



050-501

Copper to Fiber Aggregation Media Converter
Flange Mount

12 Channel RS422/RS485, 28VDC,
Mighty Mouse (Signal & Power), GHD (Fiber Optic)

REV	DESCRIPTION	DATE	APPROVED
2		1/19/2015	BD

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Aggregation Media Converter – 12x RS422/RS485



The Glenair 050-501 is a Media Converter that aggregates (combines) 12 RS422/RS485 channels and then converts these to a serial stream to transport over fiber. It is designed for harsh environments and incorporates electronics in an environmentally sealed enclosure that incorporates two environmental connectors. One connector, Mighty Mouse, is utilized for power and electrical signal and the second connector, Glenair High Density, is used for the Fiber Optic signals and can be configured to support either single mode or multi-mode fiber applications.

KEY FEATURES/BENEFITS

- Hermetic 850nm VCSEL Lasers
- Hermetic GaAs PIN/TIA
- Wide Input Voltage Range: 5-36V
- 12 – Non-Isolated RS422/RS485 Transceivers
- IP67 in mated condition
- Mighty Mouse Electrical Signal & Power

- Glenair High Density Fiber Optic Connector
- Panel Mount or Flange Mount

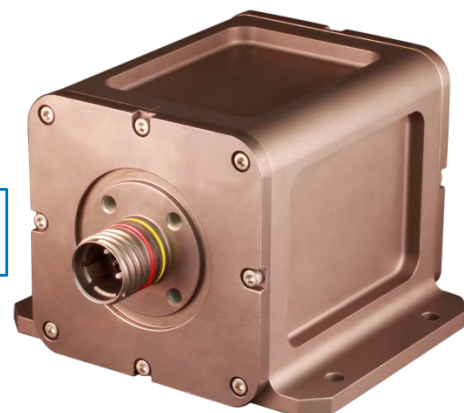
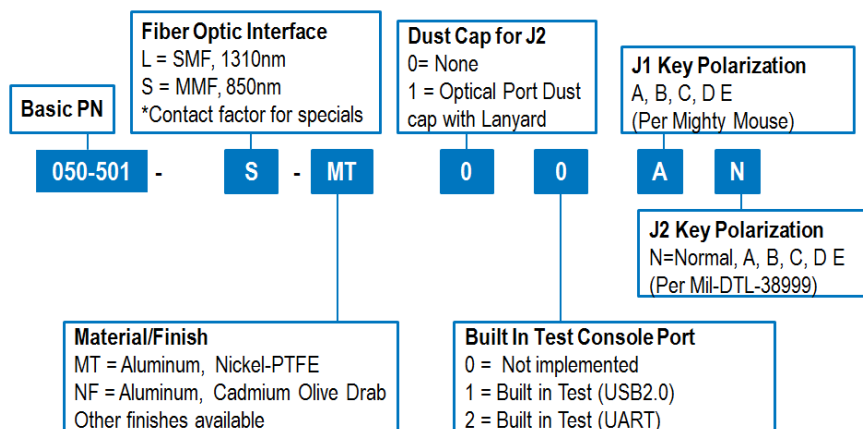
OPTIONAL FEATURES

- Built In Test Console Port accessible via USB2.0 or UART

APPLICATIONS

- Harsh Environment RS422/RS485 serial communications for Airborne, Tactical and Shipboard applications \

How To Order



The diagram illustrates the internal architecture of an Aggregation Media Converter. It features a central blue box representing the device's internal components, flanked by two gray vertical bars labeled J2 and J1. On the left, a large blue double-headed arrow labeled "Aggregated Fiber Optic" connects to J2. Inside the blue box, J2 is connected to an "O/E Rx Tx" block. This block is linked to an "Aggregation" block, which in turn connects to a "Non-Isolated RS422/RS485 Transceivers" block. The "Aggregation" block also connects to a "Status & BIT" block and a "Regulator" block. On the right, J1 is connected to three external components: a "Status & BIT" block, a "Regulator" block, and a "Non-Isolated RS422/RS485 Transceivers" block. Three large blue arrows on the right side of the diagram represent external connections: "Status & BIT" (top), "Power, 28VDC" (middle), and "12 Channels RS422/RS485" (bottom).

