

General Description

PDR offers a comprehensive family of optical and copper transceiver modules compliant with industry MSA standards, designed for high-performance serial data communication across telecom, enterprise, and data centre environments. The range spans SFP, SFP+, SFP28, QSFP+, QSFP28, and QSFP-DD form factors, supporting aggregate data rates from 1.25 Gbps up to 400 Gbps over single-mode and multi-mode fiber. Advanced FP/DFB lasers power single-mode variants, while VCSEL technology drives multi-mode models; all optical transceivers incorporate automatic power control (APC) and AGC-based receivers for wide dynamic receive range. Copper SFP and SFP+ variants extend the portfolio by enabling 10/100/1000BASE-T and 10GBASE-T operation over standard copper cabling - no fiber infrastructure required. All modules are hot-pluggable, housed in robust metal enclosures that reduce EMI, and powered from a single 3.3 V supply. RoHS-6 compliant versions are available across the entire range in both commercial (0-70°C) and industrial (-40-85°C) temperature grades.



Key Features

- Full range of MSA-compliant form factors: SFP, SFP+, SFP28, QSFP+, QSFP28, QSFP-DD, and Copper SFP/SFP+ in one product family
- Aggregate data rates from 1.25 Gbps (SFP) to 400 Gbps (QSFP-DD 400G), covering all major Ethernet, SDH/SONET, and OTN standards
- Single-mode (FP/DFB laser) and multi-mode (VCSEL) fiber options at 850 nm, 1310 nm, 1490 nm, and 1550 nm wavelengths
- Hot-pluggable design with standard duplex LC (SFP/SFP+/SFP28) and MPO/MTP or duplex LC (QSFP variants) receptacles
- Digital diagnostic monitoring (DDM) compliant with SFF-8472, SFF-8431, and CMIS specifications
- Single 3.3 V power supply with low power dissipation across all form factors
- Metal enclosure construction provides superior EMI shielding and long-term mechanical reliability
- Class 1 laser product safety certified per EN 60825-1; RoHS-6 compliant (lead-free) across the range
- Copper SFP (PDR01-C10/C11) supports 10/100/1000BASE-T and Copper SFP+ (PDR02-C0X) supports 10GBASE-T over copper - no fiber required
- Available in commercial (0 to +70°C) and industrial (-40 to +85°C) operating temperature grades

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Technical Specifications

SFP Form-Factor Family

Parameter	SFP	SFP+	SFP28	Copper SFP	Copper SFP+
MSA Standard	SFF-8472 / SFP MSA	SFF-8431 / SFP+ MSA	SFP28 MSA / SFF-8402	SFF-8431 / SFF-8472	SFF-8431 (SFP+)
Max Data Rate	2.67 Gbps	11.3 Gbps	25.78 Gbps	1 Gbps (10/100/1000M)	10.3 Gbps (10GBASE-T)
Channels	1	1	1	1	1
Fiber / Medium	SM / MM Fiber	SM / MM Fiber	SM / MM Fiber	Cat 5 UTP / STP (electrical)	Cat 6a / Cat 7 (electrical)
Connector	Duplex LC	Duplex LC	Duplex LC	RJ-45	RJ-45
Typical Wavelength	850 / 1310 / 1490 / 1550 nm	850 / 1310 / 1490 / 1550 nm	850 / 1310 nm	N/A (electrical)	N/A (electrical)
Max Reach	120 km (SM) / 550 m (MM)	80 km (SM) / 300 m (MM)	10 km (SM) / 100 m (MM)	100 m	30 m
Supported Protocols	GbE / SDH / SONET / OTN	10GbE / SDH / SONET / OTN	25GbE / SDH / OTN	1000BASE-T / SGMII	10GBASE-T
Power Supply	3.3 V	3.3 V	3.3 V	3.3 V	3.3 V
Max Power Consumption	< 1.0 W	< 1.5 W	< 1.5 W	≤ 1.2 W	≤ 2.5 W
DDM / DOM	Yes (SFF-8472)	Yes (SFF-8472)	Yes	Yes (SFF-8472)	N/A (electrical)
Laser Class	Class 1 (EN 60825-1)	Class 1 (EN 60825-1)	Class 1 (EN 60825-1)	N/A (electrical)	N/A (electrical)
Temp. - Commercial	0 to +70°C	0 to +70°C	0 to +70°C	0 to +70°C	0 to +70°C
Temp. - Industrial	-40 to +85°C	-40 to +85°C	-40 to +85°C	-40 to +85°C	-40 to +85°C
RoHS	RoHS-6 Compliant	RoHS-6 Compliant	RoHS-6 Compliant	Compliant	Compliant

