# Key Specifications for Palo Alto Networks Interfaces and Transceivers

The data interfaces implemented by Palo Alto Networks are based on industry standards and implementation agreements primarily authored by the Institute of Electrical and Electronics Engineers (IEEE) 802.3 committee and the Small Form Factor Committee (SFF). Each interface definition is supported by specifications and agreements defining the electromechanical coupling, electrical and optical signals, and management properties of compliant implementations.

Palo Alto Networks Next-Generation Firewalls utilize Ethernet interfaces in a mix of fixed form factor and pluggable formats, including 10Mb/100Mb/1Gb tri-rate copper; 100Mb/1Gb/10Gb tri-rate copper; 1Gb SFP; 10Gb SFP+; 40Gb QSFP+ and 100Gb QSFP28.

Fiber optic transceiver implementations are based on either multi-mode fiber (MMF) or single-mode fiber (SMF). It is critical to use a transceiver matched to the fiber deployed in the facility. Multi-mode transceivers must be used with MMF, and single-mode transceivers must be used with SMF. You can find educational material regarding fiber optics from multiple online sources, such as the Fiber Optic Association.

MMF is a low-cost, high-speed option for interconnections within a data center or building with distance limits measured in hundreds of meters. SMF supports distances measured in kilometers.

## Platform Interfaces

The number of data plane interfaces supported by each of the Palo Alto Networks products is shown below. Management plus high availability-related interfaces are shown in square brackets. The vertical bar separator represents an exclusive OR condition—for example, "8|4" indicates either eight (8) or four (4). On platforms allowing dual rate SFP/SFP+ or QSFP+/QSFP28, ranges (e.g., 0–16) indicate the mix of port speeds supported depending on the specific transceivers used.

**Table 1: IEEE 802.3 and SFF Standardized Interfaces**

| Product | 10Mb/ 100Mb/ 1Gb Cu | 100Mb/ 1Gb/ 10Gb Cu | 100Mb FX/ 1Gb SFP | 1Gb SFP | 10Gb SFP+ | 25Gb SFP28 | 40Gb QSFP+ | 100 Gb QSFP28 |
|---|---|---|---|---|---|---|---|---|
| PA-200* | 4 [1] | | | | | | | |
| PA-220, PA-500* | 8 [1] | | | | | | | |
| PA-220R | 6 [1] | | 2 | | | | | |
| PA-820 | 4 [3] | | | 8 | | | | |
| PA-850 | 4 [3] | | | 8\|4 | 0\|4 | | | |
| PA-3020*, PA-3050* | 12 [3] | | | 8 | | | | |
| PA-3060* | 8 [3] | | | 8 | 2 | | | |
| PA-3220 | 12 [3] | | | 8\|4 | 0\|4 [1] | | | |
| PA-3250 | 12 [3] | | | 8\|0 | 0\|8 [1] | | | |
| PA-3260 | 12 [3] | | | 8\|0 | 0\|8 [1] | | 4 | |
| PA-3410, PA-3420 | 12 [3] | | | 15 ↔ | 15 ↔ | 4 | | |
| PA-3430, PA-3440 | 12 [3] | | | 15 ↔ | 15 ↔ | 4 | 2 ↔ | 2 |
| PA-5020* | 12 [3] | | | 8 | | | | |
| PA-5050*, PA-5060* | 12 [3] | | | 8 | 4 | | | |
| PA-5220 | [3] | 4 | | 0–16 | 0–16 [2] | | 4 [1] | |
| PA-5250, PA-5260, PA-5280 | [3] | 4 | | 0–16 ↔ | 0–16 [2] | | 0–4 [0\|1] ↔ | 0–4 [0\|1] |
| PA-5410, PA-5420, PA-5430 | | | | 12 [3] ↔ | 12 [3] ↔ | 4 | 4 [1] ↔ | 4 |
| PAN-PA-5400-NPC-A | | | 4 | [0-12] ↔ | [0-12] | | [0-2] | [0-2] |
| PAN-PA-5400-MPC-A | | | | [0-6] ↔ | [0-6] | | [0-2] | [0-2] |
| PA-7050-SMC*, PA-7080-SMC* | [3] | | | | | | [2] | |
| PA-7050-SMC-B, PA-7080-SMC-B | | [0-4] ↔ | | [0–4] | [0–4] | | [0–2] ↔ | [0–2] |
| PA-7000-LFC-A | | | | | [0\|4\|8] ↔ | | [0-2] | |
| PA-7000-100G-NPC-A | | | | | | | 0–4 ↔ | 0–4 |
| PA-7000-20G-NPC,* PA-7000-20GXM-NPC | 12 | | | 8 | 4 | | | |
| PA-7000-20GQ-NPC,* PA-7000-20GQXM-NPC | | | | 12 ↔ | 12 | | 2 | |
| M-100*, GP-100*, WF-500 | 3 [1] | | | | | | | |
| M-500* | 3 [1] | | | | 2 | | | |
| M-200 | 4 | | | | | | | |
| M-600 | 4 | | | | 2 | | | |
| ION 7000 | | | | [0-6] ↔ | [0-6] | | | |
| ION 9000 | | | | [0-4] ↔ | [0-4], 4 | | | |

