



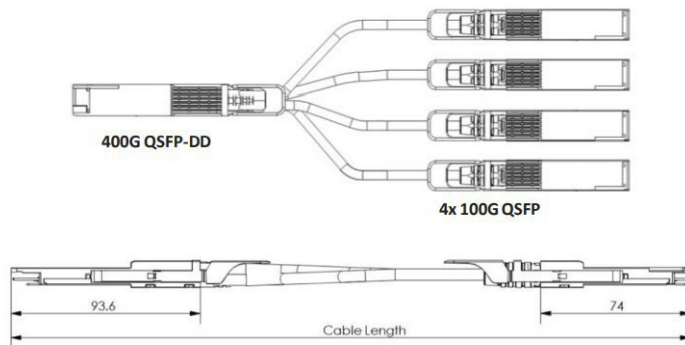
## SHIFT AEC SPECIFICATION

# PLUG & PLAY ACTIVE ELECTRICAL CABLE for Speed Shifting Ethernet Applications

## 400G QSFP-DD PAM4 to 4x100G QSFP NRZ

Credo's HiWire SHIFT Active Electrical Cable (SHIFT AEC) is 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-A0-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.



## Applications

- 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) 4.0
- SFF-8636 compliant

## 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	I2C, serial, timing per Common Management Interface Specification for 8X/16X Pluggable Transceivers I2C, 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-A0-HW	1.0m	30
CAC42X301D4P-A0-HW	2.0m	30
CAC43X301D4P-A0-HW	3.0m	30
CAC45X301D4P-A0-HW	5.0m	30

## Mechanicals

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

For more information please visit [www.credosemi.com](http://www.credosemi.com)  
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