




Looking for maximum versatility and expandability, all in a reliable, easily-accessible, budget friendly package? The Falcon Facility Monitoring System (FMS) is the system for you.

RLE's FMS is a comprehensive monitoring system commonly used to monitor equipment status and environmental sensors. Feature-rich and budget friendly, the FMS is currently used in data centers, labs, telecommunications facilities, and museums around the world.

What sets the FMS apart in the marketplace? Ease of integration is a great place to start. Designed to be vendor neutral, the FMS aggregates information from a wide variety of sensors and equipment and then displays it through an onboard web interface. Does your facility have a larger BMS? No problem - the FMS also allows aggregated data to be pulled to other systems, all without additional servers or software.

If your data's valuable, and if reduced downtime is a priority, then you'll appreciate the FMS's reliability. The FMS is engineered without any internal moving parts - no hard drive, no fans. This means no downtime, no lost data, and no scheduled maintenance.

Finally, the FMS is a self-contained solution. It stores and displays all its own data and hosts its own web pages; you won't need to buy additional servers or install software on your PC. Great onboard features include data trending and extended logging, interactive graphical facility mapping, PUE/DCiE monitoring, and nesting, which allows one FMS to report conditions from a large collection of related FMS units.



Benefits & Features

- **Accessibility**
 - Stand-alone, Web-enabled appliance hosts its own web pages
 - Provides one integrated view of all facility equipment
 - Use a web browser to configure the system and view data
 - Stores and displays its own data - no additional servers or software required
 - No recurring fees or setup fees
- **Reliability**
 - No internal moving parts, like hard drives or fans
 - No downtime, no lost data
- **Easy Integration**
 - Third-party sensor friendly
 - Vendor neutral
 - Highly scalable
 - Accommodates digital, analog, and Modbus, and SNMP inputs
 - Provides Modbus, BACnet, and SNMP output
 - Multiple notification paths - SNMP traps, email, SMS/PDA
 - Support for SNMP V1, V2, and (optional) V3

Monitoring & Notification

What Does an FMS Application Look Like?



We know. You read about all the great things the FMS can monitor but you still have difficulty visualizing it in your facility. We're here to help you understand our products; here's a great application story that showcases the FMS. Take a look, and if you have any additional questions please contact RLE or your local channel partner.

A major data center has 12 FMS units. While they initially purchased one FMS to monitor temperature and humidity sensors, a generator, and uninterruptable power supplies (UPSs), the data center manager quickly recognized the flexibility of the FMS, and purchased additional units to fulfill their monitoring needs.

Now he has 12 FMS units located at 10 separate facilities. He uses the FMS to monitor temperature, humidity, motion, and door sensors, as well as CRAC units, UPSs, generators, generator fuel levels, and leak detection systems.

The onboard features of the FMS make this data center manager's job much easier. Internal mapping features allow him to view equipment status at a glance. Instead of reading through text or scanning through rows of columns, he can look at a graphical map and verify that all monitored equipment is running smoothly. If equipment is in alarm, a red blinking indicator appears on the map, and an email notification is instantly sent to both the data center manager and the building facility manager.

FMS nesting is another onboard feature that helps make life easier. This feature employs a nest/egg concept - one primary FMS acts as a nest; other FMS units are related as eggs. When one of the "egg" units goes into alarm, the alarm is announced on the "nest" FMS. This allows the data center manager to monitor all of his 10 nationwide locations from one facility. And if he's away from his desk? All he has to do is log into the FMS from any web browser or smart phone - complete status and configuration options are available!

Finally, this data center manager uses the FMS to monitor power at his facilities. If the power levels spike, or if one of the facilities has a power outage, he knows. An added bonus - he uses the FMS's onboard PUE/DCiE features to monitor and maximize the efficiency of his facilities.

As you can see - and as this data center manager has learned - the FMS is a robust monitoring device with so many great application possibilities. Consult the following table to see which FMS will work best for you:

FMS Appliance	Inputs	Relay Outputs	Modem	Expansion Card Slots	Input Protocols	Output Protocols
FMS - 1U	8 - Configurable as analog or digital NO/NC	2	Optional	1	Modbus, SNMP, BACnet/IP	Modbus, SNMP, BACnet
FMS - 2U	8 - Configurable as analog or digital NO/NC	2	Optional	4	Modbus, SNMP, BACnet/IP	Modbus, SNMP, BACnet
Expansion Card A	12 Universal -analog or digital NO	8				
Expansion Card C	24 digital NO/NC	0				

What can the FMS monitor?

The FMS has exceptional integration capabilities - it can monitor devices that provide the following output signals:

- Dry Contact (NO or NC)
 - 4-20mA
 - 0-5VDC
 - 0-10VDC
 - Modbus
 - SNMP
 - BACnet/IP

Which types of devices output these signals?
Equipment including: CRAC units, PDUs, UPSs, BCMs, ATSS, generators, fire panels, and security systems

Sensors, including: Temperature, Humidity, Leak Detection, Voltage, Amperage, Airflow, Smoke, Gas, Motion, Door, Light, Sound

