Product Specification

5~7m 800G OSFP Finned Top to 800G OSFP Finned Top Active Electrical Cable

PN: O800-O800-AE



Features

- Supports 800 Gigabit Ethernet connectivity
- 8 × 106.25 Gb/s PAM4 electrical lanes
- 53.125 GBd symbol rate per electrical lane
- 8-channel full-duplex electrical interface
- Integrated Retimer-based signal processing
- Full active signal regeneration and loss compensation
- Available in 5–7 m lengths
- Hot-pluggable OSFP Finned Top interfaces
- Single 3.3 V power supply
- Two-wire management interface with EEPROM identification
- Commercial operating temperature range: 0°C to +70°C

Compliance

- Compliant with OSFP MSA Rev. 5.22
- Designed for OSFP 800GAUI-8 electrical interface architecture
- Designed in accordance with applicable IEEE 802.3ck 100G-per-lane PAM4 electrical requirements
- CMIS-compliant management interface
- RoHS compliant

Applications

- 800 Gigabit Ethernet
- AI/ML and GPU Computing Networks
- High-Performance Computing (HPC)
- Hyperscale Data Centers and Cloud Networking
- Distributed and Disaggregated Chassis Interconnections
- Switch-to-Switch and Switch-to-Server Interconnections

Description

The O800-O800-AE is a high-performance Active Electrical Cable (AEC) designed for medium-reach 800G interconnections in AI computing, high-performance computing, and hyperscale data center environments. Featuring OSFP Finned Top interfaces on both ends, the cable utilizes eight 106.25 Gb/s PAM4 electrical lanes in each direction to provide 800G full-duplex connectivity.

Each electrical lane operates at 53.125 GBd PAM4, corresponding to a raw electrical line rate of 106.25 Gb/s per lane and an aggregate raw electrical line rate of 850 Gb/s. Integrated Retimer-based signal-processing electronics recover, reshape, and re-drive the high-speed electrical signals, providing improved signal integrity and extended copper reach compared with conventional passive copper interconnects.

The cable contains eight transmit and eight receive differential signal pairs. Its active electrical architecture enables reliable high-speed transmission over copper while eliminating the need for optical transmitters, optical receivers, and fiber components.

The OSFP Finned Top connectors incorporate integrated heatsinks for thermal management in high-density switching environments. A two-wire management interface provides EEPROM-based product identification, configuration information, status monitoring, and cable management functions.

Available in 5 m, 6 m, and 7 m lengths, the O800-O800-AE is suitable for high-bandwidth connections between switches, servers, GPU systems, network adapters, and other 800G-capable equipment where longer copper reach is required.

The cable is designed in accordance with OSFP MSA Rev. 5.22, the OSFP 800GAUI-8 electrical architecture, applicable 100G-per-lane PAM4 electrical requirements, CMIS management requirements, and RoHS regulations.

Product Performance Specifications

1、Absolute Maximum Ratings

Parameter	Symbol	Min	Typ.	Max	Unit
Storage Temperature	TS	-40		+85	°C
Supply Voltage	VCC	-0.3		+3.6	V

2、Recommended Operating Conditions

Parameter	Symbol	Min	Typ.	Max	Unit
Operating Case Temperature	TC	0		+70	°C
Power Supply Voltage	VCC	3.135	3.3	3.465	V
Relative Humidity	RH	5		85	%

3、General Product Specifications

Parameter	Specification	Condition
Product Type	Active Electrical Cable (AEC)	
Connector Configuration	800G OSFP Finned Top to 800G OSFP Finned Top	
Ethernet Data Rate	800 Gbps	
Raw Electrical Line Rate	850 Gbps	8 × 106.25 Gb/s
Electrical Signaling	PAM4	
Number of Data Lanes	8 Full-Duplex Lanes	
Data Rate per Lane	106.25 Gb/s	
Symbol Rate per Lane	53.125 GBd	PAM4
Electrical Lane Configuration	8 Tx + 8 Rx differential pairs	
Host Electrical Interface	800GAUI-8	Both ends
Cable Length	5 m, 6 m, 7 m	
Transmission Media	Copper	
Connector Thermal Design	Finned Top	Both ends
Hot Pluggable	Supported	
Active Signal Regeneration	Supported	
Retimer-Based Signal Processing	Supported	
Management Interface	Two-wire serial interface	
Module Identification	EEPROM	