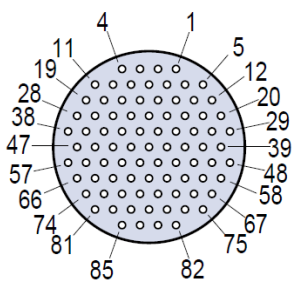
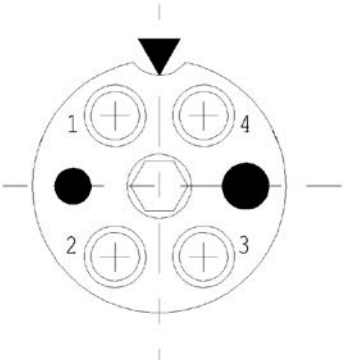
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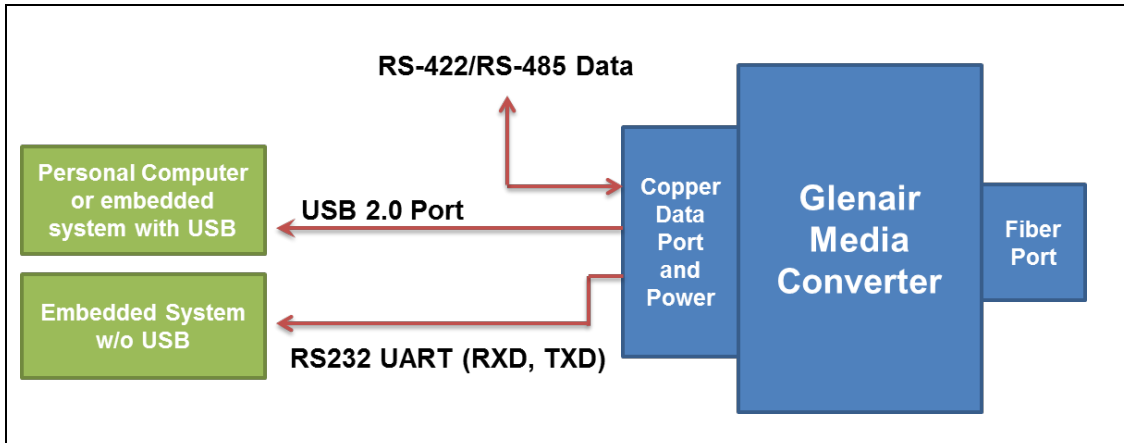
Connectors

NAME	Insert Arrangement	Function	Media Converter	Mating PLUG Connector
J1	 19-85 Series 805 Mighty Mouse Pin Connector	Electrical Signal, Status and Built In Test (BIT), & Power	Series 805, 19-85 <u>85 PIN CONTACTS, #23</u>	Series 805, Plug 805-001-16#19-85SA Or 805-002-16#19-85SA Refer to Glenair Mighty Mouse Catalog for further details <u>85 SOCKET CONTACTS, #23</u>
J2	 Glenair High Density (GHD) Shell 11-04	Fiber Optic Signal	Glenair High Density (GHD) Shell 11-04	Glenair High Density (GHD) Plug: 180-122#06-11-4N GHD Alignment sleeve retainer (ASR): 180-122ASR-11-4 GHD genderless terminus for MMF or SMF: 181-056-1260C

Note: # = Environmental Class (Material/Finish)

Built In Test (BIT) Functionality - Optional Features

This media converter can be offered with built in test functionality accessible through a Console Port via Universal Serial Bus 2.0 (USB 2.0) or via RS-232 UART (RXD, TXD) or both options can be made available. Functional block diagram for this is shown below.



