

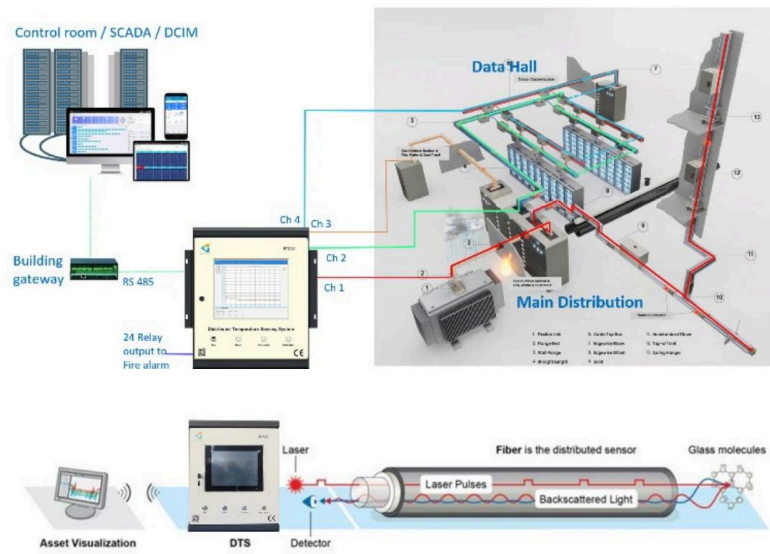
PTSQL1 Distributed Temperature Sensing (DTS) System

Product Overview

The PTSenR™ PSQL1 is a cutting-edge Distributed Temperature Sensing (DTS) system engineered for comprehensive, real-time thermal monitoring across extended infrastructure. Utilizing the principles of spontaneous Raman scattering and Optical Time Domain Reflectometry (OTDR), the system detects and localizes temperature variations along a temperature-sensing optical fiber with high precision. When a laser pulse is transmitted through the fiber, it generates backward Raman scattered light whose intensity is influenced by the temperature at each point along the fiber. This scattered light is then filtered, converted, amplified, and digitized to extract accurate temperature data, which is processed in real time and spatially located based on the speed of light and echo timing. The PSQL1 supports both contact and ambient space temperature measurement and allows users to configure alarm thresholds based on the specific measurement range of the optical fiber. With a loading length of up to 20 kilometers and 16 passive relay outputs (250VAC/3A), it provides robust alarm signaling capabilities.

The system comprises a DTS host unit, temperature-sensing optical fiber, and integrated host software, and is designed to seamlessly connect with intelligent AI management platforms. Ideal for applications such as switchboards, busducts, power cables, and fire detection, the PSQL1 offers a reliable and scalable solution for distributed thermal surveillance in critical environments.

