



**Achieve Higher Efficiency and
Reduced Downtime in your Data
Center Operations**

**Measurement Instrumentation Engineered for
the Next Generation of AI Data Centers**



Managing the health of your data center

Emerson delivers measurement instrumentation that enables AI-scale data centers to achieve reliable cooling, reduced water operation, high-density rack performance, and predictable uptime across both new builds and efficiency-focused retrofits.

AI-Grade Uptime & Resilience



Energy Efficiency (PUE / WUE / CUE)



Grid Constraints & Power Quality



Speed to Power & Speed to Revenue



Extreme Rack Density & Thermal Control



Global Vendor & Design Standardization



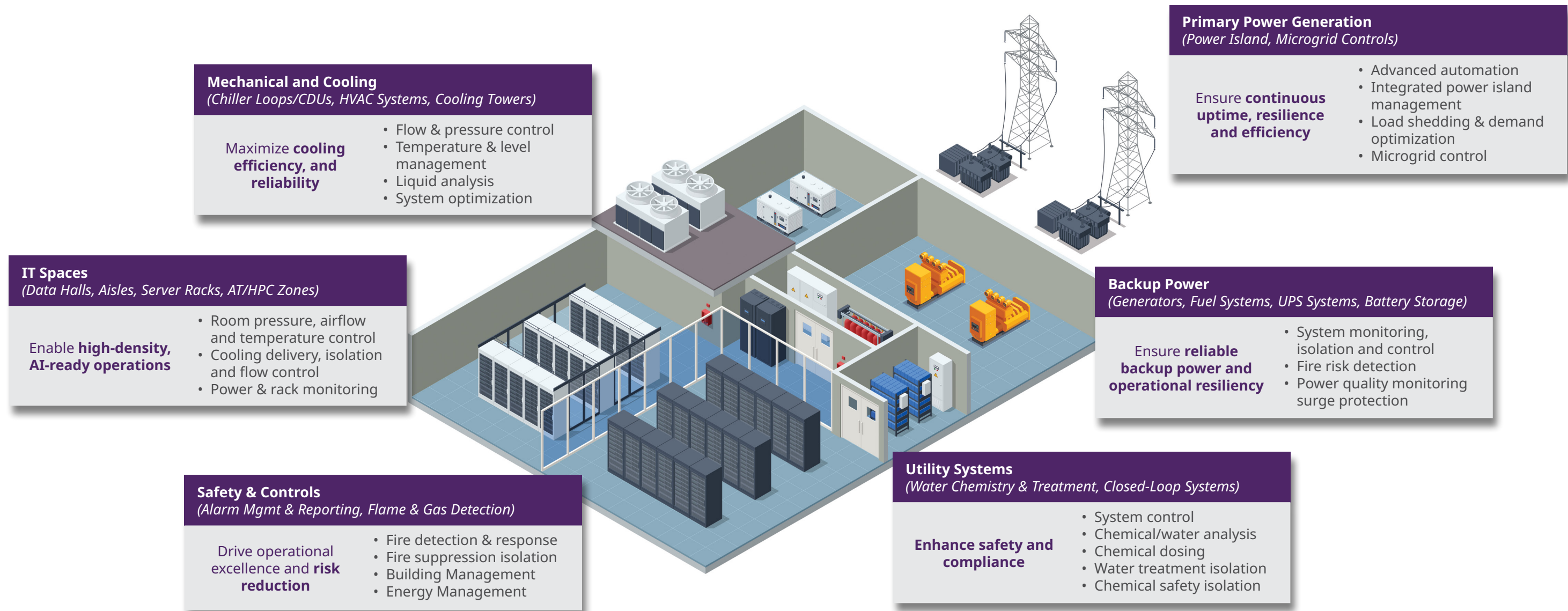
Operational Visibility & Predictive Maintenance



You need to keep your data center up and running, so downtime is simply not an option

Every Second Counts ... the world is moving fast. You need a solution that is reliable and scalable to meet demand.

Your data center's critical systems are the lifeblood of its operation, making monitoring and control of its infrastructure essential to ensuring maximum availability and continuous productivity.



