Solar SCADA System

Introduction

Logics PowerAMR's Solar SCADA System is an advanced platform designed for real-time monitoring, intelligent control, and predictive analytics across solar power infrastructure. It provides end-to-end visibility and automation of key solar plant components, ensuring efficient operation and rapid fault response.

What is Solar SCADA System?

A Solar SCADA (Supervisory Control and Data Acquisition) system facilitates seamless data acquisition, monitoring, and control for all critical assets of a solar power plant. It collects data from inverters, combiner boxes, transformers, RMU panels, protection relays, breakers, energy meters, auxiliary loads, and weather stations to maintain optimal plant performance.

System Capabilities

- Real-time local and remote data access
- Analog and digital I/O support
- Integration with third-party and legacy systems
- Alarm and event management
- Historical data logging and trend analysis

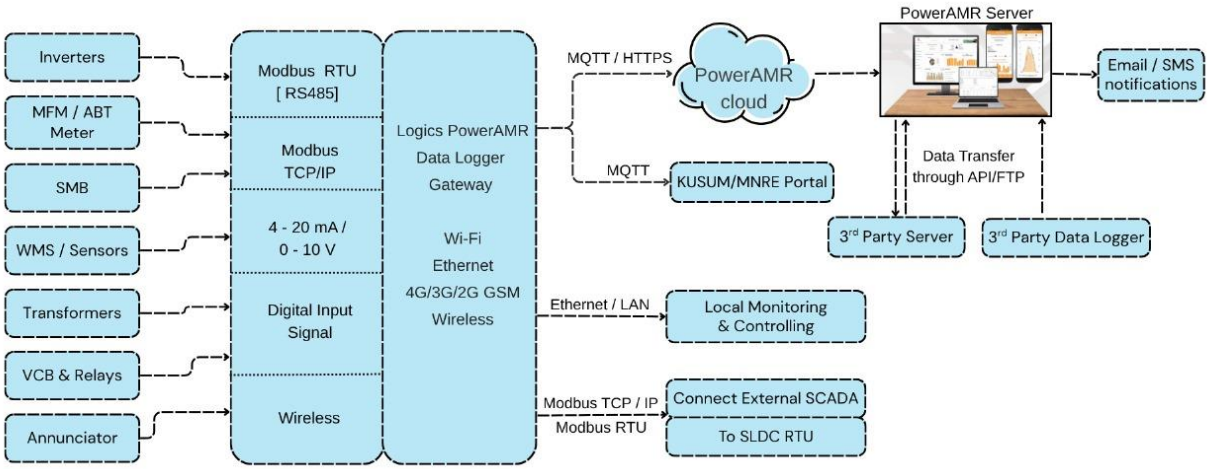
System Architecture:

The architecture depicts an integrated Solar SCADA system where field devices such as inverters, energy meters (MFM/ABT), string monitoring boxes (SMB), weather monitoring sensors, transformers, VCBs/relays, and annunciators communicate with the Logics PowerAMR Data Logger Gateway via various protocols including Modbus RTU (RS485), TCP/IP, analog/digital signals and wireless.

The data logger transmits this information using Wi-Fi, Ethernet, or GSM (2G/3G/4G) to the PowerAMR Cloud. From there:

- Data is shared with the KUSUM/MNRE portal via MQTT.
- Operators access real-time insights via the PowerAMR web portal.
- The server can integrate with third-party servers and data loggers through API/FTP.
- The system supports email/SMS alerts, local monitoring, and connects to SLDC or external SCADA systems.

SCADA Architecture-Logics PowerAMR



This modular and scalable architecture ensures centralized monitoring, seamless third-party integration, and reliable remote management of solar plants.

Key Benefits

- **Local & Remote Monitoring:** Access plant data in real time from both the central control room and remote locations. Enables fast decision-making and fault handling.

- **Transformer WTI/OTI Monitoring**: Monitors Winding Temperature Indicator (WTI) and Oil Temperature Indicator (OTI) for transformer safety and preventive maintenance.

- **Numerical Relay Integration:** Client can log on to the PowerAMR website and see working of power control on real time through the single line diagram and graphical illustration.

- **VCB & Inverter Control:** Enables seamless operation and remote switching of Vacuum Circuit Breakers and inverters through digital outputs and Modbus RS485 protocol.

- **Analog & Digital Signal Processing:** Supports a wide range of analog inputs (voltage, current, temperature, etc.) and digital signals (breaker status, alarms, sensors feedback), enabling precise system control.

- **Annunciator Panel:** Visual and audible alarms with acknowledgment and reset functions to alert operators of abnormal or critical conditions instantly.

- **Weather Monitoring Sensors:** Integrates with environmental sensors to capture wind speed, temperature, humidity, and other weather data, essential for outdoor installations and renewable systems.

- **Line Loss Monitoring:** Calculates real-time line losses between generation and receiving ends, aiding in energy efficiency optimization and loss minimization.

From transformer and VCB monitoring to weather sensors and line loss tracking, our SCADA platform delivers powerful, scalable, and future-ready automation.

Solar Management Dashboard

Our SCADA platform includes an intuitive dashboard for live system status, single-line diagram views, alarms, performance metrics, and historical data analytics. Accessible via secured web portal for remote O&M teams.