Universal Serial Bus (2.0) BIT

- Presents itself as a "Virtual" Communications Port
- Compatible with Microsoft Windows, Mac, and Linux OS's.
- On the computer side, open any terminal application (PuTTY, HyperTERM, TeraTERM, etc.) to communicate with the media converter hardware.
- Simple "Human Readable" status messages.

RS-232 UART (RXD, TXD) BIT

- Useful for when you are interfacing with an embedded microprocessor or micro controller.
- Status messages delimited to allow for easy parsing by embedded software.

ALARM STATUS MESSAGES

Fiber Side Alarm/Status

- Temperature
 - -55°C to +90°C, better than 1°C resolution
- Input Transceiver Voltage Monitor
 - Range: 2.85V to 3.45V, better than 1.6mV resolution
- Transmitter Bias Monitor (Reports: Good, Warning, Fault)
- Transmitter Power Monitor (Reports: Good, Warning, Fault)
- Receiver Photo Diode Current Monitor (Reports: Good, Warning, Fault)
- Transmitter Fault Alarm Status
- Receiver loss of signal (LOS) or signal Detect (SD) Status

Unit Identification Information

- Unit Serial Number
- Unit Product Code
- Unit Description

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TYPICAL CONSOLE PORT WINDOW (PuTTY)

```
COM1 - PuTTY
*****
Glenair *
Media Converter Service Port *
*****
Unit Identification Information
*****
Product Code: 050-501
Unit Serial Number: 0145
Firmware Revision: 1.2.0
Product Description: Copper to Fiber 12 Channel RS422 media converter

*****
Unit Status
*****
Temperature: 45 degrees C
Power Supply Status: Good
Fiber Optic RX Loss of Signal: False
Fiber Optic Transceiver Disable: False
Fiber Optic Transceiver, TX Fault: False
Fiber-Side Link Status: Up
Fiber-Side Data Rate (Mbps): 2500
Copper Side Sample Rate (MHz): 125