*Note: Systems may also include RS-232 serial ports and USB ports for management and administrative tasks. Please refer to each system's respective Hardware Reference Guide for information on these interfaces.*

* This product is no longer commercially available. Please see the End-of-Sale Announcement and Hardware End-of-Life Dates pages on the Palo Alto Networks website for more information.

## Pluggable Transceiver and Cable Assembly Specifications

Customers deploying 1-, 10-, 40-, or 100-gigabit fiber interfaces will need to decide between short haul (SX), long haul (LX), and extremely long haul (ZX) for 1-gigabit connections, or short reach (SR), long reach (LR), and extended reach (ER) for 10-, 40-, and 100-gigabit connections using the technical specifications are shown below. All Palo Alto Networks fiber transceivers utilize either a duplex LC type connector or 12-strand ribbon fiber MPO type connector.

In the table below, MMF is nominally 50/125 µm in either OM3 or OM4 grade, and SMF as specified by ITU-T G.652 is nominally 9/125 µm. G.652 allows for 8.6–9.5/125 µm. A multi-mode transceiver should only be used with MMF optic cable, and a single-mode transceiver should only be used with SMF optic cable.

*Note: The LC style connector is used on both multi-mode and single-mode transceivers.*

The MPO fiber optic cable connector on 40-gigabit QSFP+ and 100-gigabit QSFP28 -SR4 transceivers contains guide pins for alignment inside the transceiver per standards. PAN-QSFP-40GBASE-SR4, PAN-T-Q-40GBASE-SR4, PAN-QSFP-100GBASE-SR4, and PAN-T-Q28-100GBASE-SR4 are examples of this. These transceivers require a cable with guide pin holes for connector alignment. For direct connection between a pair of QSFP+ or QSFP28 transceivers, an 8-strand or 12-strand MPO-terminated ribbon fiber crossover cable without guide pins is required. This cable is commonly referred to as type-B crossover cable. For breakout applications of 4x10G or 4X25G, PAN-CBL-QSFP-QSFP28-BO-2M is a suitable cable two meters in length. Alternatively, for a longer breakout cable, an internet search for the phrase "Ethernet MPO patch cable" should provide multiple sources of various lengths. Palo Alto Networks does not have a preferred cable supplier and recommends customers work with their preferred networking partner, supplier, or or integrator.

