



ACCELERATING  
INNOVATION

**Session ID: 1-1876**

**Introducing the New Rosemount™ 4051S Pressure  
and 3144S Temperature Transmitters**

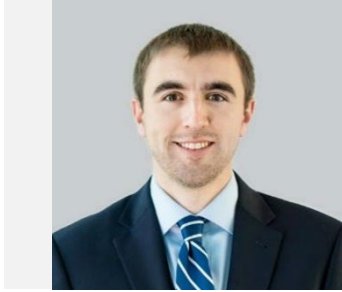
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# Agenda

**The New Platform For Measurement Innovation**

**Resetting Performance Expectations**

**A Focus on Ease of Use**

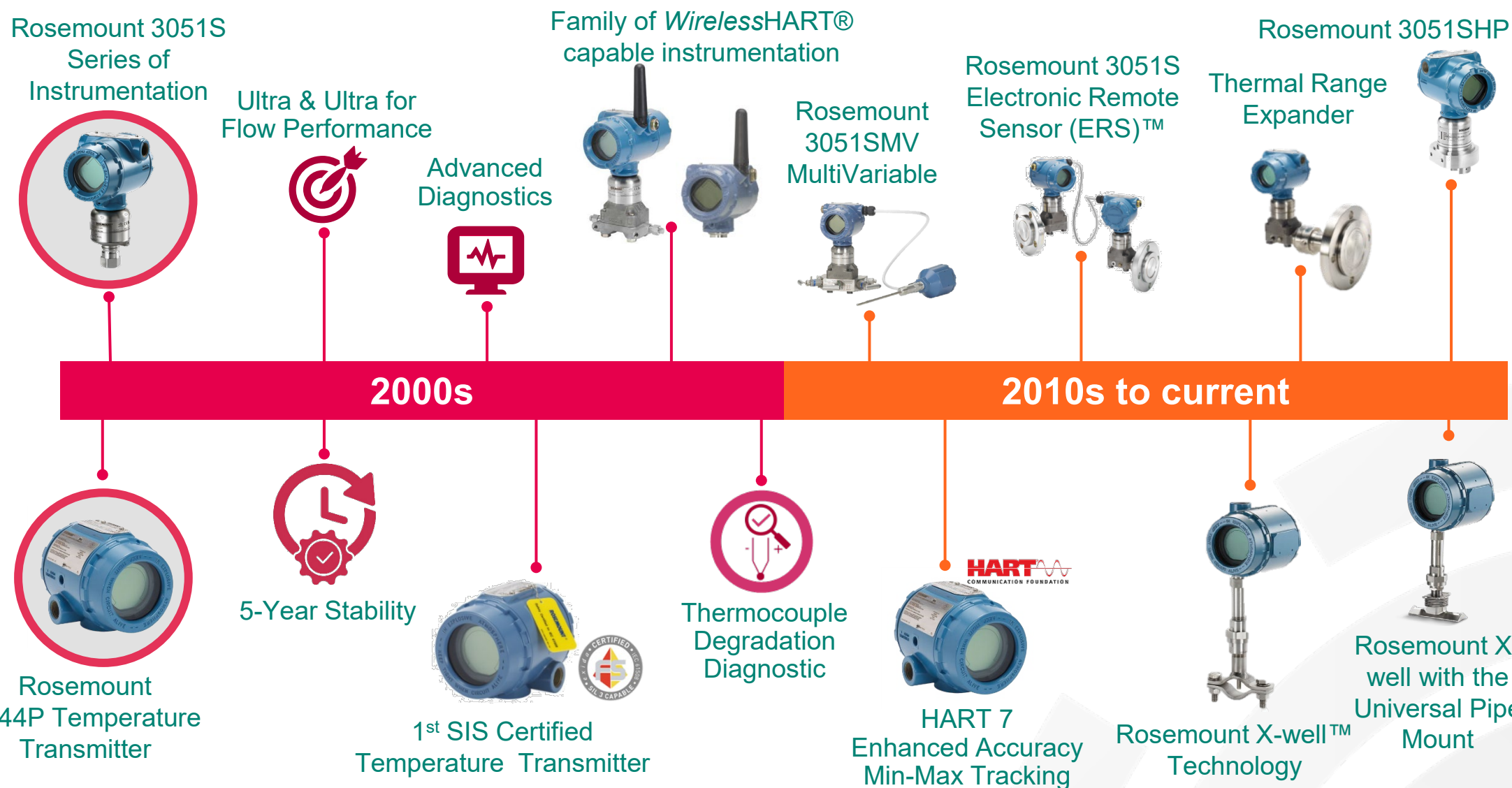
**Full Diagnostic Coverage and Process Insight**

**Expanding Application Range**

**Summary**

# The New Platform For Measurement Innovation

# Rosemount 3144S and 4051S Build On a History of Innovation



## Rosemount 3144S and 4051S

Industry-first features

“Best in Class” specs


Intuitive and Easy-to-Use interfaces

Unmatched safety and process insight

Platform for future innovations



# Rosemount 4051S Pressure Transmitter Injects New Technology and Capabilities to Pressure Measurement



**HCD User Interface**

- Quick service buttons
- Setup-by-application

**Enhanced Display**

- Larger size
- Hi-res, hi-contrast
- Graphical, backlight
- Multilingual

**New Electronics**

- Increased capabilities enabling additional innovations

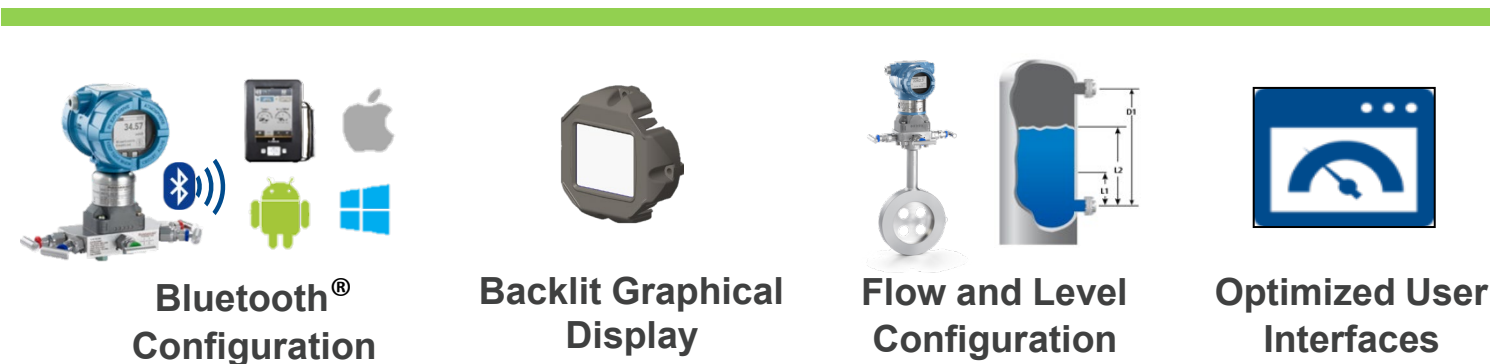
**New SuperModule**

- Faster response
- Less power

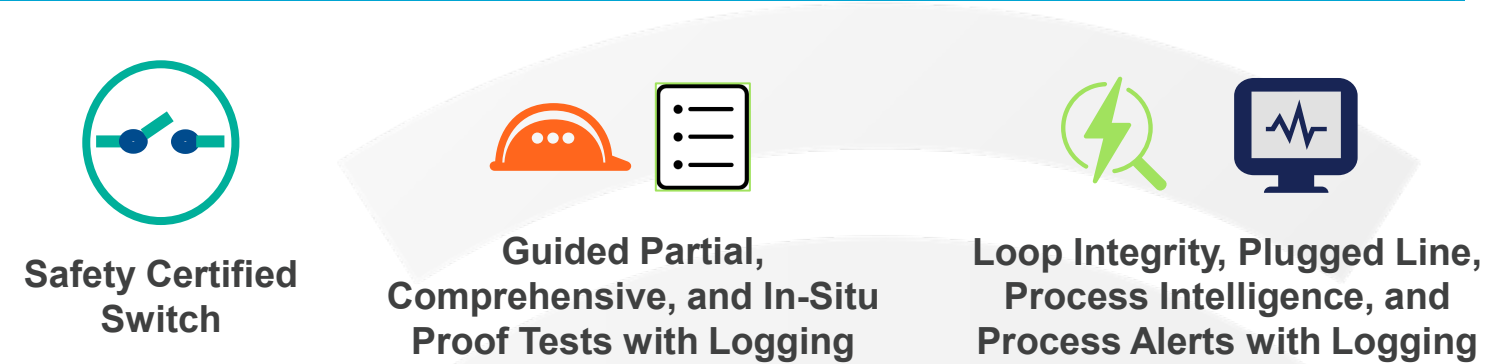
## Broad Portfolio Available at Launch



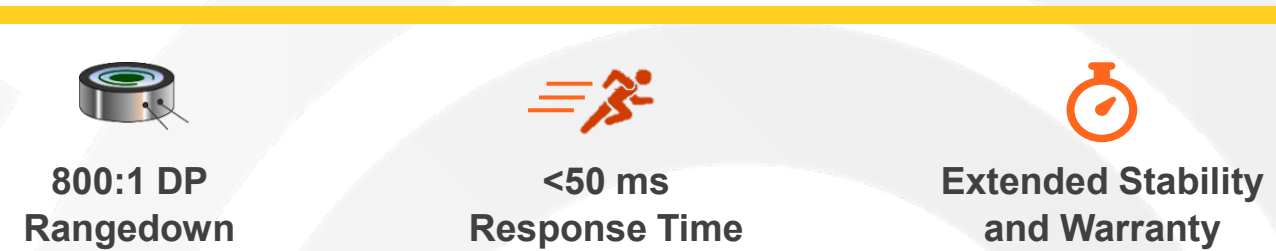
## Improved Ease of Use Device Interfaces