System tick (seconds): 135,045
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Ratings and Specifications – L VERSION

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Min	Typ	Max	Units	Notes
Storage Temperature	T _s	-55		+100	°C	
Supply Voltage	V _{cc}	-0.5		45	V	1 second maximum

OPERATING CONDITIONS

Parameter	Symbol	Min	Typ	Max	Units	Notes
Operating Temperature	T _{op}	-40		+75	°C	
Supply Voltage	V _{cc}	5	28	36	V	
Supply Current	I _{cc}		100	150	mA	@28VDC
Power Supply Noise (Peak-Peak)	V _{cc} ripple			200	mV	

OPTICAL CHARACTERISTICS – TRANSMITTER (3.2 GBPS)

Parameter	Symbol	Min	Typ	Max	Units	Notes
Optical Output Power	P _{OUT}	-8.5	-4	-3	dBm	1310nm Fabry-Perot
Extinction Ratio	Er	8			dB	
Optical Wavelength	λ _{OUT}	1285	1310	1345	nm	
Spectral Width	Δλ			3.5	nm	

OPTICAL CHARACTERISTICS – RECEIVER (3.2 GBPS)

Parameter	Symbol	Min	Typ	Max	Units	Notes
Optical Sensitivity (Input Power Range)	P _{IN OP}	-18		0	dBm	
Min. Sensitivity, BER 10 ⁻¹² , PRBS 2 ⁻⁷ -1, 8dB Er	P _{IN_MIN}		-20	-18	dBm	PIN PD, LX10 source
Overload, BER 10 ⁻¹² , PRBS 2 ⁻⁷ -1	P _{IN_MAX}	0			dBm	
Optical Wavelength	λ _{IN}	1100	1310	1590	nm	

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Ratings and Specifications – S VERSION

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Min	Typ	Max	Units	Notes
Storage Temperature	T _s	-55		+100	°C	
Supply Voltage	V _{cc}	-0.5		45	V	1 second maximum

OPERATING CONDITIONS

Parameter	Symbol	Min	Typ	Max	Units	Notes
Operating Temperature	T _{op}	-40		+75	°C	
Supply Voltage	V _{cc}	5	28	36	V	
Supply Current	I _{cc}		100	150	mA	@28VDC
Power Supply Noise (Peak-Peak)	V _{cc} ripple			200	mV	

OPTICAL CHARACTERISTICS – TRANSMITTER (3.2 GBPS)

Parameter	Symbol	Min	Typ	Max	Units	Notes
