



PT. GUNA ERA MANUFAKTURA

PRODUCT BROCHURE

SWITCHGEAR THERMAL MONITORING

Precision sensing for safer switchgear operation



$\pm 1.0^{\circ}\text{C}$

Measurement
Accuracy

3..9 Channel

Temperature
Channels

80KV

High Voltage
Insulation

Modbus RTU

Communication
Protocol



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In industrial measurement, fluorescent fiber optic temperature measurement system is like a precision guardian clad in armor. Whether wall-mounted or cabinet-installed, it operates reliably in high-voltage electric fields and strong electromagnetic interference, with its corrosion-resistant shell forming a robust barrier for extreme working conditions. The system employs a self-developed fluorescent fiber optic temperature sensor with independent intellectual property rights. It eliminates traditional electrical connections between temperature hotspots and signal reception, ensuring long-term high-precision and high-stability performance. Additionally, the remote monitoring module overcomes spatial limitations, and with its compact modular internal structure, it achieves intuitive maintenance through self-diagnosis functionality. This palm-sized industrial-grade product is a perfect blend of performance and aesthetics.

1.1 Basical Technical

Parameter

- Ambient temperature: $-20^{\circ}\text{C}\sim 65^{\circ}\text{C}$
- Environmental Humidity: $<95\%$ (at 25°C)
- Operating Voltage: AC220V ($\pm 10\%$), 50Hz/60Hz ($\pm 2\text{Hz}$)
- Temperature Measurement Range: $-40\sim 150^{\circ}\text{C}$
- Resolution: 0.1°C
- Measurement Accuracy: $\pm 1.0^{\circ}\text{C}$
- Temperature Measurement Channels: 3..9 channel
- Contact Capacity: 5A/250VAC
- Probe Diameter: $\leq 3.0\text{mm}$
- Power Consumption: $\leq 15\text{W}$

1.2 Standard

Testing Standards Passed :

IEC 61000-4:2005 International Standard

1.3 Key Features

- The fiber-optic end probe is attached to the surface of the measured object for temperature measurement.
- The temperature-measuring fiber is immune to electromagnetic interference.
- It provides high-voltage insulation, and is flame-resistant and explosion-proof (withstanding 80KV over a 20cm length).
- It supports single-point temperature measurement and outputs digital signals.
- The transmitter features a compact design and easy installation.

2.1 Indicator Light

When the device is operating, the operation indicator light remains steadily on; when RS485 communication is normal, the signal indicator light blinks.

Status Indicator Light	Operating Light - Red	Green Signal Light
Operation	Steady on	Blink

2.2 Terminal Block

Terminal Symbol	Functional Definition	Instruction
Grounding/N/L	Operational power supply input	AC220V
Alarm I	Over-temperature Alarm I Output Contac	passive normally open contact
Alarm II	Over-high Temperature Alarm II Output Contact	passive normally open contact
GND/A+/B-	RS485 communication	Factory default settings: Address - 1 / No parity / Baud rate - 9600

The product adopts the standard MODBUS-RTU communication protocol and allows the communication address to be set via DIP switches.

RS485 Communication Protocol (MODBUS-RTU)

The system supports the standard MODBUS-RTU communication protocol via RS485, providing reliable data transmission for temperature monitoring applications. Each monitoring device can be assigned a unique communication address using the built-in DIP switches, allowing multiple devices to operate within the same RS485 network.

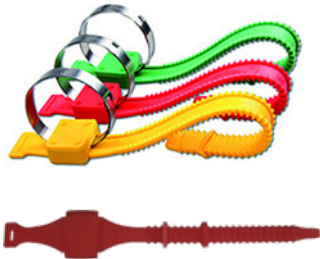
The communication interface is designed for easy integration with external monitoring and control systems. Factory default communication settings are Address 1, No Parity, and Baud Rate 9600, which can be adjusted according to the system configuration requirements.

Designed for continuous temperature monitoring in MV/LV switchgear to detect abnormal heating at critical connection points.