## Increase Safety with Switch Output, Logging, Diagnostics



## Improved Capabilities Increase Application Flexibility



# Rosemount 3144S Temperature Transmitter

## A New Standard for Temperature Measurement

### HCD User Interface

- Quick service buttons

### Improved Housing

- Castling on covers



### Industry-First Terminal Block

- Dual 4-wire RTD

### Enhanced Display

- Larger size
- Hi-res, hi-contrast
- Graphical, backlight
- Multilingual

### Improved Ease of Use Device Interfaces



Bluetooth Configuration



Backlit Graphical Display w/ Local Languages



Optimized User Interfaces

### Increase Safety with Advanced Diagnostics & Logging



ReadyConnect™ Technology



Guided Proof Tests & Logging



Full Diagnostic Coverage



### Improved Capabilities Increase Application Flexibility



Best-in-Class Accuracy: 0.05°C



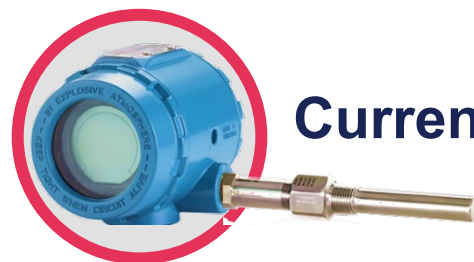
Rosemount X-well Technology with Extended Range



20-Year Stability and Warranty

# Elevating Performance Expectations

# Rosemount 3144S: Elevating Performance Expectations



**Current 3144P**



**New 3144S**

Dual Sensor Input 5-year Stability	Base Offering	<i>Dual 4-wire Input Enhanced Dashboard Loop Integrity RTD Measurement Protection Calibration Log</i>
Segmented Zero/Span Button English only	Display	<i>Graphical Quick Service Button 7 Languages Backlit Display</i>
Optional 5-year warranty .08 °C Accuracy	Ultra Performance	<i>20-year Warranty 20-year Stability .05 °C Accuracy</i>
Sensor Health Diagnostic Log	Diagnostics	<i>Improved Sensor Health Improved Diagnostic Log</i>
N/A	Enhanced Safety	<i>Guided Proof Test Proof Test Logs</i>
N/A	Enhanced Device Interface	<i>Bluetooth Configuration</i>
Standard Temperature Range Direct Mount 2 Model Assembly	X-well Technology	<i>Extended Temperature Range Remote Mount Capable Single Model Ordering</i>
N/A	Sensor Configuration	<i>ReadyConnect Technology</i>

## The Most Accurate Measurement

*.05 °C Accuracy | ReadyConnect™  
Dual 4-Wire Input*

- Control closer to setpoint
- Custody transfer measurements

## The Most Reliable Measurement

*20-yr Stability | 20-yr Warranty  
RTD Measurement Protection | Loop Integrity*

- Extend calibration intervals
- Avoid controlling based on inaccurate variable
- Prevent loss of measurement

## Across The Widest Range of Conditions

*Extended Temperature Range X-well (650 °C )  
5g Vibration Rating*

- Doubles the range of current X-well solution
- Operate in higher vibration conditions

# Rosemount 4051S Delivers New Performance Capabilities



Legacy 3051S



4051S

100 ms time response Scaled Variable	Base Offering	<b>80 ms time response</b> <b>Enhanced Dashboard</b> <b>Flow and Level Modes</b> <b>Loop Integrity</b> <b>Calibration Log</b>
Segmented Display Z+S Buttons English only Remote Display	Display	<b>Backlit, Graphical Display</b> <b>Quick Service Buttons</b> <b>7 Languages</b> Remote Display
15-year Warranty 15-year Stability	Performance	<b>20-year Warranty</b> <b>20-year Stability</b>
Up to 200:1	Rangedown	<b>Universal Rangedown (800:1)</b>
100 ms	Time Response	<b>Fast Time Response (&lt;50ms)</b>
Process Intelligence Diagnostic Log Loop Integrity	Additional Diagnostics	<b>Simplified</b> Process Intelligence <b>Expanded</b> Diagnostic Log <b>Dedicated Plugged Line</b>
N/A	Enhanced Safety	<b>Guided Proof Test</b> <b>In Situ Proof Test</b> <b>Proof Test Logs</b>
N/A	Enhanced Device Interface	<b>Bluetooth Configuration</b>
<b>11</b>	Relay Output	<b>2 High Voltage Relays</b>

## The Most Reliable Measurement

**20-yr Stability | 20-yr Warranty**  
**Ultra Performance**

- Ultimate measurement confidence with 20 year specs
- Extend calibration intervals
- 0.025% reference accuracy

## The Most Versatile Measurement

**800:1 Rangedown**

- Simplify spare inventory
- Eliminate uncertainty in projects before all sizing information is known
- Reduce the number of unique models to specific, order, and stock

## The Fastest Measurement

**<50 ms time response**

- Unlock new applications with high speed time response
- Bring Rosemount pressure measurement reliability to demanding compressor surge control

# A Focus on Ease of Use

# Shared Usability Enhancements

## Display Size and Readability

- 4-inch housing allows for large display
- Graphical display provides higher resolution
- Backlit to improve readability in low light

## Easy to Read PV

- Large, Bold PV values
- PV value always present
- 0-100% range bar

## Icons

- NE 107 Compliant Status icons
- Device configured for X-well
- Square root output for DP Flow

## Scrolling Secondary Area

- Rotates through additional information including:  
Additional variables, HART long tag,  
Switch relay status, Bluetooth status

## Quick Service Button Functionality

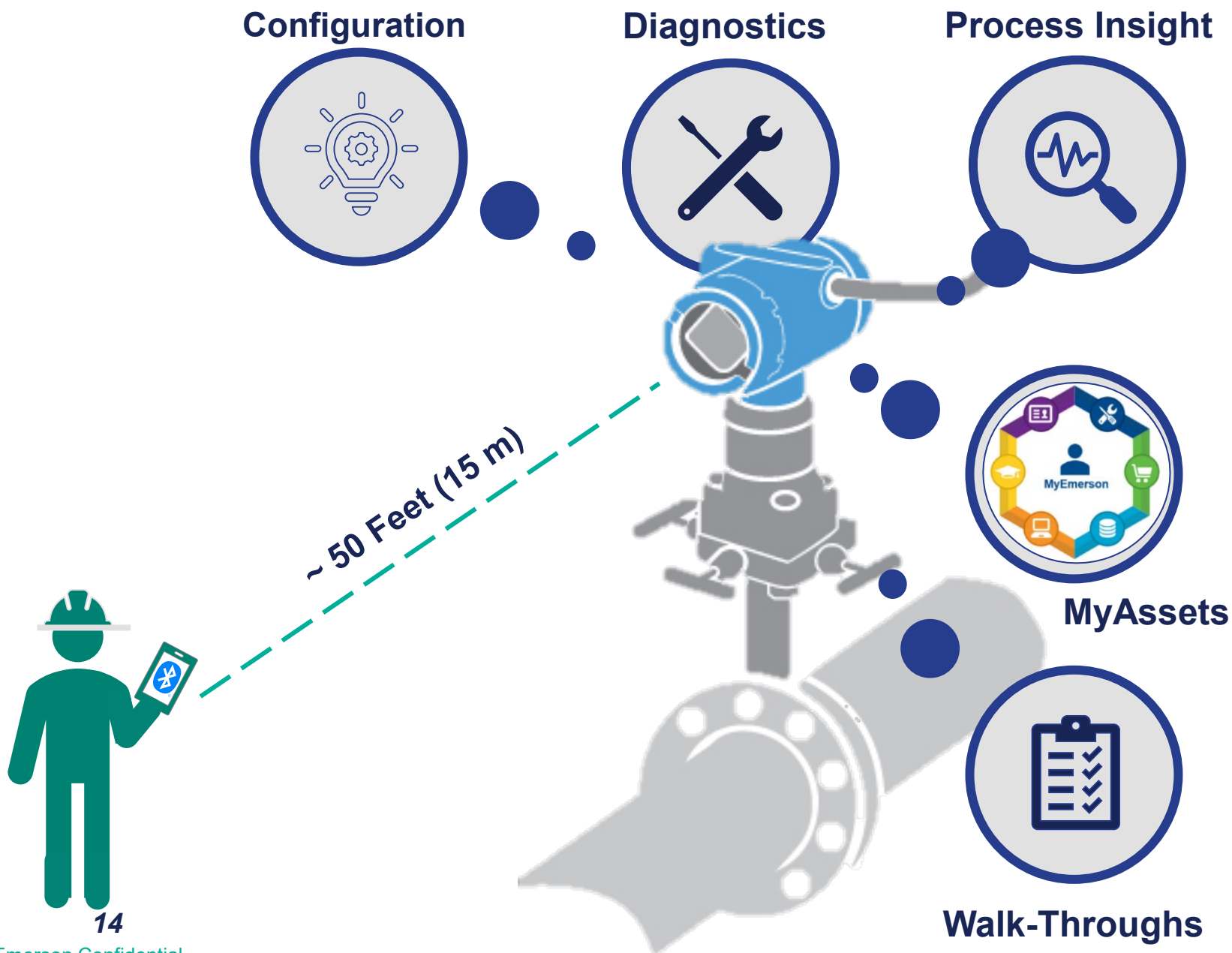
- Externally Accessible Buttons  
Provide a Simple Interface at the Device  
3144S located on top of display