Specialized Automation Solutions for Data Center Infrastructure

Data centers need reliable solutions that ensure uptime and deliver insights to meet the rapid demands of complex operations.

Emerson has one of the industry's broadest portfolios and provides measurement instrumentation with reliable process solutions that keep your data centers running and informed. How we can help:

- PUE optimization via precise DeltaV™ monitoring
- WUE (Water Usage Effectiveness) improvement with closed-loop monitoring
- Thermal runaway prevention
- Reduced energy waste in pumps & cooling towers
- Better rack inlet temp stability

Advance your facility's performance



Ensuring success involves preparing people and inspiring the workforce of the future. Emerson partners with our customers on their continuous improvement journey and stay informed on the latest trends.

What we anticipate for the future:

- Zero-water cooling
- Liquid-to-chip, cold plates, immersion
- Dry coolers replacing evaporative towers
- AI thermal loads surpassing legacy HVAC capacity
- Electric Grid congestion requiring highest-efficiency operation

Mechanical and Cooling



Instrumentation for monitoring your chilled water and glycol loops

Mechanical and cooling systems are the backbone of thermal management in data centers. These systems ensure servers and IT equipment operate within safe temperature ranges, preventing downtime and protecting critical infrastructure.

As AI and high-performance computing workloads drive power densities higher, cooling efficiency and reliability have become essential for maintaining uptime and optimizing energy use. Success in this application depends on accurate measurement of flow, temperature, and fluid quality throughout chilled water and glycol loops.

Applications:

- Monitor Heat Exchanger Air Temperature
- Validate Cooling Performance with Temperature Devices
- Optimize Flow for Energy Efficiency and Leak Detection
- Sustain Fluid Quality for Maximum Cooling Performance

Monitor Heat Exchanger Air Temperature

The Rosemount Synchros™ Temperature Monitor provides a simple and reliable way to measure air temperature across heat exchanger coils.

Rosemount Synchros Temperature Monitor

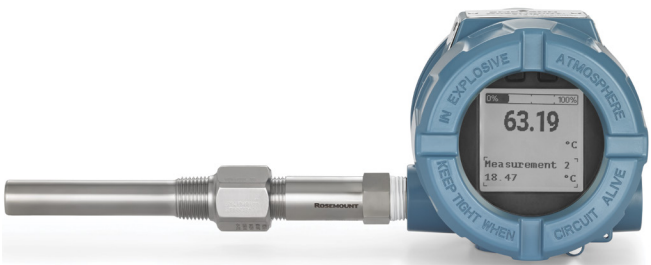


- Directly mounts to process piping without cutting or changing pipe configurations to measure surface temperature, allowing for flexible, simple installation
- Utilize *WirelessHART*® technology for secure, cost-effective and greater than 99% data reliability
- Integrates with Emerson's Plantweb Insight™ Asset View application to help manage your Synchros devices and configure asset specific alerts

Validate Cooling Performance with Temperature Devices

The Rosemount 3144S Temperature Transmitter provides diagnostic coverage from process to control room; to help ensure you do not lose your measurement on your critical temperature measurement loops.

Rosemount 3144S Temperature Transmitter



- RTD Measurement Protection converts your configuration from a 4-wire to a 3-wire configuration if a wire is broken or damaged, helping to avoid loss of measurement and downtime
- Loop Integrity diagnostic continuously monitors the health of the entire electrical loop to detect potential failures before they happen
- Hot Backup™ capability and Sensor Drift Alert utilizing dual sensors ensure measurement integrity

Optimize Flow for Energy Efficiency and Leak Detection

Accurate flow measurement ensures that cooling loops operate at peak performance by preventing costly inefficiencies and identifying issues before they escalate. Emerson provides a variety of flow technologies to meet the diverse needs of data center cooling applications.

