R501 Most Versatile, Multi Channel and Rugged Fiber Optic Temperature Monitor

- Fully flexible rack mount and distributed architecture support
- Scalable and field upgradable from 02 channels to 256 channels with plug and play modules
- Expandable to add different analog and (or) digital inputs and outputs
- Best in class EMI, ESD Immunity; range of communication options and protocol support
- Range of communication options for third party system integration

Rugged design, and extensive multichannel fiber optic temperature monitor with flexibility to integrate other input and output parameters.
Support for centralized and distributed installation make it most viable option for variety of applications.

Product Summary

Increasing automation and centralization in all industries has created a need for having a flexible and expandable monitoring system that can collect data from large number of different sensors and provide a single visualization and control platform.

The Rugged Monitoring R501 is designed with built-in flexibility and upgradability to accommodate for the changing needs of customers.

The R501 solution provides real time monitoring of fiber optic temperature and many other parameters such as, Pressure, AC Current, AC Voltage, DC Current, DC Voltage, Binary Inputs etc.

It can be used in a wide range of applications including Aviation, Automotive, Cryogenic, Battery Bank/Racks, Medical, Semiconductors, Utilities, and R&D. It's wide measuring range (-271 °C to +300 °C), high precision and complete immunity to RFI, EMI, microwave radiation, and High Voltages make it an obvious choice for temperature measurement in extreme conditions.

R501 Main Chassis

| CPU Module | FO Module | Analog Input | Analog Output | Relay Output |

R501 Modules

WIDE RANGE OF INPUT / OUTPUT MODULES DESIGNED TO CATER FOR VARIETY OF APPLICATION ACROSS ALL INDUSTRIES

Range of Fiber Optic Temperature Module

The R501 system accepts different kinds of FO modules into the same chassis making it suitable for varying application / testing needs. Range of FO modules are available to fit into the R501 chassis:
- Varying number of channels: 08, 06, 04 and 02 channels
- GaAs FO Temperature Sensor Modules with standard resoluton
- GaAs FO Temperature Sensor Modules with high precision
- Built-In LED indicators for Power, Communication, and all FO Channel status
- Dinrail mount option for distributed architecture
- CANBUS and MODBUS support for distributed data logging

8-Channels   **6-Channels**   **4-Channels**   **2-Channels**

Analog Input Module

Analog Input Modules

The R501 system allows using different types of Analog Input modules for monitoring/measuring other parameters of test objects such as, Pressure, Vibrations, Currents, Voltages etc.
- 08 x Analog input channels per module
- Support for all major analog inputs sensor type
- Built-In LED indicators for Power, Communication, and all Channel status
- Easy to set up on the filed including calibration and configuration
- Dinrail mount option for distributed architecture
- CANBUS and MODBUS support for distributed data logging

Digital Input Module

The R501 system allows Digital Input modules for monitoring/measuring Status signals and relay alarms (Dry Contact) from third party sensors/devices.
- 08 x Digital input channels per module
- Signal input volatge up to 250Vdc (Threshold >60Vdc)
- Built-In LED indicators for Power, Communication, and Status
- Easy to set up on the filed including calibration and configuration
- Dinrail mount option for distributed architecture
- CANBUS and MODBUS support for distributed data logging

Digital Input Modules

Analog Output Module

Analog Output Modules

The R501 system allows Analog Output module for applications that require monitoring / analyzed data to send to third party systems e.g. IED, RTU, Control System etc.
- 08 x Analog outputs per Module
- DC Current Loop: 4-20mA
- Built-In LED indicators for Power, Communication, and Status
- User customizable and configured
- Available in Rack mount and Distirbuted installation (Dinrail mount) options

Relay Output Module

The R501 system allows Relay Output module for applications that require relay alarm or control signal to send to third party systems e.g. IED, RTU, Control System etc.
- 08 x Form C relays per module
- Dry contact relays (NO-C-NC)
- Built-In LED indicators for Power, Communication, and all Channel status
- User customizable and configurable for different alarm conditions
- Available in Rack mount and Distirbuted installation (Dinrail mount) options