4.1 Sensor Types

Wireless Sensor

For flexible installation and distributed monitoring



Fiber Optic Sensor Probe

For high-voltage, EMI-immune temperature monitoring

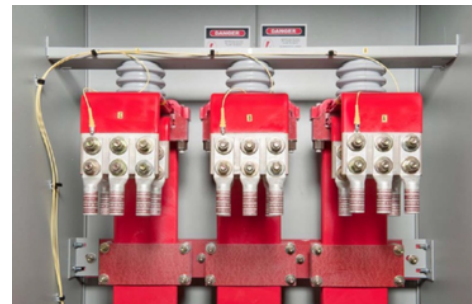
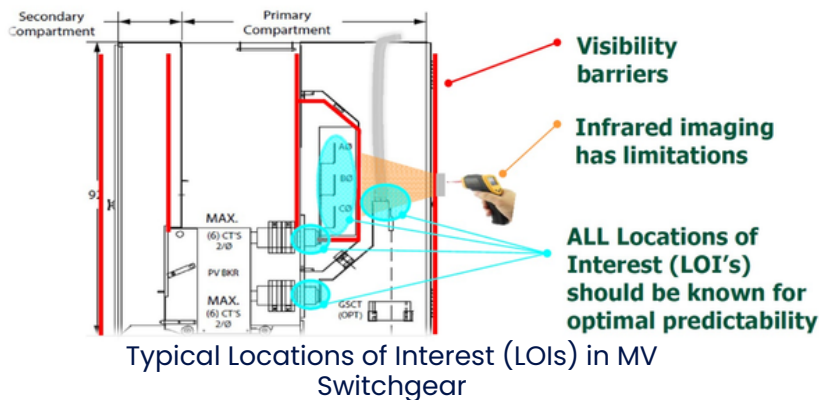


Fiber Optic Sensor for Bolt-Mounted

For direct monitoring of bolted electrical joints

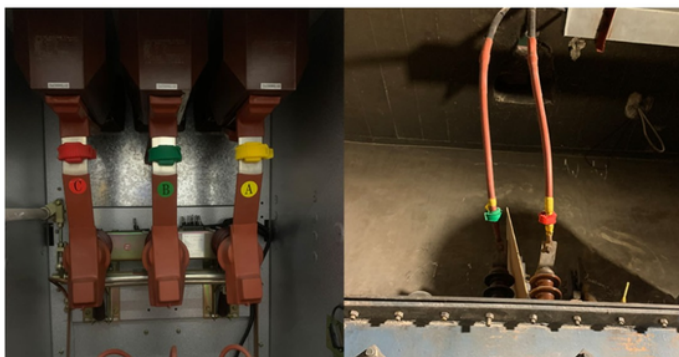


4.2 Installation Locations



Example of direct fiber-optic sensor installation on three-phase switchgear connection points

Optic Temperature sensors are installed directly at critical Locations of Interest (LOIs) inside the switchgear, particularly at electrical connection points where abnormal heating may occur. The sensor probe is positioned in direct contact with the monitored surface to provide continuous temperature measurement, including areas that may be difficult to inspect visually or with infrared equipment.



Example of wireless sensor installation



Receiver of sensor

Wireless temperature monitoring system uses wireless radio waves for signal transmission. The sensor is installed on high-voltage equipment and there is no electrical connection between it and the receiving equipment. Therefore, the system fundamentally solves the problem of difficult real-time online monitoring of the operating temperature of high-voltage equipment contacts.

4.3 Real-Time Monitoring & SCADA Integration



Supported by an intuitive HMI/LCD interface for on-site Monitoring. Furthermore, the system is fully equipped with advanced network connectivity, enabling operators and technicians to monitor real-time directly via local computer networks (LAN) or remotely from anywhere in the world using Cloud SCADA integration.

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Simple fault handling

Quick reference for diagnosis and corrective action

Fault phenomenon	Analysis of causes	Processing method
The power indicator does not light up or flashes after power-on.	1.The power cord is not properly connected or the voltage is abnormal. 2.Instrument damage	1.Check the input power supply 2.Contact the manufacturer
The transmitter temperature is abnormal.	1.Poor optical fiber contact 2.The fiber is not inserted. 3.Optical fiber damage	1.Lock fiber optic connector 2.Plug in fiber 3.Replace the optical fiber
No communication	1.“A+”“B-”wiring error 2.Communication chip damaged (external high-voltage power input)	1.Correct wiring 2.Check the external power source and disconnect it. Contact the manufacturer.
The temperature deviations in each phase are significant.	1.The depth of the fixed fiber is different. 2.Fiber optic fault 3.The environment itself has temperature differences.	1.Adjust optical fiber position 2.Replace the faulty fiber optic cable 3.Normal

GAE | SWITCHGEAR THERMAL MONITORING

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EMI IMMUNE

Fluorescent fiber-optic sensing

HIGH ACCURACY

Measurement Accuracy: ± 1.0 ° C



INDUSTRIAL LINK

MODBUS-RTU / RS485