CONNPRO SLIM SAS HD 4.0 PASSIVE COPPER CABLE

DESCRIPTION

ConnPro 90-Gbps Slim SAS HD PCC is of high-performance with aggregate 90-Gbps bandwidth for SAS-4 and PCIe4 x4 protocol specialized in data-center applications.

This 90-Gbps Slim SAS HD AOC is compliant with SFF-8644 MSA with mechanical requirement, whose reduced size of connector provides premium board space for implementing more I/O ports. The single lane speed is up to 22.5-Gbps to fulfill SAS-4 and PCIe4 x4 standard, also backward to fully compliant with SAS-3 of 12-Gbps and PCIe3 x4 lane speed. Also, the out-of-band (OOB) low-speed hand-shaking communication.This cable can be compliant to 100GBASE-SR4 Ethernet or 100-Gbps EDR InfiniBand protocol to meet several existing standards.

FEATURES

- Backwards compatible to 12-Gbps SAS-3 and PCIe3 x4 of optical-mode capable systems with out-of-band (OOB) signal supported
- Round cable for flexible routing and easy cable management
- Compliant to SFF-8644 MSA standard in mechanical consideration
- Management interface compliant to SFF-8636
- QSFP28 to Mini-SAS HD AOC with different form-factors over two ends are available upon customer request
- Supporting Hot Plug

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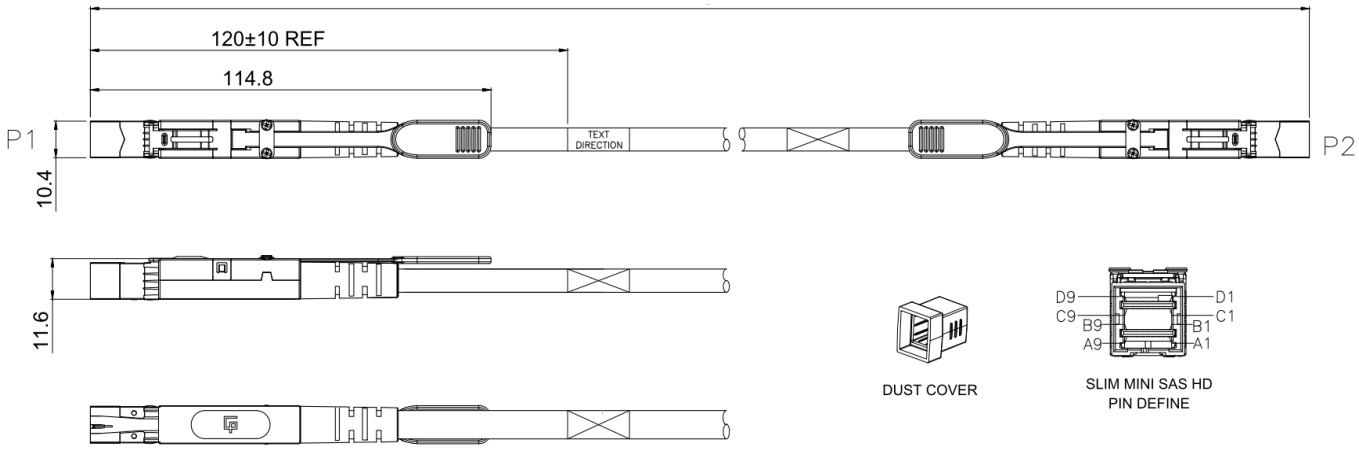
MECHANICAL SPECIFICATIONS

Product Drawing

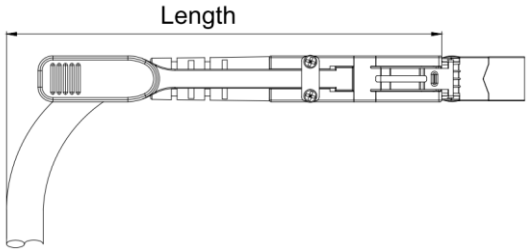


* Unit: mm

General Connector Mechanical Requirement

Description	SFF-8644 rev2.9 SPEC	Procedure
Module Mating Force	Max.62N	EIA 364-13
Un-Mating Force	Max. 30N	EIA 364-13
Vibration	- No Damage - No Discontinuity longer than 1 microsecond allowed -20 milliohms maximum change from initial contact resistance	EIA 364-28
Mechanical Shock	- No Damage -20 milliohms maximum change from initial contact resistance	EIA 364-27
Rated Durability Cycles	-250 cycle	

Minimum Cable Bending Radius



30AWG: 65mm ;

28AWG: 75mm ;