Optical Output Power	P _{OUT}	-9.5		-4	dBm	VCSEL, 62.5/125μm MM
Extinction Ratio	Er	8			dB	
Optical Wavelength	λ _{OUT}	830	850	860	nm	
Spectral Width	Δλ			0.85	nm	

OPTICAL CHARACTERISTICS – RECEIVER (3.2 GBPS)

Parameter	Symbol	Min	Typ	Max	Units	Notes
Optical Sensitivity (Input Power Range)	P _{IN OP}	-16		-2	dBm	
Sensitivity, BER 10 ⁻¹² , PRBS 2 ⁻⁷ -1, 8dB Er	P _{IN_MIN}		-21	-16	dBm	PIN PD
Overload, BER 10 ⁻¹² , PRBS 2 ⁻⁷ -1	P _{IN_MAX}	-2	-1		dBm	
Optical Wavelength	λ _{IN}	770	850	860	nm	



Ratings and Specifications - (continued)

COMPLIANCE SPECIFICATIONS

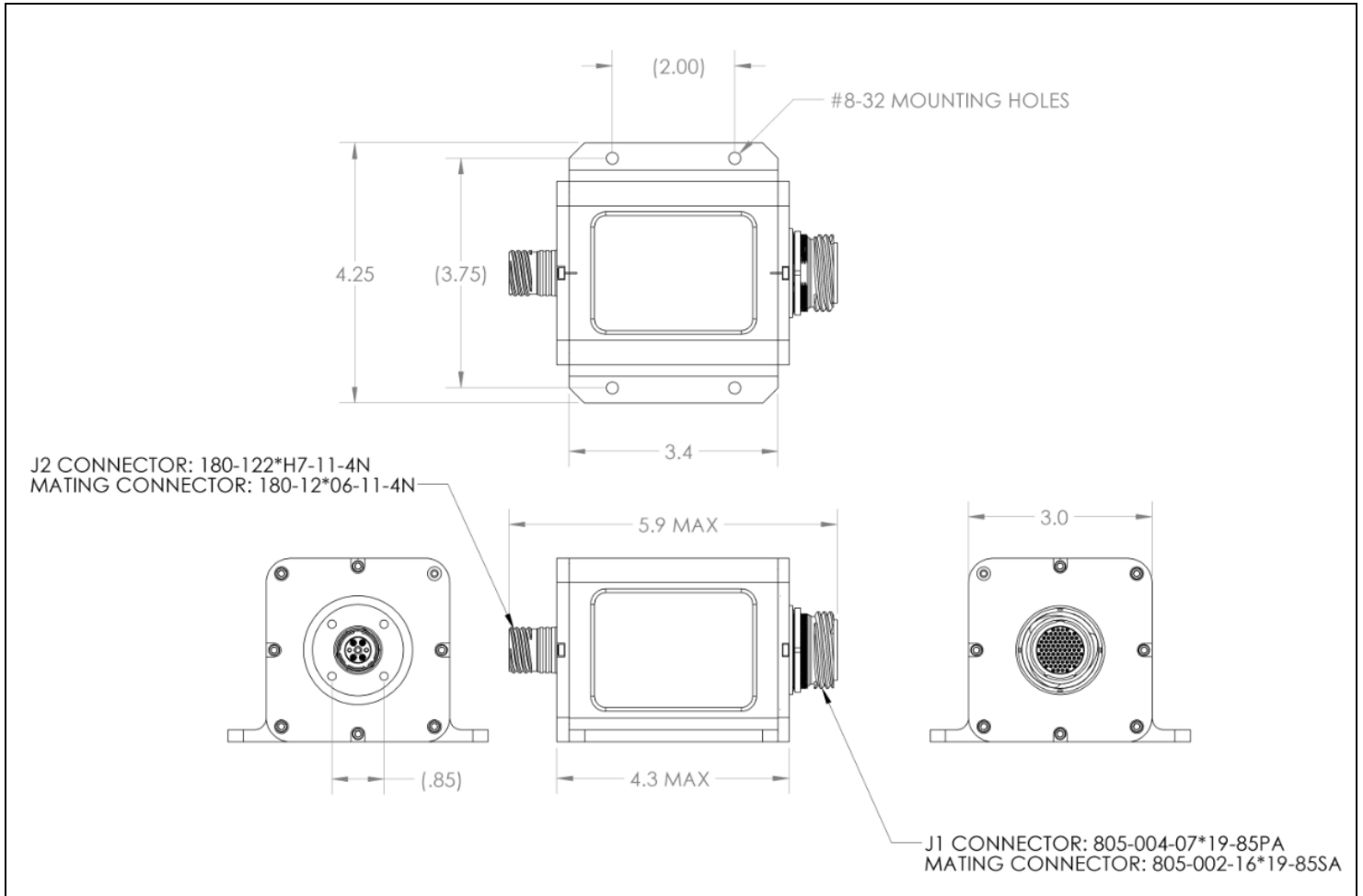
CHARACTERISTIC	Standard	Condition	Notes
Mechanical Shock	MIL-STD-810	40g	6-9 ms
Mechanical Vibration	MIL-STD-810	30g rms	
ESD	MIL-STD-883	Class II	2200V HBM
Lightning Strike	DO-160G, Section 22	Category: A2J2X	No damage, Operate error free before and after application of the pin injection tests. Will operate error free during shielded cable bundle injection tests
Conducted Emissions, Power Leads, 10 kHz to 10 MHz	MIL-STD-461F	CE102	
Conducted Susceptibility, Power Leads, 30 Hz to 150KHz	MIL-STD-461F	CS101	
Conducted Susceptibility, Bulk Cable Injection, 10 kHz to 200 MHz	MIL-STD-461F	CS114	
Radiated Susceptibility, Electric Field, 2 MHz to 18 GHz	MIL-STD-461F	RS103	
Flame Resistance	MIL-STD-1344	Method 1012	30 seconds
Damp Heat	MIL-STD-1344	10 cycles	24 hours
Eye Safety	CDRH and IEC-825	Class 1 Laser Product	

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OUTLINE DRAWING & PANEL CUT OUT



PANEL CUT OUT & Mounting Holes – J1 & J2

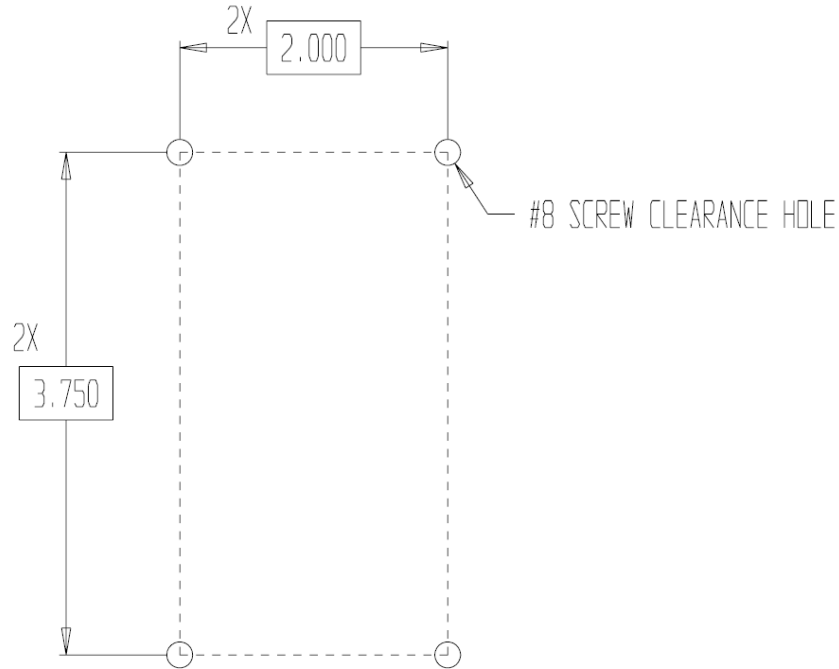


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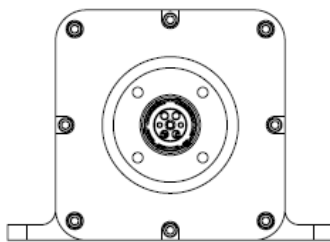


FLANGE Mounting Holes



