MCP1650-H00AE30-C

Mellanox® MCP1650-H00AE30 Compatible 200GBase-CU HDR QSFP56 to QSFP56 Direct Attach Cable (Passive Twinax, 0.5m)

Features

- Compliant with SFF-8636
- Compliant with IEEE802.3bj & IEEE802.3cd
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- Support I2C two – line strong interface, easy to control
- Support for hot plugging
- Low Crosstalk
- Low power

Applications

- 10G/40G/100G/200G Ethernet
- Infiniband SDR, DDR, QDR, FDR, EDR, HDR
- Router
- Concentrator
- Data center, cloud server

Product Description

This is a Mellanox® MCP1650-H00AE30 compatible 200GBase-CU HDR QSFP56 to QSFP56 direct attach cable that operates over passive copper with a maximum reach of 50cm (1.6ft). It has been programmed, uniquely serialized, and data-traffic and application tested to ensure it is 100% compliant and functional. This direct attach cable is TAA (Trade Agreements Act) compliant, and is built to comply with MSA (Multi-Source Agreement) standards. We stand behind the quality of our products and proudly offer a limited lifetime warranty.

ProLabs' direct attach cables are RoHS compliant and lead-free.

TAA refers to the Trade Agreements Act (19 U.S.C. & 2501-2581), which is intended to foster fair and open international trade. TAA requires that the U.S. Government may acquire only "U.S. – made or designated country end products."

Regulatory Compliance

- ESD to the Electrical PINs: compatible with MIL-STD-883E Method 3015.4
- ESD to the LC Receptacle: compatible with IEC 61000-4-3
- EMI/EMC compatible with FCC Part 15 Subpart B Rules, EN55022:2010
- Laser Eye Safety compliant with FDA 21CFR, EN60950-1& EN (IEC) 60825-1,2
- RoHS compliant with EU RoHS 2.0 directive 2015/863/EU

Electrical Characteristics

Parameter	Requirement	Test Condition
Differential Impedance		
Cable Impedance	105+5/-10Ω	Rise time of 25ps (20% ~ 80%).
Paddle Card Impedance	100±10Ω	
Cable Termination Impedance	100±15Ω	
Differential (Input/Output) Return Loss SDD11/SDD22	Return_loss (f) ≥ { *16.5-2vf 0.05 ≤ f ‹ 4.1* *10.66-14log10(f/ 5.5) 4.1≤ f≤ 19* } Where f is the frequency in GHz Return loss(f) is the return loss at frequency f	10MHz≤f ≤19GHz
Differential to common mode (Input/Output) Return loss SCD11/SCD22	Return loss (f) ≥ { *22-(20/25.78)f 0.01≤ f ‹ 12.89* *15-(6/25.78)f 12.89≤ f≤ 19* } Where f is the frequency in GHz Return loss(f) is the Differential to common-mode return loss at frequency f	10MHz≤f ≤19GHz
Common mode to common-mode (Input/Output) Return loss SCC11/ SCD22	Return loss *(f)*≥ 2dB 0.2≤f≤19 Where f is the frequency in GHz Return loss (f) is the common-mode to common-mode return loss at frequency f	10MHz≤f ≤19GHz
Low Level Contact Resistance	70 milliohms Max. From initial.	EIA-634-23: Apply a maximum voltage of 20mV and current of 100 mA.
Insulation Resistance	10 Mohm (Min)	EIA364-21:AC 300V 1minute
Dielectric Withstanding Voltage	NO disruptive discharge	EIA-364-20: Apply a voltage o f 300 VDC for 1 minute between adjacent terminals and between adjacent terminals and ground

Differential Insertion Loss Max. For TPa to TPb Excluding Test fixture

	F AWG	1.25GHz	2.5GHz	5.0GHz	7.0GHz	10Ghz	12.89Ghz	10MHz≤f ≤19GHz
Differential Insertion Loss (SDD21 Max)	30(1m) Max.	4.5dB	5.4dB	6.3dB	7.5dB	8.5dB	10.5dB	
	30/28(3m)Max.	7.5dB	9.5dB	12.2dB	14.8dB	18.0dB	21.5dB	
	26(3m) Max.	5.7dB	7.2dB	9.9 dB	11.9dB	14.1dB	16.5dB	
	26/25(5m)Max.	7.8dB	10.0dB	13.5dB	16.0dB	19.0dB	22.0dB	

Insertion Loss Deviation	-0.176*f - 0.7 ≤ ILD ≤ 0.176* f + 0.7	50MHz≤f ≤19GHz
Differential to common mode conversion Loss-Differential Insertion Loss (SCD21-SDD21)	10 0.01≤ f ‹ 12.89 Conversion loss(f) – IL (f) ≥ {27-(29/22)f 12.89≤ f ‹ 15.7} 6.3 15.7≤ f≤ 19 Where f is the frequency in GHz Conversion_loss (f) is the cable assembly differential to common-mode conversion loss IL (f) is the cable assembly insertion loss	10MHz≤f ≤19GHz
MDNEXT (multiple disturber near-end crosswalk)	≥26dB @12.89GHz	10MHz≤f ≤19GHz
Intra Skew	15ps/m	10MHz≤f ≤19GHz

Environment Performance

Parameter	Requirement	Test Condition
Operating Temperature Range	-20°C to +76°C	Cable operating temperature range
Storage Temperature Range	-40°C to +80°C	Cable storage temperature range in packed condition
Thermal Cycling Non-Powered	No evidence of physical damage	EIA-364-32D, Method A, -25 to 90C, 100 cycles, 15 min, dwells
Salt Spraying	48 hours salt spraying after shell corrosive area less than 5%	EIA-364-26
Mixed Flowing Gas	Pass electrical tests per 3.1 after stressing (Fpr connector only)	EIA-364-35 Class II, 14 days.
Temp. Life	No evidence of physical damage	EIA-364-17C w/RH, Damp heat 90°C at 85% RH for 500 hours then return to ambient
Cable Cold Bend	4H No evidence of physical damage	Condition: -20°C ±2℃, mandrel diameter is 6 times the cable diameter.