FMS Specifications

Power	1U FMS: 24VDC Model: 24VDC (±10%), 1A max., power supply included; 48VDC Model: 36-72VDC, 0.5A max. 2U FMS: 24VDC Model: 24VDC (±10%), 2.5A max., power supply included; 48VDC Model: 36-72VDC, 1.25A max.
Inputs	8 Configurable as 4-20mA (12-bit A/D conversion) or Dry Contact NO/NC (<25mA) Analog/Digital ±0.5°F (@ 25°C), ±4°F (@ -40° to 185°F); ±3%RH (@ 20% to 80%RH); (Internal Temperature/Humidity optional) Internal Temperature/Humidity Keypad Standard 3x4; 3000VAC RMS optically isolated; 20 User Access Codes (also accessible via phone/DTMF through modem)
Outputs	2 Dry Contact, Form C, 1A @ 24VDC, 0.5A resistive @ 120VAC (controllable via user programmable logic) Relay 24VDC (±10%) @ 300mA max. (power for external sensors and/or devices) Sensor/Accessory Power
Expansion Cards	1U accommodates 1 expansion card; 2U accommodates up to 4 expansion cards 24V Falcon requires EXP-x-24 option cards; 48V Falcon requires EXP-x-48 option cards EXP-A-24 or EXP-A-48 12 analog (jumper selectable for 4-20mA, 0-5VDC or 0-10VDC) or digital normally open dry contact inputs (non-isolated, individual ground only); 8 Form C Relay Outputs, 1A @ 24VDC, 0.5A resistive @ 120VAC. <i>48V FMS accepts only 1 EXP-A card.</i> EXP-C-24 or EXP-C-48 24 digital normally open or normally closed dry contact inputs, 3000VAC RMS optically isolated (common or individual ground)
Communication Ports	10/100BaseT, RJ45 connector; 500VAC RMS isolation Ethernet DB9 female connector; 9600 baud; 3000VAC RMS optically isolated; 15kV ESD protection RS-232 Two-wire half duplex; terminal block (selecting RS-232 switches to DB9 male connector); 1200, 2400, or 9600 baud EIA-485 (selectable as RS-232) configurable; 3000VAC RMS optically isolated Modem (RJ11 Telco; optional) V.34bis/33.6 kbps; DTMF capable; PPP-enabled; FCC Part 68 approved; 1500VAC RMS isolation barrier; 2100V peak surge protection
Protocols	IPV4 1.1/4.0; up to 10 URL links to other IP addressable cameras/devices; webpages comply with Rehabilitation Act of 1973, sections 504 and 508, US Dept. of Education (website accessibility for computer users with disabilities) TCP/IP; UDP/IP; ICMP/IP; FTP; NTP; HTTP/HTML; SNPP; Telnet V1: MIB-2 compliant; NMS Manageable with Get, Set, and Traps; V2c: Traps or Informs SNMP Supports Client Authentication (plain and login); compatible with ESMTTP Servers SMTP (email) RTU transmission protocol; function codes: slave - 03; master - 01,02,03,04 Modbus Modbus Slave; TCP/IP transmission protocol; Reads up to 628 registers and converts to SNMP and BACnet Modbus/IP Reads up to 106 instances and converts to SNMP and Modbus BACnet/IP VT100 compatible Terminal Emulation Telocator Alphanumeric Protocol v1.8 TAP (Pager)
Alarm Notification	15 text, numeric, or alphanumeric pager numbers; each digital and analog alarm (HighLimit and LowLimit) can notify any 5 of the 15 pagers Pager (Modem) – Optional 8 email recipients; email sent on Alarm and Return To Normal; each alarm can notify any or all of the 8 email recipients Email (Ethernet, Modem PPP) V1 and V2c: 8 Community Strings; V3 (optional): 4 users, 4 Trap Destinations SNMP Traps (Ethernet) Additional notification to 1 of the 15 pager numbers when the initial page results in a Failure To Acknowledge status Escalation
Health Check/Self-Monitoring	Self resetting; captured in Event Log
Internal Hardware	Battery backed; ±1.53 min/month accuracy Real Time Clock 16MB RAM; 128K NVRAM; 16MB Flash Memory
Logging Capabilities	Last 256 Alarms Alarm Log Last 100 Events (e.g., Acknowledgement By Code, System Boot, Page Successful, etc.) Event Log Last 100 HTML Accesses (User, Date, and Time) Web User Access Log Last 100 Digital Status entries Digital Status Log 244 entries per time frame, per channel. High, low, and average values logged over specific minutes, hours, and days. Trending of Analog Inputs 3,840 entries over 32 inputs, physical or over Modbus. Logging at defined, user-selectable intervals.
Extended Trending (Analog Inputs)	
Login Security	1 Administrator plus 7 users individually selectable for Read Only, Read/Write or Administrator Web Browser Access (Ethernet, Modem PPP) Terminal Emulation Access (Modem) 1 Administrator (password for Modem access)
Front Panel Interface	1 on/off power switch. Red and green LEDs indicate status, network link, network activity, and modem activity
Operating/Storage Environment	Operating temperature: 32° to 158°F (0° to 70°C). Humidity: 5% to 95% RH, non-condensing. Altitude: 15,000ft (4,572m) max. Storage temperature: -40° to 185°F (-40° to 85°C)
Dimensions and Weight	<u>1U FMS:</u> 16.8"W x 1.8"H x 7.9"D (427mmW x 46mmH x 201mmD); 6 lbs. (2.72kg) <u>2U FMS:</u> 16.8"W x 3.5"H x 7.9"D (427mmW x 89mmH x 201mmD); 10 lbs. (4.54kg)
Mounting	Rack mount; wall mount brackets available (not included)
Certifications	CE; ETL listed: conforms to UL 61010A-1, EN 61010; certified to CAN/CSA C22.2 NO. 1010.1; RoHS compliant

