

Opto-electronic transceiver with Series 80 Mighty Mouse connector interface



Glenair 050-303 optical transceiver employ state-of-the-art opto-electro-mechanical technology to provide effective harsh environment fiber-optic interconnect solutions for high-speed digital data. The transceiver uses rugged Mighty Mouse 805 Series electrical connectors and incorporates electrical to optical (E/O) and optical to electrical (O/E) conversion in the package body to enable customers to create their own harsh environment interconnect solutions. The Glenair optical transceiver is ideal for military, petrochemical, mining, industrial or utility applications where significant levels of shock, vibration and extreme temperature ranges are experienced.

Using 850 nm VCSEL technology, the 4.25Gbps transceiver can provide bidirectional link that operates over a data rate of 100Mbps to 4.25Gbps over Multi-mode fiber.

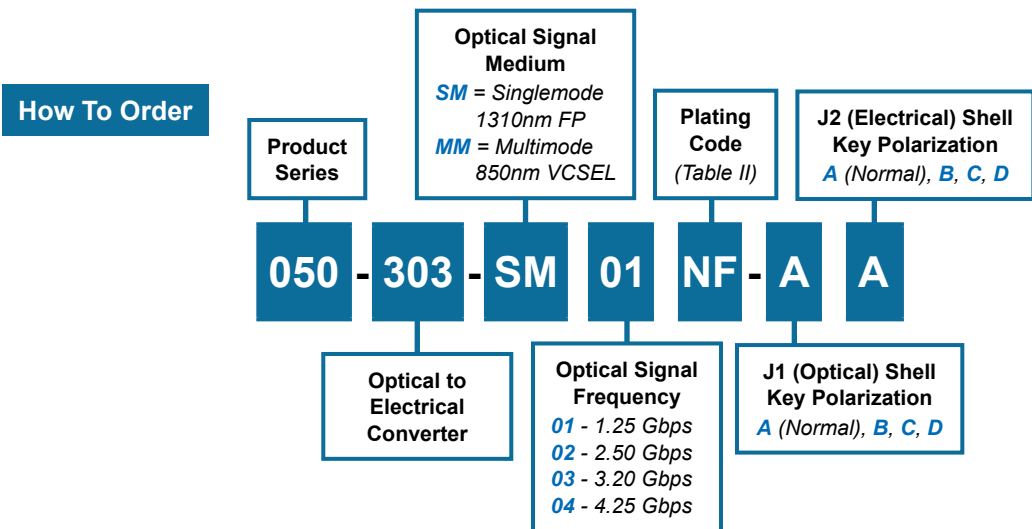
Using 1310nm Laser technology, the 4.25 Gbps transceiver can provide a bidirectional link that operates over a data rate of 100Mbps to 4.25Gbps over single mode fibers and can support transmission lengths up to 10km.

KEY FEATURES

- -40°C to +85°C operating temperature range
 - Ideal for military and other harsh environment applications.
 - MIL-STD-810 mechanical shock and vibration compliance
 - MIL-STD-1344 immersion resistance compliance
- Up to 550 Meters for VCSEL 850nm version with Multimode fiber
 - Up to 10 Kilometers for 1310nm laser version with Singlemode fiber
 - Power supply operation from 3.3V
 - IP67 in unmated condition

APPLICATIONS

- Military tactical communication Systems
- Harsh environment telemetry or communications
- Satcom systems
- Industrial, mining, petrochemical facilities communications infrastructure

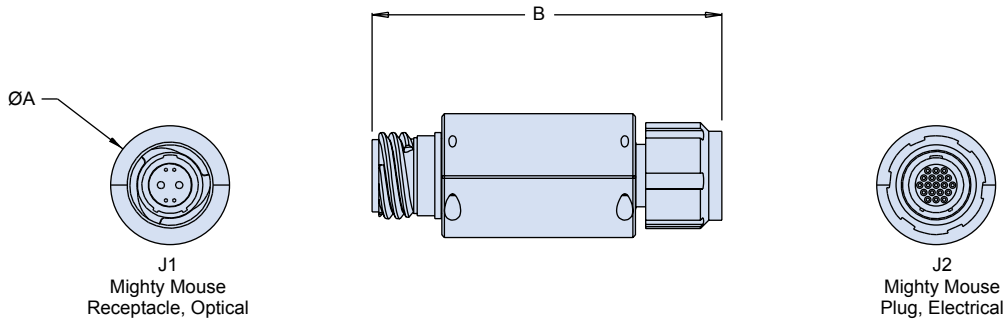


050-303
Opto-Electronic Transceiver
with Mighty Mouse Connector Interface
100Mbps – 4.25Gbps