Bulk Cable Data:

Wire Gauge	OD (mm)	Bulk Cable Bending Radius (mm)
30 AWG 8-PAIR	MAX 7.2	MIN 35
28 AWG 8-PAIR	MAX 8.2	MIN 45

RECOMMENDED OPERATING CONDITIONS

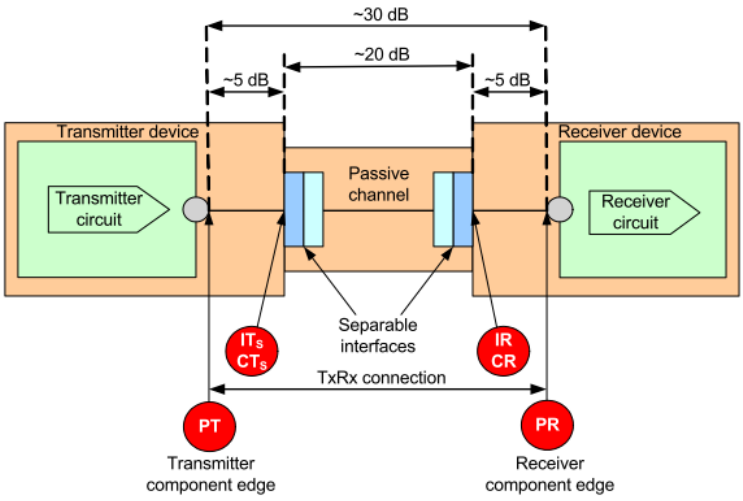
Parameter	Min	Typical	Max	Unit	Note
Case Operating Temperature	0	35	70	℃	
Power Supply Voltage	3.135	3.3	3.465	V	
Date Rate per Channel		22.5	24.0	Gbps	
Bit Error Ratio		10^{-12}			2
Current			0.5	A	Per Contact
Voltage			30	VDC	Per Contact
Two Wire Serial (TWS) Interface Clock	0		400	kHz	
Differential Data Input / Output Load		100		Ohms	
Standard Cable Lengths			5	m	
Electrical Connector	Four-layers 36-pins	SFF-8644			
Management Interface	Two-Wire Serial			SFF-8636	

Notes:

1. Bit-Error-Rate (BER) test can be compliant to PRBS31 with proper De-emphasis and Equalizer.

SIGNAL INTEGRITY REQUIREMENTS

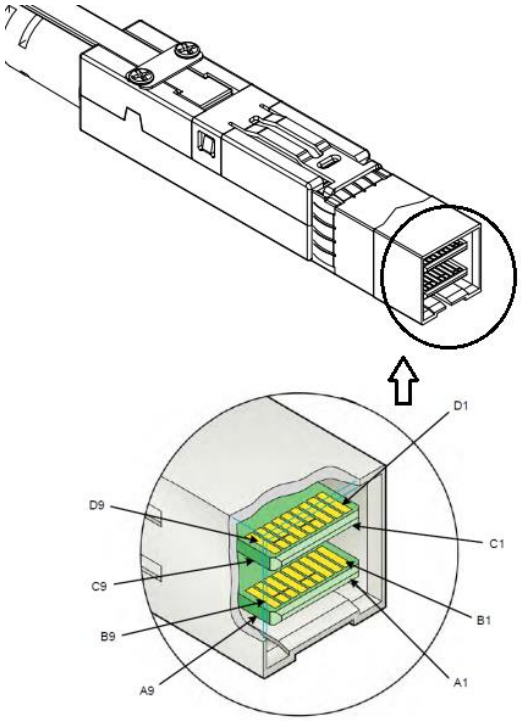
Slim SAS HD Cable Assembly insertion loss requirements (SAS-4 r10b & SFF-8644)



All the S-parameter requirments please refer to T10/BSR INCITS 534 Revision 10b, 5.5.7 Passive TxRx connection electrical characteristics for trained 22.5 Gbit/s.

