Product Data Sheet
PS-002323
October 2019

Rosemount Magnetic Flow Meter

Smart Meter Verification™ Field Guide

ROSEMOUNT™

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Smart Meter Verification Field Guide

Why Use Smart Meter Verification?

The Emerson Smart Meter Verification diagnostic provides a means of verifying that the flow meter is within calibration without requiring process shutdown or removal of the sensor. It can be configured to run continuously in the background during normal operation, or it can be manually initiated as required by the application. For more information on functionality and theory of operation, see page 2.

How To Set-Up

1. **Confirm that Smart Meter Verification is available, (option code DA2/D02/MV).** For more information on ordering this option, see page 2.
2. **Establish a Sensor Signature as a baseline for comparison.** It should be taken during the start-up process when the transmitter is first connected to the sensor, with a full line, and ideally with no flow in the line. For more information on establishing a sensor signature,see page 3.
3. **Determine Test Criteria.** Users can define the maximum allowable deviation for the transmitter calibration and sensor calibration tests. Deviation results that exceed the established test criteria will cause the test to fail. Default values are as follows:

Condition	Default*	Additional Notes
Full Pipe, No Flow	5%	Provides most accurate results and best indication of flow meter health
Full Pipe, Flowing	5%	Can cause false fails if flow rate is not steady
Empty Pipe	5%	Will not check electrode circuit health

*All limits are configurable between 0 - 10%. For more information about the test criteria, see page 5.

4. **Run the Smart Meter Verification Test.** Smart Meter Verification can be manually initiated to verify the entire flow meter installation or individual parts such as the transmitter or sensor. For more information on the manual test scope, see page 6. Continuous Smart Meter Verification can be used to monitor and verify the health of the sensor coils, electrodes, transmitter calibration, and analog output. All of these parameters can be individually enabled or disabled. The Continuous Meter Verification will not report results until 30 minutes after powering up to ensure the system is stable and avoid false failures. For more information on the continuous meter verification scope, see page 6.
5. **View Results.** Results can be viewed using the LOI, a Field Communicator, or AMS. Results can either be recorded manually using the Rosemount Magnetic Flow Meter Calibration Verification Report or printed from an AMS Screen. For more information, see page 9.

SMART METER VERIFICATION

Smart Meter Verification Overview

The Smart Meter Verification diagnostic provides a means of verifying the flow meter is within calibration without requiring a process shutdown or removal of the sensor.

This diagnostic test provides a review of the transmitter and sensor's critical parameters as a means to document verification of calibration. The results of running this diagnostic provide the deviation amount from expected values and a pass/fail summary against user-defined criteria for the application and conditions. The Smart Meter Verification diagnostic can be configured to run continuously in the background during normal operation, or it can be manually initiated as required by the application.

The Smart Meter Verification diagnostic can be initiated as required by the application. If the Smart Meter Verification Suite (options DA2/D02/MV) was ordered, then the Smart Meter Verification diagnostic will be available.

If DA2/D02/MV was not ordered or licensed, this diagnostic will not be available. However, the DA2/D02/MV option is available for purchase after the meter is installed. Contact your local sales representative to trial or order this option in the field.

Smart Meter Verification Details

Magnetic flow meters function on the principle of Faraday's Law which states that a conductor moving through a magnetic field will generate a voltage that is proportional to the speed of the conductor. This relationship is described by the following equation:

$$E = k * B * D * V$$

where:

