



Remote Terminal Unit (RTU-09)



About Verticross

Verticross is an automation company focused on transforming customers' businesses through state-of-the-art technology. Specialising in power, water, gas, oil, transportation and security, our mission is to become a global leader in communication systems, data acquisition and analytics by the year 2024.

Verticross is led by a dynamic team of professionals who possess a wealth of experience in applied research and development in the areas of communication and data transfer protocols for embedded systems in the automation of energy, water and gas utilities.

The communication systems form an integral part of data acquisition for billing, audit, decision support and analytics. Our products include automatic meter readers, energy management solutions and pump monitoring systems, while our services encompass consultancy, installation, commissioning, facilities management and IT support.

Our products and solutions conform to international standards and can be seamlessly integrated with legacy system. In addition, they can be customised in order to address and exceed customer expectation.



The **Remote Terminal unit (RTU)** monitors all sub-station equipment and acquires data on a real time basis. It captures status signals of devices and conduct automatic data logging to provide substation level control. In-addition, it monitors entire sub-station equipment, Viz, Transformers, Feeders, Batteries, Transducers Breakers, energy, meter, etc.

This facelifting, energy management, load forecasting and scheduling, and eventually leading to sub-station automation. They serve as a critical interface between field devices, such as sensors and circuit breakers, central control systems, like Supervisory Control and Data Acquisition (SCADA) systems. Using Real Time Data Acquisition System (RTDAS) software, RTU works as full-fledged SCADA system. It can communicate with the master control stations through LAN or GPRS/ 4G.

Data Acquisition – Collects data such as voltage, current, power, breaker status, and alarms.

Remote Control – Allows operators to open/close breakers or adjust equipment settings remotely.

Communication – Transmits and receives data via standard protocols like IEC 60870-5-101/104, DNP3, Modbus, or IEC 61850.

Event Logging – Records time-stamped events and disturbances for analysis.

Supervision and Diagnostics – Monitors the health and performance of substation equipment and its own internal components.

Distribution Automation - Enhancing the reliability and efficiency of power distribution.

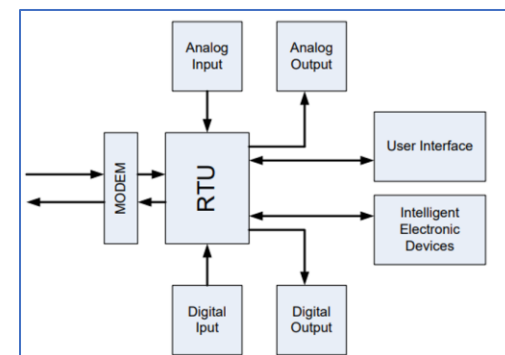
Fault Detection and Isolation - Identifying faults and enabling automatic reconfiguration of the network.

Load Management- Monitoring load conditions and facilitating demand-side management.



RTU Configuration

Processor / CPU Module	32-bit or 64-bit industrial-grade microprocessor, real-time operating system (RTOS / Linux-based), supporting redundant CPUs.
Communication Interfaces	Minimum 4 serial ports (RS-232/RS-485), 2–4 Ethernet ports (10/100/1000 Mbps), fiber-optic interfaces for LAN/WAN.
Digital Input (DI) Modules	Inputs for breaker, isolator, relay, and alarm statuses (potential-free contacts). 1 ms event resolution or better.
Digital Output (DO) Modules	Relay-type outputs for control commands (breaker open/close, OLTC raise/lower). Interlocked for safety.
Analog Input (AI) Modules	For monitoring voltage, current, power, frequency, temperature, etc. Input range: 0–20 mA or 4–20 mA.
Analog Output (AO) Modules	Optional, for analog control or setpoint commands (rarely used in substations).
Power Supply Unit	Dual redundant, operating from 24 V DC, 48 V DC, or 110 V DC (depending on utility standard).
Local HMI / Display	Optional LCD or touchscreen for local monitoring, control, and diagnostics.
Time Synchronization	Through GPS clock (IRIG-B or NTP). Required for event time-stamping (< 1 ms accuracy).
Communication Protocols	IEC 60870-5-101 / 104, DNP3, Modbus RTU/TCP, IEC 61850 (for IED integration).
Event Recorder / Data Logger	Internal memory for storing SOE (Sequence of Events) and analog data during link failure.
Cabinet / Panel	Rack-mounted or floor-standing cubicle, IP54 minimum, dust-proof, with front access.





Parameter

Operating Voltage

Operating Temperature

Humidity

EMC / EMI Compliance

Environmental Standard

Input Isolation

Digital Input Resolution

MTBF (Mean Time Between Failures)

Storage Capacity

Redundancy

Protocol Support

Cybersecurity

Configuration Tool

Compliance

Specification

110 V DC $\pm 20\%$ (or as per site standard)

-10°C to $+55^{\circ}\text{C}$ (industrial grade)

Up to 95% non-condensing

IEC 61000-4-2/3/4/5/6, IEC 60255-26

IEC 60068-2 (Temperature, humidity, vibration)

2 kV or higher optical/electrical isolation

1 ms or better for SOE recording

$\geq 100,000$ hours

30 days of data (minimum), expandable

Dual power supply, dual CPU, dual LAN (hot standby)

IEC 60870-5-101/104, DNP3, Modbus RTU/TCP, IEC 61850

User authentication, secure passwords, HTTPS, SSH, firewall, role-based access

Windows/Linux-based engineering tool for setup, diagnostics, and firmware updates

IEC 60870-5 series, IEC 61850, IS SCADA standards (CEA 2015 Technical Regulations)

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