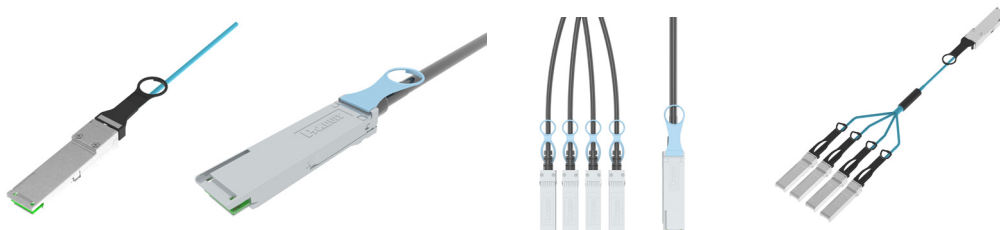**PANDUIT**®

infrastructure for a connected world

DAC & AOC Assemblies Compatibility Guide

DAC or AOC options: SFP+, SFP28, QSFP28, & QSFP28 x 4 SFP28 Breakout
AOC only: QSFP+, & QSFP+ to 4 SFP+ Breakout

(example assembly images only, more options available)

Introduction

The Panduit® SFP+, SFP28, QSFP28, and QSFP28 to 4 x SFP28 breakout Direct Attach Passive Copper (DAC) and Active Optical Cable (AOC) Assemblies (QSFP+ and QSFP+ to SFP+ breakout) are MSA, SFF-8431, SFF-8432 and SFF-8472 compliant, which means they are compatible with all active equipment with MSA compliant ports. While Panduit DAC and new AOC cable assemblies are compatible with most switches and servers some equipment vendors may utilize a lock-out mechanism by requiring vendor specific information on the EEPROM located in the DAC/AOC cable assembly connector. This was originally implemented to ensure only authorized optical transceivers were used with a particular vendor's equipment. However, as the market matured and standards from the IEEE and other organizations were put in place, many switch and server vendors have removed EEPROM lock-outs from their equipment. For the few vendors that still require special EEPROM codes there is generally a set of simple commands that can be entered into their OS to unlock the ports to third party DAC and AOC. The goal of this technical reference is to provide guidance for understanding the compatibility of Panduit® various DAC/AOC Cable Assemblies.

Compatibility Guide

The below table provides list of switches and servers and the known compatibility with Panduit DAC/AOC cable assemblies. "Third Party Transceiver" is the term switch vendors use as a catch all for any product not sold by the switch vendor that can be plugged into its ports including passive DAC and AOCs. Open to third party transceivers means all Panduit cables are compatible. The table below will be updated any time Panduit is aware of a change or a new switch or server is tested and is known to be open or closed. As there is a constant stream of new equipment, not all switches and servers will be on this list. Please contact Panduit for sample cables to try with any new equipment not currently on this list. It should be noted that while most servers are open, switch compatibility can vary even within a specific vendor's product offering. Fibre Channel switches are generally the most problematic with some require active copper cables instead of the more common and lower cost passive DAC. Links to vendor comments where available are shown where available.