Mechanical and Physical Characteristics

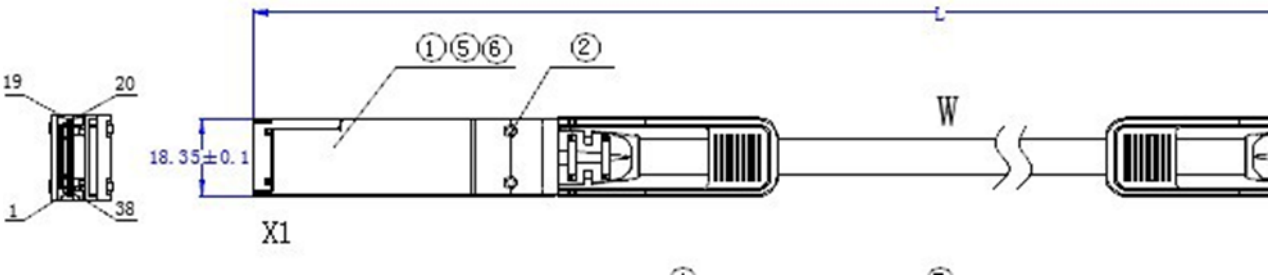
Parameter	Requirement	Test Condition
Vibration	Pass electrical tests per 3.1 after stressing	Clamp & vibrate per EIA-364-28E, TC-VII, test condition letter – D, 15 minutes in X, Y & Z axis
Cable Flex	No evidence of physical damage	Flex cable 180° for 20 cycles (±90° from nominal position) at 12 cycles per minute with a 1.0kg load applied to the cable jacket. Flex in the boot area 90º in each direction from vertical. Per EIA-364-41C
Cable Plug Retention in Cage	90N Min. No evidence of physical damage	Force to be applied axially with no damage to cage. Per SFF 8661 Rev 2.1 Pull on cable jacket approximately 1 ft behind cable plug. No functional damage to cable plug below 90N.

		Per SFF-8432 Rev 5.0
Cable Retention in Plug	90N Min. No evidence of physical damage	Cable plug is fixtured with the bulk cable hanging vertically. A 90N axial load is applied (gradually) to the cable jacket and held for 1 minute. Per EIA-364-38B
Mechanical Shock	Pass electrical tests Per 3.1 after stressing	Clamp and shock per EIA-364-27B, TC- G,3 times in 6 directions, 100g, 6ms.
Cable Plug Insertion	40N Max (QSFP28)	Per SFF8661 Rev 2.1
Cable plug Extraction	30N Max (QSFP28)	Place axial load on de-latch to de-latch plug.Per SFF8661 Rev 2.1
Durability	50 cycles, No evidence of physical damage	EIA-364-09, perform plug &unplug cycles:Plug and receptacle mate rate: 250times/hour. 50times for QSFP28/SFP28 module (CONNECTOR TO PCB)

Wiring Diagram

X1	X2	Remarks	X1	X2	Remarks
18 (RX1-)	37(TX1-)	Pair	37(TX1-)	18 (RX1-)	Pair
17 (RX1+)	36 (TX1+)		36 (TX1+)	17 (RX1+)	
15 (RX3-)	34 (TX3-)	Pair	34 (TX3-)	15 (RX3-)	Pair
14 (RX3+)	33 (TX3+)		33 (TX3+)	14 (RX3+)	
6 (TX4+)	25 (RX4+)	Pair	25 (RX4+)	6 (TX4+)	Pair
5 (TX4-)	24 (RX4-)		24 (RX4-)	5 (TX4-)	
3 (TX2+)	22 (RX2+)	Pair	22 (RX2+)	3 (TX2+)	Pair
2 (TX2-)	21 (RX2-)		21 (RX2-)	2 (TX2-)	
1, 4, 7, 13, 16, 19, 20, 23, 26, 32,35,38	1, 4, 7, 13, 16, 19,20, 23, 26, 32, 35, 38	GND	8, 9, 10, 11, 12, 27, 28, 29, 30, 31	8, 9, 10, 11, 12, 27, 28, 29, 30, 31	EEPROM point at both ends

Mechanical Specifications



UNIT: mm

About ProLabs

Our experience comes as standard; for over 15 years ProLabs has delivered optical connectivity solutions that give our customers freedom and choice through our ability to provide seamless interoperability. At the heart of our company is the ability to provide state-of-the-art optical transport and connectivity solutions that are compatible with over 90 optical switching and transport platforms.

Complete Portfolio of Network Solutions

ProLabs is focused on innovations in optical transport and connectivity. The combination of our knowledge of optics and networking equipment enables ProLabs to be your single source for optical transport and connectivity solutions from 100Mb to 400G while providing innovative solutions that increase network efficiency. We provide the optical connectivity expertise that is compatible with and enhances your switching and transport equipment.

Trusted Partner

Customer service is our number one value. ProLabs has invested in people, labs and manufacturing capacity to ensure that you get immediate answers to your questions and compatible product when needed. With Engineering and Manufacturing offices in the U.K. and U.S. augmented by field offices throughout the U.S., U.K. and Asia, ProLabs is able to be our customers best advocate 24 hours a day.

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