

RFID

Switchgear Temperature Monitoring

Features

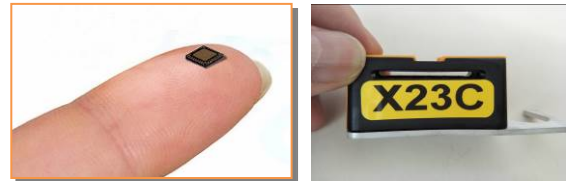
- ✧ RFID Passive Temperature Sensing
- ✧ Batteryless sensor
- ✧ Digital Communication with CRC
- ✧ Sensor with unique ID, unlimited expansion
- ✧ MODBUS RTU protocol Interface

Passive Sensing Principle Temperature Reader sending out RF signal to sensors, RF signal energized and wakes up sensor to perform temperature sensing, after measure the temperature, the sensors return the measured temperature to reader. The whole process is carry out under digital communication manner, with CRC error correction mechanism.



Integrated RFID Sensor Chip

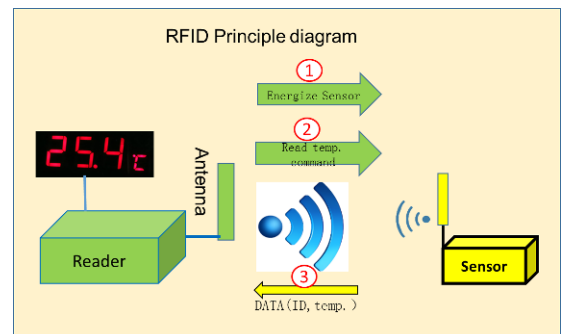
A tiny microchip integrates RFID and temperature sensor, each sensor has an unique ID, no need for external sensor. Ultralow power consumption secures the reading distance. Perfect for the switchgear temperature application



Shortfall of SAW temperature sensing

Some wireless passive temperature solution has been introduce to switchgear market in past years, however, all these methods has shown their weakness below

- **Surface Acoustic Wave(SAW) temperature sensing :**
SAW sensing solve the need of sensor battery, but the technology has following weakness when apply in switchgear temperature monitoring :
 - ① **Interference:** SAW measurement are prone to surrounding interference, causing unstable measurement and communication.
 - ② **False alarm :** SAW sensors has no ID, reader can not guarantee it is reading the designated sensor. This could result in wrong temperature reading and sometimes false alarm.
 - ③ **Expansion:** Due to technology limitation, SAW solution limits the no. of sensor per switchgear, this further restrict the application scenario of SAW solution.



Passive Temperature Sensing Solution Comparison

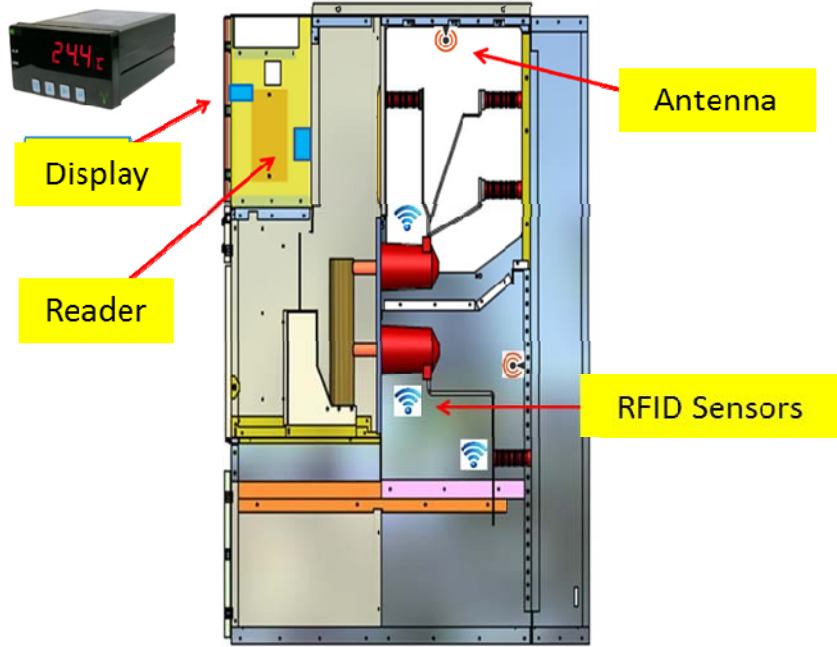
RFID Sensing	SAW Sensing
High Reliability Digital communication	Analog communication, prone to interference
Wide range of sensor size	Limited sensors size
Each sensor has unique address	Max. 12 sensors
Plug and play installation	Surrounding Sensitive, hard to commission