CONNECTOR PAD ASSIGNMENTS AND DESCRIPTIONS

Fig. Slim SAS AOC Plug connector

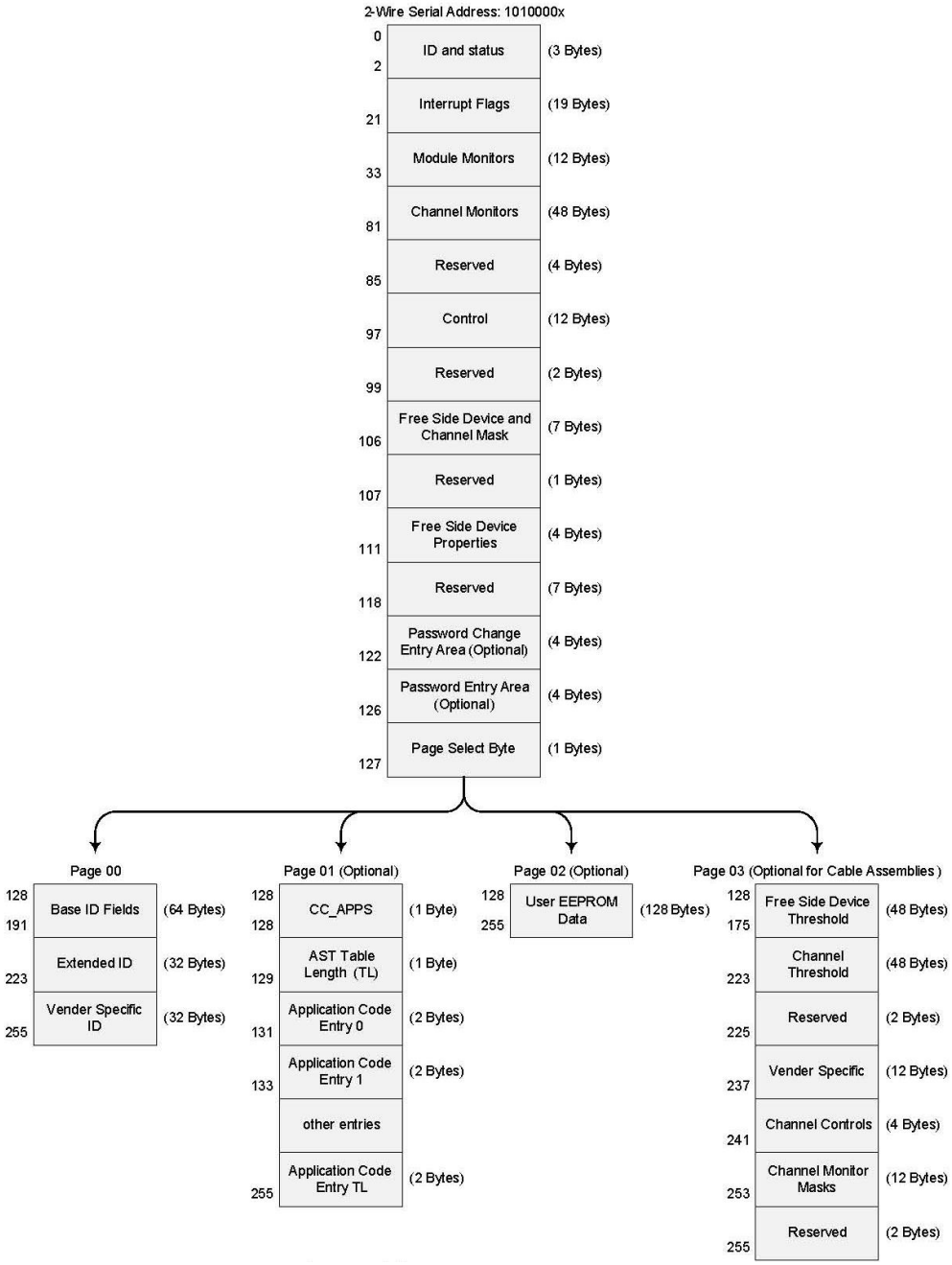


Pin	Mating Level	Signal (SAS-4)	Definition	Signal (PCIe4 x4)	Definition
A1	Second	Reserved	Reserved for future use	CADDR	used to configure the Upstream cable management device address
A2	Second	IntL	Management interface interrupt signal	CINT#	Management interface interrupt signa
A3	First	GND	Signal ground	GND	Signal ground
A4	Third	RX1+	Fixed side receiver channel 1 non-inverting input	PERp0	Fixed side receiver channel 0 non-inverting input
A5	Third	RX1-	Fixed side receiver channel 1 inverting input	PERn0	Fixed side receiver channel 0 inverting input
A6	First	GND	Signal ground	GND	Signal ground
A7	Third	RX3+	Fixed side receiver channel 3 non-inverting input	PERp3	Fixed side receiver channel 3 non-inverting input
A8	Third	RX3-	Fixed side receiver channel 3 inverting input	PERn3	Fixed side receiver channel 3 inverting input
A9	First	GND	Signal ground	GND	Signal ground
B1	Second	Vact	Free side power input for non-management interface circuitry	PWR	Free side power input for non-management interface circuitry
B2	Second	ModPrsL	Free side active low present output	CBLPRSNT#	Cable present detect
B3	First	GND	Signal ground	GND	Signal ground
B4	Third	RX0+	Fixed side receiver channel 0 non-inverting input	PERp1	Fixed side receiver channel 1 non-inverting input
B5	Third	RX0-	Fixed side receiver channel 0 inverting input	PERn1	Fixed side receiver channel 1 inverting input
B6	First	GND	Signal ground	GND	Signal ground
B7	Third	RX2+	Fixed side receiver channel 2 non-inverting input	PERp2	Fixed side receiver channel 2 non-inverting input
B8	Third	RX2-	Fixed side receiver channel 2 inverting input	PERn2	Fixed side receiver channel 2 inverting input
B9	First	GND	Signal ground	GND	Signal ground
C1	Second	SCL	Management interface serial clock	CMISCL	Management interface clock line. Used for both initial link setup and sideband messages when used with proper cables.
C2	Second	SDA	Management interface serial data output	SMISDA	Management interface data line. Used for both initial link setup and sideband messages when used with proper cables
C3	First	GND	Signal ground	GND	Signal ground
C4	Third	TX1+	Fixed side transmitter channel 1 non-inverting output	PETp0	Fixed side transmitter channel 0 non-inverting output
C5	Third	TX1-	Fixed side transmitter channel 1 inverting output	PERn0	Fixed side transmitter channel 0 inverting output
C6	First	GND	Signal ground	GND	Signal ground
