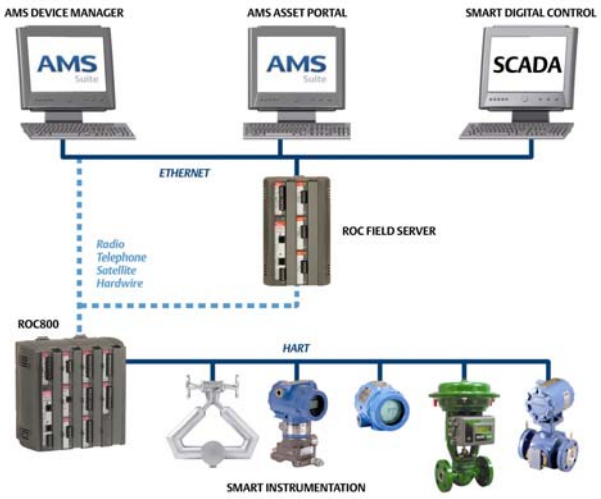
ROC Field Server

The ROC Field Server is a key component in the Smart Remote Automation extension to PlantWeb. Used in conjunction with the AMS Suite Intelligent Device Manager and the ROC800-Series Remote Operations Controller with a HART® Card, it supports predictive intelligence and remote diagnostics.

The ROC Field Server provides a low bandwidth field communications network interface to a high speed Ethernet control network. ROC Field Server provides communications pass-through functionality from up to five TCP/IP ports to up to five serial communication ports.

The ROC Field Server is based on the ROC800 platform. Its functionality is enabled through the use of the Pass Through user program, configured to route communications between its TCP/IP ports and its serial ports.



Smart Remote Automation Architecture

The ROC Field Server is intended for installation on the high bandwidth section of the communications network.

The Base Unit

The Acrylonitrile Butadiene Styrene (ABS) plastic housing has removable wire channel covers to protect the wiring terminals. DIN rail mounting allows the ROC Field Server to mount on an enclosure backplane. The rugged housing is suitable for use over the complete extended temperature range.

The ROC Field Server eliminates the need for fuses on its communications modules through the extensive use of the latest technology in short-circuit protection. This results in less maintenance for remote location operation.

The ROC Field Server economizes its power consumption for normal operation through the use of internal 3.3 Volt electronics.

The ROC Field Server uses a power input module to convert external input power to the voltage levels required by its electronics. Two power input modules are available: 12 Volts dc and 24 Volts dc. Both power input modules provide regulated 12 Volts dc power to the backplane. For more information, refer to *Specification Sheet 6.3:PIM*.

The ROC Field Server has four types of memory:

- Boot Flash – System initialization and diagnostics.
- Flash – Firmware image.
- SRAM (Static Random Access Memory) – Data logs and configuration.
- SDRAM (Synchronous Dynamic Random Access Memory) – Firmware execution and execution memory.

The 32-bit microprocessor and the Real-Time Operating System (RTOS) provide both hardware and software memory protection.

D301228X012

Communication Modules

You can easily install and remove modules from the module slots at any time by removing the two captive screws accessible from the front of the unit. The modules are hot-swappable, meaning you can remove the module and install another module of the same kind while under power. The new module acquires the previous module's configuration. The modules are hot-pluggable, meaning they may be installed directly into unused module slots under power. The modules are self-identifying, meaning ROCLINK™ 800 Configuration Software automatically recognizes the module.

The ROC Field Server allows up to six physical communication ports. Three of these ports are built-in:

- Local Operator Interface – LOI.
- Ethernet – Comm1.
- EIA-232 (RS-232) – Comm2.

The Local Operator Interface (LOI) port's EIA-232 (RS-232D) standard RJ-45 connector provides a direct link between the ROC Field Server and a personal computer.

Three communication modules can be installed to provide ports for communicating with a host computer or other devices. The following module types—in any combination—can be accommodated:

- EIA-232 (RS-232) for point-to-point asynchronous serial communications.
- EIA-422/EIA-485 (RS-422/RS-485) for asynchronous serial communications, EIA-422 for point-to-point, EIA-485 for multiple-point, 2 and 4-wire.

The ROC Field Server allows the use of a variety of communication protocols: ROC Plus, Modbus, Modbus encapsulated in TCP/IP, and Modbus TCP/IP. The Ethernet communications port can be used for:

- ROC Plus protocol.
- Modbus encapsulated in TCP/IP protocol (slave).
- Modbus TCP/IP protocol (slave).

Using ROCLINK 800 Software, the ROC Field Server can configure a TCP/IP port for each serial communications port, on which to listen for data communications to route to the ROC800 in the field. Each TCP/IP port supports up to three simultaneous sessions. For each serial communications port, the TCP/IP Port Number, Inactivity Timer, Supported Protocols, and Communications Timeouts can be configured. The ROC Field Server supports communications pass-through for ROC, ROC Plus, and serial Modbus protocols. Additionally, connection status, received byte count, and transmitted byte count are available for troubleshooting each port.