**Table 2: Palo Alto Networks Transceiver and Cable Assembly Specifications**

| Palo Alto Networks Part Name (SKU) | Ethernet Data Rate (Gbps) | Media xConnector | Media Type | Maximum Distance (m or km) | Wavelength Center/Range (λ nm) | Power Max (W) | Operating Temp (°C) | Storage Temp (°C) | Relative Humidity (%) |
|---|---|---|---|---|---|---|---|---|---|
| PAN-QSFP28-100GBASE-BIDI | 100 | LC | MMF | 70 m OM3<br>100 m OM4 | 850<br>900 | < 3.5 | 0 – 70 | -40 – 85 | 5 – 85 |
| PAN-QSFP28-100GBASE-LR4 | 100 | LC | SMF | 10 km | 1295.56, 1300.05<br>1304.58<br>1309.14 | < 4 | 0 – 70 | -40 – 85 | 0 – 85 |
| PAN-T-Q28-100GBASE-LR4 | 100 | LC | SMF | 10 km | 1295.56<br>1300.05<br>1304.58<br>1309.14 | < 4 | 0 – 70 | -40 – 85 | 0 – 85 |
| PAN-QSFP28-100GBASE-SR4 | 100 | MPO | MMF | 70 m OM3<br>100 m OM4 | 850 | < 3.5 | 0 – 70 | -40 – 85 | 0 – 85 |
| PAN-T-Q28-100GBASE-SR4 | 100 | MPO | MMF | 70 m OM3<br>100 m OM4 | 850 | < 3.5 | 0 – 70 | -40 – 85 | 0 – 85 |
| PAN-QSFP28-100GBASE-CWDM4 | 100 | LC | SMF | 2 km | 1264.5 – 1277.5<br>1284.5 – 1297.5<br>1304.5 – 1317.5<br>1324.5 – 1337.5 | < 3.5 | 0 – 70 | -40 – 85 | 0 – 85 |
| PAN-QSFP28-100GBASE-ER4 | 100 | LC | SMF | 25 km | 1295.56<br>1300.05<br>1304.58<br>1309.14 | < 4.5 | 0 – 70 | -40 – 85 | 0 – 85 |
| PAN-QSFP28-DAC-5M | 100 | n/a | n/a | 5 km | n/a | < 1.2 | -40 – 85 | -40 – 85 | — |
| PAN-QSFP28-AOC-10M | 100 | n/a | n/a | 10 m | n/a | < 3.5 | 0 – 70 | -40 – 85 | 0 – 85 |
| PAN-SFP28-25GBASE-SR | 25 | LC | MMF | 70 m OM3<br>100m OM4 | 850 | 1 | 0 – 70 | -40 – 84 | 5 – 85 |
| PAN-SFP28-25GBASE-LR | 25 | LC | SMF | 10 km | 1310 | < 1.5 | 0– 70 | -40 – 85 | 5 – 85 |
| PAN-T-S28-25GBASE-SR | 25 | LC | MMF | 70 m OM3<br>100 m OM4 | 850 | 1 | 0 – 70 | -40 – 86 | 5 – 85 |
| PAN-T-S28-25GBASE-LR | 25 | LC | SMF | 10 km | 1310 | < 1.5 | 0 – 70 | -40 – 85 | 5 – 85 |

