HiWire™ LP CLOS AEC

LP CLOS AEC Specification

800G (8x112G) QSFP-DD PAM4 to 800G (8x112G) QSFP-DD PAM4

Plug & Play Active Electrical Cable for In-Rack Ethernet Applications in Distributed, Disaggregated Chassis (DDC)

Description

Credo's HiWire™ Low Power CLOS Active Electrical Cable (LP CLOS AEC) is a thin, low power 800G AEC specifically designed for in-rack applications replacing backplanes in Distributed, Disaggregated Chassis (DDC) implementations. Plug & Play LP CLOS AECs consume up to 75% less power and take 75% less volume than DACs, enabling interconnect densities of up to 1,000 cables per rack.

Credo's **CAC8XX321D1D-A0-HW HiWire LP CLOS AEC** is designed for telecom and data center use. It can sustain 8 lanes of 112G PAM4 signal in each direction, providing bi-directional 800Gbps traffic per cable. The use and replacement of this AEC is simple and straightforward as it adopts standard QSFP-DD type 2 form factor and complies to MSA specifications.

Product Features

The following are the key features of the HiWire LP CLOS AEC:

- Recognizable, purple PVC jacket
- 800G to 800G data rate
- Built-in diagnostic features
- CMIS 4.0 compliant
- Single 3.3V power supply
- Typ. 10W power dissipation each end
- BER < $10^{\wedge -15}$ (post FEC)
- Hot pluggable
- RoHS2 compliant
- I^2C management interface
- Operating case temperature range: 0^o to $+70^oC$

1:1 Direct LP CLOS AEC

Product Selections

Part Number	Length	AWG	Weight
CAC4XX321D1D-C0-HW	0.5m	32	275g
CAC4xx321D1D-D0-HW	1.0m	32	300g
CAC4xx321D1D-A0-HW	1.5m	32	325g
CAC4xx321D1D-D0-HW	2.0m	32	350g
CAC4xx321D1D-A0-HW	2.5m	32	350g

Mechanicals

Parameter	Cable Type	Typical	Length
Diameter	16P 32AWG	6.8mm	0.5 - 2.5m

Supported Standards

The following are the key features of the HiWire cable:

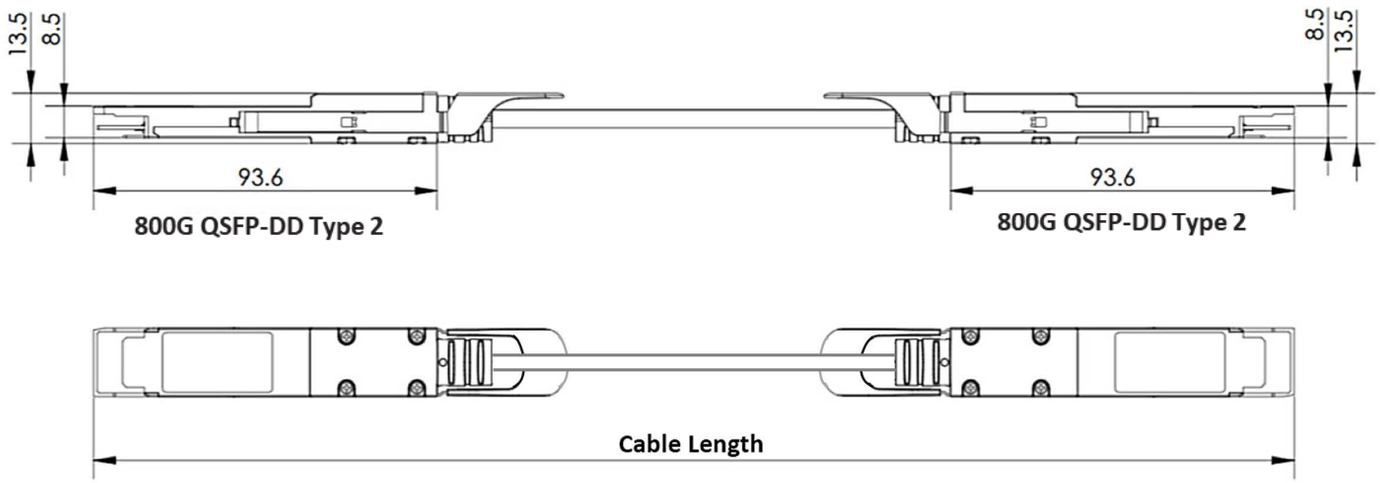
- Common Management Interface Specification (CMIS) v4.0
- QSFP-DD MSA v5.0

