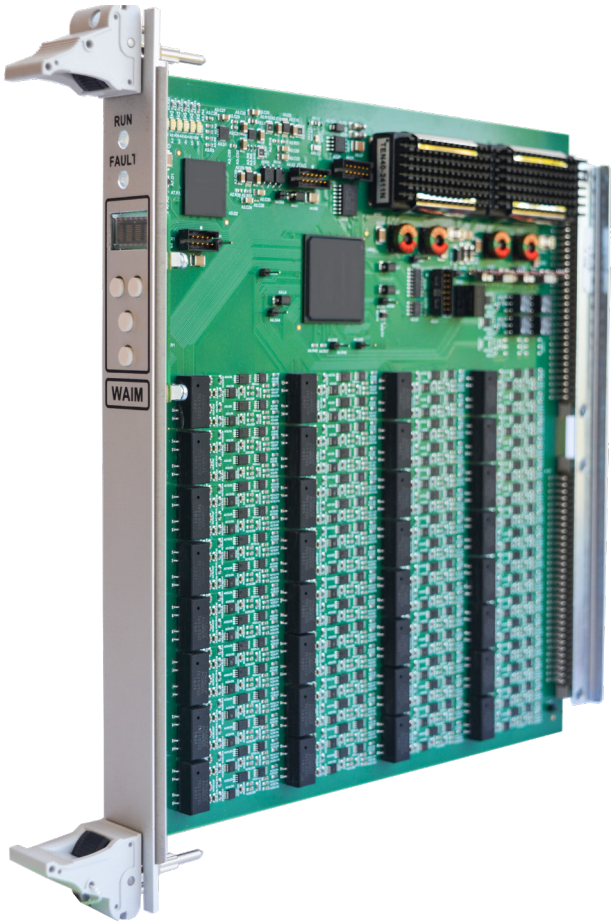


# Wide Range Analog Inputs Module (WAIM)

**Radiy delivers a digital I&C platform that is robust, flexible, and scalable. It provides state-of-the-art functions, services, and safeguards for both safety and non-safety applications in the nuclear industry. The RadICS product line consists of a Logic Module, basic input/output modules, and specialty modules all housed in a seismically qualified chassis.**

The Wide Range Analog Inputs Module (WAIM) will serve as a highdensity analog field sensor acquisition module. It will provide 32 independent, highly reliable, and galvanically isolated inputs with built-in filtering and calibration for use by the Logic Module. The WAIM will also perform robust and continuous self-diagnostics to ensure the safety and integrity of each input and module function.

- High density 32 channel analog inputs with built-in hardware redundancy and self-diagnostics for highly reliable operation, filtering, calibration, and random hardware failure detection.
- Independent FPGA for analog input processing, self-diagnostics, and fail-safe functional behavior.
- 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 I&C obsolescence.

*20 Years of Proven Innovation for the Global Nuclear Industry*

# Wide Range Analog Inputs Module
# Technical Specifications

| | |
|---|---|
| **Input Analog Signal Range** | ±10 V (+-11.5V over-range monitoring capability)<br>Differential input impedance: not less than<br>1 megaohms |
| **A/D Conversion Resolution** | 18 bits / 400 kilo samples per second (kSPS) |
| **Response Time** | 5 milliseconds |
| **Common Mode Rejection Ratio** | > 86 dB |
| **Overall Accuracy** | 0.04% of full scale (@ 25 °C) |
| **Input Channel Isolation** | all input channels are galvanic-isolated up to 250 $V_{RMS}$ AC or 250 VDC field-to-Chassis and channel-to-channel |
| **Overvoltage Protection** | ±60 VAC/VDC continuous (using external protection elements installed in Chassis) |
| **Information Package Exchange Cycle** | 5 milliseconds |
| **Diagnostic Package Exchange Cycle** | 5 milliseconds |
| **LVDS Line Speed** | 100 megabit/second |
| **LVDS Line Protocol** | proprietary protocol with integrity checking (CRC), galvanic-isolated Tx / Rx |
| **Self-Diagnostic Functions** | diverse watchdog unit, checksum analysis, active diagnostics with internal fault detection, hardware error detection, functionally diverse continuous self-diagnostic tests, power supply fault detection |
| **Power Supply / Consumption** | 2 independent inputs – 24 (18 – 36) VDC / 0.85 amp (± 0.15 amp) |
| **Indications** | 2 status LED indicators (RUN/FAULT)<br>4-character dot matrix symbol-indicator for providing current operational mode, service information, and error codes |
| **Operating Temperature** | 4.4 to 60 °C (40 to 140 °F) |
| **Operating Humidity** | 10 to 90% relative humidity, non-condensing |

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*For more than 20 years Radiy has provided advanced instrumentation and control (I&C) solutions for nuclear power plant modernization and new build projects in the global market. Radiy's main I&C product, the RadICS I&C Platform, was developed specifically for use in nuclear power plants. It is the only FPGA-based I&C platform with a SIL 3 certification in a single channel configuration. Radics, a wholly owned LLC, provides delivery services for the RadICS I&C Platform for international markets to meet local regulatory requirements. Radiy also offers industrial control systems, electrical equipment, and reverse engineering services.*

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