## Customizable

- # of significant digits shown
- Gage and absolute unit labels
- Software rotatable screen
- Configurable to 7 languages
- Decimal point vs. comma



# Bluetooth® Connectivity Streamlines Configuration, Maintenance, and Troubleshooting



## Increased Productivity

Quickly locate field devices and perform tasks related to configuration, device status, and diagnostics

## Increased Safety

Access device information from a safe location with the need for less equipment and less time in hazardous areas

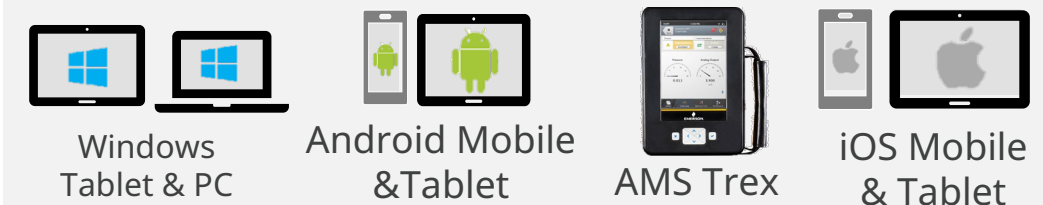
## Increased Reliability

Devices are protected from unnecessary exposure to the environment, increasing the reliability of both the device and the process

## Seamlessly Integrates into Plant Digitalization Strategies

Touchless, local access to field devices from mobile or tablet

Complements existing communication networks



# Updated User Interfaces Simplify Commissioning, Maintenance, and Troubleshooting

## Task Based Menu Structure

Intuitive user interface enables quick access

### Device Settings:

- Setup Overview
- Output
- Security
- Communication
- Display
- Calibration
- Restore/Restart
- Device Information

## Common Terminology

Updated menu selections to common names

- Engineering Units → Pressure
- Local Zero and Span → External Buttons
- Scaled Variable → Flow, Level

## Consistent experience across all tools



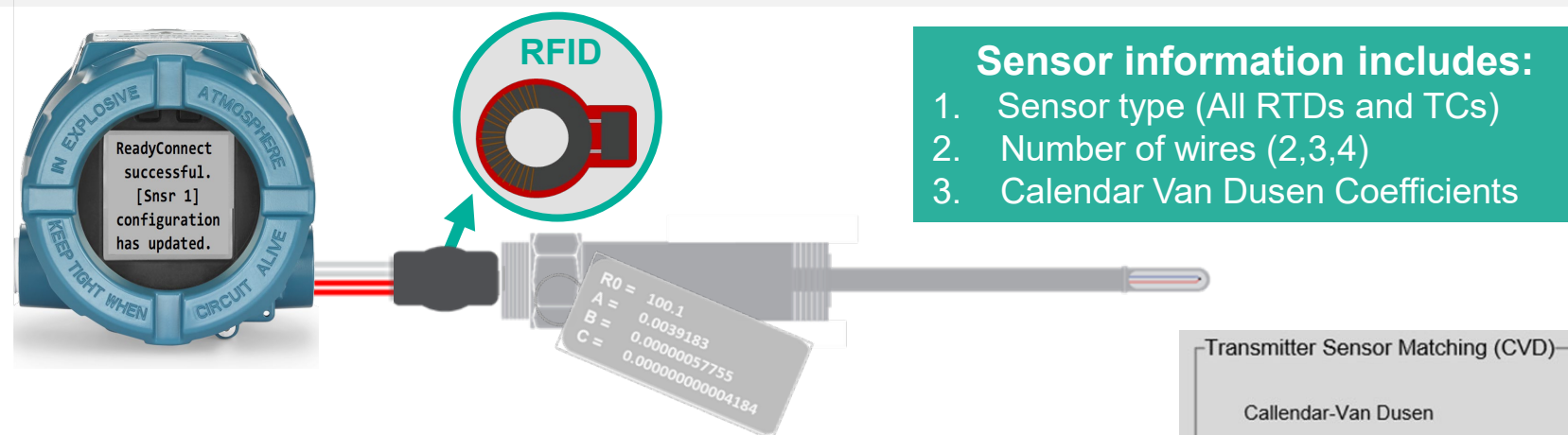
# ReadyConnect™ Technology

## Worry-free Configuration in Seconds

### What is ReadyConnect Technology and How Does it Work?

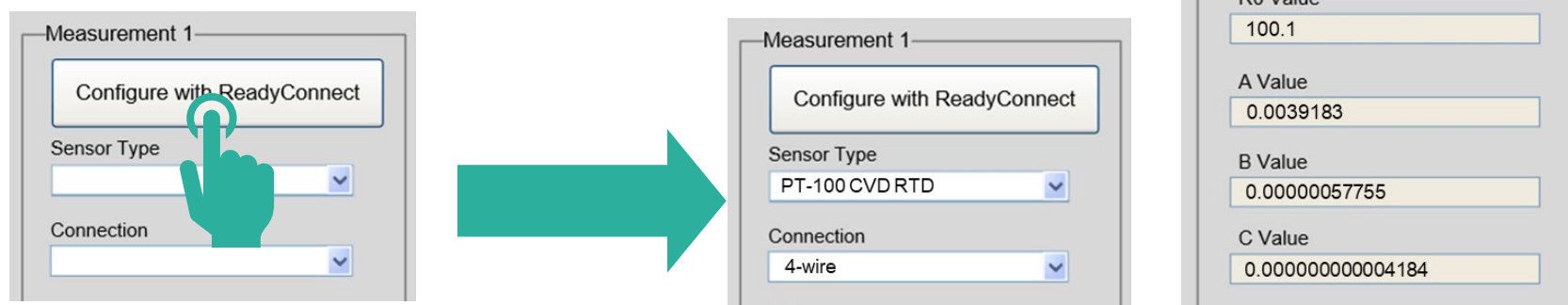
#### Sensor Configuration with a Push of a Button

- Sensor information is stored on RFID chip located in Rosemount 214C Temperature Sensor
- When Rosemount 3144S is connected to sensor, sensor configuration is initiated by push of button on transmitter's user interface (DD.DTM, FDI, Quick Service Buttons)
- Information is detected from sensor chip and configuration of transmitter is updated



