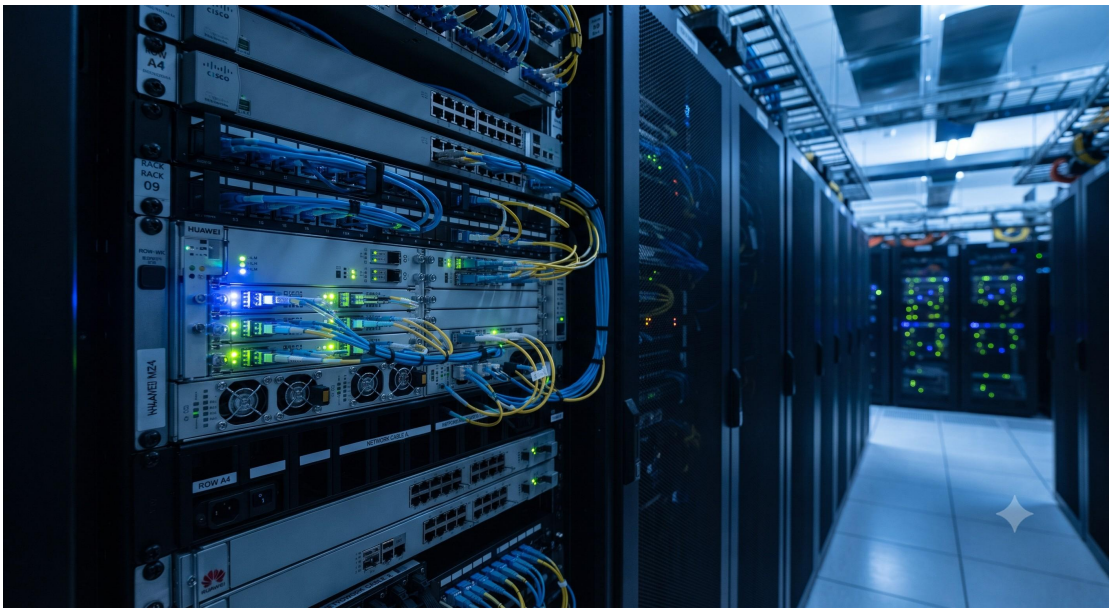
Huawei Optical Module Part Number Decoder - Official Technical Overview & Hardware Datasheet

EXECUTIVE SUMMARY

This document provides a comprehensive technical overview of the Huawei Optical Module Part Number Decoder, an essential framework for understanding the nomenclature, specifications, and operational parameters of Huawei's extensive portfolio of optical transceivers. As data center architectures and carrier networks evolve toward higher bandwidth densities, the ability to accurately decode part numbers ensures precise procurement, seamless interoperability, and optimal network performance. This datasheet serves as a definitive reference for network engineers, procurement specialists, and systems architects, detailing the structure of Huawei's optical module identification system and its alignment with industry standards.



ARCHITECTURE & CHASSIS DESIGN

The Huawei Optical Module Part Number Decoder is not a physical hardware component but a structured logical framework embedded within Huawei's hardware ecosystem. It is designed to interface seamlessly with a variety of chassis and form factors, including SFP, SFP+, SFP28, QSFP+, QSFP28, QSFP56, QSFP-DD, QSFP112, CSFP, CFP2, and OSFP . The decoder framework operates in conjunction with Huawei's network operating systems, enabling accurate identification and management of optical modules across campus switches, enterprise routers, and carrier-grade equipment. The system supports both commercial (0°C to 70°C) and industrial (-40°C to +85°C) temperature ranges, ensuring deployment flexibility in diverse environments .

HARDWARE FEATURES

The core of the decoder functionality lies in the mapping of the Bill of Materials (BOM) or Part Number (PN) to specific optical characteristics. Huawei's BOM numbers typically consist of 8 to 17 digits, encapsulating information about the module type, form factor, transmission rate, wavelength, and fiber type . Key features include:

- Comprehensive Serial Number Identification: The system retrieves the Manufacturer Serial Number via CLI commands such as display interface transceiver or display elabel, providing unique module tracking and inventory management .
- Multi-Source Agreement (MSA) Compliance: Modules are compliant with industry standards such as SFF-8472 for Digital Diagnostic Monitoring (DDM) and IEEE 802.3 for Ethernet protocols, ensuring interoperability with third-party equipment .
- Digital Diagnostic Monitoring (DDM): Supports real-time monitoring of critical parameters including temperature, supply voltage, TX bias current, and TX/RX optical power, enabling proactive fault management .
- Laser Class Certification: All modules are certified as CLASS 1 LASER products per IEC 60825-1, guaranteeing eye safety under normal operating conditions .

COMPLIANCE & STANDARDS

Huawei's optical modules are rigorously tested to meet global standards for safety, environmental compliance, and electromagnetic compatibility.

- Environmental Standards: All modules adhere to the Restriction of Hazardous Substances (RoHS) directive, ensuring environmentally responsible manufacturing .
- Security and EMC Standards: Modules comply with FCC Class B for electromagnetic interference and are certified for ESD (HBM1) up to 500V, ensuring robustness in high-static environments .
- Industry Protocols: Support for a wide range of application standards, including 1000BASE-BX, 10GBASE-SR/LR/ER/ZR, 100GBASE-LR4/ER4, and 400GBASE-LR8, ensuring seamless integration into existing network topologies .

TECHNICAL SPECIFICATIONS

The following table summarizes the decoding parameters for a selection of Huawei optical modules, illustrating the relationship between the Part Number (BOM) and key hardware specifications .

Part	Form	Data Rate	Wavelengt	Applicatio	Temperatu

Number (BOM)	Factor		h / Fiber Type	n / Reach	re
02318169	SFP+	10 Gbit/s	850nm / MM	10GBASE-SR / 0.3km	0 to 70°C
02318170	SFP+	10 Gbit/s	1310nm / SM	10GBASE-LR / 10km	0 to 70°C
02310CNF	SFP+	9.95-11.1 Gbit/s	1550nm / SM	10GBASE-ER / 40km	0 to 70°C
02312WHB	CSFP	1.25 Gbit/s	1490nm(Tx)/1310nm(Rx) / SM	40km	-40 to 85°C
02310WUR	CFP2	103.125 Gbit/s	1295.56~1309.14nm / SM	100GBASE-LR4 / 10km	0 to 70°C
02311FAP	CFP2	103.125 Gbit/s	1295.56~1309.14nm / SM	100GBASE-ER4 / 40km	0 to 70°C
N/A	QSFP-DD	400 Gbit/s	1273.55~1309.14nm / SM	400GBASE-LR8 / 10km	0 to 70°C
N/A	QSFP28	100 Gbit/s	1271,1291,1311,1331	100GBASE-CWDM4 /	0 to 70°C

			nm / SM	2km	

ORDERING OPTIONS

Huawei offers a wide range of optical modules categorized by application, reach, and form factor. Ordering information is structured to allow precise selection based on network requirements. Key ordering parameters include:

- Form Factor: e.g., SFP+, QSFP28, QSFP-DD, CFP2.
- Data Rate: Ranging from 125 Mbps to 400 Gbps .
- Reach: Options include Short Reach (SR), Long Reach (LR), Extended Reach (ER), and ZR for distances up to 80 km .
- Temperature Range: Select commercial (0°C to 70°C) or industrial (-40°C to 85°C) grade modules .

Network administrators are advised to use Huawei's 'One-stop Optical Module Query' tool or consult the official hardware description documents to verify compatibility with specific chassis and line cards .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