| Table 2: Palo Alto Networks Transceiver and Cable Assembly Specifications (continued) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Palo Alto Networks Part Name (SKU) | Ethernet Data Rate (Gbps) | Media xConnector | Media Type | Maximum Distance (m or km) | Wavelength Center/Range (λ nm) | Power Max (W) | Operating Temp (°C) | Storage Temp (°C) | Relative Humidity (%) |
| PAN-QSFP-40GBASE-ER4 | 40 | LC | SMF | 40 km | 1271<br>1291<br>1311<br>1331 | < 3.5 | 0 – 70 | -40 – 85 | 0 – 85 |
| PAN-QSFP-40GBASE-LR4 | 40 | LC | SMF | 10 km | 1271<br>1291<br>1311<br>1331 | < 3.5 | 0 – 70 | -40 – 85 | 0 – 85 |
| PAN-T-Q-40GBASE-SR4 | 40 | MPO | MMF | 100 m OM3<br>150 m OM4 | 850 | < 1.5 | 0 – 70 | -40 – 85 | 0 – 85 |
| PAN-QSFP-40GBASE-SR4 | 40 | MPO | MMF | 100 m OM3<br>150 m OM4 | 850 | < 1.5 | 0 – 70 | -40 – 85 | 0 – 85 |
| PAN-T-Q-40GBASE-LR4 | 40 | LC | SMF | 10 km | 1271<br>1291<br>1311<br>1331 | < 3.5 | 0 – 70 | -40 – 85 | 0 – 85 |
| PAN-T-Q-40GBASE-SR4 | 40 | MPO | MMF | 100 m OM3<br>150 m OM4 | 850 | < 1.5 | 0 – 70 | -40 – 85 | 0 – 85 |
| PAN-QSFP-40GBASE-LM4 | 40 | LC | MMF or SMF | 140 m OM3<br>160 m OM4<br>1 km SMF | 1264.5 – 1277.5<br>1284.5 – 1297.5<br>1304.5 – 1317.5<br>1324.5 – 1337.5 | < 2.5 | 0 – 70 | -40 – 85 | 0 – 85 |
| PAN-QSFP-40GBASE-BIDI | 40 | LC | MMF | 100 m OM3<br>150 m OM4 | 832 – 868<br>882 – 918 | < 3.5 | 10 – 70 | -40 - 85 | 5 – 95 |
| PAN-QSFP-AOC-10M | 40 | n/a | n/a | 10 m | n/a | < 1.5 | 0 – 70 | -40 – 85 | 0 – 85 |
| PAN-SFP-CG | 1 | RJ-45 | Cat 5 > | 100 m | n/a | < 1.2 | -40 – 85 | -40 – 85 | — |
| PAN-T-S-CG | 1 | RJ-45 | Cat 5 > | 100 m | n/a | < 1.2 | 0 – 70 | -40 – 85 | — |
| PAN-SFP-LX | 1 | LC | SMF | 10 km | 1310 | < 1.9 | -40 – 85 | -40 – 85 | — |
| PAN-T-S-LX | 1 | LC | SMF | 10 km | 1310 | < 1.9 | 0 – 70 | -40 – 85 | 5 – 95 |
| PAN-T-S-SX | 1 | LC | MMF | 550 m | 850 | < 0.5 | 0 – 70 | -40 – 85 | 5 – 95 |
| PAN-SFP-PLUS-10GBASE-T | 10 | RJ-45 | Cat 6a | 30 m | n/a | < 2.5 | -5 – 65 | -50 – 150 | 0 – 85 |
| PAN-SFP-PLUS-CU-5M | 10 | SFP+ | Cu | 5 m | n/a | passive | — | — | — |
| PAN-SFP-PLUS-ER | 10 | LC | SMF | 40 km | 1550 | < 1.5 | -5 – 70 | -40 – 85 | 0 – 85 |
| PAN-SFP-PLUS-LR | 10 | LC | SMF | 10 km | 1310 | < 1 | -5 – 70 | -40 – 85 | 0 – 85 |
| PAN-T-S-PLUS-LR | 10 | LC | SMF | 10 km | 1310 | < 1 | -5 – 70 | -40 – 85 | 0 – 85 |
| PAN-SFP-PLUS-SR | 10 | LC | MMF | 300 m OM3<br>450 m OM4 | 850 | < 1 | -5 – 70 | -40 – 85 | 0 – 85 |
| PAN-T-S-PLUS-SR | 10 | LC | MMF | 300 m OM3<br>450 m OM4 | 850 | < 1 | -5 – 70 | -40 – 85 | 0 – 85 |
| PAN-SFP-SX | 1 | LC | MMF | 550 m | 850 | < 0.5 | -10 – 85 | -40 – 85 | 0 – 85 |
| PAN-T-S-SX | 1 | LC | MMF | 550 m | 850 | < 0.5 | 0 – 70 | -40 – 85 | 5 – 95 |
| PAN-SFP-ZX | 1 | LC | SMF | 80 km | 1550 | < 1.1 | 0 – 70 | -40 – 85 | 5 – 95 |

*Note: Minimum link distance for all connections is two meters. Palo Alto Networks policy regarding the use of third-party transceivers is posted on our Third-Party Components Support page.*

