



T501 Gen 2

ADVANCED MONITORING SYSTEM

T501 GEN 2 Advanced Monitoring System



Modern electrical asset monitoring requires flexible data acquisition from different field signals, devices, and systems. The T501 Gen 2 is designed to simplify this integration by combining configurable inputs, relay outputs, communication interfaces, and edge-level data handling within a compact state of the art monitoring platform.

The T501 Gen 2 is a compact, multi-asset monitoring platform engineered to bring greater flexibility to electrical asset condition monitoring. Designed around a highly adaptable I/O architecture, it enables utilities, OEMs, and industrial operators to acquire and consolidate diverse field sensors within a single edge device, simplifying monitoring architectures while providing the flexibility required for both new and retrofit applications.

Its advanced I/O capability supports a broad range of sensors, including RTDs, thermocouples, current transformers, current loops, potentiometers, digital contacts, and other field instrumentation. Beyond signal acquisition, T501 Gen 2 can process measured data into user-defined computed values, enabling asset-specific calculations, alarm logic, control functions, and derived condition parameters directly at the edge.

T501 Gen 2 also acts as an integration point for the wider monitoring ecosystem. Multi-protocol communications enable connection with third-party IEDs and existing SCADA or substation automation infrastructure, with support for Master and Slave communication functions where applicable. Dedicated RM Link interfaces extend the platform to compatible Rugged Monitoring devices, allowing additional condition monitoring technologies to be incorporated within the same architecture.

By combining flexible I/O, edge processing, computed values, control capabilities, and system interoperability in one compact platform, T501 Gen 2 provides a scalable foundation for transforming diverse field data into structured, actionable asset information.

» Features

- Fully configurable analog and digital I/O, matched to the application, not fixed by the hardware
- Onboard computed values engine for real-time calculated parameters from any input
- RTD, 4 to 20 mA current, clamp-on current sensor, potentiometer, and contact input support
- Analog output options: 4 to 20 mA, 0 to 5 V, 0 to 10 V
- Ethernet, RS-485, USB, and RM Link connectivity for direct unit-to-unit data sharing
- Modbus, DNP3.0, IEC 60870-5-104, IEC 61850, and IEC 60870-5-101, with master and slave operation
- Compact, rugged design built for demanding field environments
- Relay outputs for alarms and control

» Benefits

- One flexible platform for multiple signal types
- Simplifies field data acquisition
- Reduces the need for separate standalone devices
- Enables retrofit-friendly monitoring upgrades
- Supports alarm, control, and reporting workflows
- Integrates with SCADA and enterprise platforms
- Scales through RM link connectivity
- Improves visibility into asset operating conditions

» Applications



Transformers (Oil Filled/ Dry-Type)



Power Cables (EHV/ HV/ MV)



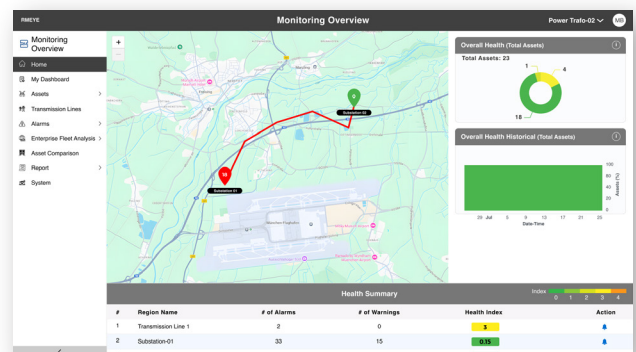
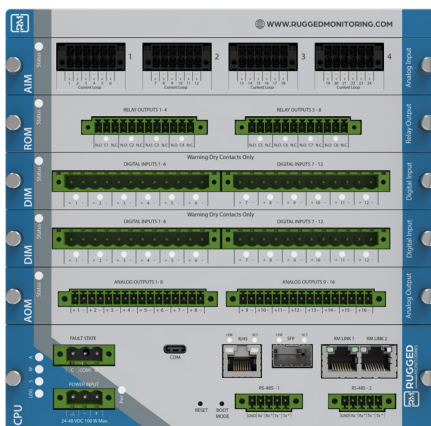
Switchgear (AIS/ GIS/ MV Panel)



Retrofit Monitoring



Rotating Machines (Motors/ Generators)



Enterprise APM Suite - RM EYE

» Key Capabilities

Asset Condition Trending

Transforms continuous and historical monitoring data into meaningful trends, making gradual changes in temperature, electrical parameters, auxiliary systems, and other monitored conditions easier to identify.