E = The induced voltage generated

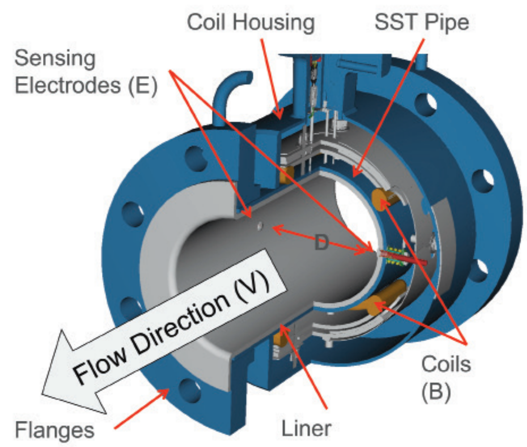
k = A unit conversion constant

B = The Magnetic Field Strength

D = The distance between the probes picking up the induced voltage

V = The velocity of the conductor

With magnetic flow meters, the conductor is the fluid that is passing through the sensor and D becomes the distance between the measurement electrodes which will always be a fixed distance. This means that the relationship between E and B and V needs to be established. This is done through the calibration process which is performed on every Rosemount magnetic flow meter sensor. The calibration process determines a 16-digit calibration number that is unique to every sensor. This calibration number then describes the relationship between the velocity (V) and the induced voltage (E).



With this, Faraday's equation can be re-written as:

$$E = C * V$$

where:

C = Calibration constant = k * B * D

E = k * D * B * V

Where:

E = Inducted Voltage (measured by Electrodes)

V = Velocity of Conductive Liquid

k = Conversion Constant

D = Fixed Distance Between Electrodes

B = Magnetic Field Strength

Since variables k and D are fixed, the only variable that will result in a change in the calibration constant is a change in the magnetic field strength (B). Since there are no moving parts to a magnetic flow meter and the coil windings and coil current are constant if the meter if functioning correctly, B should not change over time.

Taking a baseline of some basic parameters that describe the magnetic field strength (B) during the calibration process provides a factory reference point to the magnetic field strength at the time of calibration for that sensor. By comparing measured values taken during the meter verification process to the established baseline parameters and checking for deviations, it can be determined if the sensor calibration has shifted and if corrective action needs to be taken.

Smart Meter Verification Functionality

The Smart Meter Verification diagnostic functions by taking a baseline sensor signature and then comparing measurements taken during the verification test to these baseline results.

Signature Values

The sensor signature describes the magnetic behavior of the sensor. Based on Faraday's law, the induced voltage measured on the electrodes is proportional to the magnetic field strength. Thus, any changes in the magnetic field will result in a calibration shift of the sensor. Having the transmitter take an initial sensor signature when first installed will provide the baseline for the verification tests that are done in the future. There are three specific measurements that are stored in the transmitter's nonvolatile memory that are used when performing the Smart Meter Verification.

1. **Coil Circuit Resistance**

   The Coil Circuit Resistance is a measurement of the coil circuit health. This value is used as a baseline to determine if the coil circuit is still operating correctly when the Smart Meter Verification diagnostic is initiated.

2. **Coil Signature**

   The Coil Signature is a measurement of the magnetic field strength. This value is used as a baseline to determine if a sensor calibration shift has occurred when the Smart Meter Verification diagnostic is initiated.

3. **Electrode Circuit Resistance**

   The Electrode Circuit Resistance is a measurement of the electrode circuit health. This value is used as a baseline to determine if the electrode circuit is still operating correctly when the Smart Meter Verification diagnostic is initiated.

Smart Meter Verification Measurements

The Smart Meter Verification test will make measurements of the coil resistance, coil signature, and electrode resistance and compare these values to the values taken during the sensor signature process to determine the sensor calibration deviation, the coil circuit health, and the electrode circuit health. In addition, the measurements taken by this test may provide valuable information when troubleshooting the meter.

1. **Coil Circuit Resistance**

   The Coil Circuit Resistance is a measurement of the coil circuit health. This value is compared to the coil circuit resistance baseline measurement taken during the signature process to determine coil circuit health.

2. **Coil Signature**

   The Coil Signature is a measurement of the magnetic field strength. This value is compared to the coil signature baseline measurement taken during the signature process to determine sensor calibration deviation.

3. **Electrode Circuit Resistance**

   The Electrode Circuit Resistance is a measurement of the electrode circuit health. This value is compared to the electrode circuit resistance baseline measurement taken during the signature process to determine electrode circuit health.