LP CLOS AEC

800G (8x112G) QSFP-DD PAM4 to 800G (8x112G) QSFP-DD PAM4

General Product Characteristics

Parameter	Value
Module Form Factor	QSFP-DD type 2
Number of Data Lanes	8 TX and 8 RX per module (PAM4)
Maximum Aggregate Data Rate	800Gbps
Nominal Data Rate per Lane	106.25Gbps (PAM4)
Electrical Interface and Pin-out	76-pin edge connector
Pin Description	Per QSFP-DD Hardware Specification
Management Interface	I^2C, serial, timing per Common Management Interface Specification for 8X/16X Pluggable Transceivers (QSFP-DD)
Length of Copper AEC	0.5m - 2.5m in 0.5m increments
BER (Pre-FEC)*	Typ. $<10^{-8}$ * Tested with QPRBS31 pattern
BER (Post-FEC)*	$<10^{-15}$ * Tested with QPRBS31 pattern



For more information please visit **www.credosemi.com/hiwire-aec** or email **hiwire@credosemi.com**

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REV 10132021

HiWire™ LP CLOS AEC

LP CLOS AEC Specification

800G (8x112G) OSFP PAM4 to 800G (8x112G) OSFP PAM4

Plug & Play Active Electrical Cable for In-Rack Ethernet Applications in Distributed, Disaggregated Chassis (DDC)

Description

Credo's HiWire™ Low Power CLOS Active Electrical Cable (LP CLOS AEC) is a thin, low power 800G AEC specifically designed for in-rack applications replacing backplanes in Distributed, Disaggregated Chassis (DDC) implementations. Plug & Play LP CLOS AECs consume up to 75% less power and take 75% less volume than DACs, enabling interconnect densities of up to 1,000 cables per rack.

Credo's **CAC8XX321A1A-A0-HW HiWire LP CLOS AEC** is designed for telecom and data center use. It can sustain 8 lanes of 112G PAM4 signal in each direction, providing bi-directional 800Gbps traffic per cable. The use and replacement of this AEC is simple and straightforward as it adopts standard OSFP form factor and complies to MSA specifications.

Product Features

The following are the key features of the HiWire LP CLOS AEC:

- Recognizable, purple PVC jacket
- 800G to 800G data rate
- Built-in diagnostic features
- CMIS 4.0/OSFP MSA 4.1 compliant
- Single 3.3V power supply
- Typ. 10W power dissipation each end
- BER < $10^{\wedge -15}$ (post FEC)
- Hot pluggable
- RoHS2 compliant
- I^2C management interface
- Operating case temperature range: 0^{o} to $+70^{o}C$

1:1 Direct LP CLOS AEC

Product Selections

Part Number	Length	AWG	Weight
CAC805321A1A-A0-HW	0.5m	32	275g
CAC81X321A1A-A0-HW	1.0m	32	300g
CAC815321A1A-A0-HW	1.5m	32	325g
CAC82X321A1A-A0-HW	2.0m	32	350g
CAC825321A1A-A0-HW	2.5m	32	350g

Mechanicals

Parameter	Cable Type	Typical	Length
Diameter	16P 32AWG	6.8mm	0.5 - 2.5m

Supported Standards

The following are the key features of the HiWire cable:

- Common Management Interface Specification (CMIS) v4.0
- OSFP MSA v4.1 Compliant

