# RXMM930-1 2.5 Gb/s Optical Receiver Module

Nanovation's RXMM930-1 2.5 Gb/s Optical Receiver Module features low power consumption, high sensitivity and a wide dynamic range. These modules are targeted toward long-haul SONET OC-48 and SDH STM-16 DWDM applications.


## Features

- 2.488 Gb/s data rate
- Clock recovery and data regeneration
- Meets ITU-T G.957 requirements and Bellcore TA-NWT-000253 standards
- Single ended AC-coupled data and clock output
- Single ended SMA coaxial optical signal output
- Input and output optical power monitoring
- High sensitivity
- Wide dynamic range
- Alarm for optical input power loss of signal (LOS)
- Analog monitor for optical input power
- Low power consumption

## Applications

- SONET OC-48 and SDH STM-16 DWDM applications

## Optical Characteristics (T=25°C)

(All values are valid with $2^{23}$-1 PRBS, BER=1x$10^{-11}$ and over temperature range, power supply range and lifetime unless otherwise stated.)

| Parameter | Specification | Unit |
|---|---|---|
| Application | I-16 | |
| Operating wavelength | 1100 - 1650 | nm |
| Sensitivity | -13 (min.) -11 (typ.) -7 (max.) | dBm |
| Minimum overload | +3 (min.) +5 (typ.) | dBm |
| LOS point* | | |
| Optical increase | -15 | dBm |
| Optical decrease | -16 | dBm |
| LOS alarm output level (TTL) | | |
| Alarm | +5 | V |
| Normal | 0 | V |

* Can be user specified

## Absolute Maximum Ratings

| Parameter | Symbol | Min. | Max. | Unit |
|---|---|---|---|---|
| Power supply voltage + | Vcc | | +5.8 | V |
| Power supply current | + Icc | | 5 | mA |
| Power supply voltage - | Vee | | -5.8 | V |
| Power supply current - | Iee | | 400 | mA |
| Power consumption | P | | 2 | W |
| Lifetime | LT | 20 | | year |
| Failure rate | FR | | 500 | nf/h |
| Operating Temperature Range | To | 0 | 70 | °C |
| Storage Temperature Range | Ts | -40 | 85 | °C |

## Electrical Specifications (T=25°C)

**1. RF Output interface**

| Parameter | Comment | Specification | Unit |
|---|---|---|---|
| Connector type | SMA | | |
| Interface type | AC coupled single ended | | |
| Nominal impedance | | 50 (typ.) | Ω |
| Rise and fall time | 20 – 80 % | 150 (max.) | ps |
| Eye opening | $t_d$ ± 100 ps | 440 (min.) 800 (max.) | $mV_{p-p}$ |
| Output voltage | | 800 (max.) | $mV_{p-p}$ |
| Clock duty cycle | | 50 ± 10 | % |
| Data-clock timing | $t_d - t_c$ (see figure below) | +70 | ps |

**2. Input optical power monitoring**

(Pin 9 is an analog voltage monitor corresponding to the optical input power. When the input power is decreased, the output voltage is decreased)

| Parameter | Condition | Specification | Unit |
|---|---|---|---|
| Output signal level | | 1.0 (min.) 4.3 (max.) | V |
| Monitor voltage | -8 dBm | 4.2 (min.) 4.3 (max.) | V |
| | -35 dBm | 1.0 (min.) 1.7 (max.) | V |

**3. Jitter tolerance**

| Parameter | Condition | Specification | Unit |
|---|---|---|---|
| Jitter tolerance | $f_{mod} \leq 100$ KHz (40°C) | 1.5 (min.) 5.0 (typ.) | UI |
| | 100 KHz $\leq f_{mod} \leq$ 1000 KHz (40°C) | 1.5 / $f_{mod}$ (min.) 15 / $f_{mod}$ (typ.) | UI |
| | $f_{mod} \geq$ 1000 KHz (40°C) | 0.15 (min.) 0.5 (typ.) | UI |

## Fiber Pigtail and Connector

| Parameter | Specification | Unit |
|---|---|---|
| Fiber type | MMF | |
| Fiber length | 1500 | mm |
| Cord diameter | 0.9 | mm |
| Fiber bending radius | ≥ 38 | mm |
| Connector type | FC/PC | |
| Connector insertion loss | < 0.3 | dB |
| Return loss | < -27 | dB |

## Pin Information

| Pin | Description |
|---|---|
| 1 | LOS alarm for input optical power |
| 2 | GND |
| 3 | NC |
| 4 | Vee (-5.2 V) |
| 5 | GND |
| 6 | Vcc (+5 V) |
| 7 | NC |
| 8 | GND |
| 9 | Input optical power monitor |

**To order or for additional information, please contact us at:**
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