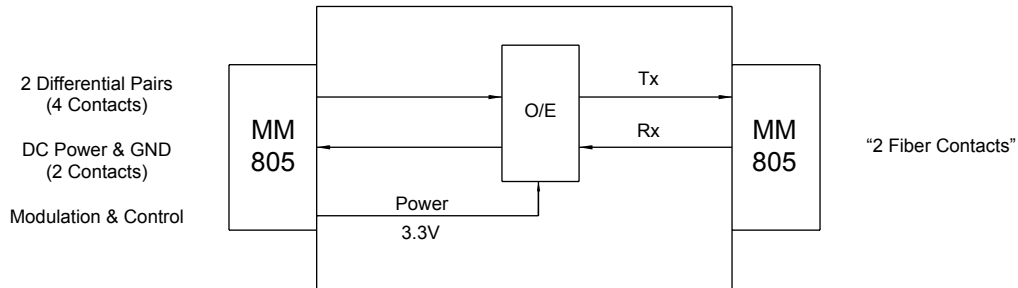


Dash No.	A Max	B Max
-01	1.200 (30.48)	3.500 (88.90)

SYM	Material	Finish Description
M*	Aluminum	Electroless Nickel
MT		Nickel - PTFE
NF		Cadmium, Olive Drab
ZN		Zinc-Nickel, Olive Drab
ZNU		Zinc-Nickel, Black



Block Diagram



Material and Finish

Enclosures: See Table II
 Connectors: Matching plating with enclosure

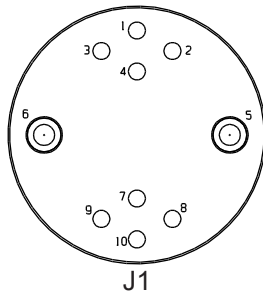
Assembly Notes

Interface connectors are designed to mate with any Glenair Series 805 Mighty Mouse plug having the same insert arrangement and polarization; opposite contact gender. Mating connector and pin information contained in Table III
 All connector cavities without defined contacts to be populated with appropriate sealing plug. MS27488 Type sealing plugs are recommended.

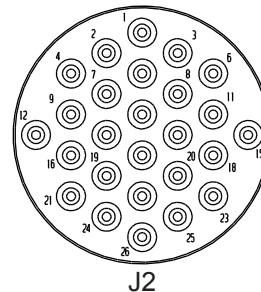
Connector Configurations

Table III: 050-303-Optical/Electrical Transceiver Pin Out Definitions		
J1** - Optical Connector		
Pin	Name	Description
1	NC	No Connect
2	NC	No Connect
3	NC	No Connect
4	NC	No Connect
5	Rx	#16 FO Contact, Rx
6	Tx	#16 FO Contact, Tx
7	NC	No Connect
8	NC	No Connect
9	NC	No Connect
10	NC	No Connect

J2* - Data & Power Connector			J2* - Data & Power Connector		
Contact P/N: N/A			Contact P/N: N/A		
Pin	Name	Description	Pin	Name	Description
1	GND	Ground	14	GND	Ground
2	WPEN	Write Protect Enable	15	Rx_OUT_N	Rx_OUT_N
3	SDA	Serial Data	16	Tx_IN_P	Tx_IN_P
4	Tx-Fault	Tx-Fault	17	GND	Ground
5	SCL	Serial Clock	18	Rx_OUT_P	Rx_OUT_P
6	LDS	Open Drain	19	NC	No Connect
7	TxD	Tx_Disable	20	NC	No Connect
8	NC	No Connect	21	NC	No Connect
9	Vcc	Vcc (3.3 V)	22	NC	No Connect
10	NC	No Connect	23	NC	No Connect
11	Vcc	Vcc (3.3 V)	24	NC	No Connect
12	Tx_IN_N	TX_IN_N	25	NC	No Connect
13	GND	Ground	26	NC	No Connect