4、Power Supply and Management Interface

Parameter	Symbol	Min	Typ.	Max	Unit
Power Supply Voltage	VCC	3.135	3.3	3.465	V
Management Interface			Two-wire serial interface		
Module Identification			EEPROM		
Management Architecture			CMIS		

5、High-Speed Electrical Characteristics

Parameter	Symbol	Min	Typ.	Max	Unit	Condition
Differential Impedance	Zdiff	90	100	110	Ω	Differential

Symbol Rate per Lane	SRL		53.125		GBd	PAM4
Raw Electrical Line Rate per Lane	DRL		106.25		Gb/s	PAM4
Effective Data Rate per Lane			100		Gb/s	
Number of Electrical Lanes			8			Per direction
Aggregate Data Rate			800		Gb/s	
Aggregate Raw Electrical Line Rate			850		Gb/s	

6、Active Electrical Signal Processing

Parameter	Specification
Electrical Interface	800GAUI-8
Signaling Architecture	8 × 100G-class PAM4
PAM4 Symbol Rate	53.125 GBd
Transmit Lanes	8 differential lanes
Receive Lanes	8 differential lanes
Total Differential Signal Pairs	16
Retimer-Based Signal Processing	Supported
Clock and Data Recovery	Supported
Signal Re-Timing	Supported
Signal Re-Shaping	Supported
Signal Re-Driving	Supported
Channel Loss Compensation	Supported
Full-Duplex Operation	Supported

7、Cable Architecture

Parameter	Specification
Cable Architecture	16 differential signal pairs total (8 Tx + 8 Rx)
Cable Type	Active Electrical Copper Cable
Transmission Media	Copper
Differential Impedance	100 Ω nominal
High-Speed Signaling	106.25 Gb/s PAM4 per lane
Active Electronics	Integrated Retimer / SerDes signal-processing circuitry
Management	EEPROM-based identification and configuration

Connector Configuration	OSFP Finned Top to OSFP Finned Top

8、Cable Configuration by Length

Cable Length	Connector A	Connector B
5 m	OSFP Finned Top	OSFP Finned Top
6 m	OSFP Finned Top	OSFP Finned Top
7 m	OSFP Finned Top	OSFP Finned Top

9、Mechanical Interface

Parameter	Specification
Connector Form Factor	OSFP
Connector Top Type	Finned Top
Connector Configuration	OSFP to OSFP
Contact Count	60 contacts per end
Number of High-Speed Lanes	8 per direction
Total Differential Signal Pairs	16
Latching Mechanism	Pull-to-release

10、Environmental and Regulatory Characteristics

Parameter	Specification
Operating Temperature	0°C to +70°C
Storage Temperature	-40°C to +85°C
Operating Relative Humidity	5% to 85%
RoHS	Compliant

