radICS

Radics 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 safety-related applications in the nuclear power industry. The RadICS product line consists of a Logic Module, basic input/output modules, and specialty modules all housed in a seismically qualified chassis (except a standalone RVDU, which is not installed in the platform chassis).

The Radics Video Display Unit (RVDU) serves as a standalone unit providing display screen generation for commercial displays in accordance with input data from several chassis.
The RVDU also provides functional data input in scope of system design using touchscreen, keyboard, mouse or trackball.

Radics Video Display Unit (RVDU)

- FPGA-based design without any operating system for all functions.
- 8 independent fiber optic communication ports for full duplex communications between RVDU and platform chassis.
- 2 independent fiber optic Ethernet ports for functional and diagnostic data transfer to independent remote PCs.
- Master/slave mode for redundant 2-channel system design.Functional data input using touchscreen display, keyboard, mouse or trackball.
- Functional data input using touchscreen display, keyboard, mouse or trackball.
- Dedicated dry-contact input for data input confirmation.
- 4 isolated dry-contact inputs for common use.
- Dedicated dry-contact output for error alarm.
- 5 isolated dry-contact outputs for common use.
- Videoframe forming process does not influence on safety functions
- Robust self-diagnostics provides early fault detection for safety-focused fault management.
- Segregation of communications processing, self-diagnostics, watchdog functions and video frame forming assure safety-critical functionality.
- 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

Radics Video Display Unit Technical Specifications

Fiber Optical Lines	8x100 Mb/s Optical full duplex
Fiber Optical Line Protocol	Proprietary protocol with integrity checking (CRC), galvanic isolated Tx / Rx
Information Package Exchange Cycle	5 milliseconds
Ethernet Fiber Optical Lines	2x100 BASE-FX IP/UDP
Diagnostic Data Refresh Rate	5 milliseconds
Master/Slave Dry-contact Input	24VDC 7mA wetting current
Soft Control Dry-contact Input	24VDC 7mA wetting current
Common Use Dry-contact Inputs	4x24VDC 7mA wetting current
Error Alarm Dry-contact Output Load	48 VDC 0.2A
Common Use Dry-contact Outputs Load	5x48 VDC 0.2A
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
Keyboard, mouse or trackball interface	PS/2
Touchscreen interface	RS-485
Monitor Resolution Support	1280x720 px
Monitor interface Support	HDMI, DisplayPort. Videoframes update time- 250 ms
Power Supply / Consumption	2 independent inputs- 24 (18 - 36) VDC / Maximum consumption: 0.92A(±0.15A)
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	4.4 to 60 °C (40 to 140 °F)

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RadICS Platform is the only FPGA-based I&C platform with a SIL 3 certification in a single channel configuration. The Platform is reviewed and approved by U.S. NRC. Radics LLC provides engineering, testing and commercial grade dedication services for nuclear power clients on international markets to meet local nuclear regulatory requirements and ensure safety and reliability at nuclear power generation sites.

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