



## Continuous Bus Duct Temperature Monitoring

### The Challenge

Commercial buildings, production facilities, data centers and hospitals are examples of critical buildings that utilize bus ducts for distributing electricity. Within these buildings, electricity is commonly distributed at up to 600 volts AC. Compact, sandwiched bus ducts are a popular method of distribution because these bus ducts speed up building construction, save on real estate space and handle an ampacity of up to 6000A.

Any current-carrying conductor dissipates energy partly as heat – that is particularly critical at loose joints – with the potential for serious consequences, such as fire. To avoid overheating of bus ducts, timely measurement is required. It is also desirable to monitor the temperature of bus ducts as frequently as possible because the temperature rise of high ampacity bus ducts can occur quickly, within several minutes. This is due to the nature of the electrical load and installation environment, as well as the thermal inertia of the bus duct design.

Traditional monitoring methods such as thermography surveys are conducted as per business requirements. With large, complex buildings such surveys are time consuming, as the temperature of each bus duct joint

must be measured and a physical visit is required to view and document the known joint temperature. Bus ducts are often installed closely to each other, often out of sight within false ceiling or raised floor, making these monitoring methods even more difficult.

### The Innovation

The AP Sensing fiber-optic temperature sensing solution alerts, identifies and locates every bus duct hot spot automatically in real time. It monitors the temperature and health of the entire bus duct continuously, every minute of the day. Our fiber-optic solution addresses challenges such as overcoming



Visualization of bus duct temperatures

the requirement of physical access after a bus duct is energized. In addition, it provides reliable and intelligent alarm alerting to the facility manager before any possible occurrence of disruptive incidents.

## Complete Bus Duct Coverage

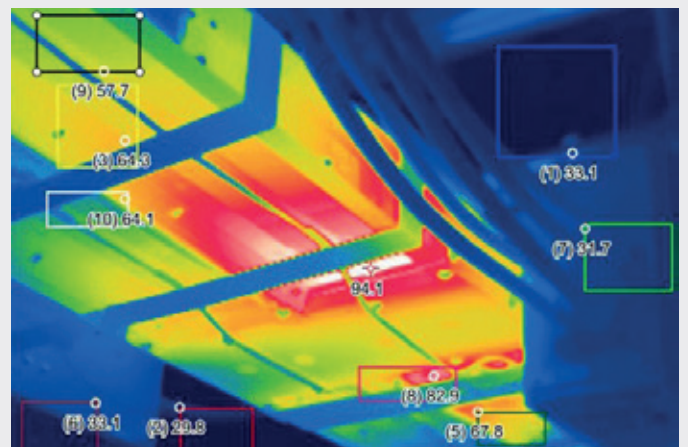
The AP Sensing distributed temperature sensing solution consists of a fiber-optic sensor cable attached to the enclosure of the bus duct. The single run of sensing cable monitors the entire bus duct temperature, covering all feeders, joints and tees by using a DTS instrument that terminates the cable. Our solution measures every meter of each bus duct, offering thousands of temperature points. Alarm zones are freely configurable, with various user-programmable temperature alarms like static and rate-of-rise. This ensures fast detection of critical hot spots while minimizing unwanted false alarms. In case of an alarm, operators are automatically

pointed to developing bus duct hot spots by using the features of AP Sensing's bus duct monitoring solution:

- Generating alarms in particular zones when hot spots are identified and precisely located.
- Providing an intuitive 3D display of the entire bus duct temperature distribution, enabling the instant correlation of the hotspots and their alarms.
- Integration with BMS/SCADA through various protocols i.e. Modbus (TCP and RS485) where temperature values and alarms can be processed further.

## Reliable & Efficient

Our linear heat detection solution is thoroughly tested, with the most complete set of certifications on the market (VdS, UL, FM, ATEX, IECEx) and a 35-year MTBF. It is robust and has passed highly demanding type tests. The sensor cables are proofed for high temperatures, ensuring the system can withstand the demands of heat monitoring.



Thermal image of hot bus bar

## Why AP Sensing?

- Industry-leading temperature measurement technology with fast response times, excellent accuracy and low maintenance.
- All product variations are fully certified and in compliance with internationally recognized standards.
- Range of certified sensor cables to fit every need.
- Easy system integration through flexible protocols and interfaces.
- Our experience and proven deployment in all regions in the world – our project reference list is extensive and comprehensive. We have 10 years of experience with continuous bus duct monitoring.
- World-class service, support and training.

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