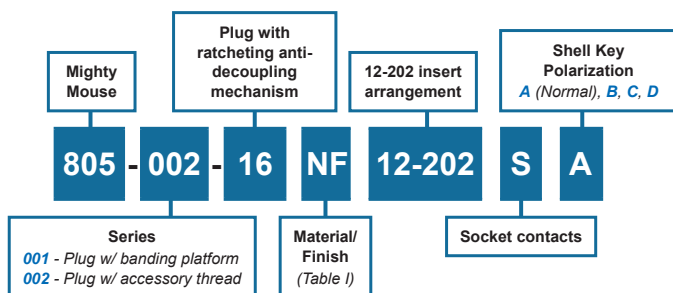


J1
Mighty Mouse Receptacle, Optical

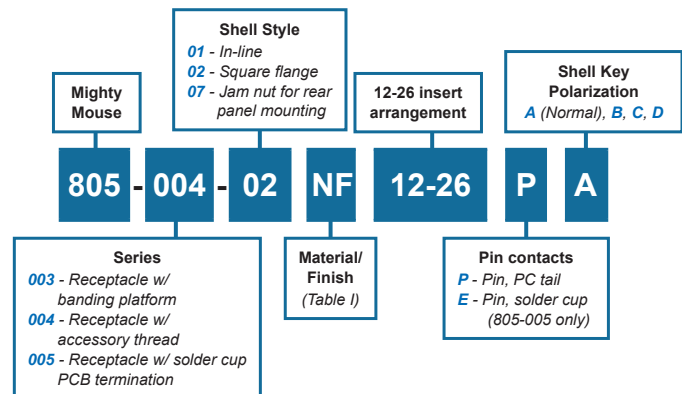


J2
Mighty Mouse Plug, Electrical

J1 Mating Connector P/N Development



J2 Mating Connector P/N Development



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Ratings and specifications—Multimode Transmitter

Absolute Maximum Rating					
Parameter	Symbol	Min	Typ	Max	Unit
Storage Temperature	Ts	-55		+100	°C
Operating Voltage	Vcc	-0.4		+4	V
Supply Voltage	Vcc	-0.4			V
Tx Disable Input Voltage	V Disable	-0.4		V _{cc}	V

Operating Conditions					
Parameter	Symbol	Min	Typ	Max	Unit
Operating Temperature	Top	-40		+85	°C
Supply Voltages	Vcc	3.14	3.3	3.46	V
Differential Input Voltage	Vid	250		2200	mVp-p
Power Supply Noise	VccRipple			0.15	Vp-p

Optical Transmitter					
Parameter	Symbol	Minimum	Typ	Maximum	Unit
Optical Output Power	Pout	-6.5		-1.5	dBm
Optical Wavelength	λout	830	850	860	nm
Spectral Width	Δλrms			0.85	nm
Extinction Ratio					
-01 (1.25 Gbps)	Er	6.0	10		dB
-02 (2.50 Gbps)	Er	6.0	10		dB
-03 (3.20 Gbps)	Er	6.0	10		dB
-04 (4.25 Gbps)	Er	6.0	10		dB
Total Jitter	TJ			60	ps

Power Supply Current Vcc = 3.14 to 3.46V					
Parameter	Symbol	Min	Typ	Max	Unit
Supply Current	Icc	50		90	mA

Example Optical Link Distances		
Protocol	Cable Type	Distance
Gigabit Ethernet	62.5/125μm, 200 MHz*Km	275 meters
	50/125μm, 500 MHz*Km	550 meters

Electrical Pin Arrangement			
Pin #	Symbol	Description	Logic
J2-7	Tx Disable	Transmit Disable (Input) Logic "1" Input->Disable Transmitter Output	CMOS Internal 4.70hm Pulldown
J2-9	Vcc	Power Supply	
J2-3	GND	Signal Ground	
J2-4	Tx Fault	Transmitter Fault Indicator (Output) Logic "1" Output->Transmitter Fault Condition	CMOS Internal 4.7k Ohm pull up
J2-12	Tx-	Transmitter Inverted Data (Input)	CML (Current Mode Logic)
J2-16	Tx+	Transmitter Non-Inverted Data (Input)	CML (Current Mode Logic)

