals
- ARINC 818 video interfaces
- sFPDP data links

Dagger series D38999 size 19-18 optical quad receivers provide a rugged optical interface that is compliant with EN4531 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



Four optical RX Links operating from 50Mbps to 4.25Gbps

DESCRIPTION

Dagger series D38999/19-18 optical quad receivers consist of optoelectronic receiver functions integrated into a wall mount D38999 cylindrical connector.

The optical receivers are 850nm PIN diodes + 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 of the Dagger series D38999/19-18 optical receivers is an ELIO® fiber optic cable plug per EN4531. The electrical interface to the Sabre series optical receivers is a ribbon coax to Samtec EQCD high density cable assembly enabling SMT interconnection to a customer's backplane, motherboard or daughtercard.

Dagger series D38999/19-18 optical receivers are vibration isolated, environmentally hardened components designed for use in harsh environment applications.

ORDERING INFORMATION

Application	Part Number
50Mbps to 3.19Gbps	P12F-4R1E-Fx-Lxxx
3.2Gbps to 4.25Gbps	P12F-4R1G-Fx-Lxxx

See Appendix A2 for more part number options

Dagger Series D38999/19-18 ELIO Optical Quad 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	-65		+100	°C
Supply Voltage	V_{CC}	-0.5		+4.5	V

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
EN4531	Mating Durability	500 Cycles	<0.5dB Change
FDA / CDRH / IEC-825-1	Eye Safety	Class 1	No Safety Interlocks Required

MATERIALS

Item	Detail	Notes
D38999 Shell	Aluminum	
D38999 Shell Finish	NI, OD-CD or ZN-NI	
Interface Seal	Silicone Elastomer	
Optical Ferrules and Alignment Sleeves	Ceramic	
Printed Circuits	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 4.25Gbps	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 4.25Gbps	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

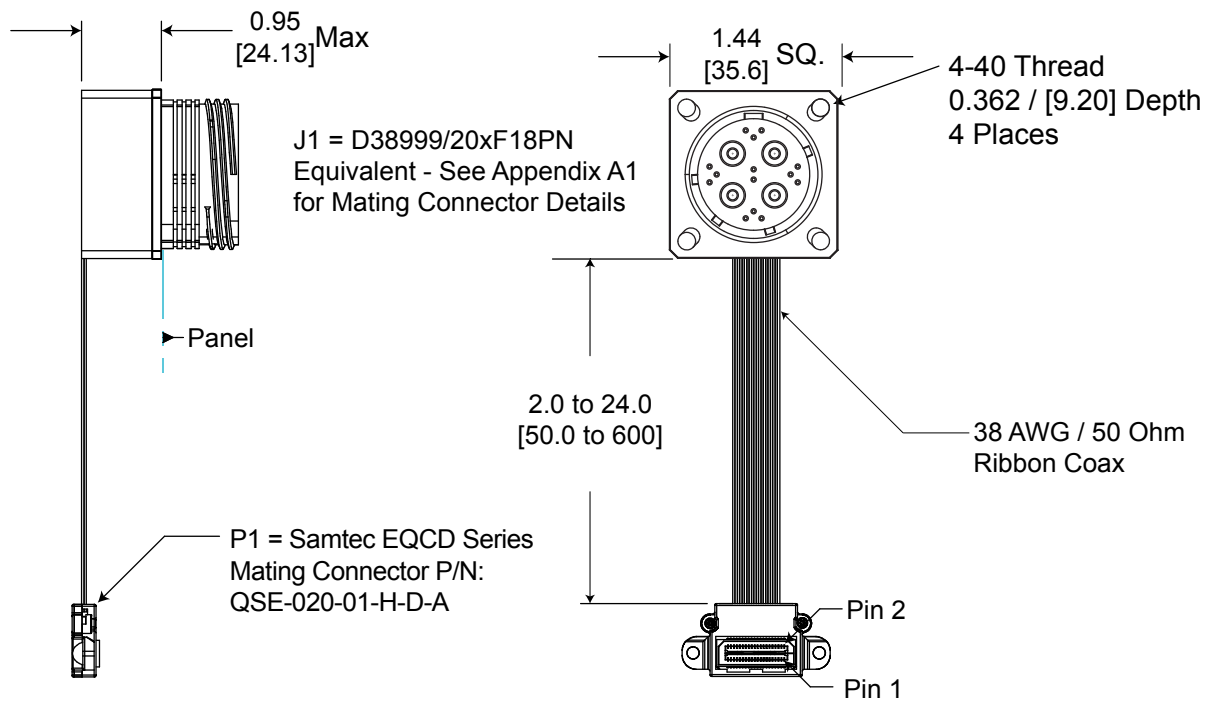
POWER SUPPLY CURRENT T_A = Operating Temperature Range, V_{CC} = 3.135V to 3.465V

