

Saturn Series

Gigabit Ethernet, Sealed RJ-45 & LC, 1000Base-T / SX Media Converter, 24Vdc, Multimode, 850nm VCSEL's

Single Port, LC / RJ-45

FEATURES

- Compliant with IEEE-802.3:2005 Gigabit Ethernet
- Maximum optical channel bit error rate less than 1×10^{-12}
- Operating temperature range from -40°C to $+85^{\circ}\text{C}$
- Shock, vibration and ESD resistant per IEC 60068
- Olive Drab Cadmium or Nickel plating meets stringent
- Aluminum alloy chassis and cylindrical connectors are strong, durable, corrosion resistant and light weight
- *LC-Field®
- *RJ-Field® electrical interface provides robust interconnection to vehicle wiring

APPLICATIONS

Saturn series Gigabit Ethernet media converters enable high speed network communications over long distances in harsh environments.

- Gigabit Ethernet switches and peripherals
- Telecom and datacom switch / router rack-to-rack links
- Storage or computation clusters

The Amphenol RJ-Field® and LC-Field® connectors provide sealed optical and electrical interfaces that are water-tight to IP67 / NEMA-4x when mated.

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

*RJ-Field® and LC-Field® are trademarks of Amphenol.



Sealed LC to RJ-45 Optical to Electrical Media Converter

DESCRIPTION

Saturn series Gigabit Ethernet media converters consist of optoelectronic transmitter and receiver functions integrated along with the 1000Base-T Ethernet electrical to 1000Base-SX Ethernet optical media conversion circuitry into an environmentally sealed unit.

The optical transmitters are high output 850nm VCSEL's. The optical receivers consist of GaAs PIN and

The optical interface to the Saturn series optical media converters is an Amphenol LC-Field® connector enabling interconnection to preterminated LC based optical cable assemblies.

The electrical interface to the Saturn series optical media converters is an Amphenol RJ-Field® connector enabling interconnection to preterminated RJ-45 Cat-5E cable assemblies.

Saturn series Gigabit Ethernet media converters are vibration isolated, environmentally hardened components designed for use in harsh environment applications.

- Sealed against liquid and solid contaminants
- Shock and vibration resistant

ORDERING INFORMATION

Application	Item Number
1000Base-T to 1000Base-SX, <i>OD Cad.</i>	M45L-2SAT-FW
1000Base-T to 1000Base-SX, <i>Nickel</i>	M45L-2SAT-FF

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 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		45.0	V
Data Input Voltage	V_I	-0.5		V_{CC}	V

RECOMMENDED OPERATING CONDITIONS

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Operating Temperature	T_A	-40		+85	°C
Supply Voltage	V_{CC}	+18.0		+36.0	VDC
Power Supply Noise (p-p)	N_P			200	mV

SPECIFICATIONS COMPLIANCE

Requirement	Feature	Condition	Notes
EN 61000-4-2	ESD	HBM	6kV contact / 8kV air discharge
IEC 60068-2-6	Vibration	10g	10Hz - 500Hz
IEC 60068-2-27	Shock	15g, 50g	11ms duration
FCC CFR47	EMC	Part 15	
EN 55022	EMC	Class A	
UL	Flame Resistance	94V-0	

MATERIALS

Item	Detail	Notes
Cylindrical Connector Shells	Aluminum Alloy	
Shell and Housing Plating	Olive Drab Cadmium or Nickel	
Connector Inserts	Thermoplastic	
Interfacial Seals	Elastomer	
Optical Alignment Sleeves	Composite Polymer	
Printed Circuits	Polyimide / FR-4	
Housing	Aluminum Alloy	
Weight	6.1 oz/172.932 grams	

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OPTICAL TRANSMITTERS T_A = Operating Temperature Range

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Optical Output Power	P_o	-9.5		-4.0	dBm
Optical Output Wavelength	λ_{OUT}	830	850	860	nM
Spectral Width	$\Delta\lambda_{RMS}$			0.85	nM

OPTICAL RECEIVERS T_A = Operating Temperature Range

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Optical Sensitivity	P_i	-17.0		-2.0	dBm
Optical Wavelength	λ_{IN}	830	850	860	nM

POWER SUPPLY CURRENT T_A = Operating Temperature Range

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Supply Current per Port @ 24VDC	I_{CCT}		100	150	mA

OPTICAL LINK DISTANCES

Protocol		Distance
Gigabit Ethernet - IEEE-802.3:2005 - 1000BASE-SX	62.5/125 μ 200MHz*Km	275M
	50/125 μ 500MHz*Km	550M