| Table 3: Transceiver and Cable Assembly Descriptions and Applicability* | | |
|---|---|---|
| **Palo Alto Networks Part Name (SKU)** | **Description** | **Platform Applicability** |
| PAN-QSFP28-100GBASE-SR4 | QSFP28 form factor, 100Gb SR4 optical transceiver, short reach 100 m OM4 (70 m OM3), 8/12 strand MPO, MMF, IEEE 802.3ba 100GBASE-SR4 compliant | PA-7000 Series, PA-5400 Series, PA-5250, PA-5260, PA-5280, PA-3430, PA.3440; |
| PAN-T-Q28-100GBASE-SR4 | TAA compliant QSFP28 form factor, 100Gb SR4 optical transceiver, short reach 100 m OM4 (70 m OM3), 8/12 strand MPO, MMF, IEEE 802.3ba 100GBASE-SR4 compliant | PA-7000 Series, PA-5400 Series, PA-5250, PA-5260, PA-5280, PA-3430, PA.3440; |
| PAN-QSFP28-100GBASE-LR4 | QSFP28 form factor, 100Gb LR4 optical transceiver, long reach 10 km, SMF, duplex LC, IEEE 802.3ba 100GBASE-LR4 compliant | PA-7000 Series, PA-5400 Series, PA-5250, PA-5260, PA-5280, PA-3430, PA.3440; |
| PAN-T-Q28-100GBASE-LR4 | TAA compliant QSFP28 form factor, 100Gb LR4 optical transceiver, long reach 10 km, SMF, duplex LC, IEEE 802.3ba 100GBASE-LR4 compliant | PA-7000 Series, PA-5400 Series, PA-5250, PA-5260, PA-5280, PA-3430, PA.3440; |
| PAN-QSFP28-100GBASE-BIDI | QSFP+ form factor, 100Gb bidirectional optical transceiver, 70 m reach over OM3 MMF, 100 m over OM4 MMF, duplex LC | PA-7000 Series, PA-5400 Series, PA-5250, PA-5260, PA-5280, PA-3430, PA.3440; |
| PAN-QSFP28-100GBASE-CWDM4 | QSFP28 form factor, 100Gb CWDM4 optical transceiver, 2 km, SMF, duplex LC | PA-7000 Series, PA-5400 Series, PA-5250, PA-5260, PA-5280, PA-3430, PA.3440; |
| PAN-QSFP28-100GBASE-ER4 | QSFP28 form factor, 100Gb ER4 optical transceiver, extended reach 25 km, SMF, duplex LC, IEEE 802.3ba 100GBASE-ER4 compliant | PA-7000 Series, PA-5400 Series, PA-5250, PA-5260, PA-5280, PA-3430, PA.3440; |
| PAN-QSFP28-DAC-5M | QSFP28 form factor, 100Gb direct attach passive cable with 2 transceiver ends and 5 m of cable permanently bonded as an assembly, IEEE 802.3bj 100GBASE-CR4 compliant | PA-7000 Series, PA-5400 Series, PA-5250, PA-5260, PA-5280, PA-3430, PA.3440; |
| PAN-QSFP28-AOC-10M | QSFP28 form factor, 100Gb active optical cable with 2 transceivers and 10 m of cable permanently bonded as an assembly | PA-7000 Series, PA-5400 Series, PA-5250, PA-5260, PA-5280, PA-3430, PA.3440; |
| PAN-QSFP40G-BASE-ER4 | QSFP+ form factor, 40Gb ER4 optical transceiver, extended reach 40 km, SMF, duplex LC, IEEE 802.3ba 40GBASE-ER4 compliant | PA-7000 Series, PA-5400 Series, PA-5200 Series, PA-5000 Series, PA-3430, PA-3440, PA-3200 Series, PA-3000 Series, PA-800 Series, PA-220R |
