

**SFP-10GB-CW-29-40-MK-OPC**

Mikrotik® Compatible TAA 10GBase-CWDM SFP+ Transceiver (SMF, 1290nm, 40km, LC, DOM)

**Features**

- SFF-8432 and SFF-8472 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:**

- 10x Gigabit Ethernet over CWDM
- 8x/10x Fibre Channel
- Access, Metro and Enterprise
- Mobile Fronthaul CPRI/OBSAI

**Product Description**

This Mikrotik® compatible SFP+ transceiver provides 10GBase-CWDM throughput up to 40km over single-mode fiber (SMF) using a wavelength of 1290nm via an LC connector. The listed reach has been determined using a link budget calculation and tested in a standard environment. Actual link distances achieved will be dependent upon the deployed environment. Our transceiver is built to meet or exceed OEM specifications and is guaranteed to be 100% compatible with Mikrotik®. It has been programmed, uniquely serialized, and tested for data-traffic and application to ensure that it will initialize and perform identically. All of our transceivers comply with Multi-Source Agreement (MSA) standards to provide seamless network integration. Additional product features include Digital Optical Monitoring (DOM) support which allows access to real-time operating parameters. We stand behind the quality of our products and proudly offer a limited lifetime warranty.

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

### CWDM Available Wavelengths

| Wavelengths | Min.   | Typ. | Max.   |
|-------------|--------|------|--------|
| 27          | 1264.5 | 1271 | 1277.5 |
| 29          | 1284.5 | 1291 | 1297.5 |
| 31          | 1304.5 | 1311 | 1317.5 |
| 33          | 1324.5 | 1331 | 1337.5 |
| 35          | 1344.5 | 1351 | 1357.5 |
| 37          | 1364.5 | 1371 | 1377.5 |
| 39          | 1384.5 | 1391 | 1397.5 |
| 41          | 1404.5 | 1411 | 1417.5 |
| 43          | 1424.5 | 1431 | 1437.5 |
| 45          | 1444.5 | 1451 | 1457.5 |

### Absolute Maximum Ratings

| Parameter                          | Symbol           | Min. | Typ.          | Max. | Unit |
|------------------------------------|------------------|------|---------------|------|------|
| Maximum Supply Voltage             | V <sub>CC</sub>  | -0.5 |               | 3.6  | V    |
| Storage Temperature                | T <sub>stg</sub> | -40  |               | 85   | °C   |
| Operating Case Temperature         | T <sub>c</sub>   | 0    |               | 70   | °C   |
| Relative Humidity (Non-Condensing) | RH               | 0    |               | 85   | %    |
| Data Rate                          | DR               | 0.6  | 9.953/10.3125 |      | Gbps |

### Notes:

1. Exceeding any one of these values may destroy the device immediately.

## Electrical Characteristics

| Parameter                     |      | Symbol            | Min. | Typ. | Max.                 | Unit  | Notes                                           |
|-------------------------------|------|-------------------|------|------|----------------------|-------|-------------------------------------------------|
| Power Supply Voltage          |      | V <sub>CC</sub>   | 3.15 | 3.30 | 3.43                 | V     |                                                 |
| Power Consumption             |      | P <sub>DISS</sub> |      |      | 1.5                  | W     |                                                 |
| Transmitter                   |      |                   |      |      |                      |       |                                                 |
| CML Differential Inputs       |      | V <sub>IN</sub>   | 150  |      | 1200                 | mVp-p | AC Coupled Inputs                               |
| Input AC Common-Mode Voltage  |      |                   | 0    |      | 25                   | mV    | RMS                                             |
| Input Differential Impedance  |      | Z <sub>IN</sub>   | 85   | 100  | 115                  | Ω     | R <sub>IN</sub> >100kΩ @DC                      |
| Tx_Disable                    | High |                   | 2    |      | V <sub>CC</sub>      | V     |                                                 |
|                               | Low  |                   | 0    |      | 0.8                  |       |                                                 |
| Tx_Fault                      | High |                   | 2    |      | V <sub>CC</sub> +0.3 | V     | I <sub>O</sub> = 400μA;<br>Host_V <sub>CC</sub> |
|                               | Low  |                   | 0    |      | 0.5                  |       | I <sub>O</sub> = -4.0mA                         |
| Receiver                      |      |                   |      |      |                      |       |                                                 |
| CML Differential Outputs      |      | V <sub>OUT</sub>  | 350  |      | 700                  | mVp-p | AC Coupled Outputs                              |
| Output Differential Impedance |      | Z <sub>OUT</sub>  | 85   | 100  | 115                  | Ω     |                                                 |
| Rx_LOS                        | High |                   | 2    |      | V <sub>CC</sub> +0.3 |       | I <sub>O</sub> = 400μA;<br>Host_V <sub>CC</sub> |
|                               | Low  |                   | 0    |      | 0.8                  |       | I <sub>O</sub> = -4.0mA                         |
| MOD_DEF(0.2)                  |      | V <sub>OH</sub>   | 2.5  |      |                      | V     | With Serial ID                                  |
|                               |      | V <sub>OL</sub>   | 0    |      | 0.5                  | V     | With Serial ID                                  |