QSFP Form-Factor Family

Parameter	QSFP+	QSFP28	QSFP-DD 200G	QSFP-DD 400G
MSA Standard	QSFP+ MSA SFF-8436	QSFP28 MSA SFF-8665	QSFP-DD MSA CMIS	QSFP-DD MSA CMIS / IEEE 802.3bm
Max Aggregate Data Rate	41.2 Gbps	103.125 Gbps	206.25 Gbps	Up to 424 Gbps (SR8: 8×53G) or 400 Gbps (DR4/FR4: 4×100G)
Channels (Full-Duplex)	4	4	8	8 (SR8) or 4 (DR4/FR4)
Data Rate per Channel	10 Gbps	25.78 Gbps	25.78 Gbps	53 Gbps (SR8) / 100 Gbps (DR4/FR4) (NRZ)
Fiber / Medium	SM / MM Fiber	SM / MM Fiber	MM Fiber (SM optional)	SM / MM Fiber
Connector	MPO/MTP (12-fiber) or Duplex LC (LR4)	MPO/MTP (12-fiber) or Duplex LC (LR4/CWDM4)	MPO-24 (24-fiber) or Duplex LC	MPO-24 (SR8) / MPO-12 (DR4) or Duplex LC (FR4)
Typical Wavelength	850 nm (MM) / SM options	850 / 1310 nm	850 nm (SR8) / 1310 nm (others)	850 nm (SR8, IEEE 802.3bm) / 1310 nm (DR4) / 1310 nm CWDM4 (FR4)
Max Reach	10 km (SM) / 400 m (MM)	80 km (SM) / 100 m (MM)	Up to 100 m (OM4 MMF)	100 m / OM4 (SR8) / 500 m (DR4) / 2 km (FR4)
Supported Protocols	40GbE / SDH / OTN	100GbE / SDH / OTN	200GbE / IEEE 802.3bm	400GbE / IEEE 802.3bs
Internal CDR	Yes (Tx & Rx)	Yes (Tx & Rx)	Yes (Tx & Rx); Bypass: Yes	Yes (Tx & Rx); Bypass: Yes
Power Supply	3.3 V	3.3 V	3.3 V	3.3 V
Max Power Consumption	< 1.5 W	< 3.5 W	< 4.0 W	< 10.0 W (SR8) / < 8.0 W (DR4/FR4)
DDM / DOM	Yes	Yes	Yes (CMIS)	Yes (CMIS)
Temp. - Commercial	0 to +70°C	0 to +70°C	0 to +70°C	0 to +70°C
Temp. - Industrial	-40 to +85°C	-40 to +85°C	-40 to +85°C	-40 to +85°C
RoHS	RoHS-6 Compliant	RoHS-6 Compliant	RoHS-6 Compliant	RoHS-6 Compliant

* Specifications represent typical values; actual reach and wavelength depend on variant ordered. Contact PDR for CWDM, DWDM, BiDi, and extended-temperature options across all form factors.

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Applications

- Fiber-to-the-Home (FTTH), Fiber-to-the-Building (FTTB), and FTTx access network rollouts
- Telecommunications backbone, metro Ethernet, and long-haul DWDM transport links
- Enterprise data centre interconnects - server-to-switch and ToR/spine aggregation at 10G, 25G, 40G, and 100G
- CATV, broadband HFC, and hybrid fiber-coax cable infrastructure
- Industrial and military communications requiring wide-temperature (-40 to +85°C) rated modules
- Campus LAN and structured cabling using Copper SFP/SFP+ over Cat 5/Cat 6a - no fiber plant required

Ordering Information

Standard Ordering Models

Part Number	Form Factor	Data Rate	Medium	Max Reach	Temp. Range
PDR01-SFP	SFP	Up to 2.67 Gbps	SM / MM Fiber	Up to 120 km	0~70°C / -40~85°C
PDR01-SFP+	SFP+	Up to 11.3 Gbps	SM / MM Fiber	Up to 80 km	0~70°C / -40~85°C
PDR01-SFP28	SFP28	25.78 Gbps	SM / MM Fiber	Up to 10 km	0~70°C / -40~85°C
PDR01-QSFP+	QSFP+	41.2 Gbps (4×10G)	SM / MM Fiber	Up to 10 km	0~70°C / -40~85°C
PDR01-QSFP28	QSFP28	103.1 Gbps (4×25G)	SM / MM Fiber	Up to 80 km	0~70°C / -40~85°C
PDR01-QSFP-DD	QSFP-DD	200G / 400G	SM / MM Fiber	Up to 2 km	0~70°C
PDR01-C10	Copper SFP	1 Gbps (1000BASE-T Serdes)	Cat 5 UTP	100 m	0~70°C
PDR01-C11	Copper SFP	10/100/1000 Mbps (SGMII)	Cat 5 UTP	100 m	0~70°C
PDR02-C0X	Copper SFP+	10 Gbps (10GBASE-T)	Cat 6a / Cat 7	30 m	0~70°C

† Wavelength, reach, and connector type are configurable - specify when ordering. Industrial (-40 to +85°C) temperature versions available for all optical variants. Contact PDR for custom wavelength, DDM, BiDi, CWDM, and DWDM options.

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