| PAN-QSFP40G-BASE-LR4 | QSFP+ form factor, 40Gb LR4 optical transceiver, long reach 10 km, SMF, duplex LC, IEEE 802.3ba 40GBASE-LR4 compliant | PA-7000 Series, PA-5400 Series, PA-5200 Series, PA-5000 Series, PA-3430, PA-3440, PA-3200 Series, PA-3000 Series, PA-800 Series, PA-220R |
| PAN-T-Q40GBASE-SR4 | TAA compliant QSFP+ form factor, 40Gb SR4 optical transceiver, short reach 100 m OM3, 8/12 strand MPO connector, IEEE 802.3ba 40GBASE-SR4 compliant | PA-7000 Series, PA-5400 Series, PA-5200 Series, PA-5000 Series, PA-3430, PA-3440, PA-3200 Series, PA-3000 Series, PA-800 Series, PA-220R |
| PAN-QSFP40G-BASE-SR4 | QSFP+ form factor, 40 Gb SR4 optical transcei ver, short reach 100 m OM3, 8/12 strand MPO connector, IEEE 802.3ba 40GBASE-SR4 compliant | PA-7000 Series, PA-5400 Series, PA-5200 Series, PA-5000 Series, PA-3430, PA-3440, PA-3200 Series, PA-3000 Series, PA-800 Series, PA-220R |
| PAN-T-Q40GBASE-LR4 | TAA compliant QSFP+ form factor, 40Gb LR4 optical transceiver, long reach 10 km, SMF, duplex LC, IEEE 802.3ba 40GBASE-LR4 compliant | PA-7000 Series, PA-5400 Series, PA-5200 Series, PA-5000 Series, PA-3430, PA-3440, PA-3200 Series, PA-3000 Series, PA-800 Series, PA-220R |
| PAN-QSFP40G-BASE-LM4 | QSFP+ form factor, 40Gb LM4 optical transceiver, long reach 140 m, OM3 MMF, duplex LC, IEEE 802.3ba 40GBASE-LR4 adaptation referred to as 40GBASE-LM4 | PA-7000 Series, PA-5400 Series, PA-5200 Series, PA-5000 Series, PA-3430, PA-3440, PA-3200 Series, PA-3000 Series, PA-800 Series, PA-220R |
| PAN-QSFP40G-BASE-BIDI | QSFP+ form factor, 40Gb bidirectional optical transceiver, 100 m reach over OM3 MMF, 150 m over OM4 MMF, duplex LC | PA-7000 Series, PA-5400 Series, PA-5200 Series, PA-5000 Series, PA-3430, PA-3440, PA-3200 Series, PA-3000 Series, PA-800 Series, PA-220R |
| PAN-QSFP-AOC-10M | QSFP+ form factor, 40Gb active optical cable with 2 transceivers and 10 m of cable permanently bonded as an assembly | PA-7000 Series, PA-5400 Series, PA-5200 Series, PA-5000 Series, PA-3430, PA-3440, PA-3200 Series, PA-3000 Series, PA-800 Series, PA-220R |
| PAN-SFP28-25GBASE-SR | SFP28 form factor, SR 10Gb optical transceiver, short reach 100m, MMF, duplex LC, IEEE 802.3ae 25GBASE-SR compliant | PA-5410, PA-5420, PA-5430, PA-3400 Series; |
| PAN-T-S28-25GBASE-SR | TAA Compliant SFP28 form factor, SR 10Gb optical transceiver, short reach 100m, MMF, duplex LC, IEEE 802.3ae 25GBASE-SR compliant | PA-5410, PA-5420, PA-5430, PA-3400 Series; |
| PAN-SFP28-25GBASE-LR | SFP28 form factor, LR 25Gb optical transceiver, long reach 10Km, SMF, duplex LC, IEEE 802.3ca 25GBASE-LR compliant | PA-5410, PA-5420, PA-5430, PA-3400 Series; |
| PAN-T-S28-25GBASE-LR | TAA Compliant SFP28 form factor, LR 25Gb optical transceiver, long reach 10Km, SMF, duplex LC, IEEE 802.3ca 25GBASE-LR compliant | PA-5410, PA-5420, PA-5430, PA-3400 Series; |