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

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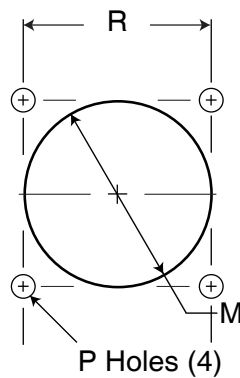
OUTLINE DRAWING

Dimensions are shown as: inches [mm]



Panel Cutout Dimensions
 Rear Panel Mounting Only

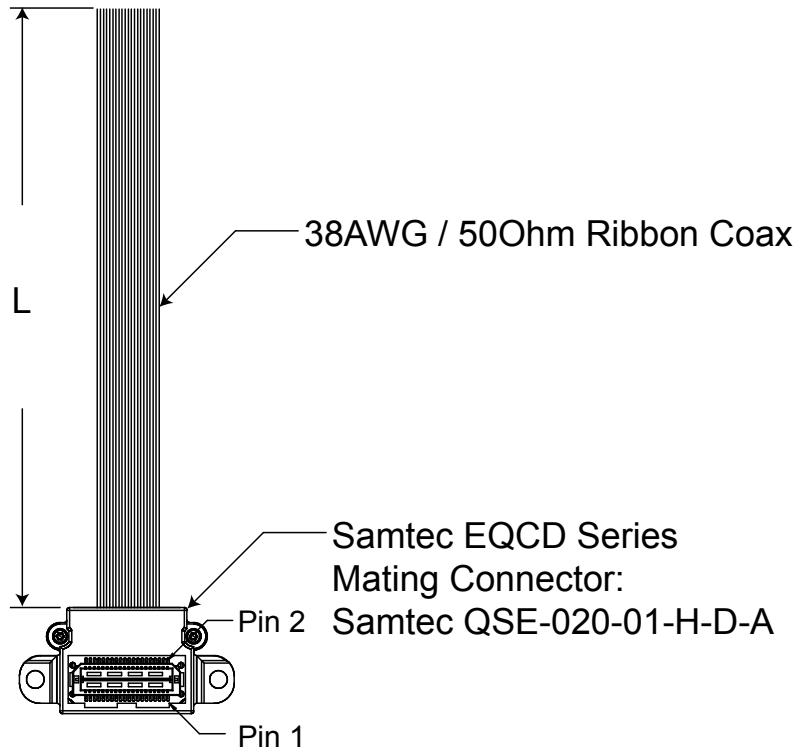
Shell Size Code	Shell Size	M Min	P Holes	R BSC
F	19	1.297 (32.94)	0.133 (3.4) 0.123 (3.1)	1.156 (29.4)



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OUTLINE DRAWING

Cable Length Options



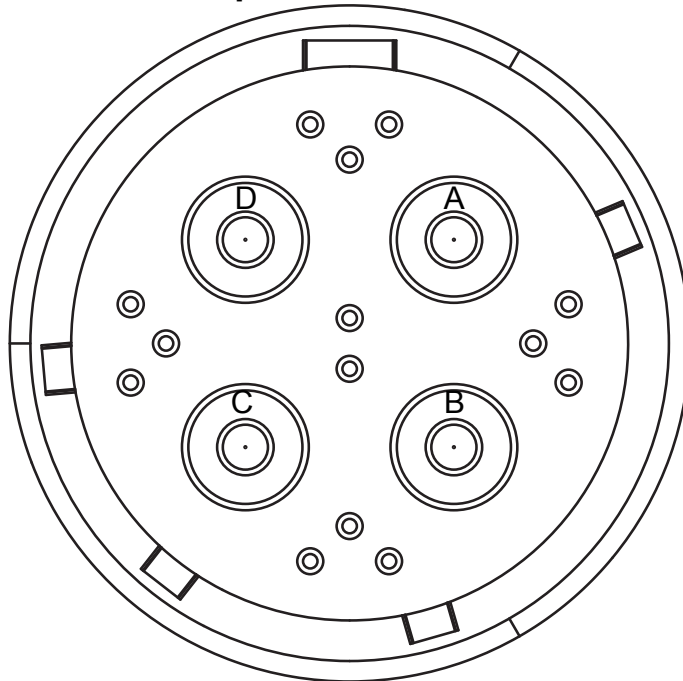
Ribbon Coax Cable Length Options

L (mm) +/- 6.0	ITEM #
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See Appendix A2 on Page 10

OPTICAL INSERT ARRANGEMENT

TOP Optical Interface



Front face of the optical
 insert shown, fiber optic cable plug
 opposite - see Appendix A2
 for details