Rosemount™ Magnetic Flow Meter



- Ensures proper flow rates for efficient heat transfer and system reliability
- Reduces energy waste and operating costs by preventing over-pumping
- Helps identify leaks or blockages before they cause downtime
- Delivers accurate flow measurement for conductive fluids to optimize cooling performance

Flexim™ FLUXUS® F731TE Ultrasonic Flowmeter



- Highly accurate flow measurement with paired and traceable calibrated ultrasonic transducers
- Integrated thermal energy calculation
- Simple, cost-effective retrofitting without any disruption to supply
- Advanced Meter Verification

Rosemount 4051SFC Compact Orifice Flow Meter



- Compact orifice plate available in 0.5–12 in. (15–300 mm) line sizes for application flexibility
- Flowmeter technology eliminates unnecessary pipe penetrations for an integrated, trouble-free solution
- Complete diagnostic coverage from process to control room
- All-welded hermetic stainless steel SuperModule platform resists overpressure and line pressure effects

Rosemount 4051SFA Annubar™ Flow Meter



- Sensor stagnation zone positioned to reduce noise, measurement inaccuracies and keeps particulates from clogging
- Fast & easy device connection simplifies operator rounds
- Bluetooth® connectivity to simplify configuration & maintenance & increase personnel safety
- T-shape Annubar design features very low permanent pressure loss

Sustain Fluid Quality for Maximum Cooling Performance

Emerson's process analytical instruments monitor pH, conductivity, turbidity, and other fluid properties to ensure optimal cooling performance and prevent corrosion, scaling, and other issues that lead to costly downtime.

Rosemount 1058 Transmitter



- 4-wire transmitter capable of two simultaneous pH, conductivity, dissolved oxygen, chlorine, or ozone measurements in any combination
- Full-color display pinpoints warnings and diagnostics
- Process data can be downloaded in Excel format using a USB drive
- Supports Legacy Analog sensors and new Digital Modbus sensors
- Ready-to-connect technology allows digital liquid sensors to be connected and configured in under 10 seconds

Rosemount 396RVP pH/ORP Sensor



- Minimum maintenance due to robust reference technology helps ensure a steady signal when pH sensor / ORP sensor is coated
- Retractable design for use with ball valve assemblies
- Versatile mounting options feature either a 21" or 36" titanium tube sensor length
- Helical reference pathway hinders reference poisoning for a long pH/ORP sensor life
- Enhanced performance and increased pH/ORP sensor life with cracking resistant glass

Rosemount 402 Retractable Contacting Conductivity Sensor



- Retractable design allows conductivity sensor to be removed from process piping without shutting down and draining the line
- Selectable cell constants 0.01, 0.1, and 1.0/cm cover a broad range of conductivity
- No initial calibration requirements; a factory-measured cell constant ensures out-of-the-box accuracy

Flexim Piox® R



- Delivers precise, real-time monitoring of glycol concentration in data center cooling systems to ensure optimal thermal performance and freeze protection
- Robust, non-fouling design enables accurate, drift-free measurements
- USB and LAN interface

IT/White Spaces



Operate equipment safely and efficiently

Inside the extensive halls of server racks, environmental conditions must be carefully managed to operate equipment safely and efficiently. These spaces require precise monitoring of airflow, pressure, and temperature to prevent contamination, optimize cooling, and avoid unnecessary energy consumption.

Applications:

- Manage Pressure for Contamination Prevention and Control
- Evaluate Temperature to Optimize Cooling

Manage Pressure for Contamination Prevention and Control

Emerson pressure transmitters provide accurate differential pressure readings to maintain positive pressure in server halls, reducing the risk of contamination and costly equipment damage.

Rosemount 4051S Pressure Transmitter



- Bluetooth connectivity to simplify configuration & maintenance & increase personnel safety
- Built-in proof testing provides reliable verification of instrument functionality to improve operational efficiency & safety
- Integral relay switches can help eliminate failure, accuracy & reliability issues that can happen with standalone switches and allow simple on/off control capabilities for applications without a PLC or DCS

Evaluate Temperature to Optimize Cooling

The Rosemount Synchros Temperature monitor delivers precise air temperature readings throughout server halls to ensure predictable cooling performance and prevent hot spots.

Rosemount Synchros Temperature Monitor



- Directly mounts to process piping without cutting or changing pipe configurations to measure surface temperature, allowing for flexible, simple installation
- Utilize *WirelessHART* technology for secure, cost-effective and greater than 99% data reliability
- Integrates with Emerson's Plantweb Insight Asset View application to help manage your Synchros devices and configure asset specific alerts

Safety and Controls



Protect your people and assets

This domain encompasses the foundational systems that ensure operational visibility and safety, including the building management system (BMS), energy management system (EMS), and fire suppression system.

