

RF Over Fiber Analog/Digital Link 20GHz

(10MHz to 20GHz, SM28 Fiber)



DATASHEET

[Return to the Webpage](#)



Features

- Up to 20GHz
- SM28 Fiber
- Low Loss
- Low Cost
- Stable

Applications

- GSM Repeater
- CDMA Repeater
- WCDMA Repeater
- PHS Repeater
- Digital TV Repeater
- Broadcast Repeater

The RFOF is designed to form an RF link between two points using fiber optical cables. It features immunity to interferences, high bandwidth, low signal loss over long distances, low signal distortion, low power consumption, high reliability, and is easy to implement. It converts an input RF electrical signal into an optical signal via an electro-optical modulator coupled with a DFB laser (transmitter) and re-converts the optical signal back into the RF signal at the other end of the fiber link via a high linearity photodiode integrated with low noise amplifier (receiver). The transmitter and receiver pair form a transceiver that provides a transparent data transmission channel. They are available in wavelengths 1550nm C-band, providing a versatile wavelength division multiplexing (WDM) capability. For example, bidirectional RF communication can be established with a single fiber link using two different wavelength transceivers and matching WDM cable adaptors. Another example is that three channels can be transmitted through a single fiber link by combining three transceivers of different wavelengths with our WDM cable adaptors. The module is packaged in a rack mount box or ruggedized outdoor aluminum case. Temperature compensation is built into the transmitter.

The RFOF modules are suitable for telecommunications, satellites, radio telescopes, distribution antennas, broadcasting audio and video, and timing synchronization. For example, point-to-point antennas can be connected from several meters to many kilometers away from the control room by fiber cables; Base stations can be connected through fiber to remote sector antennas; Satellite antennas can be connected through fiber cable to remote sites by RF over Fiber solutions.

Specifications

| Parameter | Min | Typical | Max | Unit |
|-----------------------------|------|---------|------|----------------------|
| Optical Wavelength | 1520 | | 1580 | nm |
| Optical Output Power | | 3 | | mW |
| Optical Input Power | -16 | | -6 | dBm |
| RF Frequency Range | 0.01 | | 20 | GHz |
| Gain Flatness (p-p) | | | ± 3 | dB |
| RF Output Power | -30 | | -10 | dBm |
| Input RF Return Loss | | 18 | | dB |
| RF Input Power | | | 10 | dBm |
| Spurious Free Dynamic Range | 100 | | | dBm/H ^{2/3} |
| Noise Floor | | | -120 | dBm/Hz |
| Transmit Gain Control (AGC) | | | | |
| Receive Gain Control (AGC) | | | | |
| Link Gain | 0 | 5 | | dB |
| CNR | 35 | | | dB |
| Fiber Type | | SM28 | | |
| Fiber Connector Type | | SC/APC | | |
| RF Impedance | | 50 | | Ω |
| RF Connector | | BNC | | |
| Power Consumption | 3 | | | W |
| Weight | 0.5 | | | kg |
| Operating Temperature | -20 | | 50 | °C |
| Storage Temperature | -45 | | 85 | °C |

Note: The specifications provided are for general applications with a cost-effective approach. If you need to narrow or expand the tolerance, coverage, limit, or qualifications, please [click this link](#):