Continuous Aging Assessment

Estimates insulation aging based on transformer operating temperature and moisture-in-oil to highlight periods of accelerated degradation and help operators understand the long-term impact of thermal stress on asset health.

Event & Anomaly Analysis

Provides historical context around abnormal operating conditions and external events, helping engineering teams investigate changes that may result from operational events, maintenance activities, abnormal loading, or external electrical disturbances.

Real-Time Alarms & Notifications

Measured and computed values can be evaluated against defined operating criteria, enabling teams to identify and communicate developing conditions before they escalate into asset-level problems.

Lifetime Visibility

Tracks cumulative aging trends to better understand long-term asset health.

Data-Driven Maintenance

Combines trends, alarms, events, and condition information to support maintenance decisions based on observed asset behavior rather than fixed inspection intervals alone.

Fleet-Level Insights

Centralizes condition information from multiple monitored assets and sites, giving engineering, maintenance, and asset-management teams a consistent view of asset performance and emerging risk.

Computed Values

Turn measured data into actionable insights using user-defined mathematical formulas. Create customized parameters that simplify analysis, improve monitoring, and enable smarter management of electrical assets.

» Technical Specifications

POWER SUPPLY	Input Power Requirement	24 - 48 VDC
	Power Consumption	100 W Maximum
CPU MODULE	Data Storage Capacity	12 GB on internal flash memory
	Logging Rate	1 sec to 60 minutes ¹
	Config port	Ethernet and USB ² with RM Connect software
ANALOG INPUT MODULE	# of Input Channels	4 bays per module. Number of channels per bay depends on the input type: Current Transformer (CT): 6 channels per bay Current Loop (CL): 6 channels per bay Potentiometer: 6 channels per bay RTD Temperature ³ : 1 channels per bay Thermocouple: 6 channels per bay
	AC Current Input	CT: 0–333 mV; Rugged Monitoring clamp-on current sensor with ranges of 5 A, 10 A, 20 A, 100 A, and others available
	DC Current Input	0–1 mA, 0–20 mA, 4–20 mA
	Temperature Input	100 Ω platinum (Pt100), 10 Ω copper (Cu10)
	Potentiometer	up to 20,000 Ω
	Thermocouple	Type K (NiCr-NiAl)
DIGITAL INPUT MODULE	# of Input Channels	6 or 12 Channels
	Dry Contact	Resistance between the contact < 100 Ω
	Powered Contact	75 - 250 VDC
ANALOG OUTPUT MODULE	# of Input Channels	8 or 16 Channels
	Output format	0-20mA or 4-40mA or 0-5V or 0-10V
RELAY OUTPUT MODULE	# of Output Channels	4 or 8 × 250 VAC and 30 VDC 5 A Form C relays
BUSHING MONITORING MODULE	# of Input	3 BSENS Leakage Current Sensors 3 AC Voltage Inputs 1 Thermocouple
POWER MONITORING MODULE	# of Input	4 AC Current with RM Current Sensors 3 AC Voltage Up to 240 VAC
COMMUNICATION OPTIONS	Ethernet Ports (RJ45 & SFP modules)	Modbus, DNP3.0, IEC 60870-5-104, IEC 61850
	Serial Port (2 or 4 wires X RS485)	Modbus, DNP3.0, IEC 60870-5-101
	USB	USB Type-C for configuration and data access
	2 x RM link	For compatible RM unit link support only
EMC COMPLIANCE	Conducted & Radiated Emissions	ICES-003 (2016), CISPR32 (2015), CISPR11 (2015)
	ESD and Radiated RF Immunity	IEC61000-4-2, C37.90-3, IEC61000-4-3, C37.90.2
	Fast Transient & Surge Immunity	IEC 61000-4-4, IEC 61000-4-5, C 37.90.2
	Magnetic Field Immunity	IEC 61000-4-8, IEC 61000-4-10
	Immunity from Conducted Disturbances	IEC 61000-4-6, IEC 61000-4-16
	Ripple, Dips & Damped Oscillatory	IEC 61000-4-17, IEC 61000-4-18, IEC 61000-4-29
	Safety	IEC60255-26 and CE Marked

