



SHIFT AEC SPECIFICATION

Plug & Play AEC for Speed Shifting Ethernet Applications

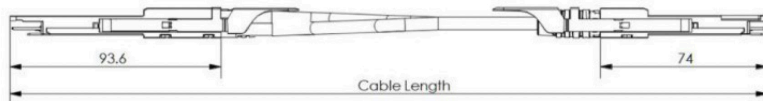
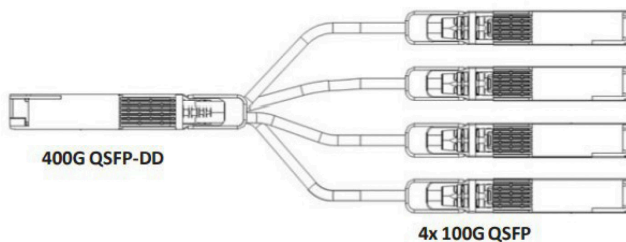
400G QSFP-DD PAM4 to 4x100G QSFP NRZ

Credo's HiWire™ SHIFT Active Electrical Cable (SHIFT AEC)

A lower power, lower cost solution to DR4 to 4xDR1 transceiver solutions for PAM4 to NRZ conversion. Powered by Credo's best-in-class signal processing technology, this Plug & Play cable provides connectivity between PAM4 and NRZ ports with speed shifting and FEC termination in-cable over thin copper cables without using any optical components.

Credo's CAC4XXXX1D4P-C0-HW HiWire SHIFT AEC

Designed for telecom and data center use. The 400G cable breaks out from one 400G (8x56G-PAM4) QSFP-DD end into four 100G (4x28G-NRZ) QSFP ends with built-in gearbox feature. The use and replacement of CAC4XXXX1D4P-A0-HW AEC is simple and straightforward as it adopts standard QSFP-DD type 2/QSFP form factors and complies to MSA specifications.



Features

The following are the key features of the HiWire SHIFT AEC:

- Recognizable, purple PVC jacket
- 400G to 4x100G with gearbox function
- SFF-8636 compliant
- Single 3.3V power supply
- Low power consumption:
 - Typ. 4.5W power dissipation (QSFP-DD end)
 - Typ. 2.5W power dissipation (QSFP end)
- BER 10^{-15} (post FEC)
- Hot pluggable
- RoHS2 compliant
- I²C management interface
- Operating case temperature range: 0 to +70°C

Supported Standards and Interfaces

- Common Management Interface Specification (CMIS) v5.1
- OSFP-XD MSA v0.1

Key Features

Parameter	Value
Module Form Factor	QSFP-DD Type 2 and QSFP
Number of Data Lanes	QSFP-DD 8 TX and 8 RX per Module (PAM4) QSFP Line Side: 2 TX and 2 RX per module (PAM) Host side: 4 TX and RX per module
Maximum Aggregate Data Rate	400Gbps
Nominal Data Rate per Lane	QSFP-DD: 53.125Gbps (PAM4), KP4 FEC must be enabled QSFP: 25.78125Gbps (NRZ), KR4 FEC must be enabled
Electrical Interface and Pin-out	76-pin edge connector (QSFP-DD) and 38-pin edge connector (QSFP)
Pin Description	Per QSFP-DD Hardware Specification (QSFP-DD) and per SFF-8679 (QSFP)
Management Interface	I ² C, serial, timing per Common Management Interface Specification for 8X/16X Pluggable Transceivers I ² C, serial, timing per SFF-8636 (QSFP)
Length of Copper AEC	1.0m – 5.0m
BER (Pre-FEC)*	Typ. <10 ⁻⁸
BER (Post-FEC)*	<10 ⁻¹⁵

* Tested with QPRBS31 pattern

Product Selections

Part Number	Length	AWG
CAC41X301D4P-C0-HW	1.0m	30
CAC42X301D4P-C0-HW	2.0m	30
CAC43X301D4P-C0-HW	3.0m	30
CAC45X301D4P-C0-HW	5.0m	30

Mechanicals

Parameter	Cable Type	Typical
Diameter	4P 30WG	5.3mm
Minimum bend radius (QSFP-DD end)	4P 30AWG x4	90.0mm
Minimum bend radius (QSFP-DD end)	4P 30AWG	54.5mm

About Credo

Credo's mission is to advance high-speed connectivity solutions that deliver optimized performance, reliability, energy efficiency, and security for the next generation of AI driven applications, cloud computing, and hyperscale networks.

Optimized for both optical and electrical applications, our solutions support port speeds up to 1.6Tb. At the core of our technology is our proprietary Serializer/Deserializer (SerDes) IP. Our diverse solutions portfolio includes system-level products such as Active Electrical Cables (AECs), a range of Integrated Circuits, including Retimers, Optical DSPs, SerDes chipsets, and SerDes IP Licensing.

For more information please visit www.credosemi.com
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