Solution Components

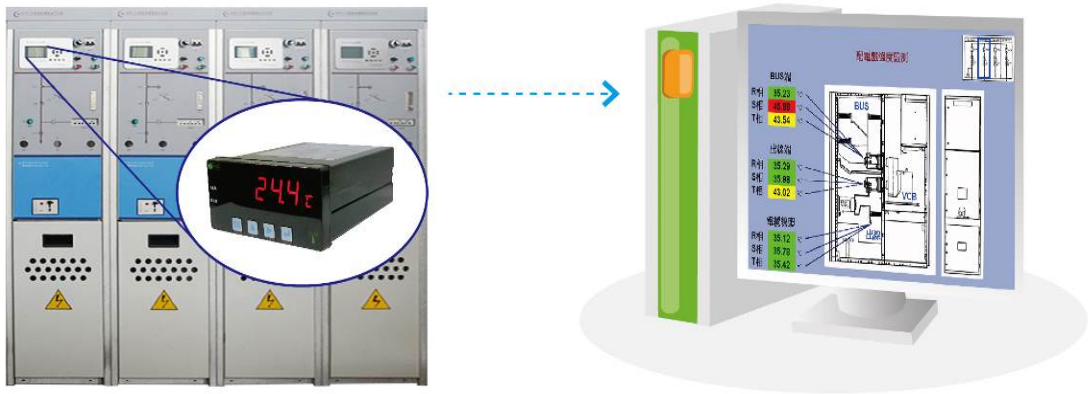
RFID Temperature Sensors		
Bolt/Tie Sensor		
		
Plum Contact Sensor		
		
Male Contact Sensor		
		
Reader		
		
Antenna		
		
Local Display		
		

Application Solution




Switchgear Temperature Monitoring



SCADA/HMI Integration



Technical Specification

Temperature Sensors			
			
Part Number	PQS-SR-01	PQS-SR-02	PQS-SR-03
Measuring Range	-40 to +125°C		
Accuracy	+/-2°C		
Operations	Passive Sensing, Digital communication		
Dimension	69 x 27 x 23mm	14 x 9 x 4mm	14 x 9 x 4mm
Mounting method	Bolt, Cable tie	Ring, fixture	Silicon Ring

Temperature Reader			
Part Number	PQS-RD-01	PQS-RD-11/4	PQS-RD-11/8
Operating Temperature Range	-20°C to +70°C		
Frequency Range	902MHZ-927MHZ		
Antenna Ports	4	4	8
Read Range	~ 250 CM		
Dimension	80 x 45 x 115 mm	190 x 101 x 41 mm	
Communication Interface	1 SET RS485 / MODBUS RTU	2 SETS RS485 / MODBUS RTU	
Power Supply	AC/DC 85-265V Wide input		
Antenna			
Part Number	PQS-AN-11		
Dimension	142 x 106 x 15 mm		
Local Display			
Part Number	PQS-MT-01		
Power Supply	AC/DC 85~265V Wide input		
Output Contact	1 set , AC120V/5A		
Communication Interface	2 Sets, RS485/Modbus RTU		
Dimension	96 x 48 x 135 mm		

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