Vendor	Equipment	Compatibility Comments
Arista	Switch	Third party transceivers are allowed, assuming the cables comply with IEEE specifications, allowing them to be correctly identified by the Arista switch. Interfaces with cables not recognized correctly will be disabled. If using ZTP mode for EOS, the transceiver will be allowed. If downloading a startup-config, the EOS command 'service unsupported-transceiver <some_company> <some_hex_code> may be necessary'.
Aruba	Switch	Third party transceivers are allowed on the following models using the 'allow-unsupported-transceiver' command.
Avaya	Switch	The VSP switches operate in forgiving mode for QSFP+ direct attach cables (DAC/AOC), which means that the switch will bring up the port operationally when using non-Avaya direct attach cables. Avaya does not provide support for operational issues related to these DAC/AOCs, but they will operate and the port link will come up.
Brocade	Switch	Brocade does not specifically block any 3rd party DAC/AOC's, but may question compatibility in the event of a support issue.
Cisco	Switch/NIC	When a customer reports a product fault or defect and Cisco believes the fault or defect can be traced to the use of third-party memory products, cables, GBIC's, filters, or other non-Cisco components by a customer or reseller, then, at Cisco's discretion, Cisco may withhold support under warranty or a Cisco support program such as SMARTnet™ service. When a product fault or defect occurs in the network, and Cisco concludes that the fault or defect is not attributable to the use of third-party memory, cables, GBICs, filters, or other non-Cisco components installed by a customer or reseller, Cisco will continue to provide support for the affected product under warranty or covered by a Cisco support program. Nexus 2000/5000/7000/9000 switches are open to third-party cables. Panduit is the only third-party vendor to have SFP+ DAC Cisco certified cable assemblies on the Nexus 5000 and 2000 platforms. All other Nexus switches and UCS products are open to third-party cables. Ensure that the latest IOS/NX-OS/OS software is installed. Starting from the 12.2(25)SE release, the user has the option via CLI to turn on the support for third-party SFPs. Note: this Cisco MDS ports are locked-out. Also Catalyst Series Switches standard configuration is closed to third-party cables.
Dell	Switch/NIC	Please reach out to your Dell Support representative for review.
D-Link	Switch/NIC	D-Link provides a range of stacking cables that allows stackable switches to be connect to be managed and operate as a single unit. DAC compatible on DGS-1510, DGS-3420, DGS-3620, DGS-6600, DGS-3600 series.
EMC	NIC	Prior to DDOS5.2 there are only some set of DA cables which are supported. From DDOS5.2 onwards, any SFP+ passive direct attach copper cable that complies with the SFF-8431 v4.1 and SFF-8472 v10.4 specifications will be supported. Maximum cable length for passive cables is 7 meters. Table 1 lists several examples of compatible third-party SFP+ direct attach cables. We only support PASSIVE DA cables (active DA cables are not supported). VNX Series Unified Storage Systems only work with active SFP+ DAC cable assemblies.
Ericsson	NIC	DAC/AOC compatible on all models.

Vendor	Equipment	Compatibility Comments
Extreme	Switch	The VSP switches operate in forgiving mode for direct attach cables (DAC) and AOC when using third party direct attach cables. Extreme Networks does not provide support for operational issues related to these DAC/AOCs, but they will operate and the port link will come up.
Fortinet	Switch	DAC/AOC compatible on 1024D, 1048D, 3032D series.
HPE	Switch/NIC	Please reach out to your HPE Support representative for review.
Huawei	Switch	DAC/AOC compatible on all models.
IBM	Switch/NIC	DAC/AOC compatible on all models.
Intel	NIC	DAC/AOC compatible on all models.
Juniper	Switch	If you face a problem running a Juniper Networks device that uses a third-party optic or cable, the Juniper Networks Technical Assistance Center (JTAC) can help you diagnose the source of the problem. Your JTAC engineer might recommend that you check the third-party optic or cable and potentially replace it with an equivalent Juniper Networks optic or cable that is qualified for the device. DAC/AOC compatible on all models.
Lenovo	NIC	DAC/AOC compatible on all models.
Mellanox	Switch/NIC	Mellanox guarantees this cable / module functionality only in a Mellanox End-to-End solution, for any other vendor's equipment, please consult your vendor on his ability to support this cable / module. DAC/AOC compatible on all models.
NetApp	NIC	Please review NetApp's Interoperability Matrix Tool (IMT) for support for your specific NetApp product.
Netgear	NIC	DAC/AOC compatible on all models.
Nutanix	NIC	DAC/AOC compatible on all models.
Oracle	Switch/NIC	The transceivers and cables that directly plug into the Oracle switch and are supplied by Oracle are compliant to the industry standards for SFP+ solutions (SR, LR, TwinX copper). Though standards-compliant, third-party SFP+ solutions "should" interoperate with Oracle switch, but Oracle does not qualify third-party solutions with the switch and does not know whether they will work or not work and therefore does not support them. If you choose to use third-party SFP+ solutions and encounters an issue that cannot be isolated to the Oracle switch, you must replicate the issue with an Oracle qualified solution before Oracle can triage the issue. Transceivers that directly plug into third-party switches should be purchased from the third-party switch suppliers and not from Oracle. DAC/AOC compatible on all models.
Vendor	Equipment	Compatibility Comments
Palo Alto Networks	Switch	Palo Alto Networks has the following policy regarding the use of third-party transceivers, power supplies, hard drives, or other components used within the Palo Alto Networks devices. If a customer uses a third-party component in a Palo Alto Networks device, and a fault is traced to the use of this third-party component, then at Palo Alto Networks' discretion, support and warranty service may be withheld. If a product fault is determined to not be related to the use of third-party components, then Palo Alto Networks will continue to support the c-ustomer per our standard support policies. At no time will hardware RMA support be provided on third-party components. If hardware is replaced and the fault is determined to have been caused by the installation of a third-party component, Palo Alto Networks reserves the right to charge for reasonable time/material rates for the service provided. DAC/AOCs compatible on all models.
Qlogic	NIC	Passive DAC/AOCs are compatible on QLE3440-CU, QLE3442-CU, QLE8440-CU, QLE8442-CU series. QLE8xxx-SR CNA server cards only work with Active DAC cable assemblies.
SuperMicro	NIC	DAC/AOC compatible on all models.
Ubiquiti	Switch	Ubiquiti allows for use of 3rd party DAC/AOC/optics, but as many vendors do, they do not provide specific support for and they are community tested.
Xilinx	Switch	DAC/AOC compatible on all models.