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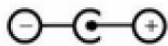
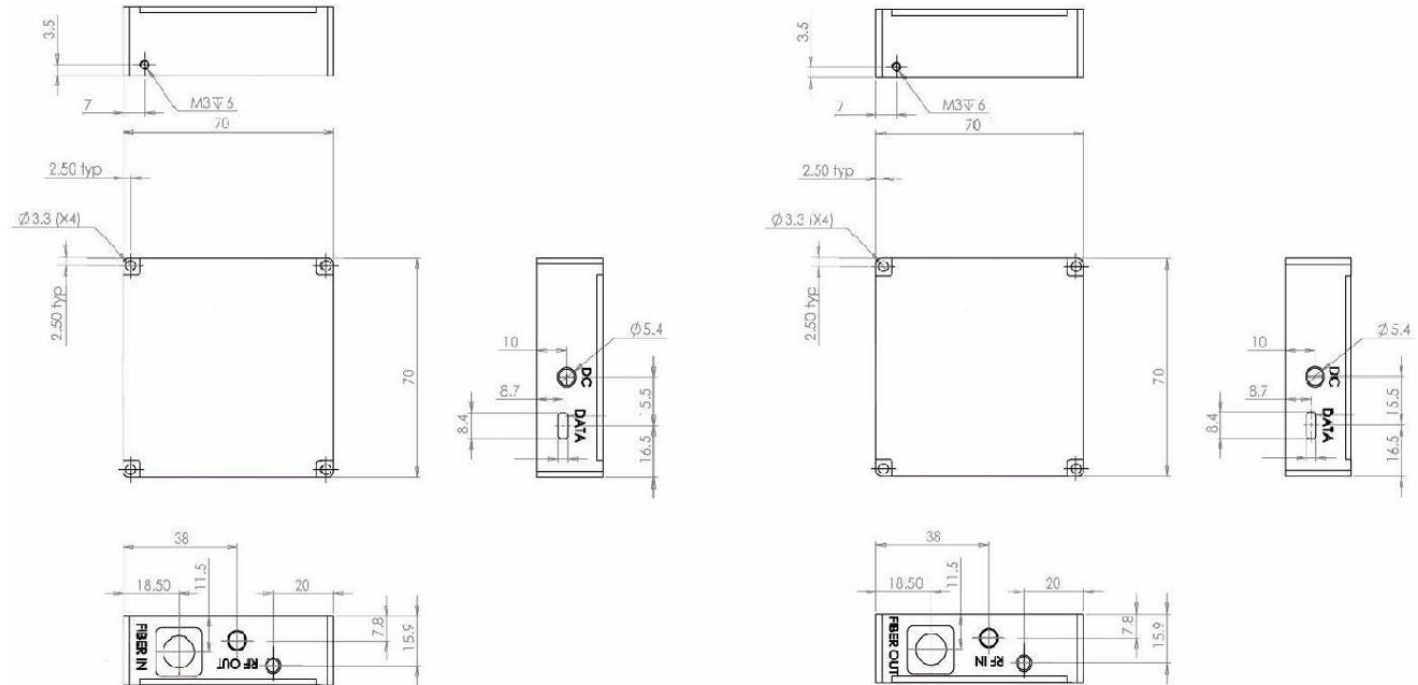
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Dimensions (Unit: mm)



Connector: Positive center plug OD: 3.5mm, ID: 1.3mm, L: 9mm

*Product dimensions may change without notice. This is sometimes required for non-standard specifications.

Electrical/Computer Connection

Ordering Information

| Prefix | RF Frequency | Wavelength | TX/RX | Package | Bidirectional * | Fiber Connector |
|--------------|-------------------------------------|--|---|---------------------------------------|------------------------------------|---|
| RFOF- | 20GHz = 20G Special = 000 | 1550 nm = 1 1560 nm = 2 Special = 0 | Receiver = 1 Transmitter = 2 Pair = 3 | Module = 1 Rack = 2 Special = 0 | None = 1 Yes = 2 Special = 0 | FC/APC = 2 FC/UPC = 3 SC/APC = 4 SC/UPC = 5 LC/APC = A LC/UPC = U Special = 0 |

Note:

* Bidirectional means two-way communications via a single fiber link. The price is double since it comprises two pairs of transceivers and receivers with WDM (different wavelength) or circulator (same wavelength) cable jumpers.

Red marked -- Special order

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Application Notes

Fiber Core Alignment

Note that the minimum attenuation for these devices depends on excellent core-to-core alignment when the connectors are mated. This is crucial for shorter wavelengths with smaller fiber core diameters that can increase the loss of many decibels above the specification if they are not perfectly aligned. Different vendors' connectors may not mate well with each other, especially for angled APC.

Fiber Cleanliness

Fibers with smaller core diameters (<5 μm) must be kept extremely clean, contamination at fiber-fiber interfaces, combined with the high optical power density, can lead to significant optical damage. This type of damage usually requires re-polishing or replacement of the connector.

Maximum Optical Input Power

Due to their small fiber core diameters for short wavelength and high photon energies, the damage thresholds for device is substantially reduced than the common 1550nm fiber. To avoid damage to the exposed fiber end faces and internal components, the optical input power should never exceed 20 mW for wavelengths shorter 650nm. We produce a special version to increase the handling by expanding the core side at the fiber ends.

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Typical Response

■ S11

■ S22

■ S21