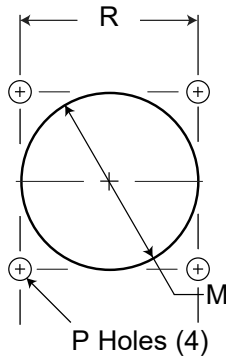
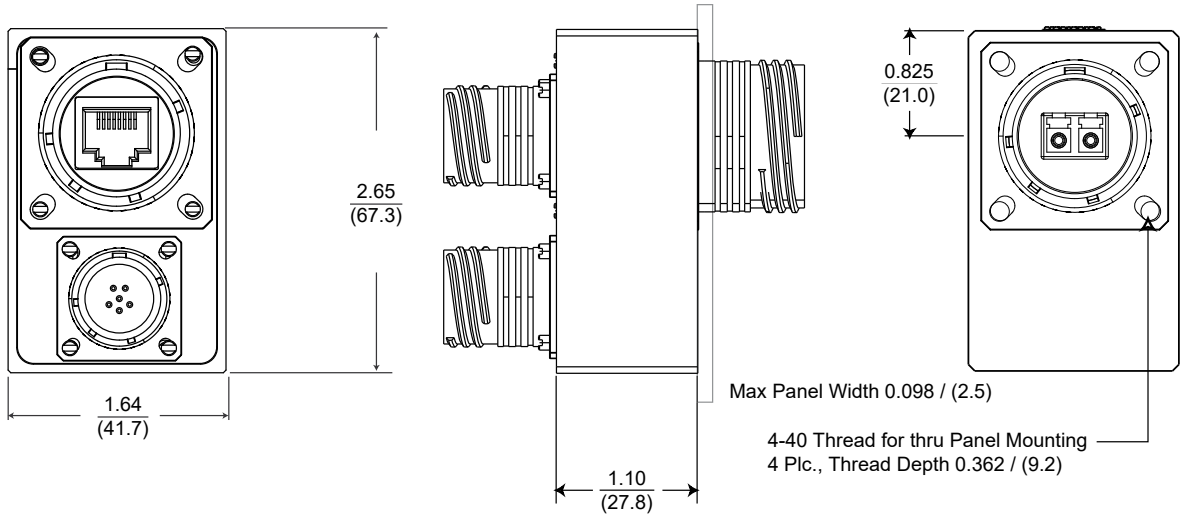
COPPER LINK DISTANCES

Protocol		Distance
Gigabit Ethernet - IEEE-802.3:2005 - 1000BASE-T	TIA/EIA-568-B Cat 5E - for other transmission media, please consult the factory	100M

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OUTLINE DRAWING

Dimensions are shown as: inches (mm)

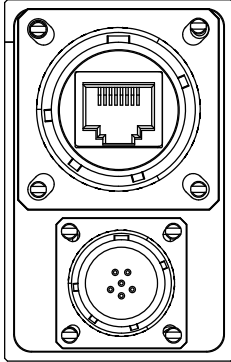


Panel Cutout Dimensions
Rear Panel Mounting Only

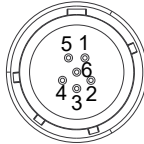
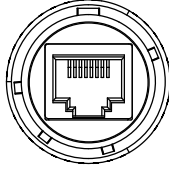
Shell Size Code	Shell Size	M Min	P Holes	R Bsc
F	19	1.297 (32.94)	0.133 (3.4) 0.123 (3.1)	1.156 (29.4)

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MEDIA CONVERTER INSERT ARRANGEMENTS



**Media Converter
Insert Pin Numbers**



**Media Converter
Pin Functions**

1000Base-T
Pin 1 = MDA+
Pin 2 = MDA-
Pin 3 = MDB+
Pin 6 = MDB-
Pin 4 = MDC+
Pin 5 = MDC-
Pin 7 = MDD+
Pin 8 = MDD-

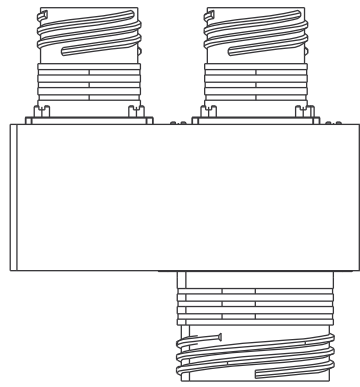
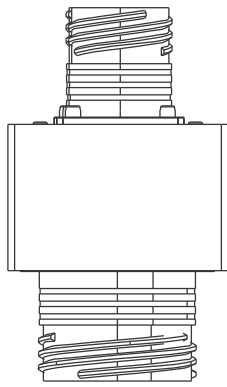
Power Supply
Pin 1 = Case Ground
Pin 2 = Case Ground
Pin 3 = Case Ground
Pin 4 = Case Ground
Pin 5 = VEE
Pin 6 = VCC

**Mating Cable Plug
Connector P/N**

See Appendix A3
Cat-5E Twisted Pair Cable

See Appendix A4
20 Guage Copper Wire

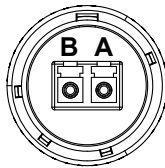
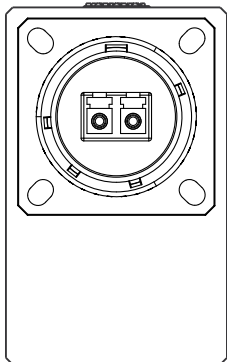
Media Converter Pin Numbers and Functions Shown - Mating Cable Plugs Opposite



