

02311NTX-OPC

Huawei® 02311NTX Compatible TAA 100GBase-LR4 QSFP28 Transceiver (SMF, 1295nm to 1309nm, 10km, LC, DOM)

Features

- SFF-8665 Compliance
- Duplex LC Connector
- Single-mode Fiber
- Commercial Temperature 0 to 70 Celsius
- Hot Pluggable
- Metal with Lower EMI
- Excellent ESD Protection
- RoHS Compliant and Lead Free



Applications:

- 100GBase Ethernet
- Access and Enterprise

Product Description

This Huawei® 02311NTX compatible QSFP28 transceiver provides 100GBase-LR4 throughput up to 10km over single-mode fiber (SMF) using a wavelength of 1295nm to 1309nm via an LC connector. It is guaranteed to be 100% compatible with the equivalent Huawei® transceiver. This easy to install, hot swappable transceiver has been programmed, uniquely serialized and data-traffic and application tested to ensure that it will initialize and perform identically. Digital optical monitoring (DOM) support is also present to allow access to real-time operating parameters. This transceiver is Trade Agreements Act (TAA) compliant. We stand behind the quality of our products and proudly offer a limited lifetime warranty.

OptioConnect's transceivers are RoHS compliant and lead-free.

TAA refers to the Trade Agreements Act (19 U.S.C. & 2501-2581), which is intended to foster fair and open internaltional trade. TAA requires that the U.S. Government may acquire only "U.S.-made or designated country end products.")



Absolute Maximum Ratings

| Parameter | Symbol | Min. | Тур. | Max. | Unit |
|-------------------------------------|--------|------|------|------|------|
| Maximum Supply Voltage | Vcc | -0.5 | | 3.6 | V |
| Storage Temperature | TS | -40 | | 85 | °C |
| Operating Case Temperature | Тс | 0 | 25 | 70 | °C |
| Operating Humidity | RH | 5 | | 85 | % |
| Receiver Damage Threshold, per Lane | Rxdmg | 5.5 | | | dBm |

Electrical Characteristics

| Parameter | Symbol | Min. | Тур. | Max. | Unit | Notes | | |
|--|--------|--------------------------|------|-------|-------|---------|--|--|
| Power Dissipation | PD | | | 3.5 | W | | | |
| Power Supply Voltage | Vcc | 3.135 | 3.3 | 3.465 | V | | | |
| Transmitter | | | | | | | | |
| Differential data input swing per lane | Vin | | | 900 | Мvp-р | | | |
| Input Impedance (Differential) | Zin | | | 10 | % | | | |
| Stressed Input Parameters | | | | | | | | |
| Eye width | | 0.46 | | | UI | | | |
| Applied pk-pk sinusoidal jitter | | IEEE 802.3bm Table 88-13 | | | | | | |
| Eye height | | 95 | | | mv | | | |
| DC common mode voltage | | -350 | | 2850 | mv | | | |
| Receiver | | | | | | | | |
| Differential output amplitude | | 200 | | 900 | Мvp-р | | | |
| Output Impedance (Differential) | Zout | | | 10 | % | | | |
| Output Rise/Fall Time | tr/tf | 12 | | | ps | 20%~80% | | |
| Eye width | | 0.57 | | | UI | | | |
| Eye height differential | | 228 | | | mv | | | |
| Vertical eye closure | | | | 5.5 | db | | | |