Sensor Signature Parameters

The sensor signature describes the magnetic behavior of the sensor. The sensor signature is taken at the time of calibration and sets values for the coil signature and the coil resistance. One signature value that is not established at the time of calibration is the electrode resistance. Because the electrode resistance will be dependant on the conductivity of the process fluid in the sensor at the time of calibration, the signature of this parameter needs to be done once the meter is installed and the sensor is filled with the actual process that is to be measured.

Establishing the baseline sensor signature

The first step in running the Smart Meter Verification test is establishing the reference signature that the test will use as the baseline for comparison. This is accomplished by having the transmitter take a signature of the sensor. Having the transmitter take an initial sensor signature when first installed will provide the baseline for the verification tests that are done in the future. The sensor signature should be taken during the start-up process when the transmitter is first connected to the sensor, with a full line, and ideally with no flow in the line.

Running the sensor signature procedure when there is flow in the line is permissible, but this may introduce some variability into the signature measurements. If an empty pipe condition exists, then the sensor signature should be run for the coils only. Once the sensor signature process is complete, the measurements taken during this procedure are stored in non-volatile memory to prevent loss in the event of a power interruption to the meter. This initial sensor signature is required for both manual and continuous Smart Meter Verification.

Integrally mounted transmitters will come with the sensor signature already loaded into the non-volatile memory. For integrally mounted transmitters this is a standard part of the calibration procedure. Once the sensor is installed and the line is filled with process fluid, the user should perform an electrode circuit signature. The electrode circuit signature is not taken at the time of calibration due to the wide variety of process fluids used with magnetic flow meters.

Transmitters that have been paired to a specific sensor will a lso come with the sensor signature preloaded into the non-volatile memory.

Transmitters that have not been paired to a specific sensor, or transmitters ordered as a replacement will need to have the sensor signature established once they are installed in the field.

Understanding the Re-Signature Parameters

When performing a re-signature of the sensor, there are three signature options available. Note that when a re-signature is done, it overwrites the existing signature values stored in the non-volatile memory.

All

Re-signature all values for the sensor. This includes the coil signature, coil resistance, and electrode resistance.

Coils

Re-signature the coil values only. This includes the coil signature and the coil resistance. The electrode resistance is not measured.

Electrodes

Re-signature the electrode resistance value only. The coil signature and coil resistance are not measured. A re-signature of the electrodes only should be done for new installations once the sensor is installed and the pipe is filled with the process fluid.

Understanding the Smart Meter Verification Test Parameters

The Smart Meter Verification diagnostic has a multitude of parameters that set the test criteria, test conditions, and scope of the meter verification test.

Test Conditions for the Smart Meter Verification

There are three possible conditions that the Smart Meter Verification test can be initiated under. This parameter is set at the time that the Smart Meter Verification test is started.

No Flow

Run the Smart Meter Verification test with a full pipe and no flow in the line. Running the Smart Meter Verification test under this condition provides the most accurate results and the best indication of magnetic flow meter health.

Flowing, Full

Run the Smart Meter Verification test with a full pipe and flow in the line. Running the Smart Meter Verification test under this condition provides the ability to verify magnetic flow meter health without shutting down the process. Running the meter verification under flowing conditions can cause false fails of the transmitter verification test if the flow rate is not at a steady flow or if there is process noise present.

Empty Pipe

Run the Smart Meter Verification test with an empty pipe. Running the Smart Meter Verification test under this condition provides the ability to verify the magnetic flow meter health with an empty pipe. Running the meter verification under empty pipe conditions will not check the electrode circuit health and may result in false fails of the transmitter verification test as empty pipe conditions generate significant background noise during the transmitter verification test.

Understanding Smart Meter Verification Test Criteria

The Smart Meter Verification diagnostic provides the ability for the user to define the maximum allowable deviation for the transmitter calibration and sensor calibration verification tests. Deviation results that exceed the established test criteria will cause the test to fail. The test criteria can be set for each of the flow conditions discussed above.