Software

A personal computer running ROCLINK 800 software configures the ROC Field Server, and can extract data and monitor its operation.

The software provides security for controlling access to functions in ROCLINK 800 software. Passwords restrict log-on to both ROCLINK 800 and the ROC Field Server controller.

Options

- **Communications** – The ROC Field Server unit supports a wide variety of communications modules to suit many applications.
- **ROC Keypad Display** – The ROC Keypad Display allows local users to view and change parameters in the ROC unit.
- **Power Input Modules** – The ROC Field Server unit supports 12 Volts dc or 24 Volts dc power input modules to suit many applications.

ROC Field Server Specifications

PROCESSOR

32-bit microprocessor based on the Motorola MPC862 Quad Integrated Communications Controller (PowerQUICC™) PowerPC processor running at 65 MHz.

PROCESSOR MEMORY

Boot Flash: 256 KB for system initialization and diagnostics.

Flash: 16 MB for firmware image.

SRAM: 2 MB for Historical Data Logs and configuration.

Synchronous DRAM: 32 MB for firmware execution and execution memory.

COMMUNICATIONS MODULES

EIA-232 (RS-232):
Type: Single. 57.6K bps maximum data rate.

EIA-422/485 (RS-422/485):
Type: Single. 57.6K bps maximum data rate.

Note: For further details, refer to *Specification Sheet 6.3:COM*.

COMMUNICATION PORTS (on board)

EIA-232 (RS-232) PORT
Type: Single. 57.6K bps maximum data rate.

Ethernet Port
Type: 10BASE-T twisted pair. IEEE multi-segment 10 MB/second baseband Ethernet.
Maximum Segment: 100 m (330 ft).

LOI Port
Type: EIA-232D (RS-232D) Standard. 57.6K bps maximum data rate.

BOARD TEMPERATURE ACCURACY

1% typical, 2% maximum.

POWER REQUIREMENTS

Series 2 Base System: (power module, backplane, and CPU) typically draws 125 mA at 12 V dc (PM-12) or 121 mA at 24 V dc (PM-24).

Note: For further details, refer to *Specification Sheet 6.3:PIM*.

BATTERY BACKUP

User-replaceable.

Type: Sanyo 3 V CR2430 lithium.

Normal use life: 10 years while power is applied to unit.

Backup life: 1 year minimum while maintaining RTC and SRAM data and no power is applied to unit.

Shelf life: 10 years.

VOLTAGE MONITOR ACCURACY

Typical: 0.75% typical.

Maximum: 1%.

TIME FUNCTIONS

Clock Type: 32 KHz crystal oscillator with regulated supply, battery-backed. Year/Month/Day and Hour/Minute/Second, with Daylight Savings Time control.

Clock Accuracy: 0.01%.

Watchdog Timer: Hardware monitor expires after 3 seconds and resets the processor.

ROC Field Server Specifications

MATERIALS

Case: Acrylonitrile Butadiene Styrene (ABS) Plastic.

Wire Channel Covers: Polypropylene Plastic.

Modules: Thermoplastic Polyester, solvent-resistant.

ENCLOSURE

US Government Patent: 6771513.

WIRING

Size 12 to 22 American Wire Gauge (AWG) for terminal blocks.

DIN RAILS

Size: 35.

DIMENSIONS

241 mm H by 244 mm W by 174 mm D (9.5 in. H by 9.6 in. W by 6.85 in. D). Allow an additional depth of 19 mm (0.75 in.) for cables.

WEIGHT

1.65 kg (3.65 lb) for housing, backplane and CPU.

ENVIRONMENTAL

Operating Temp: –40 to 75°C (–40 to 167°F).

Storage Temp: –40 to 85°C (–40 to 185°F).

ENVIRONMENTAL (continued)

Relative Humidity: IEC68-2-3; 5-95% non-condensing.

Vibration: IEC68-2-6; 0.15 mm or 20m/sec^2.

Mechanical Shock: IEC68-2-27; 11 mSec, sinusoidal 50 Gs non-operating, 15 Gs operating.

Thermal Shock: IEC68-2-14; Air to air from –20 to 85°C (–4 to 185°F).

Radiated/Conducted Immunity: Meets requirements of IEC 61326 Electrical Equipment for use in Industrial Locations.

Radiated Emissions: Meets EN 55011 Class A; ICES-003:1997 Digital Apparatus; and FCC Part 15, Class A.

APPROVALS

Evaluated per North American Standards:
CSA C22.2 No. 142 and No. 213.
CAN/CSA E79-0-02 and E79-15-02.
UL 1604 – 3rd Edition.
UL 508 – 17th Edition.

Product Markings for Hazardous Locations:
Class I, Division 2, Groups A, B, C, and D, T4A.
Class I, Zone 2, Group IIC, T4A.
AEx nA IIC, T4A.

Emerson Process Management

Remote Automation Solutions
Marshalltown, IA 50158 U.S.A.
Houston, TX 77041 U.S.A.
Pickering, North Yorkshire UK Y018 7JA

EMERSON. Process Management