

FALCON SERIES

DUAL PORT DVI FIBER OPTIC MEDIA CONVERTER, D38999 28 VDC, MULTIMODE, 850 NM, QUADRAX



Falcon series DVI fiber optic receivers consist of optoelectronic receiver functions integrated into a bulkhead mounted MIL-DTL-38999 connector assembly. The optical receivers consist of GaAs PIN and preamplifier assemblies and limiting post amplifiers.

The electrical interface to the Falcon series DVI fiber optic media converters is a D38999 / 19-18 Quadrax connector enabling interconnection to a standard DVI connector interface with a Quadrax cable adaptor.

Falcon series DVI fiber optic receivers are vibration isolated, environmentally hardened components designed for use in harsh environment applications.

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

FALCON SERIES MIL-DTL-38999, DUAL PORT DVI FIBER OPTIC RECEIVER, QUADRAX, MULTIMODE, 28 VDC, 850 NM

Dual DVI Port, Receiver
D38999 to Quadrax / Optical to Electrical Media Converter

FEATURES

- Optical fiber link distances up to 500 meters
- Operating temperature range from -40° to +85° C
- Shock, vibration and immersion resistant per MIL-STD-810 and MIL-STD-1344
- Olive drab cadmium plating meets stringent corrosion performance specifications
- Aluminum alloy enclosure and MIL-DTL-38999 shells are strong, durable, corrosion resistant and light weight
- MIL-T-29504 compliant optical fiber connector interface
- D38999 / Quadrax electrical interface provides a robust interconnection to platform cabling

APPLICATIONS

Falcon series bulkhead mounted DVI fiber optic media converters enable high speed video transmission over long distances in harsh environments.

- DVI link extension
- Remote display clusters
- Alternative display configurations

The MIL-DTL-38999, series III shell provides a sealed optical interface that is water-tight to MIL-STD-810 / IP67 / NEMA-4x when mated.

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

ORDERING INFORMATION

Application	Part Number
Dual DVI Receiver, 28 VDC	M38R-8RAV-HW

See Appendix A4 for more part number options.

FALCON SERIES MIL-DTL-38999, DUAL PORT DVI FIBER OPTIC RECEIVER, QUADRAX, MULTIMODE, 28 VDC, 850 NM

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		45.0	V

RECOMMENDED OPERATING CONDITIONS

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Operating Temperature	T_A	-40		+85	°C
Supply Voltage	V_{cc}	+18.0	+28.0	+36.0	VDC
Power Supply Noise (p-p)	N_p			200	mV

INTERFACE SPECIFICATIONS COMPLIANCE

Requirement	Feature	Condition	Notes
MIL-STD-883	ESD	Class II	2200 V
MIL-STD-810	Vibration	3.8g ² / Hz	43 G rms
MIL-STD-810	Shock	40.0 g	6-9 mS
MIL-STD-1344	Flame Resistance	Method 1012	30 Seconds
MIL-STD-1344	Damp Heat	10 Cycles	24 Hours
MIL-STD-38999	Mating Durability	500 Cycles	< 0.5 dB Change
FDA / CDRH / IEC-825-1	Eye Safety	Class 1	No Safety Interlocks Required

MATERIALS

Item	Detail	Notes
D38999 Cylindrical Shells	Aluminum Alloy	
Plating	OD-CD, NI or ZN-NI	
D38999 Inserts	Thermoplastic	
Interfacial Seals	Elastomer	
Optical Alignment Sleeves	Composite Polymer	
Printed Circuits	Polyimide / FR-4	
Housing	Aluminum Alloy	