Troubleshooting DAC/AOC Compatibility Issues

Panduit® DAC and AOC are compatible with any switch or server that includes MSA compliant SFP+, SFP28, or QSFP28 ports, unless that product requires special active copper cable assemblies or requires a proprietary code in the EEPROM. Referring to the table on pages 2-4, the switches that may have compatibility issues with Panduit DAC/AOC cable assemblies are listed with a brief explanation.

Known server CNA cards that require active SFP+ copper cable assemblies include: Brocade (1010/1020 CNA) and QLogic (QLE-8xxx-SR CNA). The EMC VNX Series Unified Storage Systems also requires active SFP+ cable assemblies.

If using DAC or AOC cable assemblies between equipment that should be open, and the link is not working, a quick check can be performed by plugging in a different DAC / AOC cable assembly between the same two ports. If the link does come up, it is likely a problem with the first DAC / AOC cable assembly. If the link does not come up, it is likely a problem with the configuration of the ports or incompatibility between server and switch. This is also true for SFP+, SFP28 and QSFP28.

Panduit is only certified third party supplier of SFP+ Cables for Cisco

Panduit is the only 3rd party passive SFP+ vendor currently Cisco certified on the Nexus 2000 and the Nexus 5000 series of switches. This means Panduit passive SFP+ cables can be used and still receive support from Cisco TAC. While Cisco switches may still show the "NON-CISCO_TRANSCEIVER" message with Panduit passive SFP+, this message just indicates it is a non-Cisco cable. Cisco TAC will still provide support for Panduit passive SFP+ cables on the Nexus 2000 and Nexus 5000 series of switches as if they were Cisco cables. If non-certified cables are being used and the cable is suspected to be at fault, Cisco TAC will require that the non-certified cable be replaced with Cisco certified cables before troubleshooting can begin.

Note that even if the information message stating "NON-CISCO_TRANSCEIVER: Non-Cisco transceiver on interface" is on any Nexus switch, all compliant SFP+ DAC cable assemblies will work). If the message "IF_UNSUPPORTED_ TRANSCEIVER: Transceiver on interface *** is not supported" is received, it means that support for 3rd party SFP+ must be enabled via the CLI. This may be completed in IOS Configuration Mode:

```
Switch(config)# service unsupported-transceiver
Switch(config)# no errdisable detect cause gbic-invalid
```

Panduit DAC (Direct Attach Copper) Part Number Guide

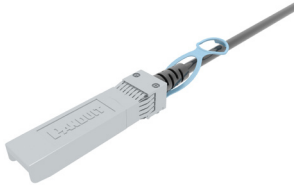### SFP+ 10 Gb/S Direct Attach Passive Cable Assembly Part Numbers

Part Number	Length (m)	Length (ft.)
PSF1PZA1M**	1	3.28
PSF1PZA1.5M**	1.5	4.92
PSF1PZA2M**	2	6.56
PSF1PZA2.5M**	2.5	8.20
PSF1PZA3M**	3	9.84
PSF1PZC3.5M**	3.5	11.48
PSF1PZC4M**	4	13.12
PSF1PZC5M**	5	16.4

Panduit DAC (Direct Attach Copper) Part Number Guide

SFP28 25 Gb/S Direct Attach Passive Cable Assembly Part Numbers

Part Number	Length (m)	Length (ft.)
PSF2PZA1M**	1	3.28
PSF2PZA1.5M**	1.5	4.92
PSF2PZA2M**	2	6.56
PSF2PZA2.5M**	2.5	8.20
PSF2PZA3M**	3	9.84
PSF2PZC3.5M**	3.5	11.48
PSF2PZC4M**	4	13.12
PSF2PZC5M**	5	16.4

