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SYSTEMS PRIVATE LIMITED

Wireless Bus Bar Temperature Monitoring System

Scope

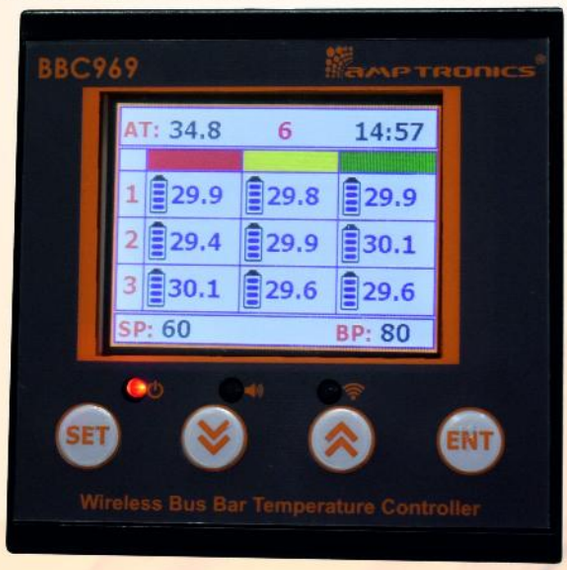
Nearly every factory, power generation plants, shopping malls, airports, office complex and high-rise apartment has an electrical control room that provides power distribution throughout the facility. The power distribution system usually includes high-voltage metal-clad switchgear, cast resin transformers, low-voltage switchgear and panel-boards.

A fault or failure in anyone of these components can result in power outages, loss of productivity, and even fire or explosions. Overload, phase imbalance, power factor, corrosion and poor electrical connections all result in the generation of heat. Any generation of heat is an indication of loss of energy and wasted power. Heat also contributes to shortening life of the equipment by up to 85%. The conditions may develop slowly over time or can result from a catastrophic fault. Since contact measurement would be dangerous, it is necessary to use isolated sensors. Continuous temperature measurement is also an important instrument for the planning of predictive maintenance cycles.

Wireless Bus Bar Temperature Monitoring System (WBTMS) is an intelligent system that we developed after many years of research and practical application. High-medium-low electrical system in range of (0.4-110KV) and electrical equipment that generates high temperature can use this solution. It integrates online temperature measurement, data collection, data analysis and control function. With this complete solution, it can help prevent many accidents due to rise in temperature, eliminating potential safety hazard.

BUS BAR MONITOR & CONTROLLER

Model: BBC969 Bus Bar Controller
Type: Spread Spectrum Tech. with 9-27 sensor's communication
Frequency: 2.4 GHz IEEE802.15.4
Alarm Mode: Buzzer, Relay for Hooter and Relay for Circuit Breaker
Data log : Max temperature in day
Minimum Reception Range: Omni directional 300fts line of sight, Range reduce by obstructions.
Mounting Location: Panel Mount.
Operating Temperature: -28°C to 85°C (-18°F to 185°F)
Physical Dimensions: 96mmx96mmx72mm
Weight: 500 grams



BUS BAR SENSORS

Model: BBS350 Bus Bar Sensor
Type: Sensor & RF Transmitter
Enclosure: Non-conductive Silicon strap can withstand up to 300°C
Operating Temperature: -40°C to 125°C
Transmission Interval : Every 30 Sec - 300 Sec*
Transmission Range: 50-100 ft. (sensors installed in control panel)
Battery: 3V/800mA High temperature Industrial Lithium battery lasts up to 5 years.
Mounting Location: On flat clean surface.
Dimensions: 45mmx45mmx20mm*350mm
Weight: 30 grams
Installation: Can be installed anywhere on stationary or rotatory object by just strapping, so low breakdown installation time.

Application Area:

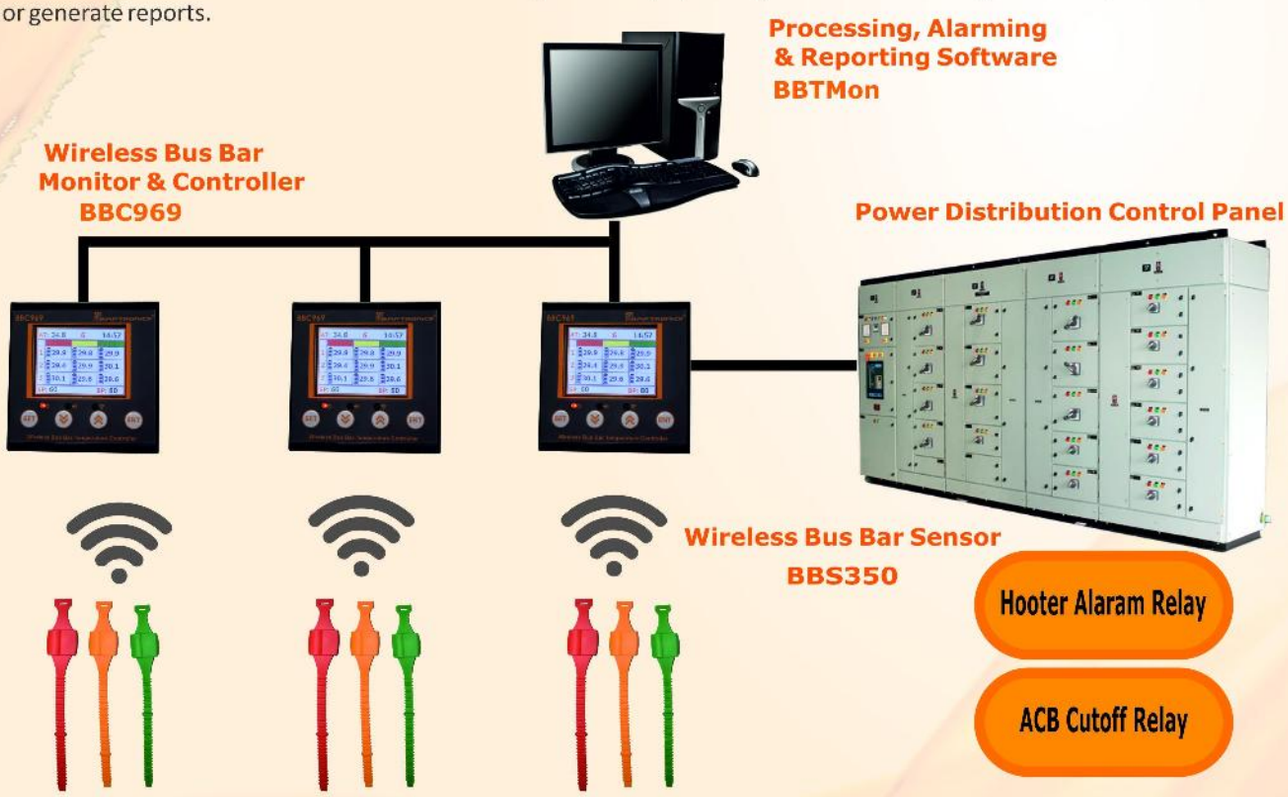
- Circuit breaker contact
- Input & output bus bar of switchgear
- Bearing and winding of the motor
- High temperature air outlets
- Power Distribution Transformers

System Description & Working of WBTMS

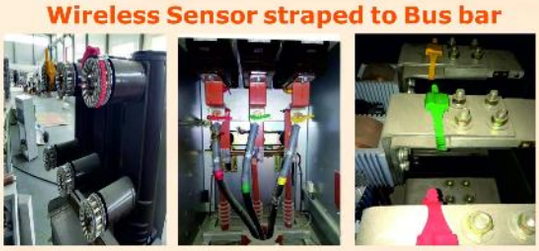
The Wireless Bus bar Temperature Monitoring System (WBTMS) monitors temperatures on surfaces of energized electrical equipment consists of:

- o Sensors (wireless temperature transmitters - BBS350)
- o Receivers (wireless signal receiving and monitoring unit - BBC969)
- o Software (processing, alarming and reporting software - BBTMon) ** optional

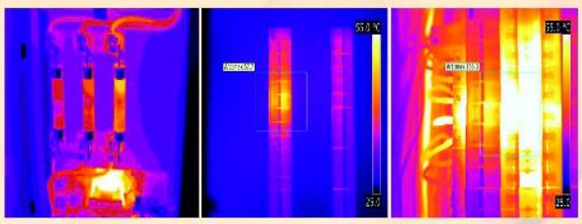
BBS350 wireless temperature sensor designed for actively measure the temperature of strategically important points on metal or insulating surfaces of current carrying parts. The sensor measures the temperature in wide range, from -40°C to 125°C and transmit packets every 30 seconds. The Receiver BBC969 receives the RF signals from multi sensors in range of 100 feet's with temperature, battery status. BBC969 is install in the control panel and can receive information from sensors. Depending on number of Sensors in the system and the size of facility, a series of the BBC969 Controller can connect in daisy chain on Modbus. BBTMon software processes the sensor information from Modbus and records it into a textual log file to display alerts, trend charts and to generate reports. Admin User can set Alerts or generate reports.



Wireless Sensor straped to Bus bar



IR Thermal Images



Burned Bus Bar

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