**Media Converter
Optical Pin Numbers**

**Media Converter
Optical Functions**

**Mating Cable Plug
Connector P/N**



Position B = Optical TX
Position A = Optical RX

See Appendix A2

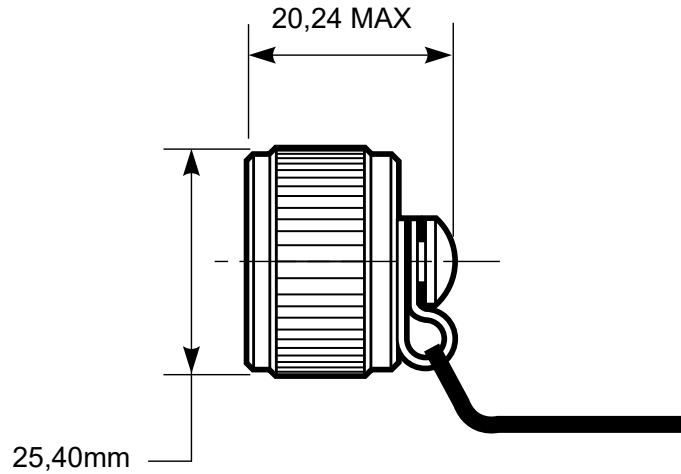
Media Converter Fiber Pin Numbers and Functions Shown - Mating Cable Plugs Opposite
For LC-Field Protective Caps, See Appendix A1

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APPENDIX A1

AMPHENOL LC-FIELD® RECEPTACLE PROTECTIVE CAPS*

PLATING	WIRE TYPE	PART NUMBER*
Olive Drab Cadmium	Nylon Cord	BFNTVW19
Olive Drab Cadmium	Metal Chain	BFTVW19
Nickel	Nylon Cord	BFNTVF19
Nickel	Metal Chain	BFTVF19



Nylon Cord shown above

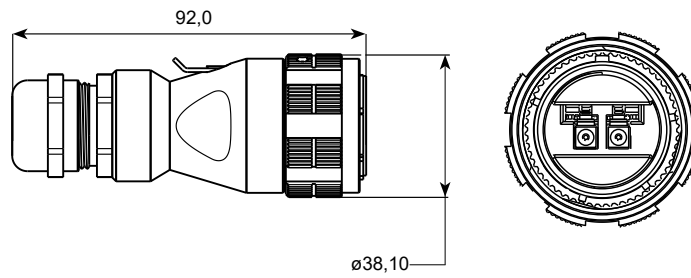
*Contact your local Amphenol Sales Representative for more information about the
Amphenol LC-Field® Protective Caps

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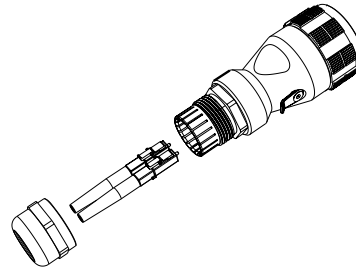
APPENDIX A2

AMPHENOL LC-FIELD® CABLE PLUGS*

PLATING	AMPHENOL PART NUMBER*
Olive Drab Cadmium	LCFTV6MGN
Nickel	LCFTV6MNN



*Contact your local Amphenol Sales Representative for more information about the Amphenol LC-Field® Cable Plugs

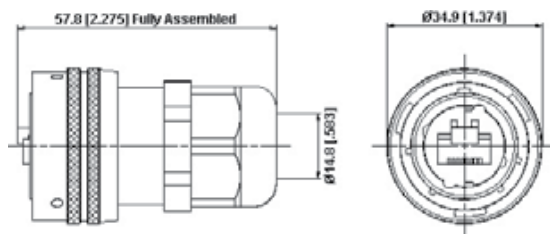


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APPENDIX A3

AMPHENOL RJ-FIELD® CABLE PLUGS*

PLATING	AMPHENOL PART NUMBER*
Olive Drab Cadmium	RJFTV6MG
Nickel	RJFTV6MN



*Contact your local Amphenol Sales Representative for more information about the Amphenol RJ-Field® Cable Plugs



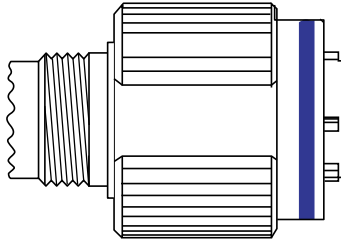
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APPENDIX A4

Power Cable - Plug Configuration

POWER CABLE PLUG - SOCKET INSERT*

PLATING	GENERIC P/N	AMPHENOL P/N*
Olive Drab Cadmium	D38999/26WA35SN	TV06RW-9-35SN
Nickel	D38999/26FA35SN	TV06RF-9-35SN



POWER CABLE PLUG - SOCKET CONTACTS*

CONFIGURATION	GENERIC P/N	AMPHENOL P/N*
Size 22D	M39029/56-348	10-407035-725

*Contact your local Amphenol Sales Representative for more information about the Amphenol D38999 power cable plugs



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