FLANGE MOUNT ENCLOSURE
MOUNTING HOLES

Marking



Marking

Assembly is identified with Manufacture's Name, Cage Code, Part Number, Date Code and Serial Number in approximate location shown.

Drawing and location Not to Scale.

Marking will conform to MIL-STD-130 (Arial font, 0.08" minimum height)

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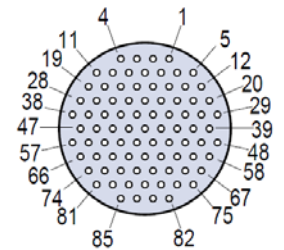
Flange Mount



Input/Output Definition

J1 – ELECTRICAL SIGNAL CONNECTOR PIN FUNCTIONS

PIN	NAME	DESCRIPTION	NOTE	PIN	NAME	DESCRIPTION	NOTE
10	Port1_OUT_P	Port 1 TX Pos	2	44	Port8_OUT_N	Port 8 TX Neg	2
4	Port1_OUT_N	Port 1 TX Neg	2	43	Port8_IN_P	Port 8 RX Pos	2
3	Port1_IN_P	Port 1 RX Pos	2	42	Port8_IN_N	Port 8 RX Neg	2
2	Port1_IN_N	Port 1 RX Neg	2	82	Port8_GND_422	Port 8 Ground	2
67	Port1_GND_422	Port 1 Ground		39	NC	Not Connected	
8	NC	Not Connected		47	Port9_OUT_P	Port 9 TX Pos	2
1	Port2_OUT_P	Port 2 TX Pos	2	46	Port9_OUT_N	Port 9 TX Neg	2
7	Port2_OUT_N	Port 2 TX Neg	2	45	Port9_IN_P	Port 9 RX Pos	2
6	Port2_IN_P	Port 2 RX Pos	2	55	Port9_IN_N	Port 9 RX Neg	2
5	Port2_IN_N	Port 2 RX Neg	2	41	Port9_GND_422	Port 9 Ground	2
68	Port2_GND_422	Port 2 Ground		40	NC	Not Connected	
11	NC	Not Connected		54	Port10_OUT_P	Port 10 TX Pos	2
9	Port3_OUT_P	Port 3 TX Pos	2	53	Port10_OUT_N	Port 10 TX Neg	2
16	Port3_OUT_N	Port 3 TX Neg	2	52	Port10_IN_P	Port 10 RX Pos	2
15	Port3_IN_P	Port 3 RX Pos	2	61	Port10_IN_N	Port 10 RX Neg	2
14	Port3_IN_N	Port 3 RX Neg	2	51	Port10_GND_422	Port 10 Ground	2
80	Port3_GND_422	Port 3 Ground		74	NC	Not Connected	
12	NC	Not Connected		57	Port11_OUT_P	Port 11 TX Pos	2
13	Port4_OUT_P	Port 4 TX Pos	2	66	Port11_OUT_N	Port 11 TX Neg	2
22	Port4_OUT_N	Port 4 TX Neg	2	65	Port11_IN_P	Port 11 RX Pos	2