FALCON SERIES MIL-DTL-38999, DUAL PORT DVI FIBER OPTIC RECEIVER, QUADRAX, MULTIMODE, 28 VDC, 850 NM

OPTICAL RECEIVERS T_A = OPERATING TEMPERATURE RANGE, V_{CC} = 18.0 V TO 36.0 V

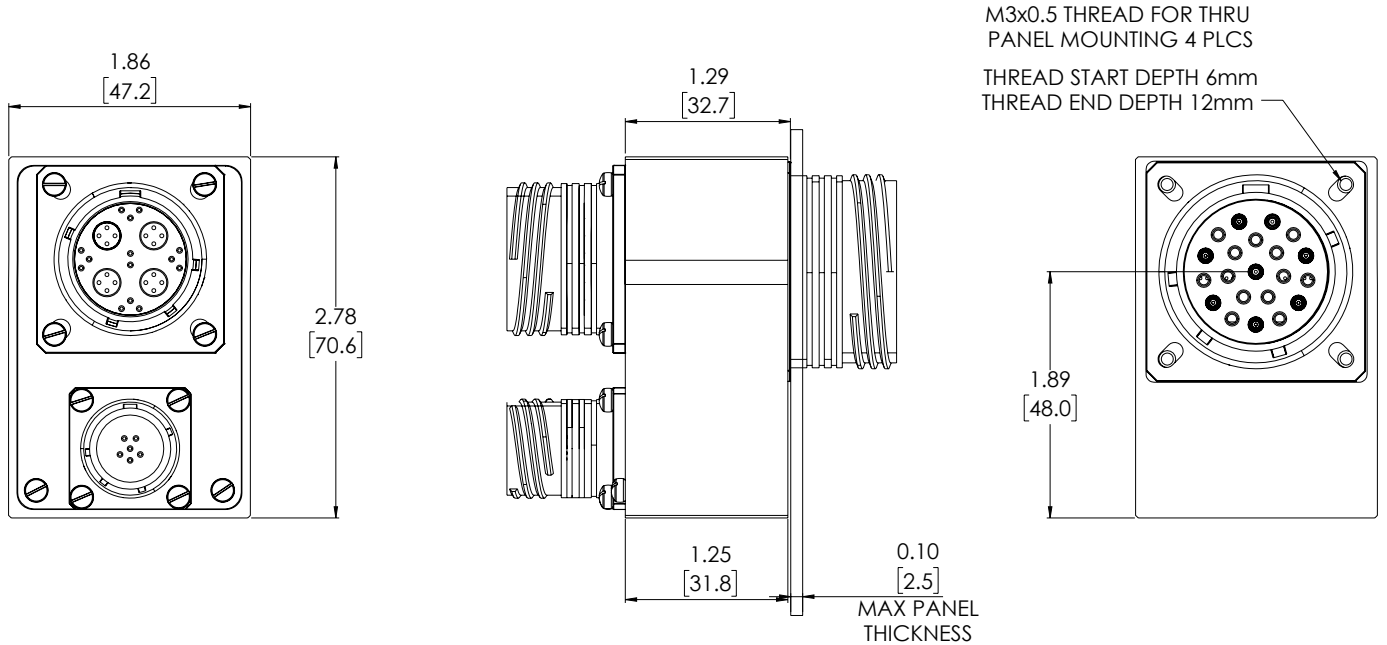
Parameter	Symbol	Minimum	Typical	Maximum	Unit
Optical Output Power (BER10^{-12}, ER = 9.0)	P_I	-19.0		0.0	dBm
Optical Wavelength	λ_{IN}	830		860	nM

