sierra monitor corporation

White Paper
Telecom Site Management Products

All segments of the telecommunications industry, land line, wireless, cable and satellite, employ vast networks of highly sophisticated communications equipment to deliver their services rapidly and reliably to their customers. Much of this equipment is deployed in remote, largely unmanned sites. The equipment in these sites will vary, depending upon the signal and data transmission medium: copper, fiber, coax, RF. The structures housing this equipment will also vary, depending upon location and local building, zoning and environmental regulations. Common, however, to all equipment and structure types is the requirement for support elements that are critical to uninterrupted site availability and uncompromised site safety and security. Critical support elements include commercial power, HVAC, generators, DC plant and batteries, and environmental sensors.

Sierra Monitor Corporation offers a comprehensive array of Telecom Site Management Products. Each is microprocessor based and is designed in form, fit and function for the intended application and for the type of structure into which it will be deployed. Precise environmental control is a prerequisite to the long term health and reliability of telecommunications equipment and the DC power plant supporting it. Sierra's Facilities Controllers manage all makes and models of wall mount air conditioners used in shelters, buildings and walk-in cabinets. They also support the custom HVAC systems employed in hatch type or flush-to-grade controlled environment vaults (CEV). All controllers employ lead/lag and demand logic to control 2 air conditioners and selected controllers can manage 3 or more air conditioners. An integral economizer cooling algorithm automatically operates the blower and fresh air damper of the HVAC unit to use outside air for cooling to maximize energy efficiency.

All Telecom Site Management Products are designed to operate on both AC and DC power. This affords the capability to alarm upon loss of commercial AC power and to continue to monitor the structure for alarms and operate DC ventilation fans for cooling in the absence of HVAC operation. For those sites equipped with generators, the controller may be configured to monitor commercial power, generator power and automatic transfer switch position. When on generator power, the controller is able to selectively manage HVAC operation to assure that sufficient power is available to the rectifiers.

When commercial power to a site is lost, monitoring generator status and alarm data is critical to site availability. Sierra's Telecom Site Management Products, in conjunction with the ProtoCessor Communications Module or the FieldServer Gateway, offer a number of options for gathering and reporting status and alarm data. Data may be gathered from either discrete or serial output from the generator control panel. ProtoCessor and FieldServer support serial communications protocols used by all major generator manufacturers. Alarms may be reported discretely to the site alarm monitor or via Ethernet output to the site monitor or directly to a Network Operations Center.

Environmental sensors provide the necessary data to enable the Facilities Controller to protect the safety of personnel, properly manage site environment and select cost effective temperature control. Safety requirements are particularly rigorous in CEV's, demanding continuous monitoring of toxic and combustible gases, controlled entry procedures and fresh air ventilation at prescribed intervals. Structure internal temperature and relative humidity dictate heating, cooling, dehumidification and economizer cooling requirements. Outside air temperature is monitored and, in conjunction with internal temperature and RH, allows the controller to use outside air for cooling to the maximum extent possible to reduce energy costs.

The primary task of the Telecom Facilities Controllers is the efficient monitoring and management of critical site support elements. A secondary task is the reporting of status and alarm data to the site alarm system or directly to the Network Operations Center. Depending upon the chosen controller, the core component to achieve connectivity is the ProtoCessor Communications Module or the FieldServer Gateway. Both support the Modbus serial communications protocols used by all Facilities Controllers. Both also support a complete library of Ethernet protocol drivers, including SNMP, TL1 and Telnet to accommodate the requirements of telecommunications network management systems.

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