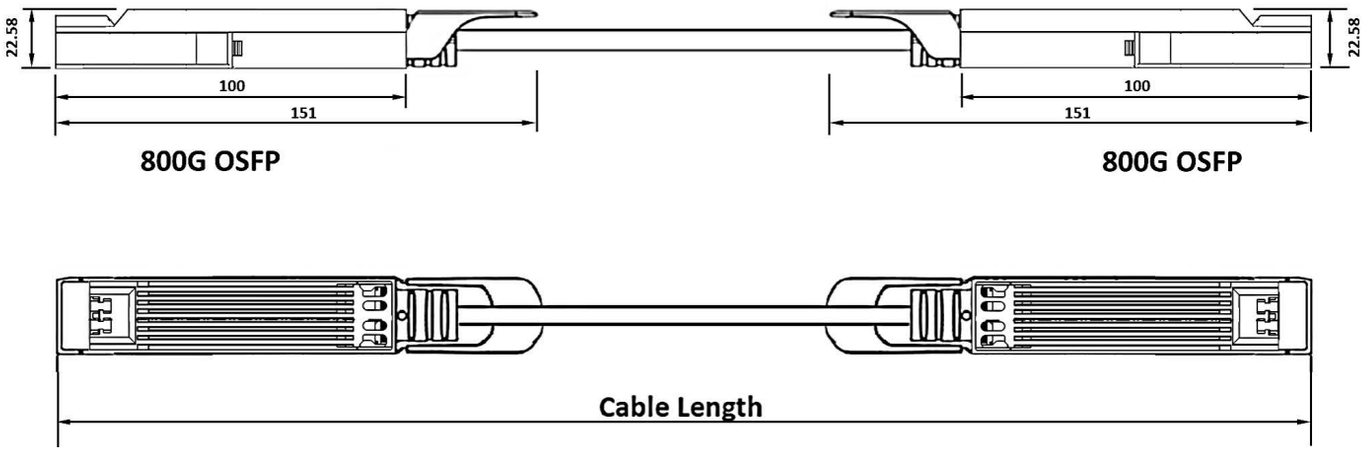
HiWire™ LP CLOS AEC

LP CLOS AEC

800G (8x112G) OSFP PAM4 to 800G (8x112G) OSFP PAM4

General Product Characteristics

Parameter	Value
Module Form Factor	OSFP
Number of Data Lanes	8 TX and 8 RX per module (PAM4)
Maximum Aggregate Data Rate	800Gbps
Nominal Data Rate per Lane	106.25Gbps (PAM4)
Electrical Interface and Pin-out	60-pin edge connector
Pin Description	Per OSFP Hardware Specification
Management Interface	I^2C, serial, timing per Common Management Interface Specification for 8X/16X Pluggable Transceivers (QSFP-DD)
Length of Copper AEC	0.5m - 2.5m in 0.5m increments
BER (Pre-FEC)*	Typ. $<10^{-8}$ * Tested with QPRBS31 pattern
BER (Post-FEC)*	$<10^{-15}$ * Tested with QPRBS31 pattern



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CONNECTIVITY SOLUTION BRIEF

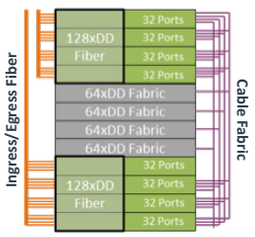
Distributed, Disaggregated Chassis (DDC) CLOS

DDC : Modern Chassis Replacement

Chassis are large, expensive, proprietary solutions to high-bandwidth switching and routing applications. Modern, software-defined data centers that need greater flexibility are driving the migration to DDCs and decoupling network hardware and software in the process.

Traditional Chassis

Distributed, Disaggregated Chassis



Solving the DDC CLOS Challenge

A chassis uses a backplane to build a CLOS network. A DDC uses standards-based 400G cables to build a CLOS network – but legacy interconnect solutions don't deliver. Optics power is too high and DAC gauge is too large to route at these densities resulting in broken connectors and failed rollouts.