Pin-out Definition

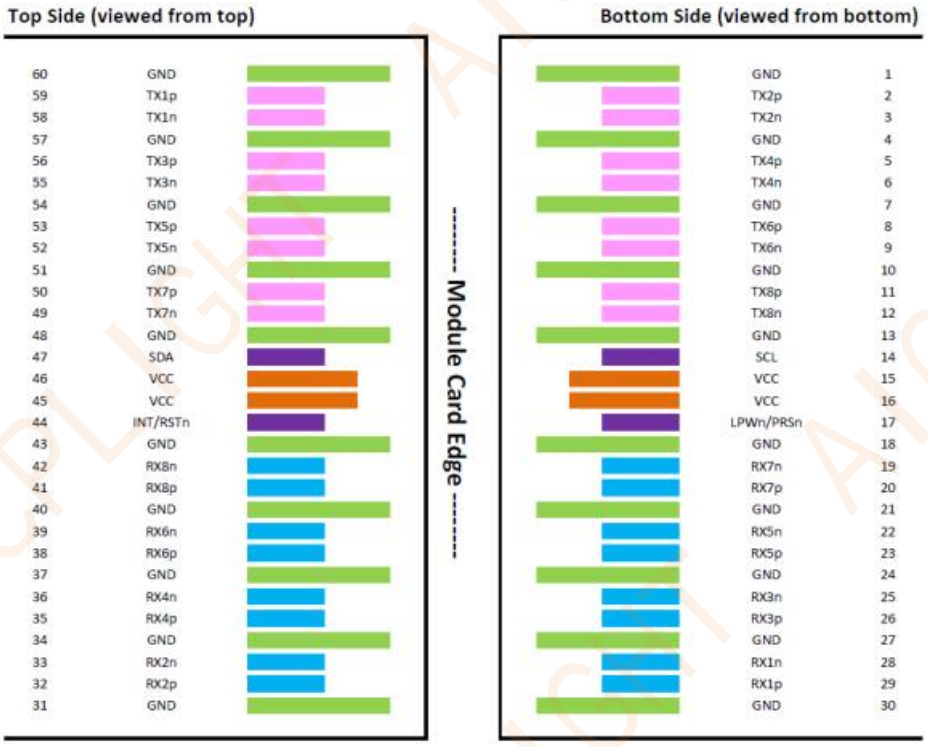


Figure4:Pin view

Pin Function Definitions

Pin	Logic	Symbol	Description	Note
1		GND	Ground	
2	CML-I	TX2p	Transmitter Data Non-Inverted	
3	CML-I	TX2n	Transmitter Data Inverted	
4		GND	Ground	
5	CML-I	TX4p	Transmitter Data Non-Inverted	
6	CML-I	TX4n	Transmitter Data Inverted	
7		GND	Ground	
8	CML-I	TX6p	Transmitter Data Non-Inverted	
9	CML-I	TX6n	Transmitter Data Inverted	
10		GND	Ground	
11	CML-I	TX8p	Transmitter Data Non-Inverted	
12	CML-I	TX8n	Transmitter Data Inverted	
13		GND	Ground	
14	LVCMOS-I/O	SCL	2-wire Serial interface clock	1

15		VCC	+3.3V Power	
16		VCC	+3.3V Power	
17	Multi-Level	LPWn/PRSn	Low-Power Mode / Module Present	2
18		GND	Ground	
19	CML-O	RX7n	Receiver Data Inverted	
20	CML-O	RX7p	Receiver Data Non-Inverted	
21		GND	Ground	
22	CML-O	RX5n	Receiver Data Inverted	
23	CML-O	RX5p	Receiver Data Non-Inverted	
24		GND	Ground	
25	CML-O	RX3n	Receiver Data Inverted	
26	CML-O	RX3p	Receiver Data Non-Inverted	
27		GND	Ground	
28	CML-O	RX1n	Receiver Data Inverted	
29	CML-O	RX1p	Receiver Data Non-Inverted	
30		GND	Ground	
31		GND	Ground	
32	CML-O	RX2p	Receiver Data Non-Inverted	
33	CML-O	RX2n	Receiver Data Inverted	
34		GND	Ground	
35	CML-O	RX4p	Receiver Data Non-Inverted	
36	CML-O	RX4n	Receiver Data Inverted	
37		GND	Ground	
38	CML-O	RX6p	Receiver Data Non-Inverted	
39	CML-O	RX6n	Receiver Data Inverted	
40		GND	Ground	
41	CML-O	RX8p	Receiver Data Non-Inverted	
42	CML-O	RX8n	Receiver Data Inverted	
43		GND	Ground	
44	Multi-Level	INT/RSTn	Module Interrupt / Module Reset	2
45		VCC	+3.3V Power	
46		VCC	+3.3V Power	
47	LVCMOS-I/O	SDA	2-wire Serial interface data	1
48		GND	Ground	
49	CML-I	TX7n	Transmitter Data Inverted	
50	CML-I	TX7p	Transmitter Data Non-Inverted	
51		GND	Ground	
52	CML-I	TX5n	Transmitter Data Inverted	
53	CML-I	TX5p	Transmitter Data Non-Inverted	

54		GND	Ground	
55	CML-I	TX3n	Transmitter Data Inverted	
56	CML-I	TX3p	Transmitter Data Non-Inverted	
57		GND	Ground	
58	CML-I	TX1n	Transmitter Data Inverted	
59	CML-I	TX1p	Transmitter Data Non-Inverted	
60		GND	Ground	

Note1: Open-Drain with pull up resistor on Host.

Note2: See pin description for required circuit.

