



## SHIFT AEC SPECIFICATION

# Plug & Play AEC for Speed Shifting Ethernet Applications

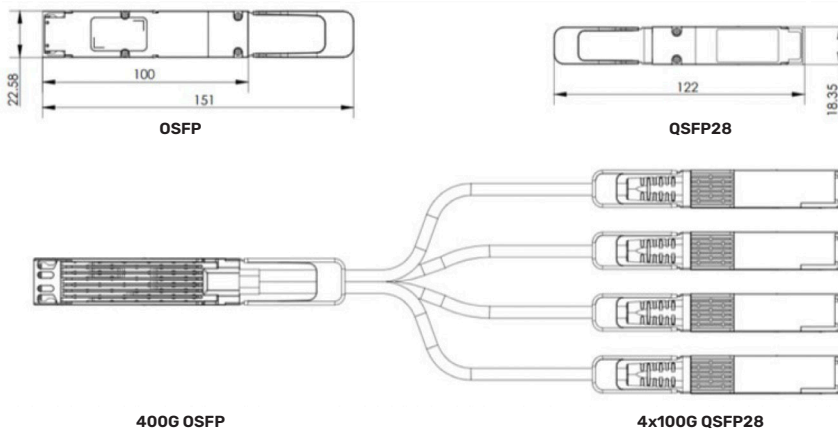
## 400G OSFP PAM4 to 4x100G QSFP NRZ

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

A lower power, lower cost replacement to Active Optical Cable (AOC) for high speed interconnects (up to 400Gbps). 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 CAC4XXXX1A4P-A0-HW HiWire SHIFT AEC

Designed for telecom and data center use. The 400G cable breaks out from one 400G (8x56G-PAM4) OSFP end into four 100G (4x28G-NRZ) QSFP ends with built-in gearbox feature. The use and replacement of CAC4XXXX1A4P-A0-HWAEC is simple and straightforward as it adopts standard OSFP/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 gear box function
- SFF-8636 compliant (QSFP end)
- Single 3.3V power supply
- Low power consumption:  
Typ. 8.5W power dissipation (OSFP end)  
Typ 3.5W power dissipation (QSFP end)
- $BER < 10^{-15}$  (post FEC)
- Hot pluggable
- RoHS2 compliant
- I<sup>2</sup>C management interface
- Operating case temperature range: 0 to +70°C

## Supported Standards and Interfaces

- SNIA SFF-8636 Management Interface for 4 Lane Modules and Cables
- SNIASFF-8679QSFP28 Electrical Specification
- Common Management Interface Specification (CMIS) v3.0
- OSFP MSA v2.0 Compliant

## Key Features

Parameter	Value
Module Form Factor	QSFP and QSFP
Number of Data Lanes	QSFP 8 TX and 8 RX per Module (PAM4)
	QSFP Line Side: 2 TX and 2 RX per module (PAM4) Host Side: 4 TRX and 4 RX per module (NRZ)
Maximum Aggregate Data Rate	400Gbps
Nominal Data Rate per Lane	QSFP: 53.125Gbps (PAM4), KP4 FEC must be enabled QSFP: 25.78125Gbps (NRZ), KR4 FEC must be enabled
Electrical Interface and Pin-out	60-pin edge connector (QSFP) and 38-pin edge connector (QSFP)
Pin Description	Per QSFP Hardware Specification (QSFP) and per SFF-8679 (QSFP)
Management Interface	I <sup>2</sup> C, serial, timing per Common Management Interface Specification for 8X/16X Pluggable Transceivers (QSFP) I <sup>2</sup> C, serial, timing per SFF-8636 (QSFP)
Length of Copper AEC	3m, 5m
BER (Pre-FEC)*	Typ. <10 <sup>-8</sup>
BER (Post-FEC)*	<10 <sup>-15</sup>

\* Tested with QPRBS31 pattern

## Product Selections

Part Number	Length	AWG	Weight
CAC43X301A4P-A0-HW	3 meters	30	810g
CAC45X301A4P-A0-HW	5 meters	30	1,210g

## Mechanicals

Parameter	Cable Type	Typical
Diameter	4P30AWG	5.3mm
<b>QSFP End</b>		
Minimum bend radius	4P 30AWG x 4	90.0mm
Minimum bend radius	4P 26AWG x 4	tbd mm
<b>QSFP End</b>		
Minimum bend radius	4P 30AWG	54.5mm
Minimum bend radius	4P 26AWG	tbd mm

## 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](http://www.credosemi.com)  
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