POWER SUPPLY CURRENT T_A = OPERATING TEMPERATURE RANGE, V_{CC} = 18.0 V TO 36.0 V

Parameter	Symbol	Typical	Maximum	Unit
Supply Current	I_{CC1}	200	250	mA

FALCON SERIES MIL-DTL-38999, DUAL PORT DVI FIBER OPTIC RECEIVER, QUADRAX, MULTIMODE, 28 VDC, 850 NM

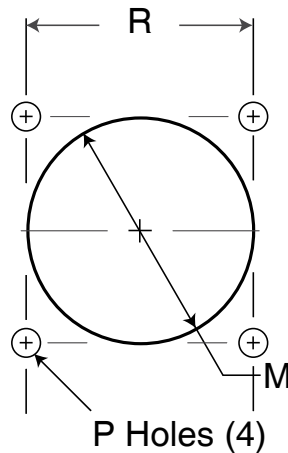
OUTLINE DRAWING



Dimensions are shown as: inches [mm]
 Weight = 8.3 oz / 235 grams

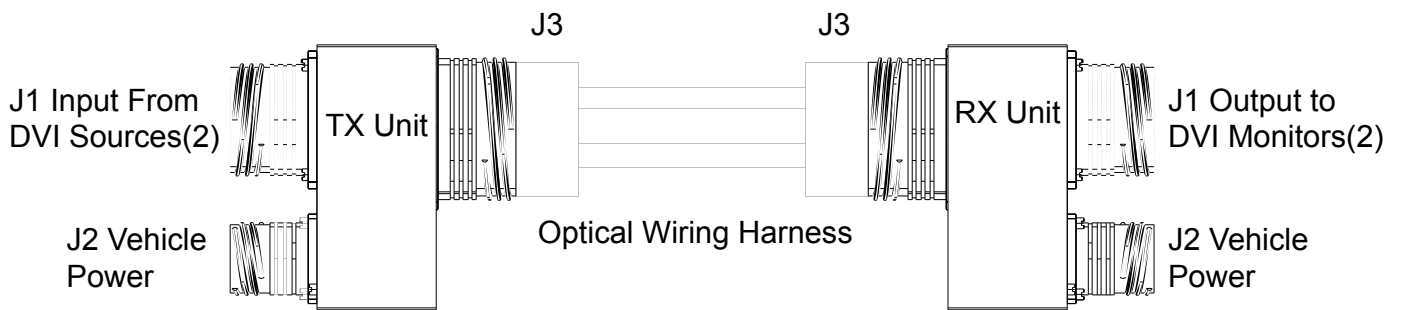
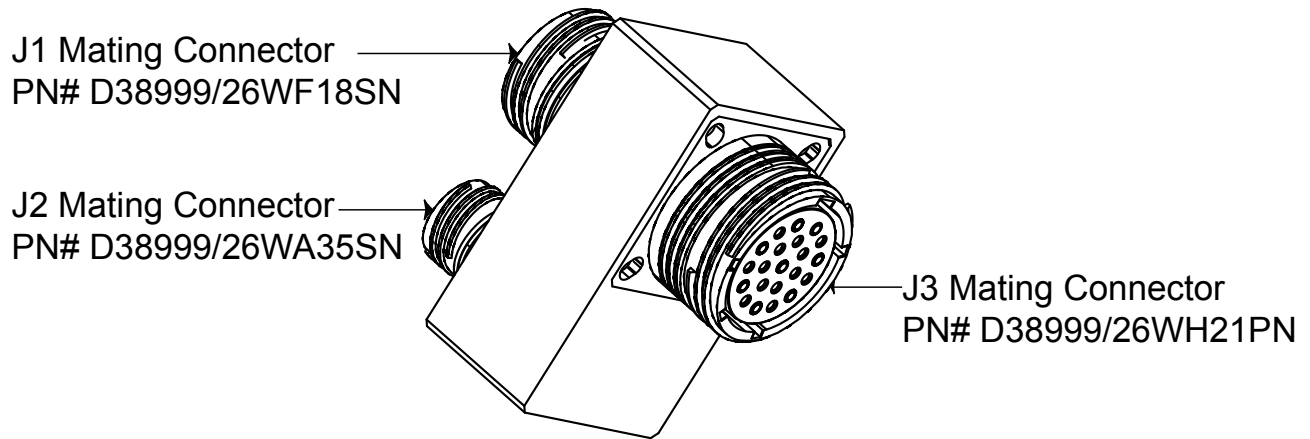
PANEL CUTOUT DIMENSIONS - REAR PANEL MOUNTING ONLY

Shell Size Code	Shell Size	M Min	P Holes	R Bsc
H	23	1.547 (39.29)	0.159 (4.0) 0.149 (3.8)	1.375 (34.9)



FALCON SERIES MIL-DTL-38999, DUAL PORT DVI FIBER OPTIC RECEIVER, QUADRAX, MULTIMODE, 28 VDC, 850 NM VCSEL'S

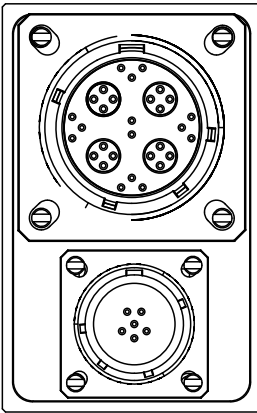
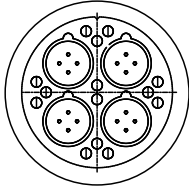
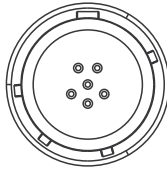
CONNECTION REQUIREMENTS