Monitoring Specification

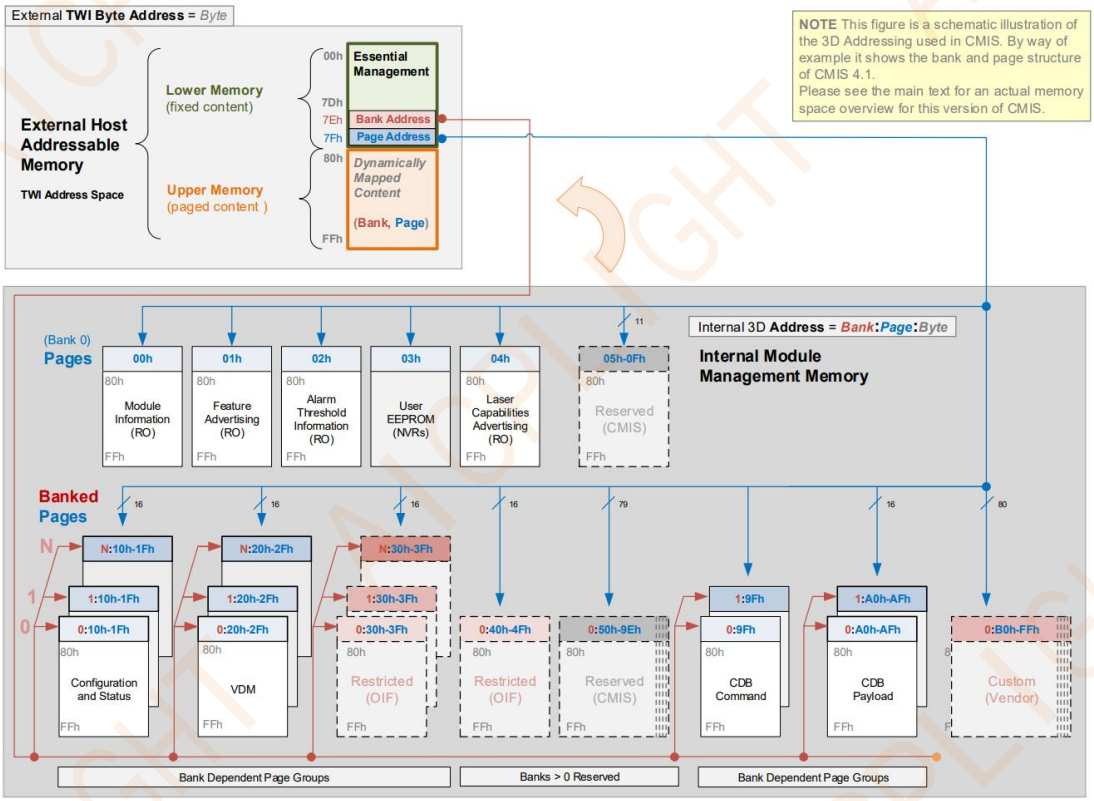
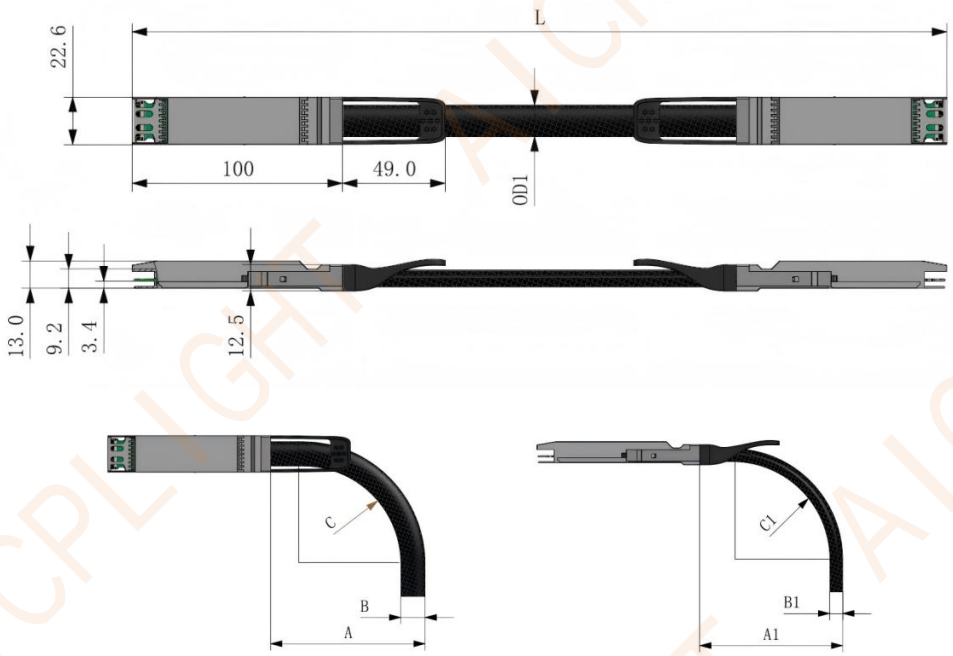