Integrated controls, combined with advanced gas and flame detection technologies, help operators maintain compliance with applicable codes while protecting personnel and critical infrastructure.

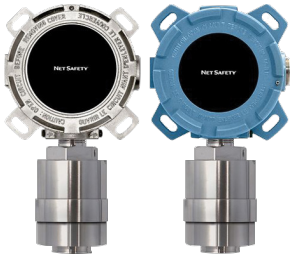
Applications:

- Gas Detection for Leak Prevention and Operational Safety
- Flame Detection for Protecting Critical Infrastructure
- Gas Chromatography for Detailed Analysis

Gas Detection for Leak Prevention and Operational Safety

Emerson offers advanced solutions in two primary categories: point detectors and open path detectors, each designed to deliver rapid, reliable detection in demanding environments.

Net Safety™ Millennium II SC310 Catalytic Bead Combustible Gas Sensor



- Non-selective response - detects both hydrocarbon and non-hydrocarbon based combustible gases
- Lowest power consumption available
- Lowest range (+2,000 ft.) sensor separation

Rosemount 935 Open Path Combustible Gas Detector



- Accurate, high speed response time (< 3 seconds)
- High immunity to false alarms
- Built-in data logger (records up to 100 events)
- Real time diagnostics
- Factory calibrated gas settings for greater accuracy

Flame Detection for Protecting Critical Infrastructure

Flame detection provides early warning when ignition occurs. Radiant energy sensors, found in Emerson's Rosemount 975 Flame Detector family, respond within seconds to specific wavelengths produced by hydrogen- or carbon-based fuels.

Rosemount 975MR Multi-Spectrum Infrared Flame Detector



- Maximum flame detection range of up to 300 ft (90 m)
- Solar blind to help prevent false alarms
- Automatic and Manual Built-In-Test (BIT) - to assure continued reliable operation
- Detect hydrocarbon and hydrogen flames

Gas Chromatography for Detailed Analysis

Emerson's Rosemount 470XA Gas Chromatograph provides a compact, reliable solution that provides accurate measurement to monitor air quality, detect hazardous gases and support safety regulations.

Rosemount 470XA Gas Chromatograph



- Simple, easy-to-use front panel LOI allows local access and control of the GC. Remote access is enabled through industry-leading MON2020 software, offering performance diagnostics, setup, calibration, analysis results and chromatograms

Backup Power



Uninterrupted power is essential

Uninterrupted power is essential for data centers to meet high-availability service-level agreements and maintain customer trust. Backup power systems ensure critical operations continue even during grid failures or unexpected outages.

When one or more primary sources fail, battery backup is generally reserved for the most critical loads due to its high cost, while the majority of backup power is provided by diesel generators. Automatic transfer switches enable a seamless transition between power sources, ensuring continuity without manual intervention.

Applications:

- Level Measurement to Ensure Fuel Availability and Operational Continuity



Level Measurement to Ensure Fuel Availability and Operational Continuity

Emerson's Rosemount 1208 Level and Flow Transmitter - Non-Contacting Radar provides a cost-effective solution for monitoring fuel levels in storage tanks, ensuring generators have the fuel required to power critical operations for several hours in case of grid failure.

This capability supports regulatory compliance, enhances operational visibility, and helps data centers meet uptime requirements without interruption.

Rosemount 1208 Level and Flow Transmitter - Non-Contacting Radar



The Rosemount 1208 Series provides accurate and reliable level measurement and open channel flow calculations.

The Rosemount 1208 uses continuous non-contacting radar technology and features Smart Echo Supervision™ technology, in a compact PVDF housing. The Rosemount 1208 Series communicates via Bluetooth wireless technology, 4–20 mA HART® or IO-link and has a broad range of mounting accessories, making it easily integrate into both new and systems.