**Sensor information includes:**

1. Sensor type (All RTDs and TCs)
2. Number of wires (2,3,4)
3. Calendar Van Dusen Coefficients



Save time during configuration and commissioning



Reduce manual input errors



Ensure most accurate measurement



Frequently replaced sensors



Calibrated Sensors  
Calendar-Van Dusen Coefficients

# Simplify Maintenance and Extend Proof Test Intervals with Rosemount 3144S and 4051S

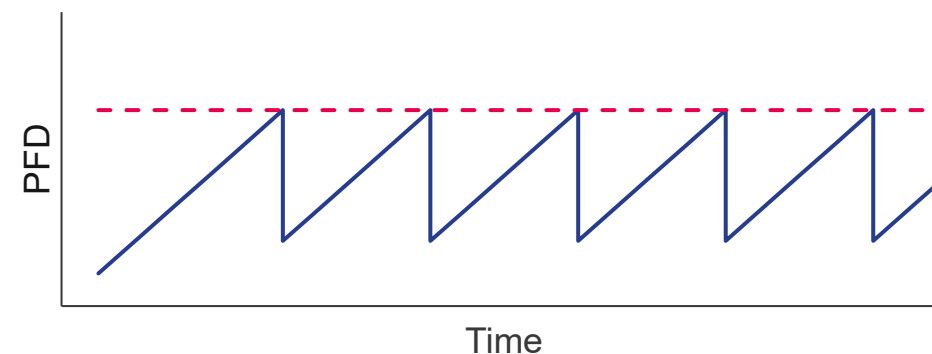
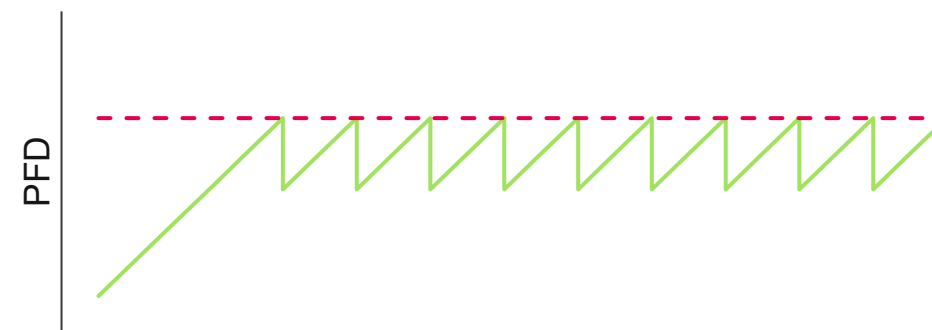
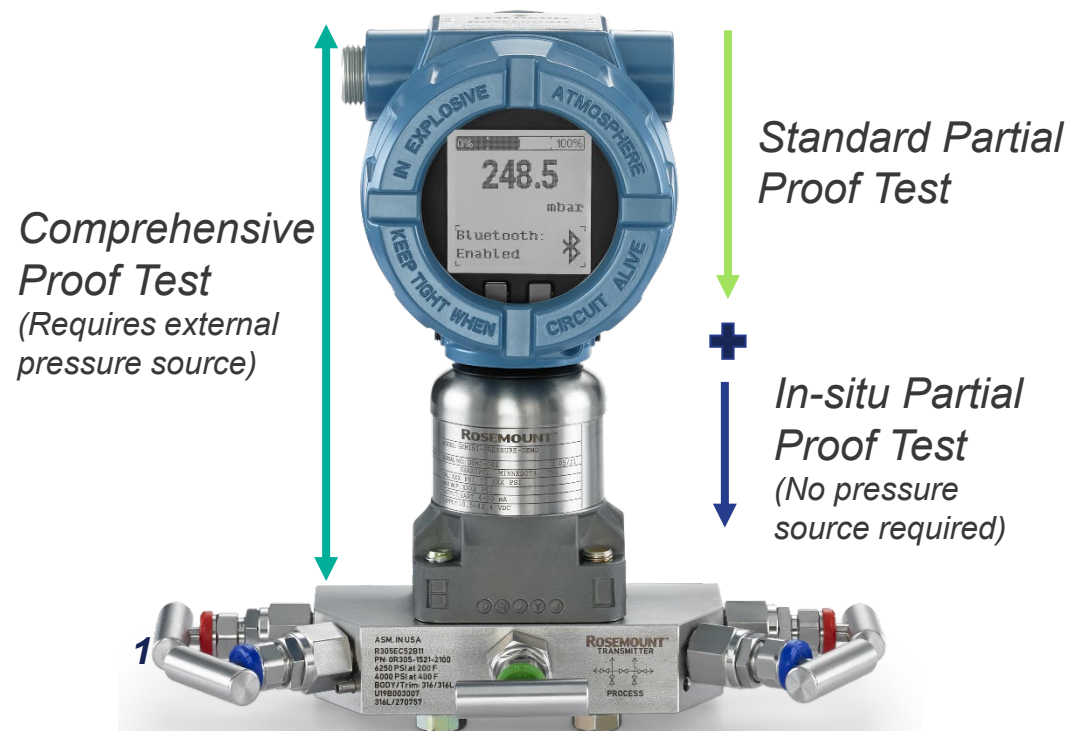


## Guided methods simplify SIS proof testing

- Proof tests are a periodic functional test of devices implemented within a safety loop to detect hidden failures
- Guided partial and comprehensive proof testing and logs take the guess work out of your safety maintenance operations

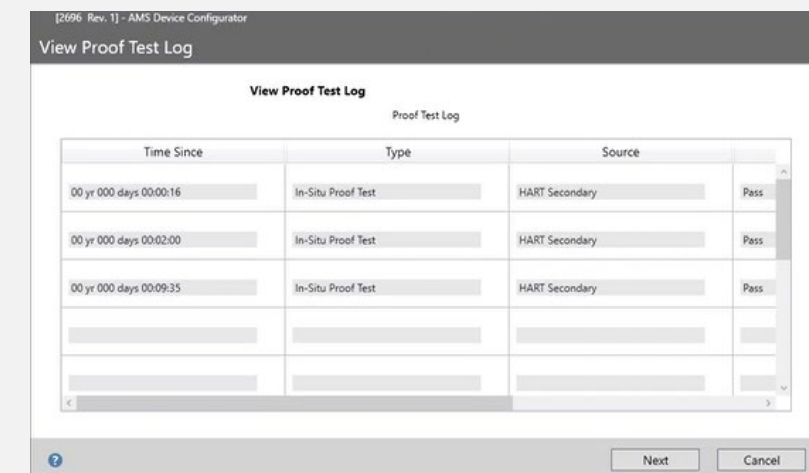


## In-situ Partial Proof Test Extends Proof Testing Intervals



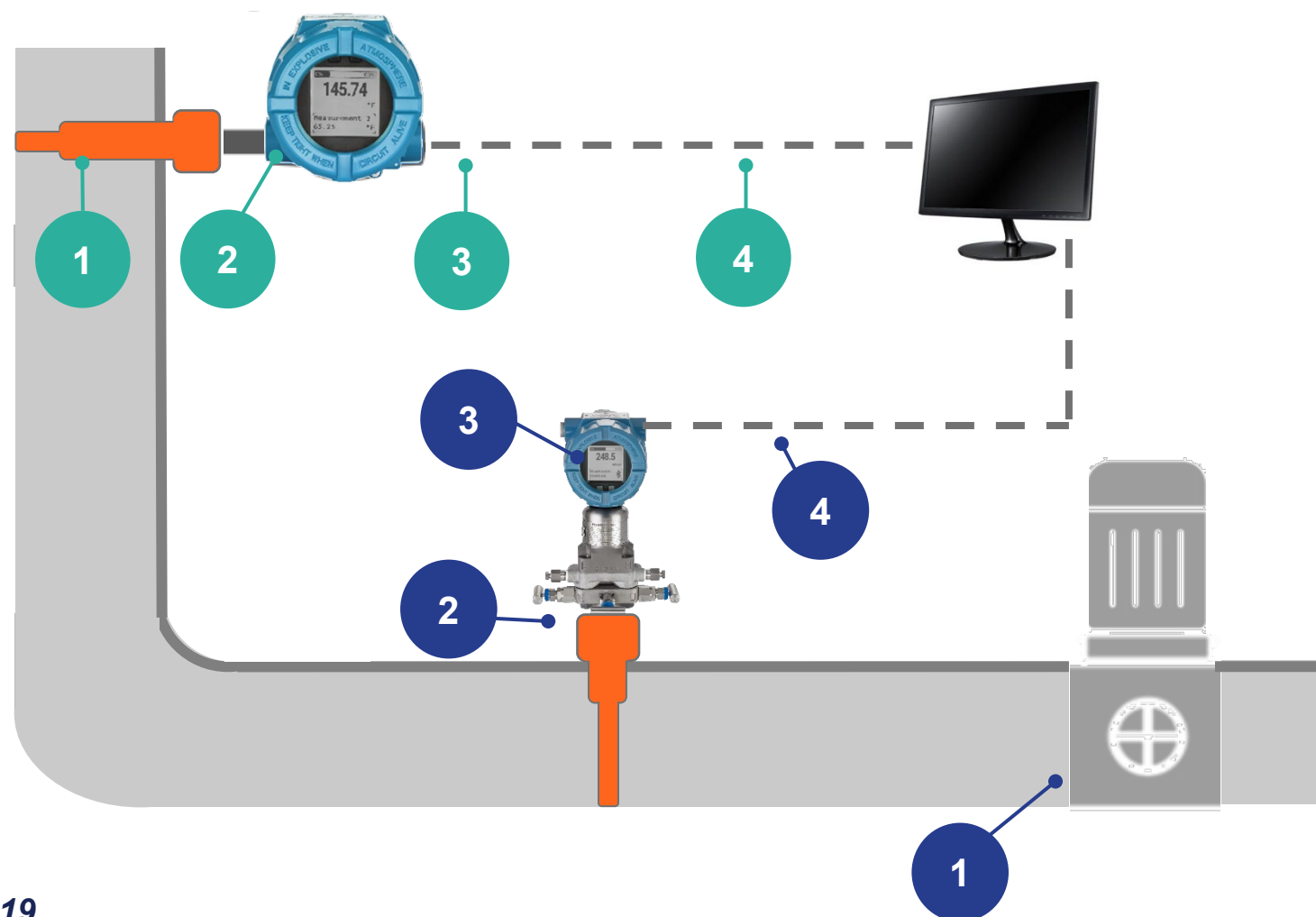
## Proof Test Log

Comply with safety standards with log so you know what was tested and when



# Full Diagnostic Coverage and Process Insight

# Complete Diagnostics Coverage from the Process to Control Room



## Temperature Diagnostics

- 1 Sensor Health and Hot Backup
- 2 RTD Measurement Protection
- 3 Loop Integrity
- 4 AC Line & Transient Filter

