



PLANTWEB ADVISOR FOR METROLOGY

Managing System Uncertainty

Plantweb Advisor for Metrology Functionality

Plantweb Advisor for Metrology is Emerson's new modular analytics platform. It is built upon the latest technologies, providing a suite of functions and flexibility that are unprecedented within the measurement world today. This next-generation platform provides a level of standardization and automation of complex tasks that integrate seamlessly across measurement assets and engineering support locations.

The enhanced diagnostic, remote monitoring, predictive capabilities and validation provide greater insight into both process and instrumentation, driving clarity and reducing financial exposure and risk.

System Uncertainty Module

A metering system's uncertainty provides direct insights into the financial exposure your organization faces on that asset. That's why it is critical to calculate and monitor uncertainty dynamically throughout the system's lifecycle. For this purpose, Plantweb Advisor for Metrology offers uncertainty calculation software. This software module uses available calibration and diagnostics data from all individual instruments to calculate relative expanded uncertainty (95% confidence level). It also offers:

- Uncertainty fingerprinting which enables dynamic uncertainty calculations during live operation
- The ability to run uncertainty calculations on a pre-defined frequency (e.g. daily) or based on an event (instrument calibration/alarm condition)
- Full system and individual device uncertainty calculations
- Customizable alert limits for monitoring the system over time
- The ability to create dashboards, trends and reports with ease
- Simple user interface that reduces the need for specialist knowledge



The System Uncertainty Module ensures visibility into a system's measurement uncertainty, providing the tools to understand and reduce financial exposure and risk.

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System Uncertainty Dashboards

A number of dashboards are provided to give at-a-glance performance indication, alongside current and historical trending and configurable reports. The Systems Uncertainty Module is integrated with the full suite of Plantweb Advisor for metrology modules, giving a holistic overview of the measurement system.

Source of Uncertainty	Input Quantity	Relative Expanded Uncertainty U(x), %	Probability Distribution	Divisor	Relative Standard Uncertainty u(x), %	Relative Sensitivity Coefficient c*	c*·u(x), %
Calibrator DC Current Measurement Accuracy, mA	0.0004	0.064	Normal(k=3)	3	0.021	1.000	0.0213
Calibrator Ambient Temperature Effect, %/°C	0.0019	0.003	Normal(k=3)	3	0.001	1.000	0.0012
Calibrator Indication Resolution, mA	0.0005	0.066	Rectangular	1.73	0.038	1.000	0.0385
Pressure Transmitter Zero Deviation	-0.0114	-1.497	Rectangular	1.73	-0.865	1.000	-0.8654
Pressure Transmitter Hysteresis	0.0000	0.000	Rectangular	1.73	0.000	1.000	0.0000
Pressure Transmitter Stability, barg/month	0.0022	0.188	Normal(k=3)	3	0.062	1.000	0.0627
Analog Input Module A/D Converter, % of Span	0.0200	0.426	Rectangular	1.73	0.246	1.000	0.2466
Analog Input Module Ambient Temp Effect, %	0.0070	0.007	Rectangular	1.73	0.004	1.000	0.0040
Relative Combined Standard Uncertainty $\Sigma(c^* u(x))^2$, %							0.9031
Coverage Factor k							2

Uncertainty Setup

As Found Pressure Transmitter Details

Name: DPT1

Calibrator Type: Calibrator

Current DC Measurement: CalEgPT

Deadweight Tester: Please Select

Pressure Gauge: Please Select

Pressure Calibrator: Please Select

Calibrated Span: 100 kg/cm²

Ambient Calibration Temperature: 30 °C

Calibration Frequency: 1 month

Test Equipment Details

Calibrator

Name: CalEgPT

Calibration Date: 6/20/2021 1:25:00 PM

DC Current Measurement Accuracy: 0.01 % of reading

Temperature Effect: 3 % of Accuracy Per 1 °C

Indication Resolution: 0.001 mA

Uncertainty Details

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