

# 400G OSFP PAM4 to 4x100G QSFP NRZ

Plug & Play Active Electrical Cable  
for Speed Shifting Ethernet Applications

## Description

Credo's **HiWire™ SHIFT Active Electrical Cable (SHIFT AEC)** is 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** is 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-HW AEC is simple and straightforward as it adopts standard OSFP/QSFP form factors and complies to MSA specifications.

## Product 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 (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<sup>-15</sup> (post FEC)
- Hot pluggable
- RoHS2 compliant
- I<sup>2</sup>C management interface
- Operating case temperature range: 0 to +70°C



1:4 Breakout SHIFT AEC

## 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	4P 30AWG	5.3mm
<b>OSFP 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

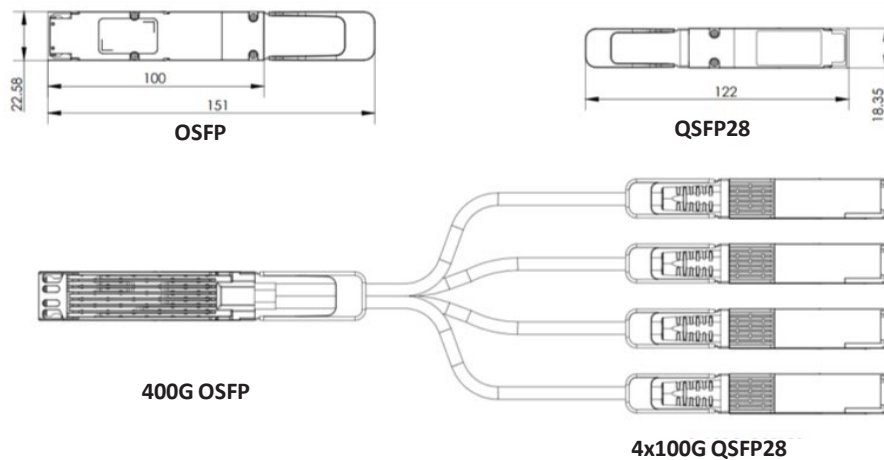
## Supported Standards

The following are the key features of the HiWire cable:

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

### General Product Characteristics

Parameter	Value
Module Form Factor	OSFP and QSFP
Number of Data Lanes	OSFP 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	OSFP: 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 (OSFP) and 38-pin edge connector (QSFP)
Pin Description	Per OSFP Hardware Specification (OSFP) and per SFF-8679 (QSFP)
Management Interface	I <sup>2</sup> C, serial, timing per Common Management Interface Specification for 8X/16X Pluggable Transceivers (OSFP) I <sup>2</sup> C, serial, timing per SFF-8636 (QSFP)
Length of Copper AEC	3m, 5m
BER (Post-FEC)*	Typ. <10 <sup>-8</sup> * Tested with QPRBS31 pattern
BER (Post-FEC)*	<10 <sup>-15</sup> * Tested with QPRBS31 pattern



For more information please visit [www.credosemi.com/hiwire](http://www.credosemi.com/hiwire) or email [hiwire@credosemi.com](mailto:hiwire@credosemi.com)

**Credo Semiconductor Inc.**  
 1600 Technology Dr.  
 San Jose, CA 95110  
 USA

**Credo Technology (HK) Limited**  
 Unit 221, 2/F, Core Building 2, Phase 1  
 Hong Kong Science Park  
 Pak Shek Kok, N.T.  
 Hong Kong

**Credo Technology (TW) Limited Taiwan Branch**  
 4F.-11, No.18, Taiyuan St. Zhubei City,  
 Hsinchu County, 30265  
 Taiwan

**Credo Technology (SH) Ltd.**  
 Building E6  
 No.2555 Xiupu Road, Pudong  
 Shanghai, 201315  
 China