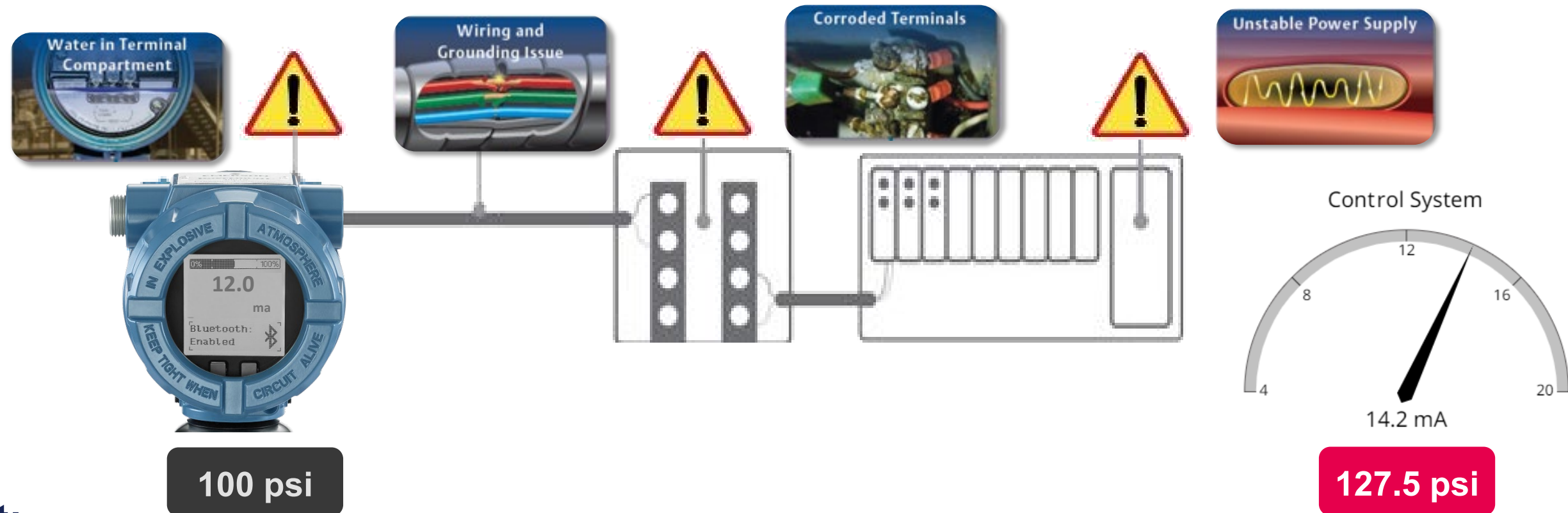
## Pressure Diagnostics

- 1 Process Intelligence
- 2 Plugged Impulse Line
- 3 Transmitter Health
- 4 Loop Integrity

# Loop Integrity Diagnostic Performs a Continuous Loop Test

## Challenge:

- Multiple issues can lead to degradation of the electrical loop causing an inaccurate analog output signal

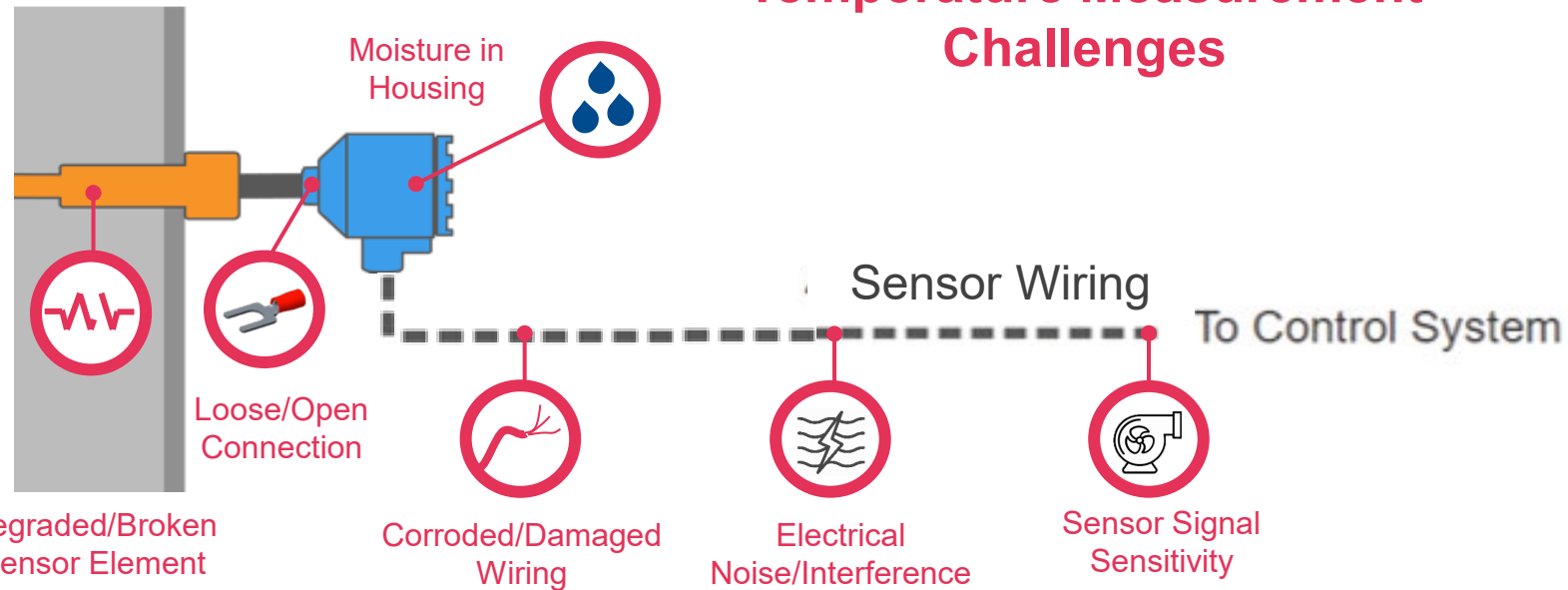


## Benefit:

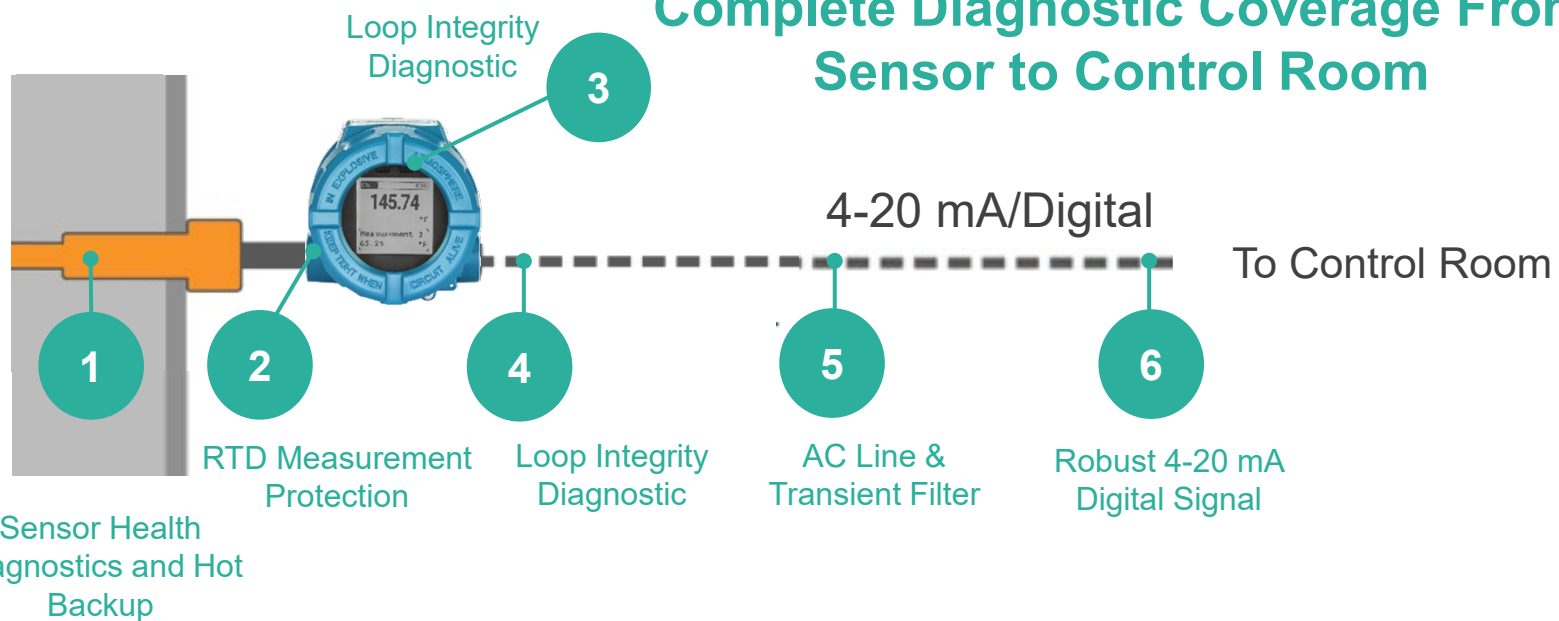
- Ensures that the transmitter loop current signal is delivered to the control system
- Avoid controlling your process based on an inaccurate variable