QSFP28 40/100 Gb/S Direct Attach Passive Cable Assembly Part Numbers*

Part Number	Length (m)	Length (ft.)
PQSF2PZA1MBL	1	3.28
PQSF2PZA2MBL	2	6.56
PQSF2PZA3MBL	3	9.84
PQSF2PZC4MBL	4	13.12
PQSF2PZC5MBL	5	16.4
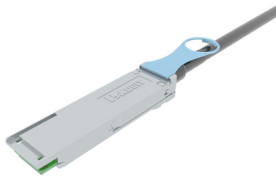
*QSFP28 available in Black only

QSFP28 to 4xSFP28 Breakout 100Gb/S Direct Attach Passive Cable Assembly Part Numbers*

Part Number	Length (m)	Length (ft.)
PHQ4SFP2A1MBL	1	3.28
PHQ4SFP2A2MBL	2	6.56
PHQ4SFP2A3MBL	3	9.84
PHQ4SFP2C4MBL	4	13.12
PHQ4SFP2C5MBL	5	16.4
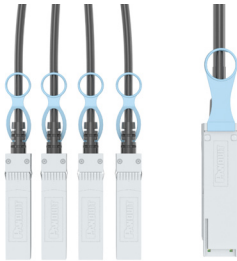
*QSFP28 to 4xSFP28 Breakout available in Black only
Note: Wire Gauge Guide: 'A' in part number = 30AWG, 'C' = 26 AWG
Replace ** with colors: BL (Black), BU (Blue), RD (Red), WH (White)
Ex. PSF2PZA1M**, for a 1m black cable would be PSF2PZA1MBL

Panduit AOC (Active Optical Cable) Part Number Guide

OM3 SFP+ to SFP+ 10 Gb/S (AOC) Part Numbers

Part Number	Length (m)	Length (ft.)
AX23NSPSPAQM001	1	3.28
AX23NSPSPAQM***	***	***

Replace *** in part number with length (0**)
Ex: 25m part is AX23NSPSPAQM025

OM3 SFP28 to SFP28 25 Gb/S (AOC) Part Numbers

Part Number	Length (m)	Length (ft.)
AX23NS2S2AQM001	1	3.28
AX23NS2S2AQM***	***	***

Replace *** in part number with length (0**)
Ex: 25m part is AX23NS2S2AQM025

Panduit AOC (Active Optical Cable) Part Number Guide (Continued)

OM3 QSFP+ to QSFP+ 40 Gb/S (AOC) Part Numbers

Part Number	Length (m)	Length (ft.)
AX83NQPQPAQM001	1	3.28
AX83NQPQPAQM***	***	***

Replace *** in part number with length (0**)
Ex: 25m part is AX83NQPQPAQM025

OM4 QSFP28 to QSFP28 100G Gb/S (AOC) Part Numbers

Part Number	Length (m)	Length (ft.)
AZ83NQ2Q2AQM001	1	3.28
AZ83NQ2Q2AQM***	***	***

Replace *** in part number with length (0**)
Ex: 25m part is AX83NQPQPAQM025

OM3 QSFP+ to SFP+ Breakout 40 Gb/S (4x10G) (AOC) Part Numbers

Part Number	Length (m)	Length (ft.)
AX83NQPSPAQM001	1	3.28
AX83NQPSPAQM***	***	***

Replace *** in part number with length (0**)
Ex: 25m part is AX83NQPSPAQM025

OM4 QSFP28 to SFP28 Breakout 100 Gb/S (4x25G) (AOC) Part Numbers

Part Number	Length (m)	Length (ft.)
AZ83NQ2S2AQM001	1	3.28
AZ83NQ2S2AQM***	***	***

Replace *** in part number with length (0**)
Ex: 25m part is AX83NQPSPAQM025

SFP+, SFP28, QSFP28, QSFP28 to SFP28 Breakout, QSFP+ (AOC only), QSFP+ to SFP+ Breakout (AOC only) available in the following lengths: 1, 2, 3, 5, 7, 10, 15, 20, 25, & 30m

Panduit Difference

Panduit is committed to delivering a consistently high level of quality and service the world over. With a presence in more than 100 countries, local Panduit sales representatives and technical specialists offer guidance and support that bring value to your business. Our global supply chain, which includes manufacturing, customer service, logistics, and distribution partners, provides prompt response to your inquiries and streamlines delivery to any worldwide destination.

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