## Optical Characteristics

| Parameter                        | Symbol          | Min.          | Typ.      | Max.          | Unit  | Notes |
|----------------------------------|-----------------|---------------|-----------|---------------|-------|-------|
| Transmitter                      |                 |               |           |               |       |       |
| Center Wavelength                | $\lambda_C$     | $\lambda-6.5$ | $\lambda$ | $\lambda+6.5$ | nm    |       |
| Average Output Power             | POUT            | 0             |           | 6             | dBm   | 1     |
| Extinction Ratio                 | ER              | 3.5           |           | dB            | dB    |       |
| Average Power of Off Transmitter | Poff            |               |           | -30           | dBm   |       |
| Side-Mode Suppression Ratio      | SMSR            | 30            |           | dB            |       |       |
| -20dB Spectral Width             | $\Delta\lambda$ |               |           | 1             | nm    |       |
| Transmitter Dispersion Penalty   | TDP             |               |           | 3             | dB    |       |
| Relative Intensity Noise         | RIN             |               |           | -128          | dB/Hz |       |
| Tx_Disable Assert Time           | T_off           |               |           | 10            | us    |       |
| Receiver                         |                 |               |           |               |       |       |
| Center Wavelength                | $\lambda_C$     | 1260          |           | 1620          | nm    |       |
| Receiver Sensitivity             | Pmin            |               |           | -15           | dBm   | 2     |
| Receiver Overload                | Pmax            | 0             |           | dBm           | nm    |       |
| LOS De-Assert                    | LOSD            |               |           | -17           | dBm   |       |
| LOS Assert                       | LOSA            | -28           |           | dBm           |       |       |
| LOS Hysteresis                   | LOSH            | 0.5           |           | dB            |       |       |

### Notes:

1. Output is coupled into a 9/125 $\mu$ m SMF.
2. Measured with worst ER, BER less than  $1E^{-12}$ , and PRBS  $2^{31}-1$  @10.3125Gbps.

## Pin Descriptions

| Pin | Symbol     | Name/Description                                                           | Notes |
|-----|------------|----------------------------------------------------------------------------|-------|
| 1   | VeeT       | Transmitter Ground (Common with Receiver Ground).                          | 1     |
| 2   | Tx_Fault   | Transmitter Fault. LVTTTL-O.                                               | 2     |
| 3   | Tx_Disable | Transmitter Disable. Laser output disabled on “high” or “open.” LVTTTL-I.  | 3     |
| 4   | SDA        | 2-Wire Serial Interface Data (Same as MOD-DEF2 in INF-8074i). LVTTTL-I/O.  |       |
| 5   | SCL        | 2-Wire Serial Interface Clock (Same as MOD-DEF2 in INF-8074i). LVTTTL-I.   |       |
| 6   | MOD_ABS    | Module Absent. Connect to the VeeT or VeeR in the module.                  | 4     |
| 7   | RS0        | Rate Select 0. Not Used.                                                   | 5     |
| 8   | LOS        | Loss of Signal Indication. “Logic 0” indicates normal operation. LVTTTL-O. | 2     |
| 9   | RS1        | Rate Select 1. Not Used.                                                   | 5     |
| 10  | VeeR       | Receiver Ground (Common with Transmitter Ground).                          | 1     |
| 11  | VeeR       | Receiver Ground (Common with Transmitter Ground).                          | 1     |
| 12  | RD-        | Receiver Inverted Data Out. AC Coupled. CML-O.                             |       |
| 13  | RD+        | Receiver Non-Inverted Data Out. AC Coupled. CML-O.                         |       |
| 14  | VeeR       | Receiver Ground (Common with Transmitter Ground).                          | 1     |
| 15  | VccR       | Receiver Power Supply.                                                     |       |
| 16  | VccT       | Transmitter Power Supply.                                                  |       |
| 17  | VeeT       | Transmitter Ground (Common with Receiver Ground).                          | 1     |
| 18  | TD+        | Transmitter Non-Inverted Data In. AC Coupled. CML-I.                       |       |
| 19  | TD-        | Transmitter Inverted Data In. AC Coupled. CML-O.                           |       |
| 20  | VeeT       | Transmitter Ground (Common with Receiver Ground).                          | 1     |

## Notes:

1. The module signal ground contacts, VeeR and VeeT, should be isolated from the module case.
2. This contact is an open collector/drain output and should be pulled up to the Host\_Vcc with resistor in the range 4.7kΩ to 10kΩ. Pull-ups can be connected to one or several power supplies; however, the host board design shall ensure that no module contact has a voltage exceeding the module VccT/R+0.5V.
3. Tx\_Disable is an input contact with a 4.7kΩ to 10kΩ pull-up resistor to the VccT inside the module.
4. MOD\_ABS is connected to the VeeT or VeeR in the SFP+ module. The host may pull the contact up to the Host\_Vcc with a resistor in the range from 4.7kΩ to 10kΩ. MOD\_ABS is asserted “high” when the SFP+ module is physically absent from a host slot.
5. Internally pulled down per SFF-8431.



**Mechanical Specifications**

Small Form Factor Pluggable (SFP) transceivers are compatible with the dimensions defined by the SFP Multi-Sourcing Agreement (MSA).



## **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 AI-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**

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#### **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.

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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.

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Discover how OptioConnect's intelligent infrastructure solutions can power your network's next leap forward.

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