# Gain Confidence in Your Temperature Measurement with Complete Diagnostic Coverage from Sensor to Control Room

## Temperature Measurement Challenges



## Complete Diagnostic Coverage From Sensor to Control Room

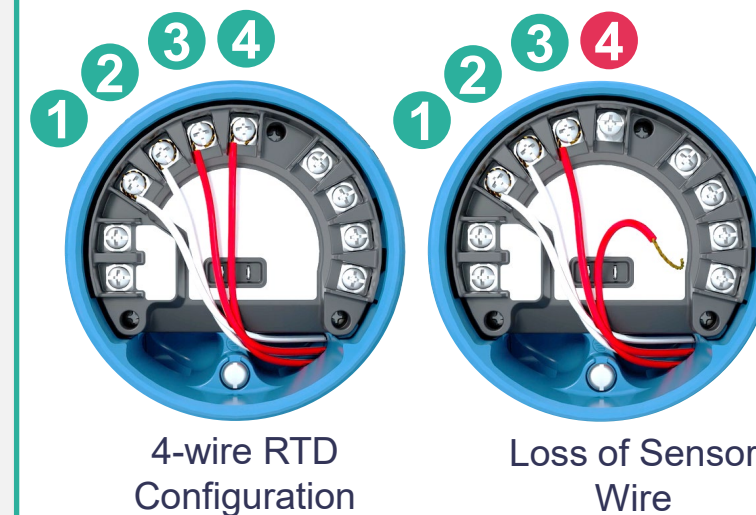


## Protect the entire measurement point

- Operate at optimum performance with *sensor health diagnostics* and *filtering* by maintaining accuracy in non-ideal conditions
- Optimize process uptime with *sensor health diagnostics* and *hot backup*, helping users avoid measurement failure and process shutdown by alerting of issues before sensor failure
- *Loop Integrity* diagnostics provides actionable insight into power loop issues and moisture in the housing

2

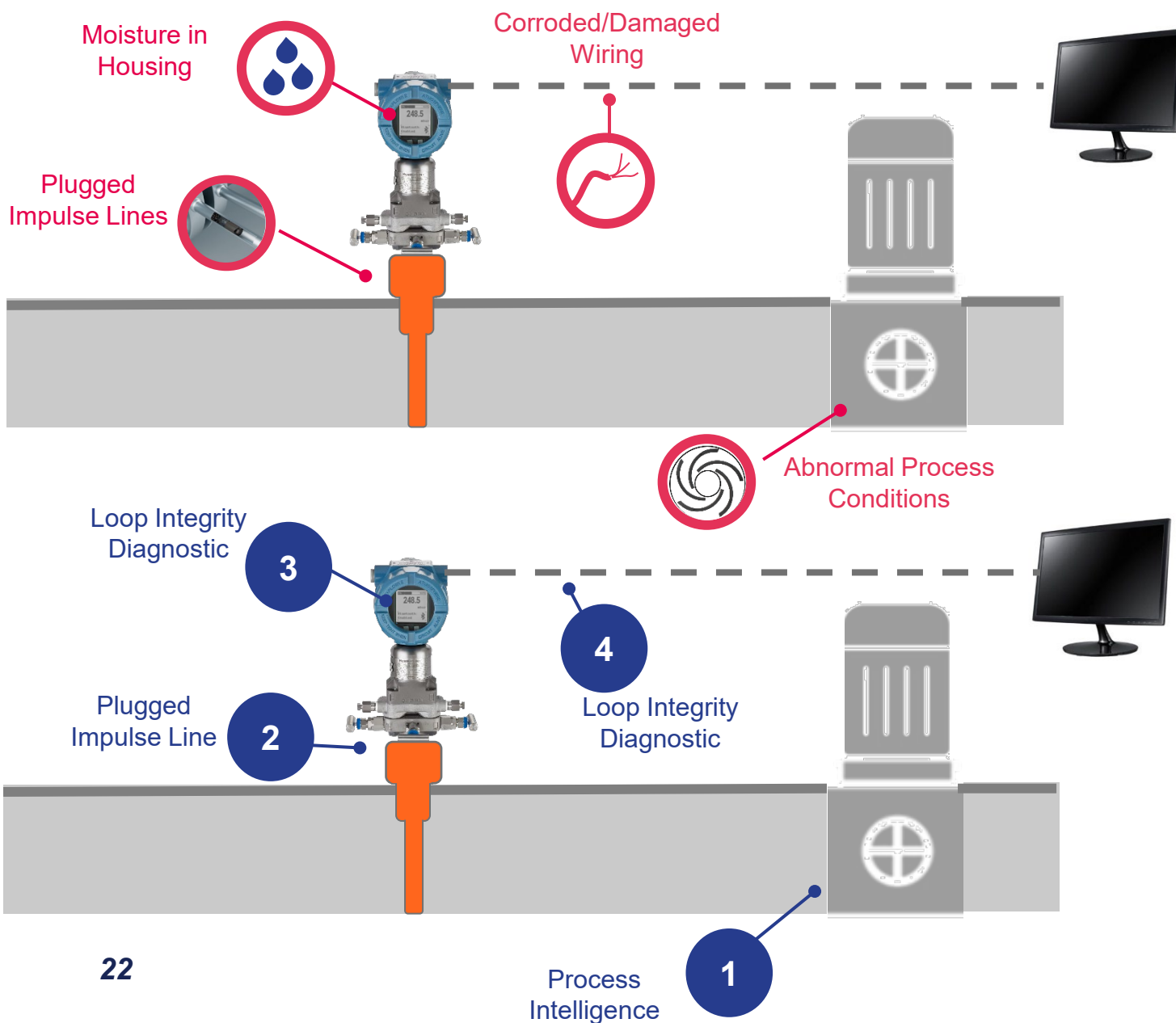
## Avoid Downtime \*NEW\* RTD Measurement Protection



3144S will change from 4- to 3-wire RTD Config.

- No Alarm
- No Disruption
- Measurement Maintained
- Alert Generated

# Advanced Diagnostics on the Rosemount 4051S Provides More Process Insight



## Plugged Impulse Line Diagnostics

- Easily detect plugged impulse lines with dedicated diagnostic
- Avoid controlling your process based on an inaccurate reading
- Optimize maintenance schedule and increase process uptime


## Process Intelligence Diagnostics

- Detects changes in process noise levels to diagnose abnormal conditions
- Get notified before issues impact operations or safety with alerts to changes in the process or process equipment
- Simplified configuration makes set up quick and easy


# Device Logs Provide Process Insight Even When You Are Not Connected to the Device


Active Alerts   **History**   Process Alert 1   Process Alert 2   Loop Integrity Diagnostic   Plugged Impulse Line Diagnostic

Number of Events  
100

 View 10 Most Recent Diagnostic Events

Note: Loading a 100 event log may take several minutes.

 View 100 Most Recent Diagnostic Events

 Clear Diagnostic Log

Example Diagnostic Log (Not Actual Data)

Time Since	Event Name
01 yr 003 days 02:14:53	Incompatible Sensor Module - Alert Active
01 yr 004 days 03:12:12	Pressure Out of Limits - Alert Cleared
02 yr 003 days 09:14:12	Log Cleared

Time Since	Event Name
01 yr 003 days 02:14:53	Incompatible Sensor Module - Alert Active
01 yr 004 days 03:12:12	Pressure Out of Limits - Alert Cleared
02 yr 003 days 09:14:12	Log Cleared

Diagnostic logs: up to 100 events

Calibration logs: up to 20 events

Proof test logs: up to 10 events

Log entries automatically created when transmitter alerts occur

Stores events on a first-in, first-out basis

# Expanding Application Range

# Flow and Level Configurations are Easy

## Flow Rate and Totalized Flow

**Setup**

Flow Units:       Damping:  Seconds

**Configure Flow**

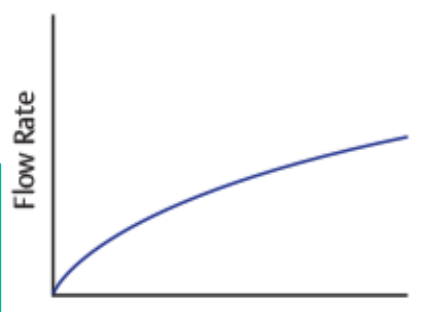
Entered Flow Rate:  SCFM

Pressure at Flow Rate:  inH2O...

Totalizer Units:       Direction:

Flow Unit of Time:

Flow Units:



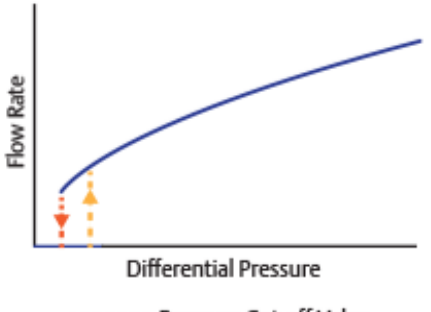
Flow Rate vs Differential Pressure

**Low Flow Cut-off**

Cut-off Mode:

Pressure Cut-off Value:  inH2O...

Pressure Cut-in Value:  inH2O...