** Only models or series cited are supported, unlisted models or series are not supported*

| Table 3: Transceiver and Cable Assembly Descriptions and Applicability* (continued) | | |
|---|---|---|
| **Palo Alto Networks Part Name (SKU)** | **Description** | **Platform Applicability** |
| PAN-SFP-PLUS-10GBASE-T | SFP+ form factor, 10Gb copper transceiver, 30 m over Cat6a RJ-45, IEEE 802.3an 10GBASE-T compliant | PA-7000 Series, PA-5450 NC only, PA-5430, PA-5420, PA-5410, PA-5200 Series, PA-5000 Series, PA-3400 Series, PA-3200 Series, PA-3000 Series, PA-800 Series, PA-220R |
| PAN-SFP-PLUS-CU-5M | SFP+ form factor, 10Gb direct attach twin-ax passive cable with 2 transceiver ends and 5 m of cable permanently bonded as an assembly, IEEE 802.3ae 10GBASE-CR compliant | PA-7000 Series, PA-5400 Series, PA-5200 Series, PA-5000 Series, PA-3400 Series, PA-3200 Series, PA-3000 Series, PA-800 Series, PA-220R |
| PAN-SFP-PLUS-ER | SFP+ form factor, ER 10Gb optical transceiver, extended reach 40 km, SMF, duplex LC, IEEE 802.3ae 10GBASE-ER compliant | PA-7000 Series, PA-5400 Series, PA-5200 Series, PA-5000 Series, PA-3400 Series, PA-3200 Series, PA-3000 Series, PA-800 Series, PA-220R |
| PAN-SFP-PLUS-LR | SFP+ form factor, LR 10Gb optical transceiver, long reach 10 km, SMF, duplex LC, IEEE 802.3ae 10GBASE-LR compliant | PA-7000 Series, PA-5400 Series, PA-5200 Series, PA-5000 Series, PA-3400 Series, PA-3200 Series, PA-3000 Series, PA-800 Series, PA-220R |
| PAN-T-S-PLUS-LR | TAA compliant SFP+ form factor, LR 10Gb optical transceiver, long reach 10 km, SMF, duplex LC, IEEE 802.3ae 10GBASE-LR compliant | PA-7000 Series, PA-5400 Series, PA-5200 Series, PA-5000 Series, PA-3400 Series, PA-3200 Series, PA-3000 Series, PA-800 Series, PA-220R |
| PAN-SFP-PLUS-SR | SFP+ form factor, SR 10Gb optical transceiver, short reach 300 m, OM3 MMF, duplex LC, IEEE | PA-7000 Series, PA-5400 Series, PA-5200 Series, PA-5000 Series, PA-3400 Series, PA-3200 Series, PA-3000 Series, PA-800 Series, PA-220R |
| PAN-T-S-PLUS-SR | TAA compliant SFP+ form factor, SR 10Gb optical transceiver, short reach 300 m, OM3 MMF, duplex LC, IEEE 802.3ae 10GBASE-SR compliant | PA-7000 Series, PA-5400 Series, PA-5200 Series, PA-5000 Series, PA-3400 Series, PA-3200 Series, PA-3000 Series, PA-800 Series, PA-220R |
| PAN-SFP-CG | SFP form factor, 1Gb copper transceiver, 100 m over Cat5 RJ-45, IEEE 802.3ab 1000BASE-T compliant | PA-7000 Series, PA-5400 Series, PA-5200 Series, PA-5000 Series, PA-3400 Series, PA-3200 Series, PA-3000 Series, PA-800 Series, PA-220R |
| PAN-T-S-CG | TAA compliant SFP form factor, 1Gb copper transceiver, 100 m over Cat5, RJ-45, IEEE 802.3ab 1000BASE-T compliant | PA-7000 Series, PA-5400 Series, PA-5200 Series, PA-5000 Series, PA-3400 Series, PA-3200 Series, PA-3000 Series, PA-800 Series, PA-220R |
| PAN-SFP-LX | SFP form factor, LX 1Gb optical transceiver, 10 km reach, SMF, duplex LC, IEEE 802.3ab 1000BASE-LX compliant | PA-7000 Series, PA-5400 Series, PA-5200 Series, PA-5000 Series, PA-3400 Series, PA-3200 Series, PA-3000 Series, PA-800 Series, PA-220R |
| PAN-T-S-LX | TAA compliant SFP form factor, LX 1Gb optical transceiver, 10 km reach, SMF, duplex LC, IEEE 802.3ab 1000BASE-LX compliant | PA-7000 Series, PA-5400 Series, PA-5200 Series, PA-5000 Series, PA-3400 Series, PA-3200 Series, PA-3000 Series, PA-800 Series, PA-220R |
| PAN-SFP-SX | SFP form factor, SX 1Gb optical transceiver, 550 m reach on OM2 MMF, duplex LC, IEEE 802.3z 1000BASE-SX compliant | PA-7000 Series, PA-5400 Series, PA-5200 Series, PA-5000 Series, PA-3400 Series, PA-3200 Series, PA-3000 Series, PA-800 Series, PA-220R |
| PAN-T-S-SX | TAA compliant SFP form factor, SX 1Gb optical transceiver, 550 m reach on OM2 MMF, duplex LC, IEEE 802.3z 1000BASE-SX compliant | PA-7000 Series, PA-5400 Series, PA-5200 Series, PA-5000 Series, PA-3400 Series, PA-3200 Series, PA-3000 Series, PA-800 Series, PA-220R |
| PAN-SFP-ZX | SFP form factor, ZX 1Gb optical transceiver, 80 km reach, SMF, duplex LC | PA-7000 Series, PA-5400 Series, PA-5200 Series, PA-5000 Series, PA-3400 Series, PA-3200 Series, PA-3000 Series, PA-800 Series, PA-220R |

** Only models or series cited are supported, unlisted models or series are not supported*

Refer to the SFF-8024 Specification for SFF Cross Reference to Industry Products for a list of applicable SFF documents. SFF specifications are available at http://www.snia.org/sff/specifications or ftp://ftp.seagate.com/sff.

Through the IEEE Standards Association as well as industry and government support, select IEEE standards are available for download at no charge. You can also purchase the IEEE Standard for Ethernet.

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