OPTICAL PORT ASSIGNMENTS

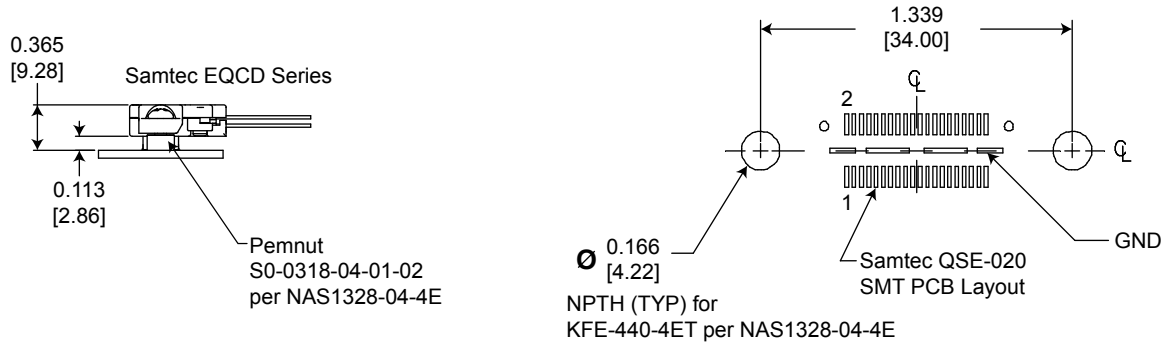
Dagger Series D38999/19-18 Optical Interface

D38999 CAVITY CODE	LOGICAL PORT NUMBER	PORT FUNCTION
A	0	RX
B	0	TX
C	1	RX
D	1	TX

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PRINTED CIRCUIT BOARD FOOTPRINT

All dimensions shown are for reference only: inches [mm]



SAMTEC EQCD PIN ASSIGNMENTS

ELECTRICAL			PORT #	OPTICAL	
PIN #	FUNCTION	LOGIC FAMILY		PIN #	FUNCTION
1	LOS	Open Drain CMOS	0	0	RX
2	GND	N/A	0-3	0-3	
3	RX-	CML	0	0	
4	NC	N/A	N/A	N/A	
5	RX+	CML	0	0	
6	LOS	Open Drain CMOS	1	1	
7	RX-	CML	1	1	
8	V _{CC}	3.135 to 3.465VDC	0-3	0-3	
9	RX+	CML	1	1	
10	V _{CC}	3.135 to 3.465VDC	0-3	0-3	
11	LOS	Open Drain CMOS	2	2	
12	GND	N/A	0-3	0-3	
13	RX-	CML	2	2	
14	NC	N/A	N/A	N/A	
15	RX+	CML	2	2	
16	LOS	Open Drain CMOS	3	3	
17	RX-	CML	3	3	
18	V _{CC}	3.135 to 3.465VDC	0-3	0-3	
19	RX+	CML	3	3	
20	V _{CC}	3.135 to 3.465VDC	0-3	0-3	

Center slug is Ground.

For the Loss of Signal (LOS) Functions: Satisfactory Optical Input: Logic "0" Output, Unsatisfactory Optical Input: Logic "1" Output

All CML functions are internally AC coupled with 100Ω differential termination.