Flow Rate vs Differential Pressure

..... Pressure Cut-off Value  
..... Pressure Cut-in Value

## Level and Volume

[008F Rev. 11] - AMS Device Manager

**Level Configurator**

Enter the required information:

Maximum Level (L2):  Inches

Minimum Level (L1):  Inches

Process Fluid Specific Gravity:

Set Vertical Distance Between Process Connections:

Vertical Distance (D1):  Inches

Fill Fluid:

**Maximum Level Configuration**

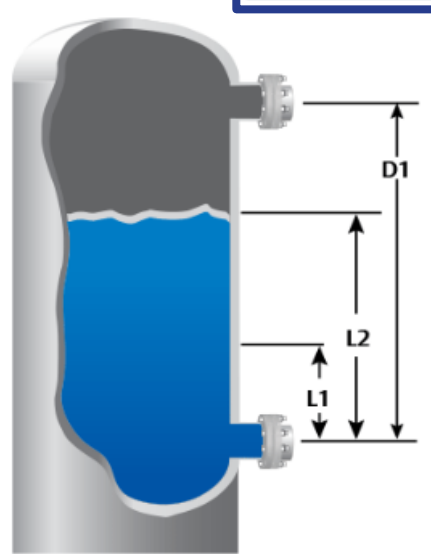
Maximum Level (L2):  Inches

Pressure at Max Level:  inH2O...

**Minimum Level Configuration**

Minimum Level (L1):  Inches

Pressure at Min Level:  inH2O...

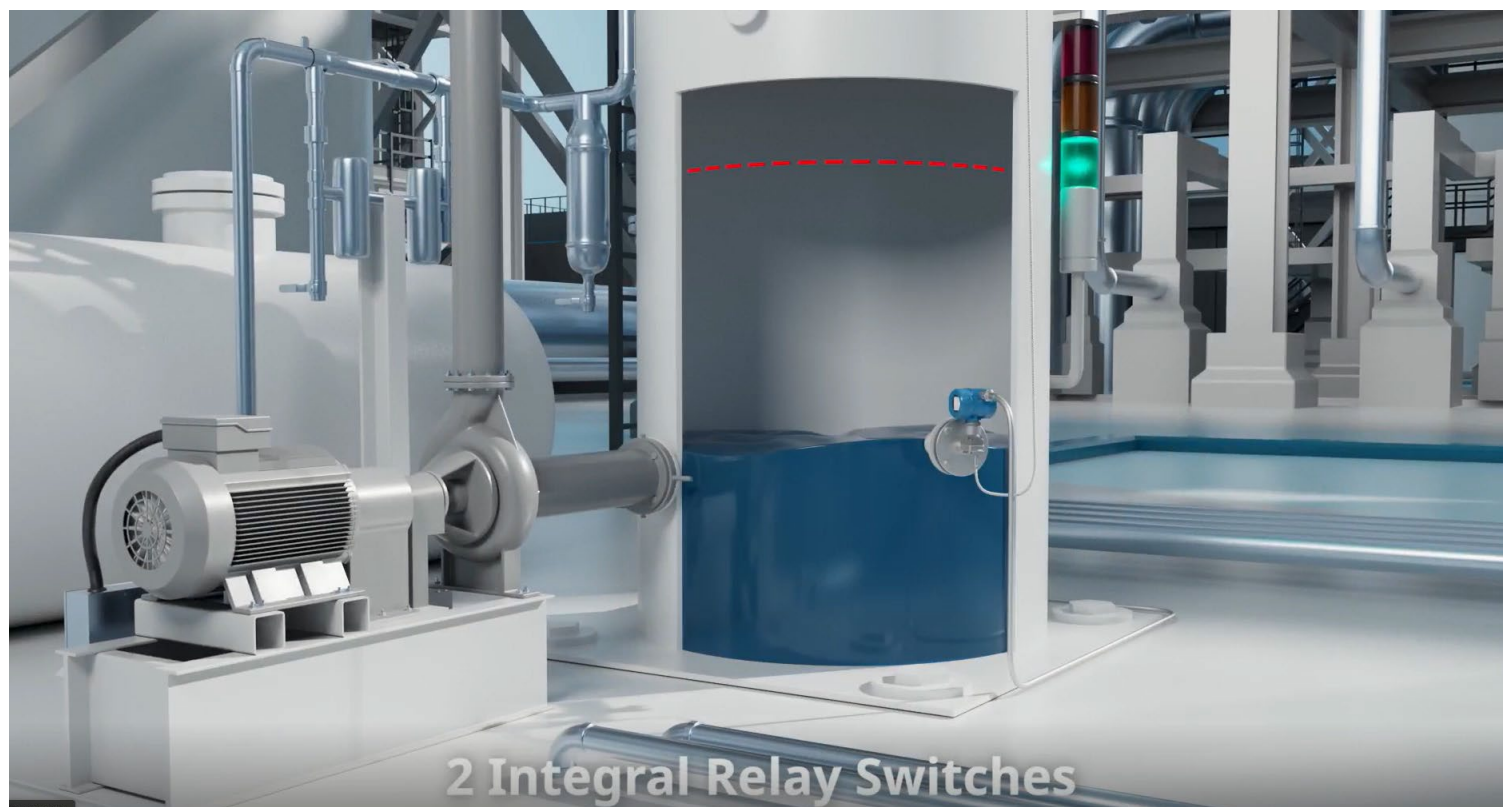


Level Configurator

# Relay Switches Provide Enhanced Asset Protection for Critical Measurement Points

## *Control of equipment via relay switches directly from 4051S transmitter*

- 2 Independent high voltage, high current relay switches
  - Relay Power: 21.5 – 60 VDC or 20 – 264 VAC 50/60 Hz
  - Switching Voltage: 20 – 60 VDC or 20 – 250 VAC 50/60 Hz
  - Switching Current: Current: 5 A max resistive load



## With Integrated Relay Switches you can:

- Have confidence switch is working with notifications and continuous process readings
- Reduce failure, accuracy, and reliability issues that can happen with stand-alone switches

## Where to use

- Control of equipment directly (pumps, compressor, lights)
- Safety certified for use in SIS applications providing redundant SIS path to final control element
- Simple on/off control capability for applications without a PLC or DCS
- Enables a safety shut down or alarm (pump control, essential asset protection, tank pressure)

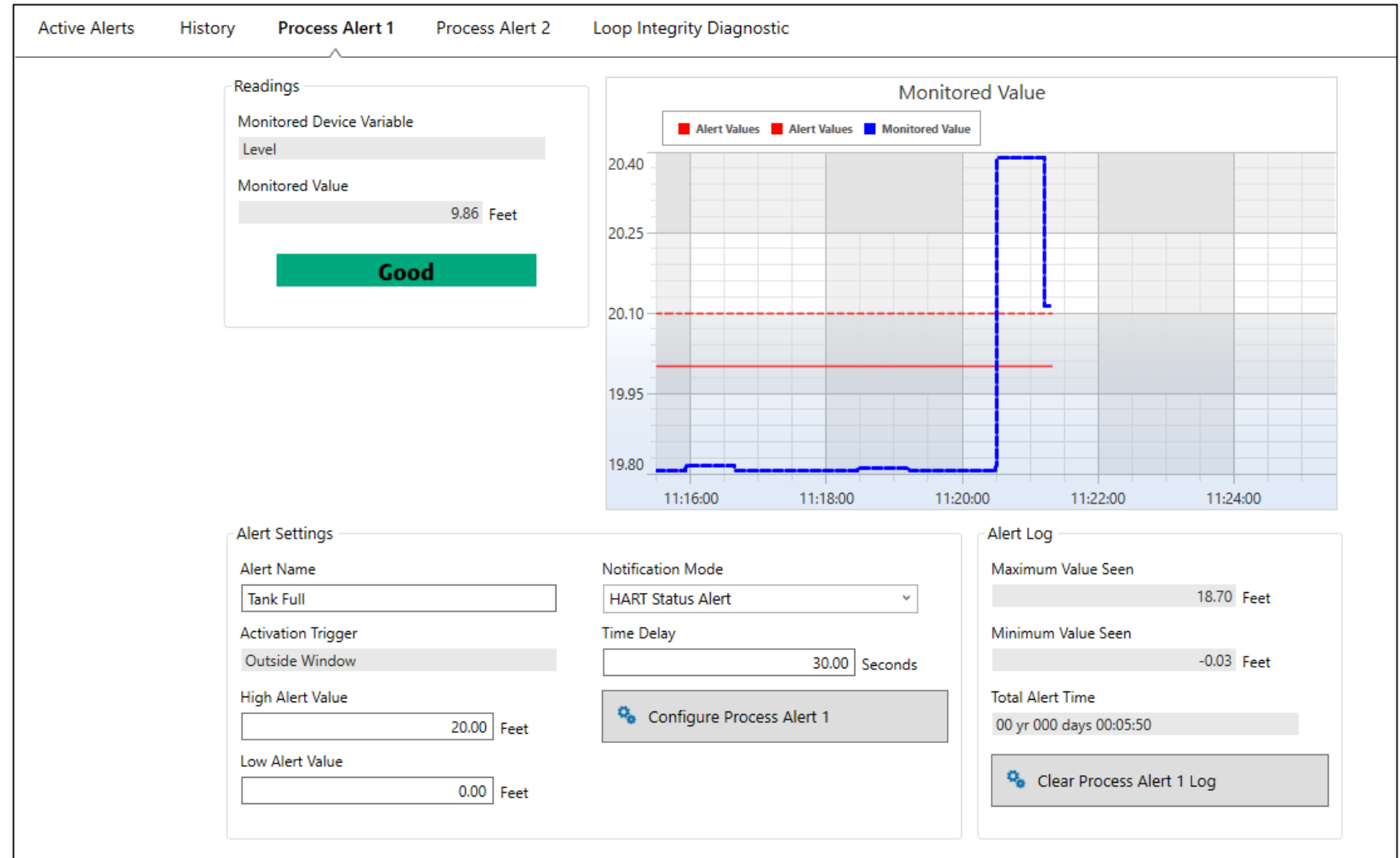
# Improve Visibility to Your Operation with Expanded Process Alerts

