



Service Bulletin

Bulletin No: SB-0039-20-351-FS Effective Date: 12-16-2020 Type: Informational

Subject: FlexSCADA use for off-grid or remote site security and monitoring

Scope

This service bulletin provides information on the benefits of using the FlexSCADA Q5 line of products to monitor the security of a remote or off-grid site.

Discussion

FlexSCADA has many features that can assist site operations in monitoring the security of a remote or off-grid site. Through different accessories and the programmable logic onboard the Q5 device, site security can be viewed and monitored in real time from a computer or phone anywhere in the world. The FlexSCADA Q5 is a powerful tool that provides users with reliable, real-time data concerning their off-grid or remote site. Combining a Q5 with ancillary items such as those listed below creates an even stronger platform for the Q5 to operate in.

Proximity & Door Alarms

Openings such as doors, windows and equipment enclosure cabinets can be wired with a contact sensor that reads normally open or normally closed. When the sensor contact is broken, it triggers an event (programed through the javascript) that energizes a relay, which can be connected to alarm lights, sirens or other devices. Checking the status [OPEN / CLOSED] by way of the FlexSCADA on one's phone before leaving a site helps ensure the site has been properly secured before a maintenance team has left the area. Additionally, through the use of a PIR (Person-In-Room) sensor, users can monitor the site and track when movement is detected in single room or multiple areas (depending on the number of sensors installed). This is particularly effective for remote sites, where intruder detection is crucial. Secondary locking mechanisms such as solenoid-based locks and pin pads can also be incorporated into an entry/access plan & vandalism avoidance strategy.

Temperature Alarms

Temperature sensors are configured through the low power expansion port of the Q5 and can be used to monitor temperatures at multiple locations throughout the site. Users can place sensors on different shelving levels, allowing the controller to have a pin-point view of the temperature inside (or outside) of a site. Monitoring battery temperature as part of the charging and maintenance process is critical to ensuring the maximum service life of the battery itself. For more information, see the white paper "How to bake a battery – a recipe for failure" <https://missioncriticalenergy.com/wp-content/uploads/2019/11/How-to-bake-a-battery-a-recipe-for-failure.pdf> . Early detection of air conditioning or ventilation failure by real time monitoring

of abnormal temperature increases within the site allows for a more rapid response and prevention of heat damage to sensitive electronics and batteries alike.

Flood Alarms

Flood alarms operate in a similar manner to proximity sensors. When water reaches a certain level, the javascript code would trigger an action item through the relay inputs or through a custom feed. Programming the sensors to trigger early will provide users advance warning of water intrusion, allowing them to take preventative action before damage to critical electronics occurs.

Ambient & Environmental Alarms

Combined humidity, temperature, and VOC sensors can also be used to monitor the air quality within a site, which can help identify threats to both equipment and personnel. High humidity can be an indicator of a fan failure or a pre-flooding event. Detection of high VOC levels can be an early warning of a fuel leak or low air quality caused by a venting problem associated with a generator or petro-storage system. Detection of elevated VOCs near a Lithium-Ion Battery bank can be crucial early warning sign of an imminent thermal runaway. These events could also be caused by a ventilation system failure, which would trigger a maintenance required notification for the site.

Low Battery Bank Alarm

Setting up an alert for battery voltage requires no additional hardware other than what is already required for initializing the Q5. By adding a ‘voltage monitoring’ line to the analog inputs, a user can configure an alert based on voltage readings outside of the entered range. Additionally, the on-board javascript can begin to turn off non-critical components in the event power reaches low levels.

Cyber Security

The Q5 line of products is built with the future in mind. All Q5 devices are compatible with IPv4 and IPv6 settings, allowing a “push-based” TCP protocol originating from the device itself. For more information on this topic, see service bulletin **SB-0036-20-236-FS**.

Javascript Coding

The most important feature for the multitude of sensors and alarms that can be utilized is the javascript coding of the Q5. This allows the device to passively monitor each situation and make adjustments based on those values or inputs. Code within the device can be set to turn on pumps, lights, or alarms in order to protect the site. Events can also be logged and annotated for future evaluation. If there is a critical alert, such as an intrusion, the javascript code can send out immediate alerts to a control center, notifying in real time that an alarm action has occurred. This rapid, autonomous notification allows the control center to investigate problems and correct as needed, keeping both site damage and downtime to a minimum. The onboard webhost provides detailed examples for users to transpose onto their device and customize it, based on the configuration of the user’s site.

For more information, please contact Mission Critical Energy at (716) 276-8465 or visit us at www.flexscadafusion.com.