radiy

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 Discrete Outputs Module (DOM) serves as a high-density module providing for 32 independent, highly reliable, and optically isolated discrete outputs. The Logic Module uses the DOM to drive field devices, indicators, and other functions. The DOM also performs robust and continuous self-diagnostics to ensure the safety and integrity of each output and module function. In the event of critical failures, the DOM de-energizes to a safe-state.

Discrete Outputs Module
(DOM)

➤ High density 32 channel Form-A optically isolated, fuse and overvoltage protected discrete outputs.

➤ Independent FPGA for discrete output processing, self-diagnostics, and fail-safe functional behavior.

➤ IEC 61508 SIL 3 certification in single and multiple channel configurations.

➤ Robust self-diagnostics ensure higher reliability and early fault detection with safety-focused fault management.

➤ Segregation of output processing, self-diagnostics, and watchdog functions assures safety-critical functionality.

➤ Galvanic isolation for signal outputs 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.

20 Years of Proven Innovation for the Global Nuclear Industry

Discrete Outputs Module Technical Specifications

Output Channel Load Voltage / Current (maximum switching voltage / current)	up to 48 VDC, 0.2 amp, Form A contact
Output Channel Isolation	all output channels are galvanic-isolated up to 500 V_{RMS} AC or 707 VDC field- to-Chassis and channel-to-channel
Output Channel Isolation Method	optical relay
Output Overvoltage Protection	up to ±60 VDC/VAC 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
Fiber Optical Lines Speed	100 megabit/second
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 / 0.4 amp
Indications	2 status LED indicators (RUN/FAULT) 4-character dot matrix symbol-indicator for providing current operational mode, service information, and error codes
Operating Temperature	0 to 60 °C (32 to 140 °F)
Operating Humidity	5 to 90% relative humidity, non-condensing

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.