

SIRU3007 .05-7 GHz Unamplified Fiber Optic Receiver

DATASHEET | JANUARY 2024

MICROWAVE



Applications

- Microwave Antenna Signal Distribution
- Broadband Delay-Line and Signal Processing Systems
- Frequency Distribution Systems
- Phased Array Antenna Systems, Interferometric Antenna Arrays

Features

- Integrated High Frequency Photodiode and Bias Circuitry in a Connectorized Package
- 50 MHz – 7 GHz Bandwidth
- 1310 nm and 1550 nm Operation
- High Optical Input Power Capability +12 dBm (15 mW)

The SIRU3007 (Small Integrated Receiver Unit) is an ideal receiver to use with Ortel's high-performance externally-modulated fiber optic transmitters. This high-performance optical receiver is designed for applications from 50 MHz to 7 GHz and features high optical input power of up to +12 dBm (15 mW). The SIRU3007 is a fully-integrated unit that contains both high-frequency PIN photodiode and the control electronics. Only DC input voltages and the optical signal are required for operation.

The broad bandwidth of the SIRU3000 units makes it ideal to construct transparent links for microwave antenna signal distribution, Electronic Warfare (EW) systems and Ku- and Ka-Band systems. Other applications include delay lines, signal processing, radar system calibration, phased array antennas and other systems where it is necessary to transport RF and microwave signals over long distances without signal degradation.

Performance Highlights

| Parameter | Min | Typical | Max | Units |
|---------------------|-----|---------|-----|-------|
| Frequency Range | .05 | - | 7 | GHz |
| Wavelength | - | 1550 | - | nm |
| Optical Input Power | - | - | +12 | dBm |
| Temperature Range | -40 | - | 70 | °C |

Absolute Maximum Ratings

Stresses in excess of the absolute maximum ratings can cause permanent damage to the device. These are absolute stress ratings only. Functional operation of the device is not implied at these or any other conditions in excess of those given in the operational sections of the data sheet. Exposure to absolute maximum ratings for extended periods can adversely affect device reliability.

| Parameter | Symbol | Min | Max | Units |
|---|------------------|-----|-----|-------|
| Operating Temperature (within specifications) | T _{OP} | 0 | 50 | °C |
| Operating Temperature (with degraded performance) | T _{OP} | -40 | 70 | °C |
| Storage Temperature | T _{STG} | -40 | 70 | °C |
| Receiver Optical Input Power (damage level threshold) | - | NA | +13 | dBm |

Optical Specifications

| Parameter | Condition | Min | Typical | Max | Unit |
|--------------------------|--------------|------|---------|------------|------|
| Wavelength | - | 1280 | - | 1580 | nm |
| Optical Power Input | - | - | - | +12 (15mW) | dBm |
| Responsivity (@1310 nm) | - | 0.7 | - | - | AW |
| Responsivity (@ 1550 nm) | - | 0.7 | - | - | AW |
| Connectors | FC/APC, AVIM | - | - | - | - |

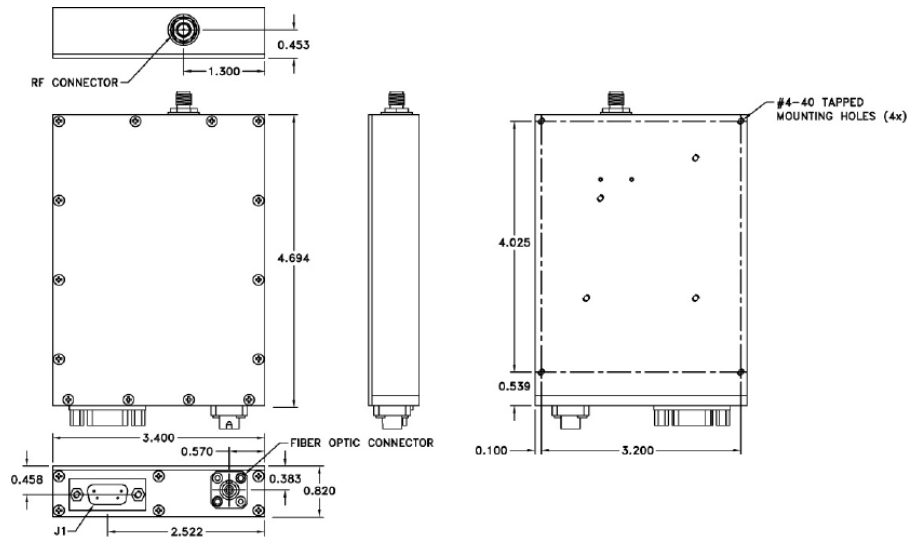
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RF Specifications

| Parameter | Condition | Min | Typ | Max | Unit |
|--|-----------|------|--------------|------------|------|
| Frequency Range | - | 0.05 | - | 7 | GHz |
| Electrical Power Requirements | - | - | - | +15 V @ 50 | mA |
| RF Response/Gain Variation (S21 w/Ortel SITU3122 TX) | | | | | |
| 0.05 - 1 GHz | - | - | - | < 5 | dB |
| 1 - 7 GHz | - | - | - | <10 | dB |
| Photodiode Monitor Output | - | - | 0.1 | - | V/mA |
| RF Connector | 2.92 mm | - | SMA (female) | - | - |
| RF Output Impedance | - | - | 50 | 0 | Ω |

Note: Units provide signal transport above and below rated RF bandwidth with some degradation in signal gain and return loss.

Package Outline Drawing



Physical Specifications

| Parameter | Condition | Min | Typ | Max | Unit |
|-------------------------------|------------------------------|-----|-------|-----|------|
| Configuration | Self Contained Housing | - | - | - | - |
| Dimensions | 0.8 H x 4.6 W x 3.4 D | - | - | - | in |
| | 20.32 H x 116.84 W x 86.36 D | - | - | - | mm |
| Operating/Storage Temperature | | -40 | - | +70 | °C |
| Weight | - | - | 10 | - | oz |
| | - | - | 283.5 | - | g |

D-Connector Pin Out

| Pin | Function |
|-----|--------------------|
| 1 | +15 V |
| 2 | n/c |
| 3 | n/c |
| 4 | GND |
| 5 | n/c |
| 6 | Photodiode Monitor |
| 7 | n/c |
| 8 | n/c |
| 9 | n/c |

DC Power Consumption

| Input Voltage | Max Current |
|---------------|-------------|
| +15 | 0.7 A |

Ordering Information

| Product Name | Description |
|------------------|--|
| SIRU3007-00-FA | 0.05 - 7 GHz Fiber Optic Receiver Module, FC/APC |
| SIRU3007-00-AVIM | 0.05 - 7 GHz Fiber Optic Receiver Module, AVIM |