Utility Systems



Maintain continuous operations and meet uptime requirements

Data centers depend on robust utility systems to maintain continuous operations and meet strict uptime requirements. Cooling water is a critical component of these systems, and its quality must be carefully managed to prevent corrosion, scaling, and microbial growth in cooling loops. These issues can degrade heat transfer, reduce cooling efficiency, and shorten equipment life. Because utilities represent one of the largest operating costs for data centers, operators focus on strategies that minimize water and energy consumption while ensuring optimal conditions for IT equipment and personnel.

Applications:

- Water quality and level measurement

Water Quality and Level Measurement

Stable utility water level control helps data centers run more efficiently and reduce conditions that can cause process upsets and drive-up maintenance costs, such as scaling, corrosion, and biological growth.

Rosemount 1208 Level and Flow Transmitter - Non-Contacting Radar



- With Smart Echo Supervision technology, Rosemount Non-Contacting Radars automatically track all echoes, including those from obstructions in the vessel, and distinguish them from the real product surface echo. This ensures the true product level is reliably and accurately reported
- Simple configuration over your tablet/mobile device via Bluetooth wireless technology
- Designed for ease of use, no complex configuration needed. Setup within minutes

Rosemount 1058 Transmitter



- 4-wire transmitter capable of two simultaneous pH, conductivity, dissolved oxygen, chlorine, or ozone measurements in any combination
- Full-color display pinpoints warnings and diagnostics
- Process data can be downloaded in Excel format using a USB drive
- Supports Legacy Analog sensors and new Digital Modbus sensors
- Ready-to-connect technology allows digital liquid sensors to be connected and configured in under 10 seconds



The industry’s most extensive portfolio of measurement devices

Emerson has one of the industry’s broadest portfolios to help you address the challenges of today for a more profitable tomorrow.

Emerson has been a trusted partner in exploring new opportunities, boldly leading the way forward with an unparalleled portfolio of measurement and analytical instrumentation, software, integrated systems, and services.

Put Emerson’s Measurement Instrumentation technologies to work in your data center operations.

Pressure Measurement

Keep positive pressure in your server rooms to keep them clean of dust and other contaminants

Positive pressure to keep your server rooms free of dust and other contaminants

Rosemount 3051 Coplanar Differential Pressure Transmitter



- Loop Integrity and Plugged Impulse Line diagnostics detect electrical loop issues and plugged impulse piping before it impacts the quality of the process for increased safety and reduced downtime
- 10-year installed stability and 150:1 range down produce reliable measurements

Monitoring differential pressure in cooling systems boosts efficiency by guiding fan speeds, detecting leaks, and preventing hot spots in air and liquid setups

Rosemount Electronics Board Assembly for 4088A MODBUS™ Protocol - Temp. Input Disabled



- Best-in-class sensor stability
- Lower Power Consumption
- Suitable for use in Air and Liquid cooling applications
- Easy-to-use Configuration Tools
- Full Range of Safety Certifications

Achieve reliable pressure measurements quickly and easily

Rosemount 2088 Gauge and Absolute Pressure Transmitter



- Available protocols include 4–20 mA HART and 1–5 Vdc HART Low Power for application flexibility
- Lightweight compact design allows for easy, installation

Monitor your cooling loop quality to reduce downtime

Rosemount 2051 Coplanar Pressure Transmitter



- Monitors pump performance, detecting blockages or air pockets, and ensuring proper differential pressure across heat exchangers and filters
- Patented coplanar technology allows direct mounting for flow and level solutions that provide installation flexibility

Temperature Measurement

Accurate and reliable temperature data tells you if the system is picking up and removing heat like it should

Manage your supply and return water temperature in chilled water and glycol loops

Rosemount 644 Temperature Transmitter



- Available in HART, FOUNDATION™ Fieldbus or PROFIBUS® protocols
- Hot Backup™ capability and sensor drift alert with dual sensors ensure measurement integrity
- Minimum and maximum temperature tracking observes temperature extremes for easy troubleshooting
- Device dashboards provide easy interface for simplified device configuration and diagnostic troubleshooting

Rosemount X-well™ Technology



- Accurately measures internal process temperature without a thermowell or process penetration
- Improve safety by eliminating process shutdowns and pipe modification
- Decrease design and engineering time by up to 65%