21	Port4_IN_P	Port 4 RX Pos	2	64	Port11_IN_N	Port 11 RX Neg	2
20	Port4_IN_N	Port 4 RX Neg	2	56	Port11_GND_422	Port 11 Ground	2
79	Port4_GND_422	Port 4 Ground	2	75	NC	Not Connected	
27	NC	Not Connected		63	Port12_OUT_P	Port 12 TX Pos	2
19	Port5_OUT_P	Port 5 TX Pos	2	72	Port12_OUT_N	Port 12 TX Neg	2
18	Port5_OUT_N	Port 5 TX Neg	2	71	Port12_IN_P	Port 12 RX Pos	2
17	Port5_IN_P	Port 5 RX Pos	2	70	Port12_IN_N	Port 12 RX Neg	2
26	Port5_IN_N	Port 5 RX Neg	2	62	Port12_GND_422	Port 12 Ground	2
78	Port5_GND_422	Port 5 Ground	2	73	BIT_OUT_P	BIT Output TX Pos	
29	NC	Not Connected		81	BIT_OUT_N	BIT Output TX Neg	
25	Port6_OUT_P	Port 6 TX Pos	2	58	POWER	5-36VDC Input	
24	Port6_OUT_N	Port 6 TX Neg	2	59	POWER	5-36VDC Input	
23	Port6_IN_P	Port 6 RX Pos	2	60	POWER	5-36VDC Input	
32	Port6_IN_N	Port 6 RX Neg	2	48	POWER RTN	Power Return	
84	Port6_GND_422	Port 6 Ground		49	POWER RTN	Power Return	
30	NC	Not Connected		50	POWER RTN	Power Return	
28	Port7_OUT_P	Port 7 TX Pos	2	38	VBUS	USB +5V Input	1
37	Port7_OUT_N	Port 7 TX Neg	2	77	USB_D+	USB Data +	1
36	Port7_IN_P	Port 7 RX Pos	2	69	USB_D-	USB Data -	1
35	Port7_IN_N	Port 7 RX Neg	2	31	NC	Not Connected	
83	Port7_GND_422	Port 7 Ground	2	76	NC	Not Connected	
33	NC	Not Connected		85	NC	Not Connected	
34	Port8_OUT_P	Port 8 TX Pos	2				



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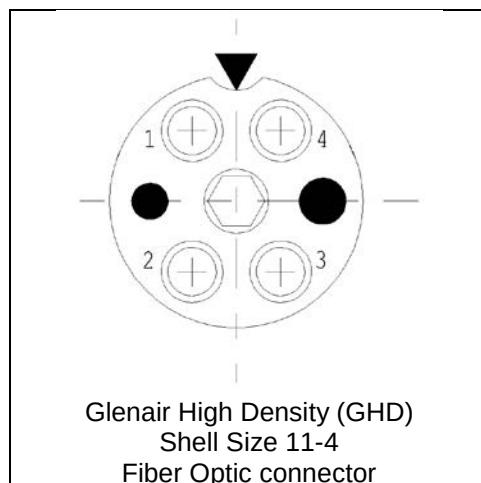
Series 805 Mighty Mouse
Mating face for PIN shown
85X SIZE 23 Contacts

Notes

1. Built In Test Port, USB2.0
2. Compliant to ANSI TIA/EIA-422 voltage signaling levels; Max rate 6 Mbps.

Input/Output Definition (continued)

J2 OPTICAL CONNECTOR



J2 PIN FUNCTION ASSIGNMENTS

PIN	NAME	DESCRIPTION	NOTES
1	NC		
2	TX1	Transmitter	
3	NC		
4	RX1	Receiver	