Relay Output Modules

RUGGED CONNECT & WEB BROWSER BASED SOFTWARE

Key Features

The intuitive user interface of the software is designed to give quick access to the most relevant information with highest level of data security. The key features of rugged connect software are:

- Flexibility to compare and plot multiple parameters from modules for corelative analysis (or comparison) such as Temperature, Pressure, Vibration, Current etc.
- Real time data visualization and user configurable alarming
- Monitoring of Signal strength for Fiber Optic signals for easy troubleshooting
- Easily customizable dashboards to meet different application requirements
- Flexibility to adjust data storage frequency and with user selectable summary feature (Minimum, Maximum and Average)
- Historic trending for user selectable duration
- Export of data into CSV, Excel, and JPEG format
- Flexibility to Enable / Disable Channels remotely using rugged connect software
- Support for multiple languages

Integration with third party systems

Rugged connect provides easy to configure protocols for integration with third party data logger and systems. It supports the following protocols for data input and output:

- Serial Protocols: CANBUS, Profinet, Modbus, DNP3.0, IEC 60870-5-101
- Ethernet (TCP/IP) Protocols: Modbus, DNP3.0, IEC 60870-5-104, IEC61850

Distributed Modules have CANBUS / MODBUS data output for high resolution data logging such as CAN Dataloggers.

Third Party Drivers Available

Drivers for the following computing environment and programming languages are provided by the software. These drivers enable customers to use the measured / monitored temperature data directly into their existing computing environment.

LABVIEW   MATLAB   PYTHON

TECHNICAL SPECIFICATIONS

POWER SUPPLY	Input Power Requirement	24V DC (Default), Optional USB powered
CPU MODULE	Data Storage Capacity	MicroSD external memory slot (up to 2 TB)
	Logging Rate	1 sec interval on USB
	Config port	USB (to use with Rugged connect windows software)
SYSTEM CAPACITY	Maximum number of Channels	Expandable to 256 Channels, Daisy chain up to 32 units (with Modbus, Canbus)
FIBER OPTIC MODULES	# of Channels	2, 4, 6 and 8 channels
	Measurement Range	-80 °C to +300 °C (cryogenic 4 °K range optional)
	Resolution	0.1 °C
	Accuracy	±1.0 °C (±0.2 °C in relative temperature)
	Scan Rate	200 ms / channel (Optional: Faster scanning rates available)
ANALOG INPUT MODULE	# of Input Channels	Up to 08 Channels
	AC Current Input	Clamp-on CT with different ranges: 5Amp, 10Amp, 20Amp, 100Amp and others available
	AC Voltage Input	0 - 125 VAC and 0 - 340 VAC; 50/60 Hz
	DC Current Input	4 - 20 mA
	DC Voltage Input	0 - 125 mV and 0 - 25 VDC
	Temperature Input	100 ohm platinum (Pt100)
	Potentiometer	up to 20,000 ohms
DIGITAL INPUT MODULE	# of Input Channels	08 Channels
	Maximum voltage	250 Vdc
	Threshold voltage	>75 Vdc
ANALOG OUTPUT MODULE	# of Input Channels	08 Channels
	Output format	4-20 mA or 0-5V or 0-10V Configurable for any measured / calculated value
OUTPUT RELAY MODULE	# of Output Channels	8 Form C relays
COMMUNICATION OPTIONS	Ethernet Ports (RJ-45 & FO Ethernet)	Modbus, DNP3.0, IEC 60870-5-104, IEC61850
	Serail Port	RS485 with Modbus support
	CANBUS Port	CANBUS Master/Slave support for Can Dataloggers
MECHANICAL AND ENVIRONMENTAL	Operating Temperature	-40 to 72 °C
	Operating Humidity	95% Non Condensing
	Storage Temperature	-40 to 85 °C

Rugged Monitoring Services

Rugged Monitoring provides customization of sensors, monitors & software. In addition we offer on-site commissioning services, maintenance contracts and technical support to all customers worldwide.

About Rugged Monitoring

Industry leading team of fiber optic experts with 100+ years of combined experience committed to delivering customizable solutions for challenging applications. We offer a range of reliable, high performance, customizable sensors and monitoring solutions that are immune to external influence.

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