ENVIRONMENTAL AND MECHANICAL

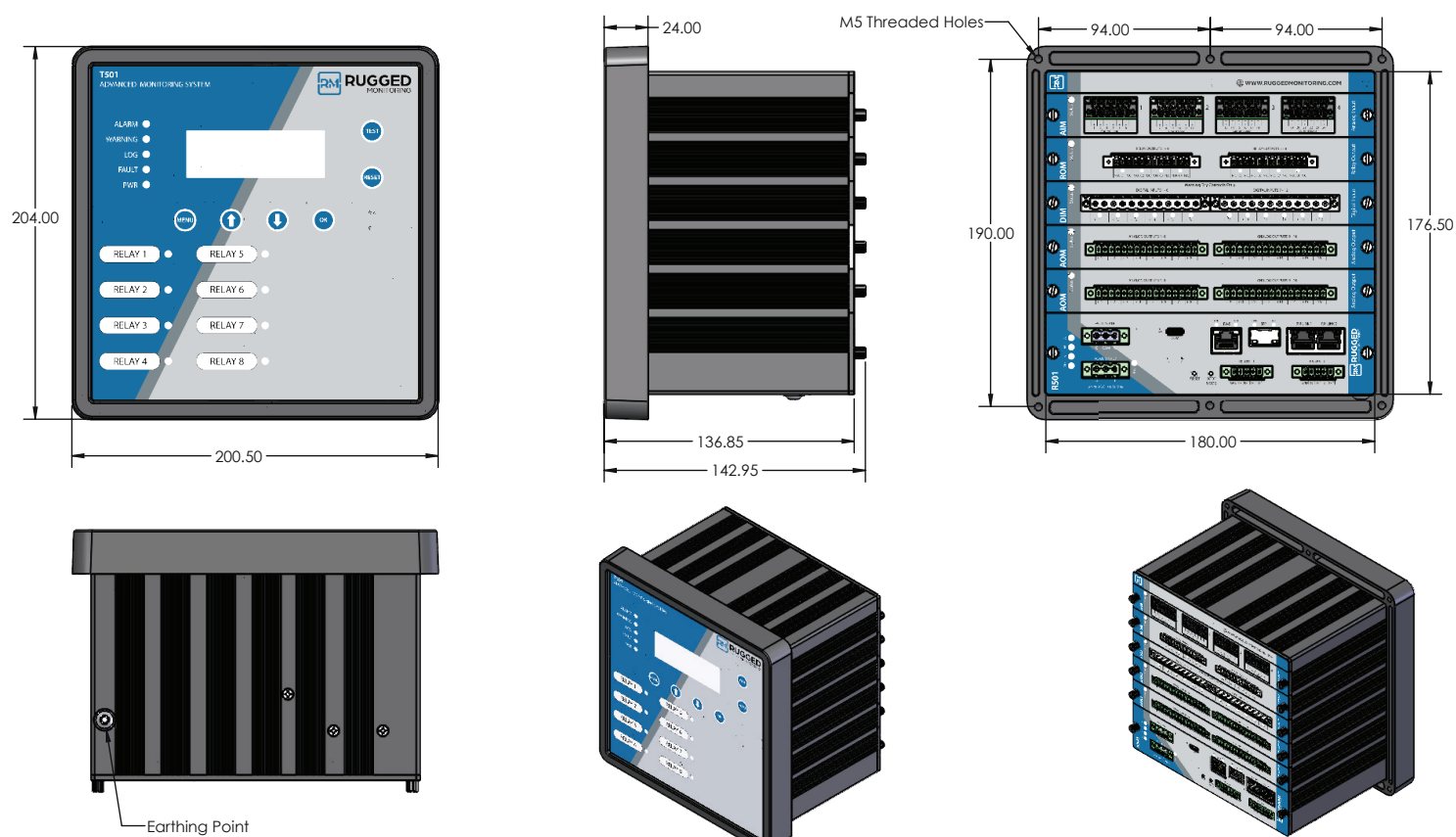
Operating Temperature	-40 °C to 72 °C
Operating Humidity	95% Non Condensing
Storage Temperature	-40 °C to 85 °C
Dimensions	200.50 x 204 x 142.95 mm
Weight	3,4 Kg

¹ Data is stored internally; USB is used for access/configuration and should not be described as the direct logging medium unless Engineering confirms otherwise.

² For configuration and data access via RM Connect; direct logging to USB is not supported

³ Upcoming feature

» Product Drawing



All measurements are in mm

» Ordering Code

Contact our Sales Team: info@ruggedmonitoring.com

CERTIFICATIONS



875 Bd. Charest O, Quebec, QC, Canada G1N 2C9

Asia Pacific | China | India | Middle East & Africa | Europe | North America | Latin America

+1-418-767-0111

info@ruggedmonitoring.com

www.ruggedmonitoring.com