Note: 50μm Fiber Output



Ratings and specifications—Multimode Receiver

Absolute Maximum Rating					
Parameter	Symbol	Min	Typ	Max	Unit
Storage Temperature	Ts	-55		+100	°C
Operating Voltage	Vcc	-0.4		+4	V

Operating Conditions					
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Operating Temperature	Top	-40		+85	°C
Supply Voltages	Vcc	3.14	3.3	3.46	V
Power Supply Noise	VccRipple			0.15	Vp-p

Optical Receiver					
Parameter	Symbol	Minimum	Typ	Maximum	Unit
Optical Sensitivity 125Mbps – 1.25 Gbps • ER = 9dB, PRBS 2 ⁷ -1 • BER = 10 ⁻¹²					
-01 (125 Mbps)		-17			dBm
-01 (1.25 Gbps)		-17			
-02 (2.50 Gbps)		-15			
-03 (3.20 Gbps)		-15			
-04 (4.25 Gbps)		-14			
Optical Overload				0	dBm
Optical Wavelength	λout	830		860	nm
Differential Output Swing (P-P)	Vdiff	600		1200	mV
LOS Assert Level	LOSh		-24	-22	dBm
LOS Hysteresis	LOS HYS	1.5	2.3		dB

Power Supply Current Vcc = 3.14 to 3.46V					
Parameter	Symbol	Min	Typ	Max	Unit
Supply Current	Icc	50		90	mA

Electrical Pin Arrangement			
Pin #	Symbol	Description	Logic
J2-13	GND	Signal Ground	
J2-11	Vcc	Power Supply	
J2-14	GND	Signal Ground	
J2-6	LOS	Loss of Signal (Output) Loss of Valid Optical Signal->Logic "1" Output	CMOS Internal 4.7k Ohm pull up
J2-15	RX-	Receiver Inverted Data (Output)	CML (Current Mode Logic)
J2-18	RX+	Receiver Non-Inverted Data (Output)	CML (Current Mode Logic)

Note: 62.5µm Fiber Input

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Ratings and specifications—Singlemode Transmitter

Absolute Maximum Rating					
Parameter	Symbol	Min	Typ	Max	Unit
Storage Temperature	T _s	-55		+100	°C
Supply Voltage	V _{cc}	-0.4		+4	V
Tx Disable Input Voltage	V _{Disable}	-0.4		V _{cc}	V

Operating Conditions					
Parameter	Symbol	Min	Typ	Max	Unit
Operating Temperature	T _{op}	-40		+85	°C
Supply Voltages	V _{cc}	3.14	3.3	3.46	V
Differential Input Voltage	V _{id}	250		2200	mVp-p
Power Supply Noise	V _{cc} Ripple			0.15	Vp-p

Optical Transmitter					
Parameter	Symbol	Minimum	Typ	Maximum	Unit
Optical Output Power	P _{out}	-8.4		-3	dBm
Optical Wavelength	λ _{out}	1260		1350	nm
Spectral Width	Δλ _{rms}			5	nm
Extinction Ratio					
-01 (1.25 Gbps)	E _r	6.0	10		dB
-02 (2.50 Gbps)	E _r	6.0	10		dB
-03 (3.20 Gbps)	E _r	6.0	10		dB
-04 (4.25 Gbps)	E _r	6.0	10		dB
Total Jitter	T _J			60	ps

Transceiver Power Supply Current V _{cc} = 3.14 to 3.46V					
Parameter	Symbol	Min	Typ	Max	Unit
Supply Current	I _{cc}	100		300	mA

Example Optical Link Distances		
Protocol	Fiber Type	Distance
4X Fibre Channel	9/125 μm SMF 4km	4km
2X Fibre Channel	9/125 μm SMF 4km	10km
1X Fibre Channel	9/125 μm SMF 4km	10km
Gb Ethernet	9/125 μm SMF 4km	10km

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-01 (1.25 Gbps)		-22			
-02 (2.50 Gbps)		-21			
-03 (3.20 Gbps)		-20			
-04 (4.25 Gbps)		-18			
Optical Overload				0	dBm
Optical Wavelength	λout	1260		1350	nm
Differential Output Swing (P-P)	Vdiff	600		1200	mV
LOS Assert Level	LOSh			-30	dBm
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Note: 62.5µm Fiber Input