Say Hi to HiWire LP CLOS AECs

Credo's HiWire CLOS AEC are thin, low power, deterministic Active Electrical Cables (AECs) specifically designed for DDC CLOS applications:

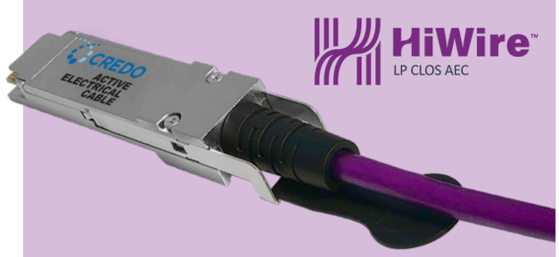
- Up to 75% less power consumption than optical solutions
- Up to 75% less space than DACs
- Deterministic $1e^{-8}$ pre-FEC BER performance
- 10-year service life

Using HiWire LP CLOS AECs in a DDC

- Routing densities of up to 1,000 cables per rack
- Improved reliability with MTBF >10 million hours
- Lower power consumption than chassis

www.credosemi.com/hiwire

HiWire LP CLOS AEC



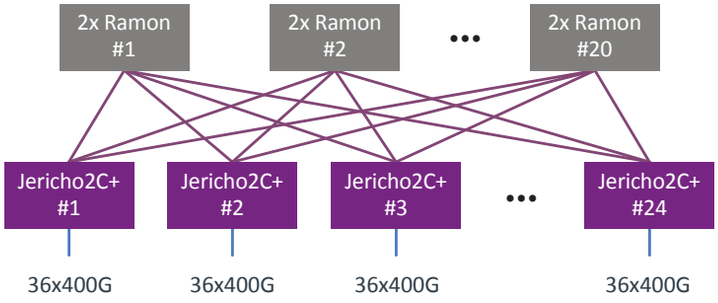
Credo HiWire LP CLOS Active Electrical Cables (AEC) are specifically designed for high density in-rack or HPC rack-to-rack interconnect to support CLOS architectures.

With 75% less power than optical solutions and 75% less volume than DACs, these AECs enable CLOS cabling densities up to 1,000 cables per rack.

Key Parameters

Lengths	0.5m – 3.0m 0.5m granularity	
Cu Gauge	32 AWG	
Modulation	PAM4	PAM4
Connectors	**A-Side** QSFP56-DD	**B-Side** QSFP56-DD
Link Speeds	56G	
Power	4.5W per end	
BER	Pre-FEC BER $1e^{-8}$ Post-FEC BER < 10^{-15}	

345Tb Jericho2C+ / Ramon Cluster

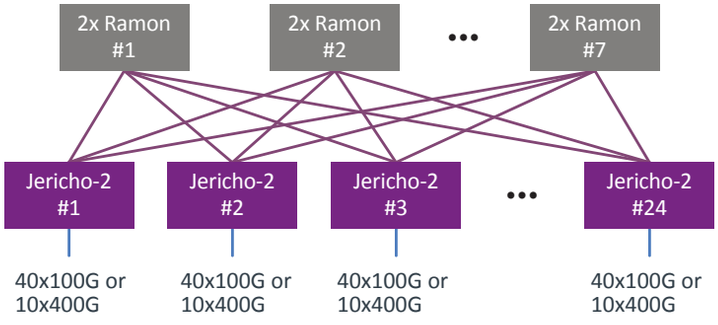


Item	Power	Qty	Total Power
Jericho2C+	900W	24	21.6kW
2U Ramon	550W	20	11kW
400G DR4	9W	864	7.8kW
		Total	40.1kW

CLOS Options

Item	Power	Qty	Ext Power
AOC	2x9W	960	17.2kW
HiWire LP CLOS AEC	**2x4.5W**	**960**	**8.6kW**

96Tb Jericho2 / Ramon Cluster



Item	Power	Qty	Ext Power
Jericho2	450W	24	10.8kW
2U Ramon	550W	7	3.9kW
400G DR4	9W	240	2.2kW
		Total	16.4kW

CLOS Options

Item	Power	Qty	Ext Power
AOC	2x11W	312	5.6kW
HiWire LP CLOS AEC	**2x4.5W**	**312**	**1.7kW**

For more information please visit **www.credosemi.com/hiwire** or email **hiwire@credosemi.com**.