



Radiy delivers a digital I&C platform that is robust, flexible, and scalable. It provides state-of-the-art functions, services, and safeguards for applications in industry.

The RadICom product line consists of a Logic Module, basic input/output modules, and specialty modules all housed in a chassis.

The Resistance Input Module (RIM) serves as a high-density resistance sensor acquisition module. It provides for 16 independent, highly reliable, and galvanically isolated inputs with built-in filtering and calibration to be used by the Logic Module. The RIM also performs robust and continuous self-diagnostics to ensure the safety and integrity of each input and module function.



## Resistance Input Module (RIM)

- High density 16 channel resistance inputs with built-in hardware redundancy and self-diagnostics for highly reliable operation, filtering, calibration, and random hardware failure detection.
- FPGA for analog input processing, self-Diagnostics and microcontroller for power control and fail-safe functional behavior as a watchdog.
- IEC 61508 SIL 2 certification in single and multiple channel configurations.
- Robust self-diagnostics ensure higher reliability and early fault detection with safety-focused fault management.
- Segregation of input processing, self-diagnostics, and watchdog functions assure safety-critical functionality.
- Galvanic isolation for signal inputs with robust and dedicated communication links to Logic Module for secure data transfer.
- Inherent on-board diversity features eliminate common cause failure vulnerabilities.
- FPGA technology ensures resilience to obsolescence.



## Resistance Input Module Technical Specifications

|   |  |
|---|--|
| <b>Input Signal Range</b>                 | 0 to 400 Ohm   |
| <b>Supported Sensor Types</b>             | <ol style="list-style-type: none"><li>2-, 3- and 4-wire connection schemes support.</li><li>Raw resistance (Ohms) measurement (to support any specific sensor type with external conversion into temperature performed in Logic Module).</li><li>5 pre-defined RTD sensor types support with adjustable R0 (up to 100 Ohms) and R -&gt; t conversion performed internally by module.</li></ol> <p><b>Supported RTD types:</b></p> <ul style="list-style-type: none"><li>- Platinum (<math>\alpha=0.00385</math> per °C) – corresponds to IEC 751</li><li>- Platinum (<math>\alpha=0.00391</math> per °C)</li><li>- Copper (<math>\alpha=0.00428</math> per °C)</li><li>- Copper (<math>\alpha=0.00426</math> per °C)</li><li>- Nickel (<math>\alpha=0.00617</math> per °C)</li></ul> |
| <b>Overall Accuracy</b>                   | 0.1% of full scale   |
| <b>Input Channel Isolation</b>            | all input channels are galvanic-isolated up to 250 V RMS AC or 250 VDC field-to-Chassis and channel-to-channel   |
| <b>Overvoltage Protection</b>             | $\pm 24$ VAC/VDC continuous  |
| <b>Information Package Exchange Cycle</b> | 5 milliseconds   |
| <b>Diagnostic Package Exchange Cycle</b>  | 5 milliseconds   |
| <b>LVDS Line Speed</b>                    | 100 megabit/second   |
| <b>LVDS Line Protocol</b>                 | proprietary protocol with integrity checking (CRC), galvanic-isolated Tx / Rx  |
| <b>Self-Diagnostic Functions</b>          | diverse watchdog unit, checksum analysis, active diagnostics with internal fault detection, hardware error detection, functionally diverse continuous self-diagnostic tests, power supply fault detection  |
| <b>Power Supply / Consumption</b>         | 2 independent inputs – 24 (18 – 36) VDC / 0.85 amp   |
| <b>Indications</b>                        | bicolour status LED indicator (STATUS)<br>OLED indicator for providing current operational mode, service information, and error codes  |
| <b>Operating Temperature</b>              | 4.4 to 60 °C (32 to 140 °F)  |
| <b>Operating Humidity</b>                 | 10 to 90% relative humidity, non-condensing  |

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