Full Pipe, No Flow Limit

Set the test criteria for the No Flow condition. The factory default for this value is set to five percent with limits configurable between one and ten percent. This parameter applies to manually initiated tests only.

Full Pipe, Flowing Limit

Set the test criteria for the Flowing, Full condition. The factory default for this value is set to five percent with limits configurable between one and ten percent. This parameter applies to manually initiated test only.

Empty Pipe Limit

Set the test criteria for the Empty Pipe condition. The factory default for this value is set to five percent with limits configurable between one and ten percent. This parameter applies to manually initiated tests only.

Continuous Limit

Set the criteria for the Continuous Smart Meter Verification diagnostic. The factory default for this value is set to five percent with limits configurable between one and ten percent. If the tolerance band is set too tightly, under empty pipe conditions or noisy flow conditions, a false failure of the transmitter test may occur.

Manual Smart Meter Verification Test Scope

The manually initiated Smart Meter Verification can be used to verify the entire flow meter installation, or individual parts such as the transmitter or sensor. This parameter is set at the time that the Smart Meter Verification test is manually initiated.

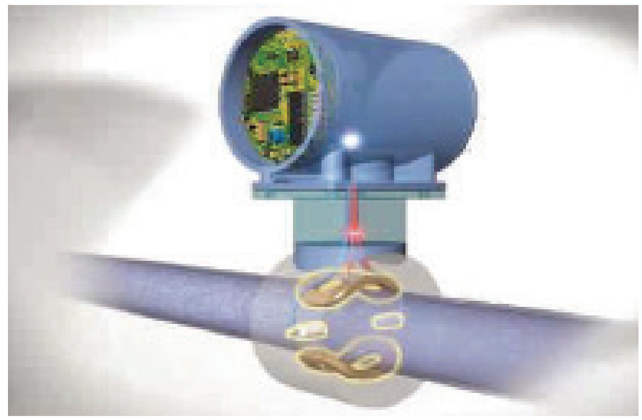


Figure 2 – Manual Smart Meter Verification Test Scope

All

Run the Smart Meter Verification test and verify the entire flow meter installation. This parameter results in the meter verification performing the transmitter calibration verification, sensor calibration verification, coil health check, and electrode health check. Transmitter calibration and sensor calibration are verified against the percentage associated with the test condition selected when the test was initiated.

Transmitter

Run the Smart Meter Verification test on the transmitter only. This selection results in the verification test only checking the transmitter calibration against the test criteria established for the condition selected when the Smart Meter Verification test was initiated

Sensor

Run the Smart Meter Verification test on the sensor only. This causes the verification test to check the sensor calibration against the test criteria established for the condition selected when the Smart Meter Verification test was initiated. This test will also verify the coil circuit health, and the electrode circuit health.

		Test Scope		
		All	Transmitter	Sensor
Test Condition	No Flow, Full	Sensor Cal Test Coil Circuit Test Electrode Circuit Test Transmitter Cal Test	Transmitter Cal Test	Sensor Cal Test Coil Circuit Test Electrode Circuit Test
	Flowing, Full	Sensor Cal Test Coil Circuit Test Electrode Circuit Test Transmitter Cal Test	Transmitter Cal Test	Sensor Cal Test Coil Circuit Test Electrode Circuit Test
	Empty Pipe	Sensor Cal Test Coil Circuit Test Transmitter Cal Test	Transmitter Cal Test	Sensor Cal Test Coil Circuit Test

Continuous Smart Meter Verification Test Scope

Continuous Smart Meter Verification can be used to monitor and verify the health of the sensor coils, electrodes, transmitter calibration, and analog output. All of these parameters can be individually enabled or disabled. The Continuous Meter Verification will not report results until 30 minutes after powering up to ensure the system is stable and avoid false failures. These parameters apply to Continuous Smart Meter Verification only.

