



RFID Passive Wireless Switchgear Temperature Monitor

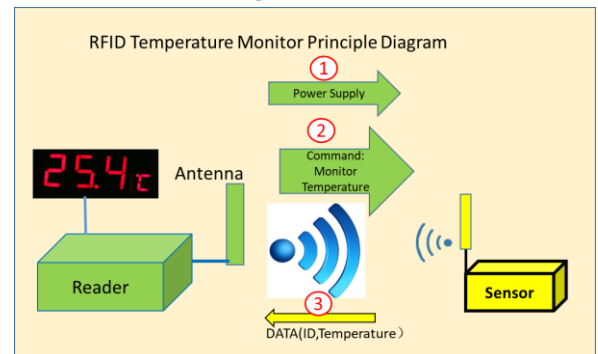
Features

- ✧ World's first RFID passive temperature sensor
- ✧ Completely Passive: battery-free, needless of CT power
- ✧ Digital Measurement, Digital Transmission, CRC Check
- ✧ Sensors with Unique ID, expansion possibilities
- ✧ MODBUS RTU Transmitting protocol



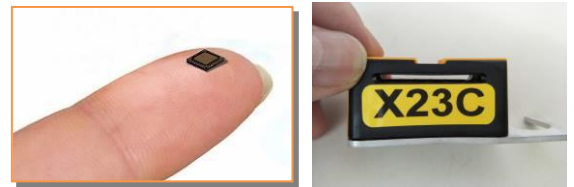
Passive Wireless Temperature Monitor Principle

The temperature reader's antenna sends out radio frequencies, activating the sensor, and simultaneously send commands to the sensors. The whole process is digital transmission conducted through transmitting protocols, along with CRC check. Thus, the transmitting operation is both stable and reliable.



Passive Sensor with RFID Integrated Temperature Monitor Chip

Core Micro IC (shown on the right): With the RFID Communication and Temperature Monitor Integrated Design, there is no need for a temperature monitor add-on. The IC contains a Unique ID, capable of remote access with low-power consumption.



The combination of low-power and wireless energy transfer technologies realizes a battery-free, CT-free, passive wireless temperature monitor with digital measurements and digital transmissions. This technology rids the hidden dangers of batteries and provides a solution for Surface Acoustic Wave (SAW) temperature monitor being easily interfered with or misread.



Other Temperature Monitor Technologies are Unable to Meet Requirements

As temperature monitor technologies become prevalent, general wireless technologies are being integrated into the application for switchgear temperature monitors, attempting to prevent switchgear from overheating. However, after many years of experience, the flaws of the current scenario is quite clear. They can be mainly categorized as below:

- **Surface Acoustic Wave (SAW) Temperature Monitor:** SAW Temperature Monitor is a type of passive sensor technology, it successfully solves energy transfer issues. However, because it is limited to the SAW temperature monitor’s frequency divided principle and analog signal process technology, its flaws are listed below:
 - ① **Easily Interfered:** SAW Temperature Monitor is susceptible to interferences such as nearby radio frequencies and vibrations, interrupting the temperature monitor process or large jumps.
 - ② **False alarms:** Sensors are not equipped with an ID, therefore, making it impossible to judge misreading sensors under interferences, often resulting in false alarms.
 - ③ **Poor Expandability:** Switchgear is incapable of installing too many sensors, because of its incapability to differentiate sensors. It is also inapplicable to applications with multiple integrated switchgear, like the applications of the main ring unit.
- **CT Powered Sensors:** To avoid using batteries, some have developed their own self-powering CT circuits to provide power to sensors. However, these self-powering CT come in a large size, is also difficult to install, and the power it provides is very unstable. In addition, it also requires more maintenance on the switchboard and can become a hidden danger.

Passive Temperature Monitor Technologies Comparison

RFID Temperature Monitor	SAW Temperature Monitor
Digital Technology	Analog Technology
Digital Measurement Digital Transmission	Analog Measurement Analog Transmission
Digital Transmission accompanied with CRC Check, unafraid of interferences.	Interferences cause temperature jumps, resulting in false alarms.
Sensors with IDs prevent misreading.	Sensors without IDs, often misread nearby sensors on the same frequency.
Extremely Stable, easy to debug.	Unstable requires large amounts of debugging and maintenance.