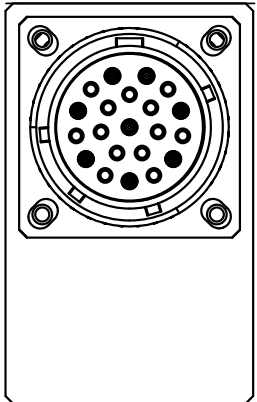
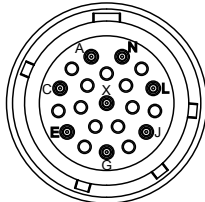


J3 Pin Number	DVI Port Number	DVI Cable Color
J	0	Blue
L	1	Blue
N	0	Green
G	1	Green
X	0	Red
A	1	Red
E	0	Clock
C	1	Clock

FALCON SERIES MIL-DTL-38999, DUAL PORT DVI FIBER OPTIC RECEIVER, QUADRAX, MULTIMODE, 28 VDC, 850 NM VCSEL'S

MEDIA CONVERTER INSERT ARRANGEMENTS

		Media Converter Insert Assignments	Media Converter Pin Functions
	J1		Electrical Signal Interface See Appendix A2
	J2		Power Supply Interface See Appendix A3

		Media Converter Optical Pin Numbers	Media Converter Optical Functions
	J3		Optical Fiber Interface See Appendix A1

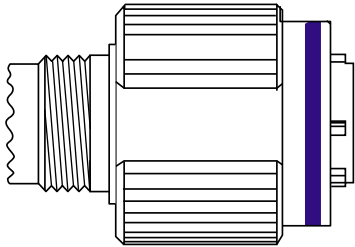
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APPENDIX A1 MIL-DTL-38999 FIBER OPTIC CABLE PLUG / MIL-T-29504 PIN TERMINI

*See DSCC or SAE QPL for Approved Suppliers
<http://www.dsccl.dla.mil/programs/qmlqpl/QPLdetail.asp?QPL=38999>

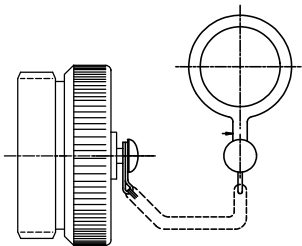
*D38999 PLUG - PIN INSERT MIL-DTL-38999 CABLE PLUG

MS Plug P/N *D38999 / 26WH21PN



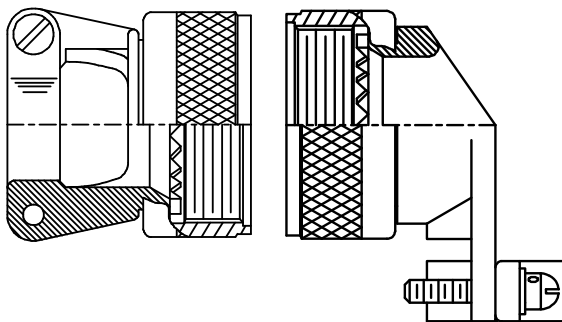
*CABLE PROTECTION CAP D38999 / 32 PLUG PROTECTION CAP