## Configure in 3 easy steps

- Select an activation trigger
  - Above high, below low
  - Inside/outside window
- Define alert thresholds
- Choose a notification mode
  - HART alert
  - Analog output alarm

## Track any dynamic variable

- Pressure, flow rate, totalizer, level, volume, process temperature and ambient temperature



Set an analog output alarm when your measured pressure exceeds a high-limit setting

Trigger an analog output alarm when your measured level is outside a desired range

Send a HART alert when your sensor module temperature is either too high or too low

# Take Advantage of Non-Intrusive Rosemount X-well Solution in High Temperature Applications

Accurate and Reliable Process Temperature Measurement without a Thermowell



## Rosemount X-well Enhancements

- Extended Range Capability
  - Measurement range doubled
  - Up to 650 °C / 1202 °F
- Remote mount capability
  - Mount transmitter away from process
  - Install display for maximum visibility
- Single model code
  - Easier to specify



Measure process temperature non-intrusively in *High Temperature Applications*



Operate in viscous, corrosive, and high velocity conditions



Improve safety with no pipe penetration



Increase flexibility with Universal Pipe Mount



Reduce design, engineering and installation costs

# Summary

## EMERSON TECHNOLOGY AND SERVICES

### EXPERTISE & BEST PRACTICES

323 Future Vision of Automation

### INDUSTRY SOLUTIONS

- 413 Chemical & Refining Industry
- 307 Collaboration Wall
- 405 Energy Industry
- 404 Energy Transition Industry
- 301 Life Sciences Industry
- 412 Metals & Mining Industry
- 313 Power Industry
- 305 Capital Projects

### MEASUREMENT INSTRUMENTATION

- 548 Engineered Solutions
- 526 Flexim Non-Intrusive Ultrasonic Flow
- 451 Lifecycle Services for Measurement Instrumentation
- 427 Micro Motion Coriolis Flow
- 457 Non-Intrusive Measurement Instrumentation
- 449 Rosemount Combustion Analysis
- 434 Rosemount Corrosion & Erosion
- 435 Rosemount DP Flow
- 456 Rosemount DP Level
- 351 Rosemount Flame & Gas Detection
- 448 Rosemount Gas Analysis
- 357 Rosemount Level
- 349 Rosemount Liquid Analysis
- 439 Rosemount Magnetic Flow
- 339 Rosemount Pressure
- 438 Rosemount Temperature
- 534 Rosemount Ultrasonic Flow
- 538 Rosemount Vortex Flow
- 532 Roxar Flow Metering
- 335 Wireless & Connectivity Solutions

### ASSET OPTIMIZATION

- 332 AspenTech Industrial Data Fabric
- 238 Simulation

### ASSET PERFORMANCE MANAGEMENT

- 139 AMS Reliability Solutions
- 139 AspenTech Asset Performance Management

### CONTROL & SAFETY SYSTEMS

- 227 Control & Optimize
- 228 Cybersecurity
- 334 DeltaV Artificial Intelligence
- 221 DeltaV Batch
- 348 DeltaV Data Integration
- 326 DeltaV Edge Environment
- 350 DeltaV Ethernet-APL Solutions
- 223 DeltaV Integrated Enterprise Engineering
- 220 DeltaV Modernization
- 338 DeltaV Safety Instrumented Systems
- 322 DeltaV Software Defined Control
- 251 DeltaV Virtualization
- 250 Energy and Transportation Solutions
- 229 Guardian Software & Solutions
- 354 SCADA Systems

### OPERATIONS MANAGEMENT SOFTWARE

- 239 DeltaV AgileOps
- 247 DeltaV Live
- 249 DeltaV Mobile
- 248 DeltaV Real-Time Scheduling

### VALVES, ACTUATORS & REGULATORS

- 209 Actuators
- 101 Fisher Valves and Instruments
- 201 Valve Services
- 300 Regulators and Relief Valves

## EXHIBITORS

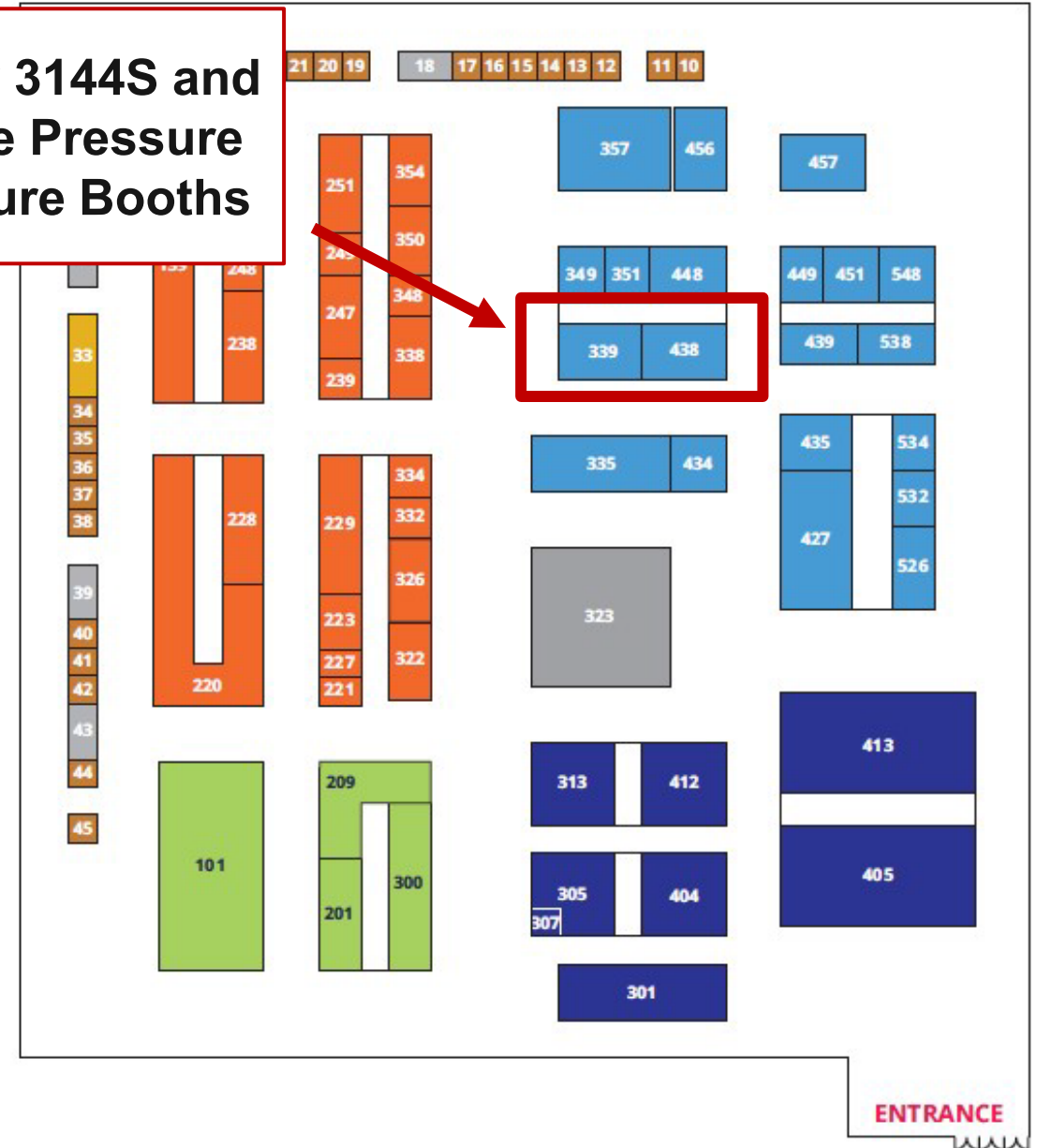
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- 14 Multi Instruments Inc.
- 38 Nozomi Networks
- 36 OPSWAT
- 45 Rittal, LLC
- 19 Roxtec
- 17 Russ Bassett Corp.
- 15 Safran
- 44 Sartorius
- 21 SmartSights, LLC
- 31 Softing Inc.
- 11 Terrapin Industrial LLC
- 25 Waterfall Security Solutions, Ltd.
- 41 Weidmüller USA

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