Figure5: Memory map

Memory map Table

Byte	Unit	Name	Description
		Lower Page 00h	
0-2	3	Management Characteristics	Basic Information about how this module is managed
3	1	Global Status Information	Current state of Module, Interrupt signal status
4-7	4	Flag Summary	Summary of Flags set on specific Pages (and Banks)
8-13	6	Module-Level Flags	Flags that are not lane or Data Path specific
14-25	12	Module-Level Monitors	Monitors that are not lane or Data Path specific
26-30	5	Module-Level Controls	Controls applicable to the module as a whole
31-36	6	Module-Level Masks	Mask bits for the Module-Level Flags
37-38	2	CDB Command Status	Status of current CDB command
39-40	2	Module Active Firmware Version	Module Active Firmware Version number
41	1	Fault Information	Fault cause for entering ModuleFault state
42-63	22		Reserved
64-84	21		Custom
85-117	33	Supported Applications Advertising	Applications supported by module Data Path(s)
118-125	8	Password Facilities	Password Entry and Change (mechanism only)
126-127	2	Page Mapping	Page mapping into host addressable Upper Memory
		Upper Page 00h	
128	1	SFF8024IdentifierCopy	Copy of Byte 00h:0
129-144	16	VendorName	Vendor name (ASCII)
145-147	3	Vendor OUI	Vendor IEEE company ID
148-163	16	Vendor PN	Part number provided by vendor (ASCII)
164-165	2	Vendor Rev	Revision level for part number provided by vendor (ASCII)
166-181	16	Vendor SN	Vendor Serial Number (ASCII)
182-189	8	DateCode	Manufacturing Date Code (ASCII)
190-199	10	CLEICode	Common Language Equipment Identification Code (ASCII)
200-201	2	ModulePowerCharacteristics	Module power characteristics
202	1	CableAssemblyLinkLength	Cable length (for cable assembly modules only)
203	1	ConnectorType	Connector type of the media interface
204-209	6	Copper Cable Attenuation	Attenuation characteristics (passive copper cables only)
210	1	MediaLaneInformation	Supported near end media lanes (all modules)
211	1	Cable Assembly Information	Far end modules information (cable assemblies only)
212	1	MediaInterfaceTechnology	Information on media side device or cable technology
213-220	8		Reserved
221	1		Custom
222	1	PageChecksum	Page Checksum over bytes 128-221
223-255	33		Custom

Mechanical Dimension



Note:

- All dimensions are in mm.
- Unless otherwise specified, dimensional tolerance is ±0.1 mm.
- Latch color: Black.
- Cable length tolerance: ±25 mm for L < 2 m and ±50 mm for L ≥ 2 m.

Handling and Safety Precautions:

- ESD Precautions: Follow standard ESD handling procedures when handling or installing the cable assembly, particularly at the connector ends.
- Bend Radius: Do not bend the cable below the specified minimum bend radius. Avoid sharp bends or repeated bending near the connector strain-relief area.
- Cable Handling: Avoid excessive pulling, twisting, crushing, kinking, or other mechanical stress that may damage the cable or affect signal integrity.
- Installation and Removal: Use the pull tab or release mechanism when inserting or removing the cable assembly. Do not pull directly on the cable.
- Connector Protection: Keep the electrical connector contacts clean and protected from dust, moisture, and contamination when not installed.
- Cable Assembly Protection: Do not disassemble, modify, splice, or attempt to repair the cable assembly or connector housing. Replace the cable if physical damage is observed.

Ordering Information

PN	Description
O800-O800-AE5	800G OSFP Finned Top to 800G OSFP Finned Top Active Electrical Cable,5m
O800-O800-AE6	800G OSFP Finned Top to 800G OSFP Finned Top Active Electrical Cable,6m
O800-O800-AE7	800G OSFP Finned Top to 800G OSFP Finned Top Active Electrical Cable,7m