Coils

Continuously monitor the sensor coil circuit by enabling this Verification parameter.

Electrodes

Continuously monitor the electrode resistance by enabling this parameter.

Transmitter

Continuously monitor the transmitter calibration by enabling this parameter.

Analog Output

Continuously monitor the analog output signal by enabling this parameter.

Manual Verification Test Results

If the Smart Meter Verification test is manually initiated, the transmitter will make several measurements to verify the transmitter calibration, sensor calibration, coil circuit health, and electrode circuit health. The results of these tests can be reviewed and recorded on the Rosemount Magnetic Flow Meter Calibration Verification Report (00816-0200-4727).

This report can be used to validate that the meter is within the required calibration limits to comply with governmental regulatory agencies.

Sensor Characteristic	Signature Baseline Values	Measured Values	Deviation	Criteria	Pass/Fail
Coil Signature	19.5	19.6			
Coil Resistance	15.2	15.6			
Electrode Resistance	260.7	245.6			

Sensor Characteristic	Signature Baseline Values	Measured Values	Deviation	Criteria	Pass/Fail
Coil Signature	19.5	19.6	0.51	1%	Pass
Coil Resistance	15.2	15.6			
Electrode Resistance	260.7	245.6			

Viewing the Smart Meter Verification Results

Depending on the method used to view the results, they will be displayed in either a menu structure, as an LOI sequence, or in the report format. When using a Field Communicator, each individual component can be viewed as a menu item. When using the LOI, the parameters are viewed as a sequence using the left arrow key to cycle through the results. In AMS or ProLink III Professional the verification report is populated with the necessary data eliminating the need to manually record the information on the Rosemount Magnetic Flow meter Calibration Report.

Note: *When using AMS there are two possible methods that can be used to print the verification report. Method one involves taking a PrntScrn picture of the Smart Meter Verification Report tab on the status screen and pasting it into a word processing program. Using Ctrl + Alt + PrntScrn will capture the active window and allow it to be paste into a word processing program. Method two involves using the print feature within AMS while on the status screen. This will result in a printout of all of the information stored on the status tabs. Page 2 of the report will contain all of the necessary calibration verification result data.*

Viewing Verification Results

The results are displayed in the order found in the table below. These parameters are explained in more detail in the text that follows. Manual results are listed in order followed by Continual results. Note that the Manual results and Continual results share some parameters, so the shared parameters will be out of order for the Continual results section.

	Manual Results	Continual Results
1	Test Condition	Test Criteria
2	Test Criteria	Simulated Velocity
3	MV Test Result	Actual Velocity
4	Simulated Velocity	Flow Simulation Deviation
5	Actual Velocity	Coil Inductance
6	Flow Simulation Deviation	Sensor Cal Deviation
7	Xmtr Cal Verify	Coil Resistance
8	Sensor Cal Deviation	Electrode Resistance
9	Sensor Cal Test Result	4-20 mA Expected
10	Coil Circuit Test Result	4-20 mA Actual
11	Electrode Circuit Test Result	Analog Output Feedback Deviation

Test Condition

Review the test condition that the Smart Meter Verification test was performed under. This setting applies to manually initiated test only.

Test Criteria

Review the test criteria used to determine the results of the calibration verification tests. This setting applies to manually initiated test only.

Test Result

Displays the overall result of the Smart Meter Verification test as either a Pass or Fail. This setting applies to manually initiated test only.

Simulated Velocity

Displays the simulated velocity used to verify the transmitter calibration.

Actual Velocity

Displays the velocity measured by the transmitter during the transmitter calibration verification process.

Velocity Deviation

Displays the deviation in the actual velocity compared to the simulated velocity in terms of a percentage. This percentage is then compared to the test criteria to determine if the transmitter is within calibration limits.

Transmitter Calibration Verification Test Result

Displays the results of the transmitter calibration verification test as either a Pass or Fail. This parameter applies to manually initiated test only.