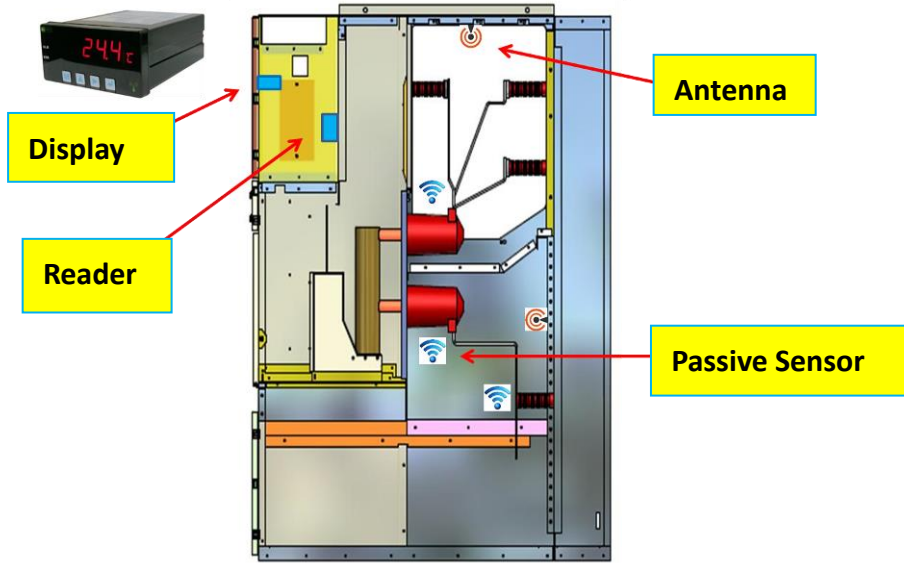
System Components

Temperature Sensors		
Bolt/Strap Sensors		
		
Plum Contact Sensors		
		
Plum Contact (male) Sensors		
		
Temperature Reader		
		
Temperature Monitor Antenna		
		
Local Temperature Display		
		

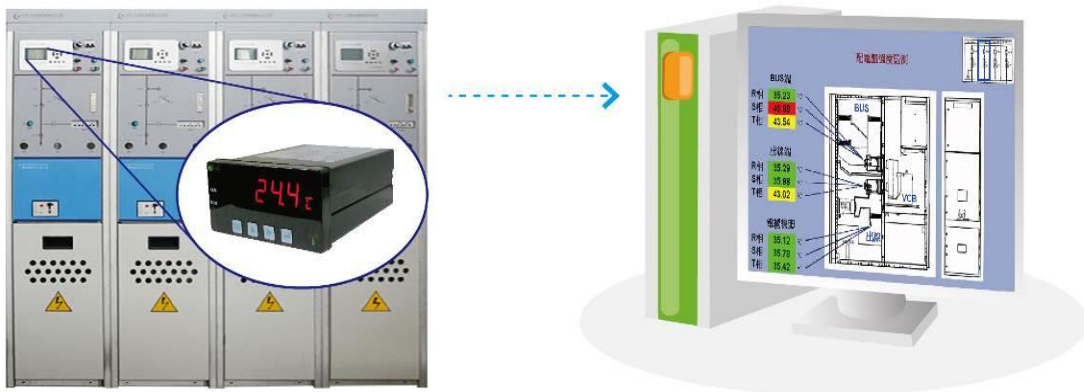


Applicable Cases

Switchgear Temperature Monitor






Integrated Monitor System





Technical Specifications

Temperature Sensors			
			
Product Model	PQS-SR-01	PQS-SR-02	PQS-SR-03
Monitor Range	-25 to+125°C		
Margin of Error	+/-2°C		
Operate Mode	Passive Wireless, Digital Transmission		
Dimensions	69 x 27 x 23mm 23mm	13 x 9 x 4mm 23mm	13 x 9 x 4mm 23mm
Installation Type	Bolt, Strap	Silicon Ring, Fixture	Silicone Ring

Temperature Reader	
Product Model	PQS-RD-01
Monitor Range	-20°C to +70°C
Frequency Range	920MHZ - 925MHZ
Reader Antenna Ports	4 ports, can be expanded to 16 ports
Receiving Range	Over 2 meters
Dimensions	80 x 45 x 115 mm
Communication Interface	RS485 / MODBUS RTU
Power Supply	AC/DC 85-265V Wide Input Power

Temperature Monitor Antenna	
Product Model	PQS-AN-01
Dimensions	108 x 119 x 30 mm

Temperature Display	
Product Model	PQS-MT-01
Power Supply	AC/DC 85 ~ 265V
Alarm Contact	1 set of Voltage Withstand AC 120 V/5A, AC250V/3A, or DC 24V/3A
RS485/MODBUS contact	Two set · Master / Slave
Dimensions	96 x 48 x 135 mm



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