

# 800G Twin-port NDR 2x400Gb/s OSFP to 2x400Gb/s OSFP Passive Copper Splitter Cable

## Features

- 800Gb/s to two 400Gb/s data rates
- Based on 100G-PAM4 modulation
- 1, 1.5, 2, 2.5, and 3-meter lengths
- OSFP ends each consume 0.1 Watts
- Operating case temperature 0-70°C
- Hot pluggable
- RoHS compliant
- LSZH (Low Smoke Zero Halogen) jacket
- LF (Lead Free) HF (Halogen Free) PCB
- CMIS compliant I2C management interface (OSFP end)

## Applications

- Quantum-2 InfiniBand or Spectrum-4 Ethernet switch-to-two 400Gb/s ConnectX-7 OSFP adapters

## Description

O20112-800G-DACH is an 800Gb/s twin-port OSFP (Octal Small Form-factor Pluggable) to 2x400Gb/s OSFP passive Direct Attach Copper (DAC) dual breakout (aka splitter) cable for 400Gb/s End-to-End InfiniBand and Ethernet solutions. It has identical design and internals as the QSFP112 version, only with different connector shells. The DAC firmware supports both InfiniBand and Ethernet and is automatically enabled depending on the protocol of the switch attached to.

The 8-channel twin-port OSFP end uses a finned top form-factor for use in Quantum-2 and Spectrum-4 switch cages. The two 400G ends support 4-channels of 100G-PAM4 (400G) and use a flat top OSFP for use in ConnectX-7 adapters using riding heat sinks on the connector cage. For use in liquid-cooled systems, a twin-port OSFP version is available with a flat top (designated -FLT in the part number).

DAC cables are the lowest-cost, lowest-latency, near zero power consuming, high-speed links available due to their simplicity of design and minimal components. The “passive” term refers to the copper cable containing no electronics in the data path. Each end includes an EEPROM which provides product identification and characteristics to the host system. Every cable length is tuned to reduce internal signal noise and back reflections. Thin 30AWG is used for 1 and 1.5-meter lengths and thicker 26AWG for 2 to 3-meters.

Main use is linking an 800Gb/s Quantum-2 switch or Spectrum-4 switch to OSFP-based 400Gb/s ConnectX-7 PCIe network adapter cards.

NADDOD’s cable solutions provide power-efficient connectivity enabling higher port bandwidth, density and configurability at a low cost and reduced power requirement in the data centers. Rigorous cable production testing ensures best out-of-the-box installation experience, performance, and durability.

## Absolute Maximum Specifications

Absolute maximum ratings are those beyond which damage to the device may occur.

Between the operational specifications and absolute maximum ratings, prolonged operation is not intended and permanent device degradation may occur.

Table1-Absolute Maximum Specifications					
Parameter	Min.	Typical	Max.	Unit	Note
Supply voltage	-0.3		3.6	V	
Data Input Voltage	-0.3		3.6	V	
Control Input Voltage	-0.3		3.6	V	

## Environmental Specifications

This table shows the environmental specifications for the product

Table2-Environmental Specifications				
Parameter	Min	Typical	Max.	Units
Storage Temperature	-40		85	°C

## Operational Specifications

Table3-Optical Specifications					
Parameter	Min.	Typical	Max.	Unit	Note
Supply Voltage (Vcc)	3.135	3.3	3.465	V	
Power Consumption	--	--	0.1	W	
Operating Case Temperature	0		70	°C	
Operating Relative Humidity	5		85	%	

## Electrical Specification

Table4-Electrical Specification				
Parameter	Min.	Typical	Max	Units
Characteristic impedance	90	100	110	Ω
Time propagation delay	--	--	4.5	ns/m

## Mechanical Specifications

Table5-Optical Specifications			
Parameter	Value		Units
Diameter	30AWG: 7.2 ±0.03 26AWG: 8.9 ±0.03		mm
Length tolerance	length < 2 m	±25	mm
	length ≥ 2 m	±50	

## Minimum Bend Radius

Table6-Minimum Bend Radius					
OPN	Length (m)	AWG (mm)	Cable Diameter	Min bend Radius R (mm)	Assembly Space L** (mm)
O20112-800G-CU1H	1.0	30AWG, 2x8pairs	7.2	72	135/128
O20112-800G-CU1-5H	1.5	30AWG, 2x8pairs	7.2	72	135/128
O20112-800G-CU2H	2.0	26AWG, 2x8pairs	8.9	89	156/147
O20112-800G-CU2-5H	2.5	26AWG, 2x8pairs	8.9	89	156/147