Optical Characteristics

| Parameter | Symbol | Min. | Тур. | Max. | Unit | Notes |
|---|-------------------|---------|---------|---------|-------|-------|
| Transmitter | | | | | | |
| Signaling Speed per Lane | Brave | | 25.78 | | Gbps | |
| Data Rate Variation | | -100 | | +100 | | |
| Lane_0 Center Wavelength | λC0 | 1294.53 | 1295.56 | 1296.59 | nm | |
| Lane_1 Center Wavelength | λC1 | 1299.02 | 1300.05 | 1301.09 | nm | |
| Lane_2 Center Wavelength | λC2 | 1303.54 | 1304.58 | 1305.63 | nm | |
| Lane_3 Center Wavelength | λСЗ | 1308.09 | 1309.14 | 1310.19 | nm | |
| Average Launch Power each Lane | P _{each} | -4.3 | | 4.5 | dBm | 1 |
| Optical Modulation Amplitude (OMA) each Lane | TxOMA | -1.3 | | 4.5 | dBm | |
| Difference in launch power between any two lanes (OMA) | | | | 5 | dB | |
| Launch power in OMA minus TDP, each lane | | -2.3 | | | dBm | |
| Transmitter and dispersion penalty (TDP), each lane | | | | 2.2 | dB | |
| Extinction Ratio | ER | 4 | | | dB | |
| Side-mode Suppression ratio | SMSRmin | 30 | | | dB | |
| Average launch power of OFF transmitter per lane | | | | -30 | dBm | |
| Relative Intensity Noise | RIN | | | -130 | dB/hz | |
| Transmitter Reflectance | | | | -12 | dB | |
| Optical Return Loss Tolerance | | | | 20 | dB | |
| Transmitter eye mask definitions: X1, X2, X3, Y1, Y2, Y3 | · | | l . | | 2 | |
| Receiver | | | | | | |
| Signaling Speed per Lane | BRAVE | | 25.78 | | Gbps | |
| Data Rate Variation | | -100 | | +100 | ppm | |
| Damage threshold per lane | Rxdmg | 5.5 | | | dBm | |
| Lane_0 Center Wavelength | λСО | 1294.53 | 1295.56 | 1296.59 | nm | |
| Lane_1 Center Wavelength | λC1 | 1299.02 | 1300.05 | 1301.09 | nm | |
| Lane_2 Center Wavelength | λC2 | 1303.54 | 1304.58 | 1305.63 | nm | |
| Lane_3 Center Wavelength | хс3 | 1308.09 | 1309.14 | 1310.19 | nm | |
| Average Receive Power per Lane | Rxpow | -10.6 | | 4.5 | dBm | 3 |
| Receive Power (OMA) per Lane | RxOMA | | | 4.5 | dBm | |
| Receive Sensitivity in OMA per Lane | Rxsens | | | -8.6 | dBm | |
| Receiver 3 dB electrical upper cutoff frequency, per lane | | | | 31 | GHz | |
| Stressed Receiver Sensitivity (OMA) per Lane | RXSRS | | | -6.8 | dBm | 4 |

| Optical Return Loss | ORL | | | -26 | dB | | | |
|--|------|-----|------|-----|-----|---|--|--|
| LOS Assert | LOSA | -25 | | | dBm | | | |
| LOS De-Assert | LOSD | | | -12 | dBm | | | |
| LOS Hysteresis | | 0.5 | | | dB | | | |
| Conditions of stressed receiver sensitivity test | | | | | | | | |
| Vertical eye closure penalty | VECP | | 1.8 | | dB | 5 | | |
| Stressed eye J2 Jitter | J2 | 0.3 | | | UI | 5 | | |
| Stressed eye J9 Jitter | J9 | | 0.47 | | UI | 5 | | |

Notes:

- 1. Average launch power, each lane (min) is informative and not the principal indicator of signal strength. A transmitter with launch power below this value cannot be compliant; however, a value above this does not ensure compliance.
- 2. Hit ratio 5x10⁻⁵.
- 3. Average receive power, each lane (min) is informative and not the principal indicator of signal strength. A received power below this value cannot be compliant; however, a value above this does not ensure compliance.
- 4. Measured with conformance test signal at TP3 for BER = 10–12.
- 5. Vertical eye closure penalty, stressed eye J2 Jitter, and stressed eye J9 Jitter are test conditions for measuring stressed receiver sensitivity. They are not characteristics of the receiver.