Sensor Calibration Deviation

Displays the deviation in the sensor calibration. This value tells how much the sensor calibration has shifted from the original baseline signature. This percentage is compared to the test criteria to determine if the sensor is within calibration limits.

Sensor Calibration Test Result

Displays the results of the sensor calibration verification test as either a Pass or Fail. This parameter applies to manually initiated test only.

Coil Circuit Test Result

Displays the results of the coil circuit health check as either a Pass or Fail. This parameter applies to manually initiated tests only.

Electrode Circuit Test Result

Displays the results of the electrode circuit health check as either a Pass or Fail. This parameter applies to manually initiated test only.

Continual Limit

Review the test criteria used to determine the results of the Continuous Smart Meter Verification diagnostic. This parameter applies to Continuous Smart Meter Verification only.

Coil Signature

Displays the Coil Signature used to verify the magnetic field strength. This value is compared to the coil signature baseline measurement taken during the sensor signature process to determine tube calibration deviation. This parameter applies to Continuous Smart Meter Verification only.

Coil Resistance

Displays the Coil Resistance value used to verify the coil circuit health. This value is compared to the coil circuit resistance baseline measurement taken during the sensor signature process to determine coil circuit health. This parameter applies to Continuous Smart Meter Verification only.

Electrode Resistance

Displays the Electrode Resistance value used to verify the electrode circuit health. This value is compared to the electrode circuit resistance baseline measurement taken during the sensor signature process to determine electrode circuit health. This parameter applies to Continuous Smart Meter Verification only.

mA Expected

Displays the simulated mA output used to verify the transmitter calibration. This parameter applies to Continuous Smart Meter Verification only.

Sensor Calibration Test Result

Displays the results of the sensor calibration verification test as either a Pass or Fail. This parameter applies to manually initiated test only.

mA Actual

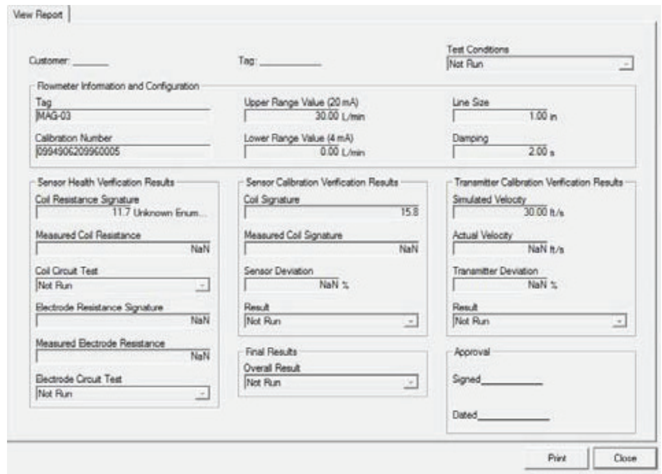
Displays the mA output sent by the transmitter during the transmitter calibration verification process. This parameter applies to Continuous Smart Meter Verification only.

mA Deviation

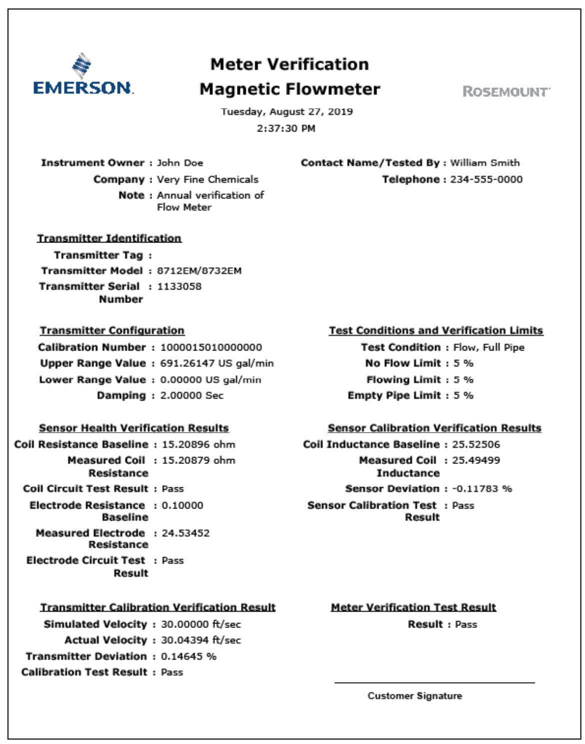
Displays the deviation in the actual mA output compared to the simulated mA output in terms of a percentage. This percentage is then compared to the test criteria to determine if the transmitter is within calibration limits. This parameter applies to Continuous Smart Meter Verification only.