C7	Third	TX3+	Fixed side transmitter channel 3 non-inverting output	PETp3	Fixed side transmitter channel 3 non-inverting output
C8	Third	TX3-	Fixed side transmitter channel 3 inverting output	PERm3	Fixed side transmitter channel 3 inverting output

C9	First	GND	Signal ground	GND	Signal ground
D1	Second	Vact	Free side power input for non-management interface circuitry	PWR	Free side power input for non-management interface circuitry
D2	Second	Vman	Free side power input for management interface circuitry	MGTPWR	Free side power input for management interface circuitry
D3	First	GND	Signal ground	GND	Signal ground
D4	Third	TX0+	Fixed side transmitter channel 0 non-inverting output	PETp1	Fixed side transmitter channel 1 non-inverting output
D5	Third	TX0-	Fixed side transmitter channel 0 inverting output	PETn1	Fixed side transmitter channel 1 inverting output
D6	First	GND	Signal ground	GND	Signal ground
D7	Third	TX2+	Fixed side transmitter channel 2 non-inverting output	PETp2	Fixed side transmitter channel 2 non-inverting output
D8	Third	TX2-	Fixed side transmitter channel 2 inverting output	PETn2	Fixed side transmitter channel 2 inverting output
D9	First	GND	Signal ground	GND	Signal ground

MEMORY MAP

The memory map is structured as a single address and multiple page approaches, according to SFF-8636 MSA specification as shown in the below. For more detailed description of this memory map or lower pages, please see our Memory Map document with flexible customization settings.



PART NUMBERS

RS4D5TD5T05001	External Mini-SAS HD passive copper cable, L=0.5M (SAS-4) ,30AWG
RS4D5TD5T10001	External Mini-SAS HD passive copper cable, L=1M (SAS-4) ,30AWG
RS4D5TD5T20001	External Mini-SAS HD passive copper cable, L=2M (SAS-4) ,30AWG
RS4D5TD5T30002	External Mini-SAS HD passive copper cable, L=3M (SAS-4) ,28AWG
RS4D5TD5T40002	External Mini-SAS HD passive copper cable, L=4M (SAS-4) ,28AWG
RS4D5TD5T50002	External Mini-SAS HD passive copper cable, L=5M (SAS-4) ,28AWG
RP4D5TD5T05001	External Mini-SAS HD passive copper cable, L=0.5M (PCIe4 x4) ,30AWG
RP4D5TD5T10001	External Mini-SAS HD passive copper cable, L=1M (PCIe4 x4) ,30AWG
RP4D5TD5T20001	External Mini-SAS HD passive copper cable, L=2M (PCIe4 x4) ,30AWG
RP4D5TD5T30002	External Mini-SAS HD passive copper cable, L=3M (PCIe4 x4) ,28AWG
RP4D5TD5T40002	External Mini-SAS HD passive copper cable, L=4M (PCIe4 x4) ,28AWG
RP4D5TD5T50002	External Mini-SAS HD passive copper cable, L=5M (PCIe4 x4) ,28AWG

IMPORTANT NOTICE

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