MS Plug Cap P/N *D38999 / 32W23N



*CABLE BACKSHELL MIL-C-85049 CABLE BACKSHELL

MS Backshell P/N *MS85049 / XXXXX**



**Straight or angled backshell - defined by application / mounting configuration

*FIBER OPTIC PIN TERMINUS MIL-T-29504 PIN TERMINUS

MS Pin Terminus P/N *M29504 / 04-xxxx**

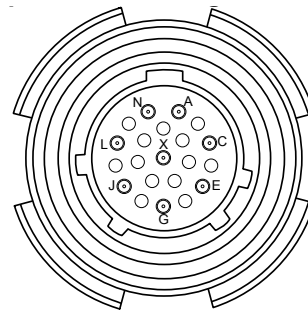


**Defined by fiber optic cable configuration

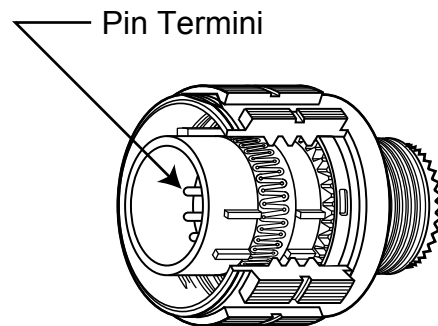
D38999 PLUG PORT FUNCTIONS

Port Number	0	1
Blue	J	L
Green	N	G
Red	X	A
Clock	E	C

TOP
Optical Cable Plug Interface

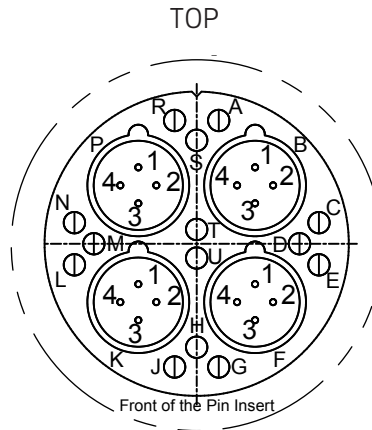


Front face of the optical cable plug pin insert shown. Transceiver insert opposite.



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APPENDIX A2 - J1 PIN FUNCTIONS - ELECTRICAL DATA CONNECTOR WIRING SCHEMATIC



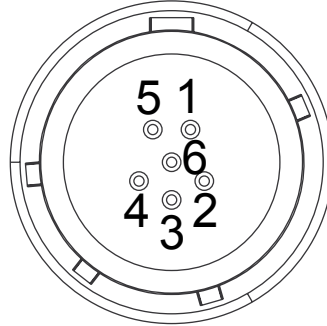
DUAL PORT DVI MEDIA CONVERTERS

Pin	Channel	Function	+ / -	Pin	Channel	Function	+ / -
A	N/A	No Connect	N/A	K1	0	TMDS - Red	-
B1	0	TMDS - Blue	-	K2	0	TMDS - Red	+
B2	0	TMDS - Blue	+	K3	1	TMDS - Red	-
B3	1	TMDS - Blue	-	K4	1	TMDS - Red	+
B4	1	TMDS - Blue	+	L	N/A	No Connect	N/A
C	N/A	No Connect	N/A	M	N/A	No Connect	N/A
D	N/A	No Connect	N/A	N	N/A	No Connect	N/A
E	N/A	No Connect	N/A	P1	0	TMDS - Clock	-
F1	0	TMDS - Green	-	P2	0	TMDS - Clock	+
F2	0	TMDS - Green	+	P3	1	TMDS - Clock	-
F3	1	TMDS - Green	-	P4	1	TMDS - Clock	+
F4	1	TMDS - Green	+	R	N/A	No Connect	N/A
G	N/A	No Connect	N/A	S	N/A	No Connect	N/A
H	N/A	No Connect	N/A	T	N/A	No Connect	N/A
J	N/A	No Connect	N/A	U	N/A	No Connect	N/A

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APPENDIX A3 - J2 PIN FUNCTIONS - POWER SUPPLY CONNECTOR ELECTRICAL POWER CABLE - CONNECTOR WIRING SCHEMATIC

TOP



Pin	Function
1	Isolated Case Ground
2	Isolated Case Ground
3	Isolated Case Ground
4	Isolated Case Ground
5	18 - 36 VDC Return
6	18 - 36 VDC

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APPENDIX A4 PART NUMBER OPTIONS

DVI FIBER OPTIC RECEIVERS, 850 NM

M38R - 8 R A V - H x x

SHELL CONFIGURATION
M38R = 38999 Receptacle

FIBER CHANNELS
8 = Eight

FIBER OPTIC INTERFACE
R = 850 nm MM RX

POWER SUPPLY VOLTAGE
A = 28.0 VDC

ELECTRICAL INTERFACE
V = DVI

SHELL SIZE CODE
H = 23 - 21

SHELL PLATING
F = NI
W = OD CD / NI
Z = ZN / NI

SHELL POLARIZATION
 (Leave Blank) **_** = N

A = A
B = B
C = C
D = D

Other wavelength, mounting and mounting and port options are available.
 Please consult the website for alternate configurations.

MOOG

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