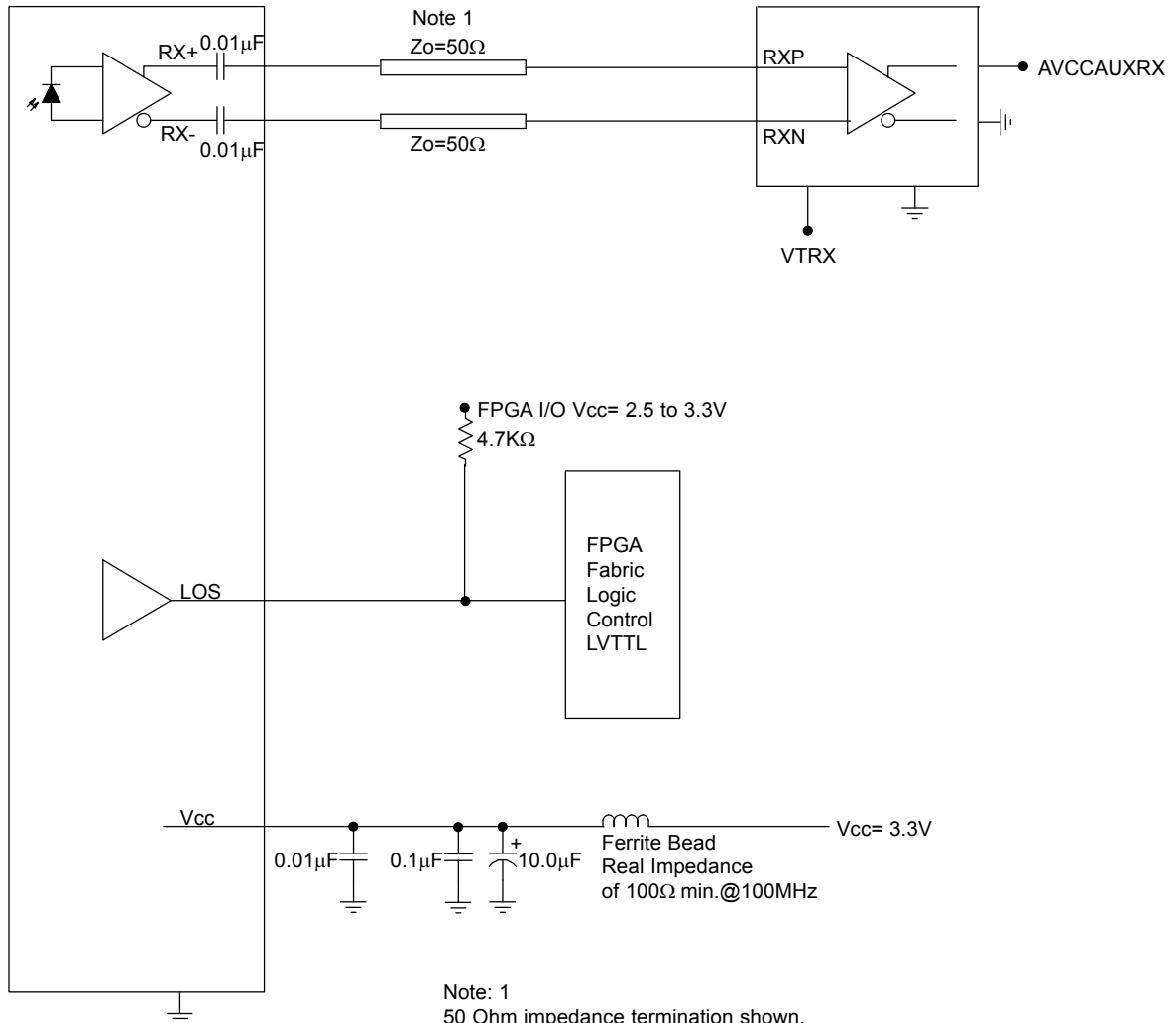
All other pins are NC.

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

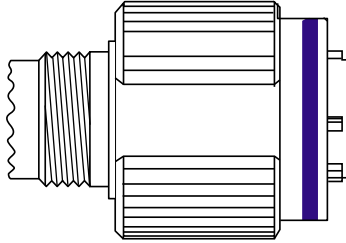
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APPENDIX A1

Mating Fiber Optic Cable - Plug Configuration

FIBER OPTIC CABLE PLUG - SOCKET INSERT

ESTERLINE SOURIAU PART NUMBER = 8D5Q19x84SN621L x = Finish Code



SIZE 8 CAVITY ADAPTOR FOR ELIO TERMINI

ESTERLINE SOURIAU PART NUMBER = ELIOAQ6SB



ESTERLINE SOURIAU ELIO TERMINI

ELIO® multimode contact
Ordering information

ELIO	09N	G	L	A
Cable external diameter & Contact sealing:				
09N: 0.9 ^{mm} , Non waterproof				
18N: from 1.5mm to 1.9mm, Non waterproof				
18W: 1.8 ^{mm} , Waterproof				
20N: from 1.7mm to 2.1mm, Non waterproof				
20W: 2.0 ^{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				



APPENDIX A2

PART NUMBER OPTIONS

Dagger D38999/19-18 Series

P12 **X** - **4** **X** **1** **X** - **F** **X** **X** - **L**

Shell Configuration
P12= D38999 / ELIO

Shell Configuration
F= Square Flange
J= Jam Nut

Fiber Ports
4= 4x Optical Ports

Configuration
R = 4xRX
S = 2xTX + 2xRX
T = 4xTX

Cable Mode
1= Multimode

Datarate
E = 0.1 to 3.19Gbps
G = 3.2 to 4.25Gbps

Shell Size Code
F = D38999/19-18

Shell Plating
F = NI
W = OD CD
Z = ZN / NI

Polarization
 (leave blank) **_** = N
A = A
B = B
C = C
D = D

Electrical Interface
L = Ribbon Coax to
 Samtec EQCD Series -
 Cable Length TBD



192 Bob Fitz Road, Johnson City, TN 37615
 salesmp@moog.com
 moogprotokraft.com