Meter Verification Reports Examples

Once the meter verification diagnostic has completed, it is possible to print a verification report for submission to a regulatory agency or file with the instrument file. If using AMS or ProLink III Professional, the report is populated automatically with the appropriate information. If using a HART Handheld communicator such as the TREX or the LOI, a report is available to fill out manually.



AMS report screen



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Meter Verification
Magnetic Flowmeter

ROSEMOUNT

Tuesday, August 27, 2019
2:37:30 PM

Instrument Owner : John Doe
Company : Very Fine Chemicals
Note : Annual verification of Flow Meter

Contact Name/Tested By : William Smith
Telephone : 234-555-0000

Transmitter Identification
Transmitter Tag :
Transmitter Model : 8712EM/8732EM
Transmitter Serial Number : 1133058

Transmitter Configuration
Calibration Number : 1000015010000000
Upper Range Value : 691.26147 US gal/min
Lower Range Value : 0.00000 US gal/min
Damping : 2.00000 Sec

Test Conditions and Verification Limits
Test Condition : Flow, Full Pipe
No Flow Limit : 5 %
Flowing Limit : 5 %
Empty Pipe Limit : 5 %

Sensor Health Verification Results
Coil Resistance Baseline : 15.20896 ohm
Measured Coil Resistance : 15.20879 ohm
Coil Circuit Test Result : Pass
Electrode Resistance Baseline : 0.10000
Measured Electrode Resistance : 24.53452
Electrode Circuit Test Result : Pass

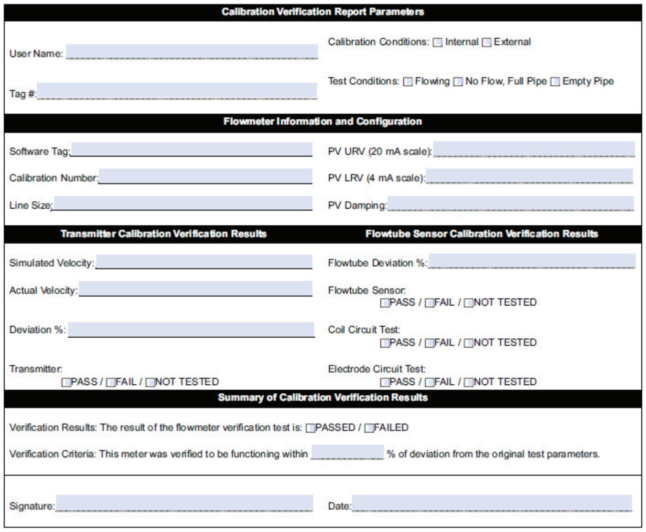
Sensor Calibration Verification Results
Coil Inductance Baseline : 25.52506
Measured Coil Inductance : 25.49499
Sensor Deviation : -0.11783 %
Sensor Calibration Test Result : Pass

Transmitter Calibration Verification Result
Simulated Velocity : 30.00000 ft/sec
Actual Velocity : 30.04394 ft/sec
Transmitter Deviation : 0.14645 %
Calibration Test Result : Pass