O20112-800G-CU3H	3.0	26AWG, 2x8pairs	8.9	89	156/147
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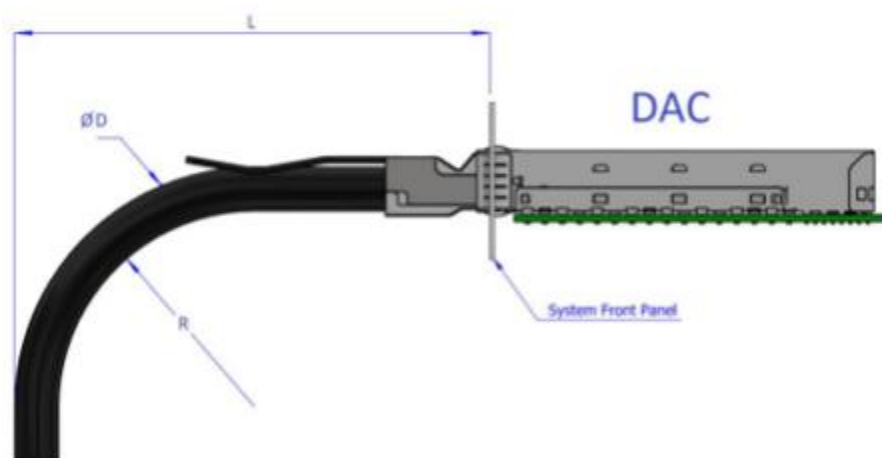
**Note:**

The minimum assembly bending radius (close to the connector) is 10x the cable's outer diameter. The repeated bend (far from the connector) is also 10x the cable's outer diameter. The single bend (far from the connector) is 5x the cable's outer diameter.

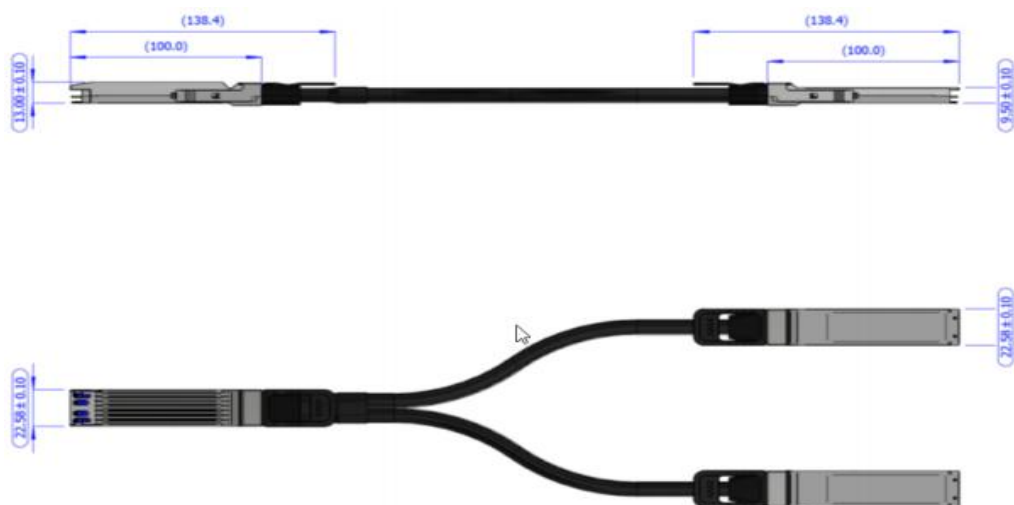
\*\*Combined end' is the 'head' where the cables join together, inserted into the switch. 'Single end' is the 'tail' which plugs into the HCA/NIC in a server.

L = Assembly Space. Minimum value depends on the backshell (connector housing) dimensions = the space for the cable assembly behind the rack door.