System Architecture



Applications

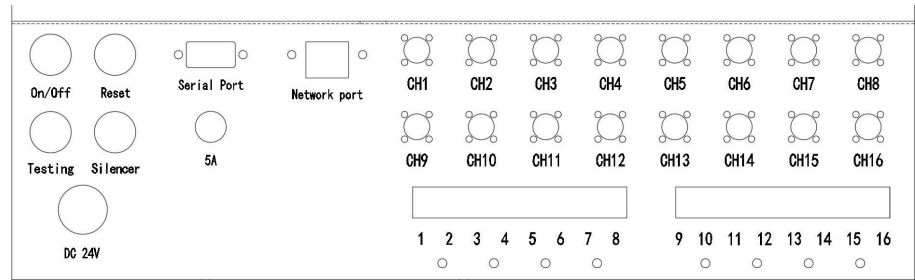
Power Plant

Oil Tanks

Tunnel Safety

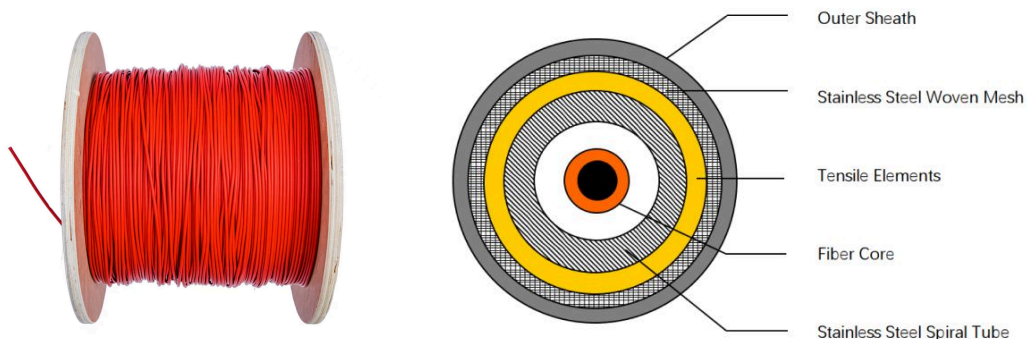


Characteristics



Door Panel	
Running Indicator	A green light remains steadily on when the equipment is functioning normally.
Fault Indicator	A yellow light stays on continuously if a device or optical fiber experiences a failure.
Fire Alarm Indicator	A red light is constantly illuminated when a high temperature alarm is triggered.
Fault Alarm	The buzzer sounds intermittently to signal a fault.
Fire Alarm	The buzzer sounds continuously to indicate a fire condition.
Display	Touch Screen: Equipped with a 10.4-inch touch screen for user interaction.
Internal In & Out Interface Board	
ON/OFF	Press this button to start the device after it is powered on.
Reset	Restarts the device.
Self Test	Initiates a self-diagnostic to check the device's operating status.
Silencer	Mutes the alarm sound when triggered.
DC 24V	Power input interface using a three-hole aviation plug.
Serial Port (RS485)	Used for device data forwarding or networking.
5A Overcurrent Protection	Limits current to $\leq 5A$ to safeguard the equipment.
CH1 ~ CH16	Device channel interfaces, typically using 4 channels.
Relay Interfaces (1 ~ 16)	Provides 16 relay outputs for external control.

Characteristics for Optical Fiber Cable



The optical fiber cable features a robust and responsive design, incorporating a 62.5/125 μ m multimode optical fiber at its core. This inner core is reinforced with a stainless steel spiral tube, a Kevlar tensile sleeve, and a stainless steel braided mesh, providing exceptional mechanical strength and durability. Encasing this structure is an outer sheath made of flame-retardant, low smoke zero halogen, which enhances fire resistance while minimizing toxic emissions.

Together, these components ensure the cable delivers rapid temperature response, superior tensile and compressive strength, and reliable performance in high-temperature and fire-prone environments

Specifications

PTSGL1	
Power Supply Input Voltage	DC 24 V, 50 W
Number of Channels	4
Single Channel Max. Measurement Distance	5 km
Max. Total Measurement Distance	20 km
Operating Temperature Range	-40°C ~ 120°C (Depends on FO cable)
Temperature Accuracy	±1.0°C
Temperature Resolution	±0.1°C
Collection Frequency	Single Channel 3 s
Switching Value	16 Relays
Relay Capacity	250 VAC/3 A
FO Cable Connector	FC/APC Standard FO Cable Connector
Applicable Ambient temperature	-10°C ~ +50°C
Storage Temperature	-20°C ~ +60°C
Relative Humidity	0%~95% RH, No Condensation
Standard Alarm Length	1 meters
Dimensions	420x 182x 580 mm (LXWXH)
Fiber Optic Cable	IP 67 & EX II C TG Gb
Communication Interface	RS485 for communication with the intelligent AI integrated management platform (standard Modbus RTU protocol) RS232 for extended relays (supports 64-channel expansion, the original built-in relays will not be available) RJ45 can be connected to an external industrial computer via a network cable
Compliance	EN 55014-1:2006/A2:2011; EN 55014-2:1997/A2:2008; EN 60335-1:2012/A11:2014; EN 14582:2016

PTSCL-1	
FOC Core Diameter	62.5 μm
Fiber Cladding Diameter	125 μm
FOC Core	Single Core & Multi mode
Overall Outer Diameter	Φ 3mm
Outer Sheath Material	Anti-static, flame retardant, low smoke halogen-free materials
Tensile Strength	≤ 500N During installation ≤ 300N During use
Compressive Strength	(Short-term) ≤ 5000N/10cm during installation (Long-term) ≤ 3000N/10cm during use
Measuring Temperature Range	-40°C ~ + 120°C
Bending Radius	≥ 60 mm
Ordering Information	
Part Number	Product Description
PTSGL1	PTSenR™ Distributed Temperature Sensing Heat Detection - Wall mount
PTSCL-1	PTSenR™ FO Single core multi-mode 62.5/125μm, 85°C (long term) (MOQ 200M)
PTSPA-2	PTSenR™ Splice Box and terminal box, pigtail