Rosemount 214C RTD Temperature Sensors



- Single or dual element Pt-100 RTD with thin-film or wire-wound designs meets various application requirements
- Callendar-Van Dusen constants allow for transmitter-sensor matching and offer the highest level of accuracy
- Includes spring-loaded or compact spring-loaded mounting styles for adaptability

Rosemount 114C Thermowells



- Threaded, flanged, Van Stone and welded mounting styles with stem profile options allow for application flexibility
- Flexible design modifiers for root, bore and tip thickness allow customization for special application requirements
- Thermowell options, including NACE, material certification and PMI, ensure material traceability or compatibility

Flow Measurement

Reliable and robust flow measurement, with unparalleled process insight and integrated diagnostics

Monitor flow for load balancing, control valve tuning, and energy performance optimization

Rosemount Magnetic Flow Meter Sensors



- All-welded construction provides a hermetic seal that protects against moisture and other contaminants
- Removable and replaceable terminal block enables easy repair in the field without the need to replace the entire meter
- Minimize maintenance and repair with an obstruction less design featuring no moving parts

Rosemount Magnetic Flow Meter Transmitter



- Continually monitor meter health and performance without stopping the process with Smart Meter Verification
- Prevent moisture ingress with dual-compartment transmitter housing
- Advanced diagnostics and through-the-glass Local Operator Interface offer unparalleled process insight

Flexim FLUXUS F731TE Ultrasonic Flowmeter



- Highly accurate flow measurement with paired and traceable calibrated ultrasonic transducers
- Integrated thermal energy calculation
- Simple, cost-effective retrofitting without any disruption to supply
- Advanced Meter Verification

Flexim FLUXUS F731WD Ultrasonic Flowmeter



- No zero-calibration needed and permanently drift-free
- Permanent coupling foils eliminate maintenance requirements
- Advanced Meter Verification
- Flow disturbance correction to reduce required straight runs down to 2D inlet

Level Measurement

Optimize processes and improve safety

Managing your level measurement requirements

Rosemount 2120 Level Switch - Vibrating Fork and
Rosemount 2140 Level Detector - Vibrating Fork



- Reliable high/low level alarms, overfill prevention and pump control
- Help prevent unplanned shutdowns with advanced diagnostics
- Fully integrated remote proof- testing

Flame Detection

Protect your people and assets

Flame detection for monitoring your emergency power and fuel storage pad

Rosemount 965 Flame Detector



- Fast and reliable flame detection at up to 150 ft (45 m)
- Proven false alarm immunity
- Quick response time
- Factory calibrated for life use
- Infrared built-in test (BIT) for continuous integrity verification of optics and electronics
- An internal log event recorder
- Multiple output options for maximum compatibility with standard infrastructures

Additional Emerson Technologies

Ovation Automation Platform

Emerson’s industry-leading Ovation™ Automation Platform simplifies operations while delivering the reliability data centers demand. This unified platform coordinates power generation, energy storage, and electrical systems by seamlessly integrating power generation assets and supporting infrastructure. The result is a single, cohesive view of site-wide data and operations.

Learn more at [Emerson.com/data-center-energy-management](https://emerson.com/data-center-energy-management)

Valves, Actuators and Regulators

Emerson’s ecosystem of valves, actuators, and regulators helps data center developers accelerate, scale, and de-risk delivery through a unified, single-partner expertise that simplifies procurement and enables fast execution.

We help operators protect uptime and improve efficiency with reliable, precise control and isolation of critical cooling, water, power, and utility systems, supported by Emerson’s global footprint of local service providers.

Mechanical & Cooling Systems | Primary Power Generation | Backup Power Generation | IT Spaces | Utility Systems | Safety & Controls

Learn more: [Data Center Valves](#) | [Emerson US](#)

Learn more about Emerson’s Measurement Instrumentation for Data Centers:
[Emerson.com/DataCenterMeasurement](https://emerson.com/DataCenterMeasurement)

**Emerson's Measurement
Instrumentation technologies
will help you achieve higher
efficiency and reduce downtime,
while enabling you to optimize
operations and carry out proactive
maintenance.**



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