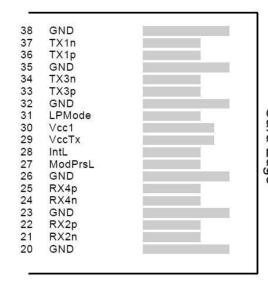
Pin Descriptions

| | criptions | | | |
|-----|------------|---------|---|------|
| Pin | Logic | Symbol | Name/Descriptions | Ref. |
| 1 | | GND | Module Ground | 1 |
| 2 | CML-I | Tx2- | Transmitter inverted data input | |
| 3 | CML-I | Tx2+ | Transmitter non-inverted data input | |
| 4 | | GND | Module Ground | 1 |
| 5 | CML-I | Tx4- | Transmitter inverted data input | |
| 6 | CML-I | Tx4+ | Transmitter non-inverted data input | |
| 7 | | GND | Module Ground | 1 |
| 8 | LVTTL-I | MODSEIL | Module Select | 2 |
| 9 | LVTTL-I | ResetL | Module Reset | 2 |
| 10 | | VCCRx | +3.3v Receiver Power Supply | |
| 11 | LVCMOS-I | SCL | 2-wire Serial interface clock | 2 |
| 12 | LVCMOS-I/O | SDA | 2-wire Serial interface data | 2 |
| 13 | | GND | Module Ground | 1 |
| 14 | CML-O | RX3+ | Receiver non-inverted data output | |
| 15 | CML-O | RX3- | Receiver inverted data output | |
| 16 | | GND | Module Ground | 1 |
| 17 | CML-O | RX1+ | Receiver non-inverted data output | |
| 18 | CML-O | RX1- | Receiver inverted data output | |
| 19 | | GND | Module Ground | 1 |
| 20 | | GND | Module Ground | 1 |
| 21 | CML-O | RX2- | Receiver inverted data output | |
| 22 | CML-O | RX2+ | Receiver non-inverted data output | |
| 23 | | GND | Module Ground | 1 |
| 24 | CML-O | RX4- | Receiver inverted data output | |
| 25 | CML-O | RX4+ | Receiver non-inverted data output | |
| 26 | | GND | Module Ground | 1 |
| 27 | LVTTL-0 | ModPrsL | Module Present, internal pulled down to GND | |
| 28 | LVTTL-O | IntL | Interrupt output, should be pulled up on host board | 2 |
| 29 | | VCCTx | +3.3v Transmitter Power Supply | |
| 30 | | VCC1 | +3.3v Power Supply | |
| 31 | LVTTL-I | LPMode | Low Power Mode | 2 |
| 32 | | GND | Module Ground | 1 |
| 33 | CML-I | Tx3+ | Transmitter non-inverted data input | |
| 34 | CML-I | Tx3- | Transmitter inverted data input | |
| 35 | | GND | Module Ground | 1 |
| 36 | CML-I | Tx1+ | Transmitter non-inverted data input | |
| 37 | CML-I | Tx1- | Transmitter inverted data input | |
| 38 | | GND | Module Ground | 1 |

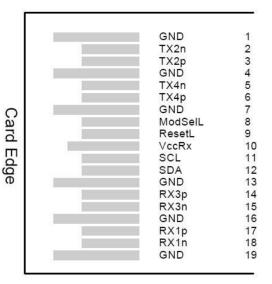
Notes:

- 1. Module circuit ground is isolated from module chassis ground with in the module.
- 2. Open collector; should be pulled up with 4.7k-10k ohms on host board to a voltage between 3.15V and 3.6V.

Electrical Pin-out Details

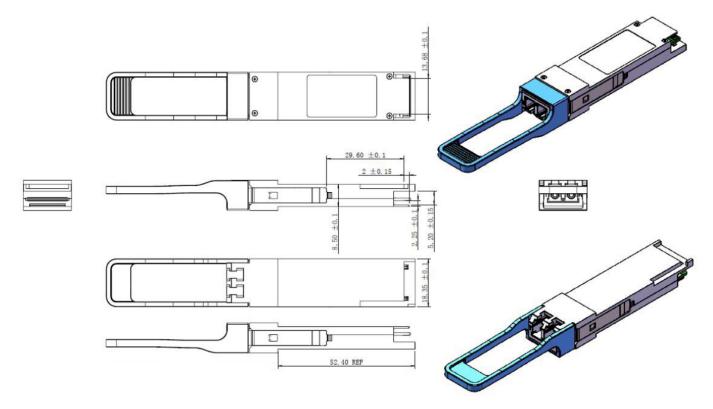


Top Side Viewed from Top



Bottom Side Viewed from Bottom

Mechanical Specifications



OptioConnect

Innovation for the Future of High-Speed Networking

Who We Are

OptioConnect is reshaping the landscape of communication and high-speed networking through intelligent technology. With a core focus on cutting edge technology, we deliver smarter fiber optic solutions for enterprise networks, data centers, and next-gen telecom infrastructures.

What We Do

At OptioConnect, we fuse advanced engineering with intelligent automation to drive the future of networking. Our Al-integrated solutions are designed to optimize performance and streamline operations with:

- Superior Performance
- Network and traffic optimization
- Intelligent energy management
- Seamless OEM compatibility
- Scalable cost-efficiency

Smarter Networks by Design

Innovation isn't just a goal—it's our process. We embed AI and machine learning across our R&D and product lines, enabling adaptive performance, automated tuning, and faster deployment cycles. The result? Networks that don't just work—they learn, evolve, and outperform.

Our Team

Our engineers, data scientists, and network architects bring decades of experience and a future-focused mindset. We provide hands-on support with intelligent insights that turn complex challenges into simple solutions.

Our Mission

To deliver AI-enhanced connectivity that reduces cost, increases speed, and maximizes efficiency—empowering our partners to operate at the forefront of a rapidly evolving digital world.

Let's Connect

Discover how OptioConnect's intelligent infrastructure solutions can power your network's next leap forward. www.optioconnect.com | info@optioconnect.com