## Assembly Bending Radius



## Mechanical Dimensions



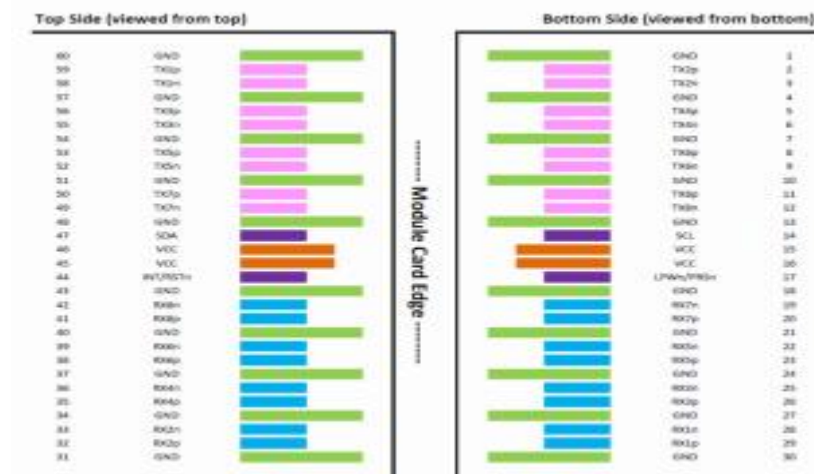
## Pin Description

The device is OSFP MSA Specification for OSFP Octal Small Form Factor Pluggable Module Rev. 1.12 compliant, see [www.osfpmsa.org](http://www.osfpmsa.org).

Table7-Pin Description					
Pin	Symbol	Description	Pin	Symbol	Description
1	GND	Ground	31	GND	Ground
2	Tx2p	Transmitter Non-Inverted Data Input	32	Rx2p	Receiver Non-Inverted Data Output
3	Tx2n	Transmitter Inverted Data Input	33	Rx2n	Receiver Inverted Data Output
4	GND	Ground	34	GND	Grounds
5	Tx4p	Transmitter Non-Inverted Data Input	35	Rx4p	Receiver Non-Inverted Data Output
6	Tx4n	Transmitter Inverted Data Input	36	Rx4n	Receiver Inverted Data Output
7	GND	Ground	37	GND	Ground
8	Tx6p	Transmitter Non-Inverted Data Input	38	Rx6p	Receiver Non-Inverted Data Output
9	Tx6n	Transmitter Inverted Data Input	39	Rx6n	Receiver Inverted Data Output
10	GND	Ground	40	GND	Ground
11	Tx8p	Transmitter Non- Inverted Data input	41	Rx8p	Receiver Non-Inverted Data Output
12	Tx8n	Transmitter Inverted Data Input	42	Rx8n	Receiver Inverted Data Output
13	GND	Ground	43	GND	Ground
14	SCL	2-wire serial interface clock	44	INT / RSTn	Module Interrupt / Module Reset
15	VCC	+3.3V Power	45	VCC	+3.3V Power
16	VCC	+3.3V Power	46	VCC	+3.3V Power
17	LPWn / PRS <sub>n</sub>	Low- Power Mode / Module Present	47	SDA	2-wire Serial interface data
18	GND	Ground	48	GND	Ground
19	Rx7n	Receiver Inverted Data Output	49	Tx7n	Transmitter Inverted Data Input
20	Rx7p	Receiver Non-Inverted Data Output	50	Tx7p	Transmitter Non-Inverted Data Input
21	GND	Ground	51	GND	Ground
22	Rx5n	Receiver Inverted Data Output	52	Tx5n	Transmitter Inverted Data Input
23	Rx5p	Receiver Non-Inverted Data Output	53	Tx5p	Transmitter Non-Inverted Data Input
24	GND	Ground	54	GND	Ground
25	Rx3n	Receiver Inverted Data Output	55	Tx3n	Transmitter Inverted Data Input
26	Rx3p	Receiver Non-Inverted Data Output	56	Tx3p	Transmitter Non-Inverted Data Input

27	GND	Ground	57	GND	Ground
28	Rx1n	Receiver Inverted Data Output	58	Tx1n	Transmitter Inverted Data Input
29	Rx1p	Receiver Non-Inverted Data Output	59	Tx1p	Transmitter Non-Inverted Data Input
30	GND	Ground	60	GND	Ground

## OSFP Module Pad Layout



## Ordering Information

**Table8-Ordering Information**

PN	Description
020112-800G-CU1H	passive copper splitter cable, InfiniBand 800Gb/s to 2x 400Gb/s, OSFP to 2x OSFP, 1m
020112-800G-CU1-5H	passive copper splitter cable, InfiniBand 800Gb/s to 2x 400Gb/s, OSFP to 2x OSFP, 1.5m
020112-800G-CU2H	passive copper splitter cable, InfiniBand 800Gb/s to 2x 400Gb/s, OSFP to 2x OSFP, 2m
020112-800G-CU2-5H	passive copper splitter cable, InfiniBand 800Gb/s to 2x 400Gb/s, OSFP to 2x OSFP, 2.5m
020112-800G-CU3H	passive copper splitter cable, InfiniBand 800Gb/s to 2x 400Gb/s, OSFP to 2x OSFP, 3m

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