

Rev	Date	Modified by	Description
A	2023		

## Product Specifications

### 200Gbps QSFP56 To 2x 100G DSFP56 Passive High Speed Cable

**PN: EQ5DP20X-32D5CNxx**

### Features

- SFF-8636, SFF-8402, DSFP MSA
- Compliant with ethernet network IEEE802.3bj&IEEE802.3 cd
- Supports I2C two-wire interface for easy control
- Supports hot swap
- Low crosstalk
- Low power consumption

### Applications

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

### Product Description

200G QSFP56 passive cable assembly products, based on 4X50G or 4X56G structure, the production

Products can well meet the next generation of 200G switches, servers, routers and other product applications.

The QSFP56 cable assembly features an optimized design to reduce crosstalk and plug loss for excellent signal integrity,

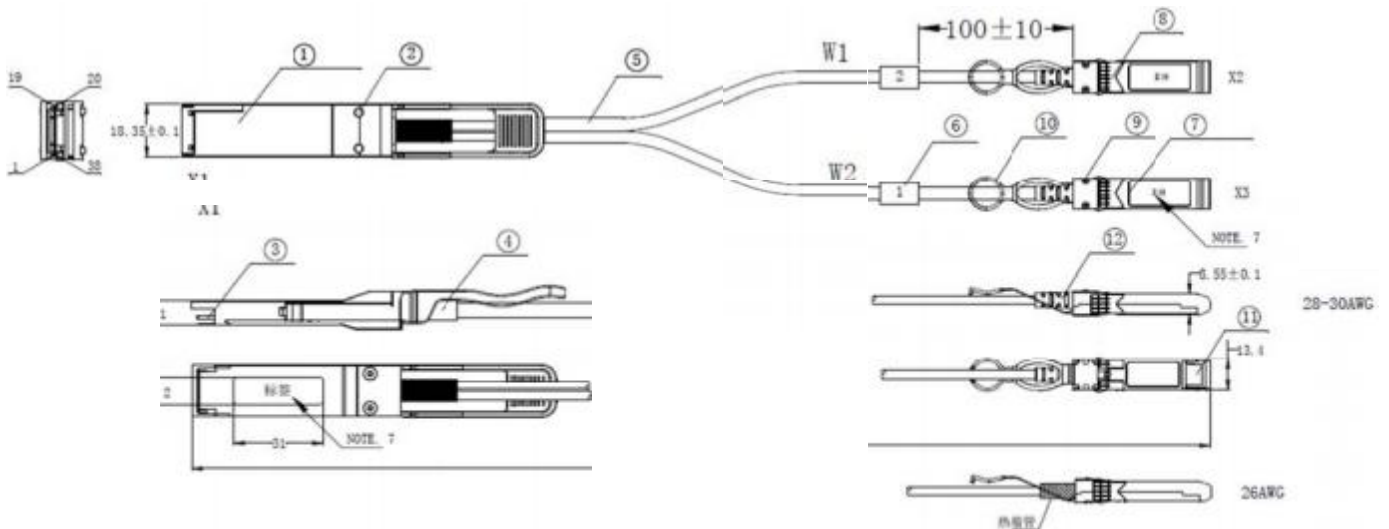
Fully compliant with the next generation 200G Ethernet and InfiniBand HDR standards.

The DSFP56 is based on SFP+ equivalent form factor, supports NRZ/PAM4 transmission, provides 56Gb/s error-free code transmission, and can be applied to high-density 56G Ethernet

switches and network interfaces to facilitate data centers

200G QSFP56 To 2x100G DSFP56 supports the interconnection of two interface devices and single channel transmission speed rate is 56Gbps.

## Outline drawing



## Wiring Diagram

wire	Starting signal	Starting	End	End signal
W1	RX1+	X1. 17	X2. 18	TX+
	RX1-	X1. 18	X2. 19	TX-
	GND	X1. 19	X2. 20	GND
	TX1+	X1. 36	X2. 13	RX+
	TX1-	X1. 37	X2. 12	RX-
	GND	X1. 38	X2. 14	GND
	RX2+	X1. 22	X2. 2	TX2+
	RX2-	X1. 21	X2. 1	TX2-
	GND	X1. 20	X2. 22	GND
	TX2+	X1. 3	X2. 8	RX2+
	TX2-	X1. 2	X2. 9	RX2-
	GND	X1. 1	X2. 10	GND

wire	Starting signal	Starting	End	End signal
W2	RX3+	X1. 14	X3. 18	TX+
	RX3-	X1. 15	X3. 19	TX-
	GND	X1. 16	X3. 20	GND
	TX3+	X1. 33	X3. 13	RX+
	TX3-	X1. 34	X3. 12	RX-
	GND	X1. 35	X4. 14	GND
	RX4+	X1. 25	X3. 2	TX2+
	RX4-	X1. 24	X3. 1	TX2-
	GND	X1. 23	X3. 22	GND
	TX4+	X1. 6	X3. 8	RX2+
	TX4-	X1. 5	X3. 9	RX2-
	GND	X1. 4	X4. 10	GND

## Electrical Performance

### Signal Integrity

ITEM		REQUIREMENT	TEST CONDITION
Differential Impedance	Cable Impedance	$100 \pm 5\Omega$	Rise time of 25ps (20 % - 80 %).
	Paddle Card Impedance	$100 \pm 10\Omega$	
	Cable Termination Impedance	$100 \pm 15\Omega$	
Differential (Input/Output)Return loss $S_{DD11}/S_{DD22}$		$\text{Return\_loss}(f) \geq \begin{cases} 16.5-2\sqrt{f} & 0.05 \leq f < 4.1 \\ 10.66-14\log_{10}(f/5.5) & 4.1 \leq f \leq 26.5 \end{cases}$ frequency in GHz Where f is the Return loss(f) is the return loss at frequency f	$10\text{MHz} \leq f \leq 26.5\text{GHz}$
Differential to common-mode (Input/Output)Return loss $S_{CD11}/S_{CD22}$		$\text{Return\_loss}(f) \geq \begin{cases} 22-(20/25.78)f & 0.01 \leq f < 12.89 \\ 15-(6/25.78)f & 12.89 \leq f \leq 26.5 \end{cases}$ Where f is the frequency in GHz Return_loss(f) is the Differential to common-mode return loss at frequency f	$10\text{MHz} \leq f \leq 26.5\text{GHz}$
Common-mode to Common-mode (Input/Output)Return loss $S_{CC11}/S_{CC22}$		$\text{Return\_loss}(f) \geq 2\text{dB} \quad 0.2 \leq f \leq 126.5$ Where f is the frequency in GHz Return_loss(f) is the common-mode to common-mode return loss at frequency f	$10\text{MHz} \leq f \leq 26.5\text{GHz}$
Differential Insertion Loss ( $S_{DD21}$ Max.)		(Differential InsertionLoss Max. For TPa to TPb Excluding Test fixture ) Passive Cable: -17.16dB Min@13.28GHz.	$10\text{MHz} \leq f \leq 13.28\text{GHz}$
Differential to common-mode Conversion		$\text{Conversion\_loss}(f) - \text{IL}(f) \geq \begin{cases} 10 & 0.01 \leq f < 12.89 \\ 27-(29/22)f & 12.89 \leq f < 15.7 \\ 15.7 & 15.7 \leq f \leq 26.5 \end{cases}$	

Loss-Differential Insertion Loss( $S_{CD21}-S_{DD21}$ )	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	$10\text{MHz} \leq f \leq 26.5\text{GHz}$
MDNEXT(multiple disturber near-end crosstalk)	$\geq 26\text{dB} @ 13.28\text{GHz}$	$10\text{MHz} \leq f \leq 26.5\text{GHz}$

### Other Electrical Performance

ITEM	REQUIREMENT	TEST CONDITON
Low Level Contact Resistance	20milliohms Max. From initial.	EIA-364-23:Apply a maximum voltage of 20mV And a current of 100 mA.
Insulation Resistance	10Mohm(Min.)	EIA364-21:AC 300V 1minute
Dielectric Withstanding Voltage	NO disruptive discharge.	EIA-364-20:Apply a voltage of 300 VDC for 1minute between adjacent terminals And between adjacent terminals and ground.

### Environment Performance

ITEM	REQUIREMENT	TEST CONDITON
[Operating Temp. Range]	0°C to +70°C	Cable operating temperature range.
[Storage Temp. Range (in packed condition)]	-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. (For 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°C, mandrel diameter is 6 times the cable diameter.

## Mechanical and Physical Characteristic

ITEM	REQUIREMENT	TEST CONDITON
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 90° 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 DSFP MSA Rev 1.0 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.(QSFP56) 18N Max.(DSFP56)	Per SFF8661 Rev 2.1 Per DSFP MSA Rev 1.0

Cable plug Extraction	30N Max. (QSFP56) 12.5N Max. (DSFP56)	Place axial load on de-latch to de-latch plug.Per SFF8661 Rev 2.1 Per DSFP MSA Rev 1.0
Durability	50 cycles, No evidence of physical damage	EIA-364-09, perform pplug & unplug cycles: Plug and receptacle mate rate: 250times/hour. 50times for QSFP/DSFP module (CONNECTOR TO PCB)

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