Meter Verification Test Result
Result : Pass

Customer Signature

ProLink III SMV Report



Calibration Verification Report Parameters

User Name: ______ Calibration Conditions: ☐ Internal ☐ External

Tag #: ______ Test Conditions: ☐ Flowing ☐ No Flow, Full Pipe ☐ Empty Pipe

Flowmeter Information and Configuration

Software Tag: ______ PV URV (20 mA scale): ______

Calibration Number: ______ PV LRV (4 mA scale): ______

Line Size: ______ PV Damping: ______

Transmitter Calibration Verification Results / **Flowtube Sensor Calibration Verification Results**

Simulated Velocity: ______ Flowtube Deviation %: ______

Actual Velocity: ______ Flowtube Sensor: ☐PASS / ☐FAIL / ☐NOT TESTED

Deviation %: ______ Coil Circuit Test: ☐PASS / ☐FAIL / ☐NOT TESTED

Transmitter: ☐PASS / ☐FAIL / ☐NOT TESTED Electrode Circuit Test: ☐PASS / ☐FAIL / ☐NOT TESTED

Summary of Calibration Verification Results

Verification Results: The result of the flowmeter verification test is: ☐PASSED / ☐FAILED

Verification Criteria: This meter was verified to be functioning within ______ % of deviation from the original test parameters.

Signature: ______ Date: ______

Rosemount Magnetic Flow Meter Calibration Verification Report

Optimizing Manual Smart Meter Verification

The Smart Meter Verification diagnostic can be optimized by setting the test criteria to the desired levels necessary to meet the compliance requirements of the application. The following examples below will provide some guidance on how to set these levels.

Example

An effluent meter must be certified annually to comply with environmental regulations. This example regulation requires that the meter be certified to five percent. Since this is an effluent meter, shutting down the process may not be viable. In this instance the Smart Meter Verification test will be performed under flowing conditions. Set the test criteria for Flowing, Full to five percent to meet the requirements of the governmental agencies.

Example

A pharmaceutical company requires bi-annual verification of meter calibration on a critical feed line for one of their products. This is an internal standard, but plant requirements require a calibration record be kept on-hand. Meter calibration on this process must meet one percent. The process is a batch process so it is possible to perform the calibration verification with the line full and with no flow. Since the Smart Meter Verification test can be run under no flow conditions, set the test criteria for No Flow to one percent to comply with the necessary plant standards.

Example

A food and beverage company requires an annual calibration of a meter on a product line. The plant standard calls for the accuracy to be three percent or better. They manufacture this product in batches, and the measurement cannot be interrupted when a batch is in process. When the batch is complete, the line goes empty. Since there is no means of performing the Smart Meter Verification test while there is product in the line, the test must be performed under empty pipe conditions. The test criteria for Empty Pipe should be set to three percent, and it should be noted that the electrode circuit health cannot be verified.

Optimizing Continuous Smart Meter Verification

For continuous meter verification, there is only one test criteria value to configure, and it will be used for all flow conditions. The factory default is set to five percent to minimize the potential for false failures under empty pipe conditions. For best results, set the criteria to match the maximum value of the three test criteria set during manual meter verification (No Flow, Flowing Full, and Empty Pipe).

Example

For example, a plant might set the following manual meter verification test criteria: two percent for No Flow, three percent for Flowing Full, and four percent for Empty Pipe. In this case, the maximum test criterion is four percent, so the test criteria for continuous meter verification should be set to four percent. If the tolerance band is set too tightly, under empty pipe conditions or noisy flowing conditions, a false failure of the transmitter test may occur.

Troubleshooting the Smart Meter Verification Test

In the event that the Smart Meter Verification test fails, the following steps can be used to determine the appropriate course of action. Begin by reviewing the results to determine the specific test that failed.

Test	Potential Causes of Failure	Steps to Correct
Transmitter Calibration Verification Test Failed	• Unstable flow rate during the verification test • Noise in the process • Transmitter drift • Faulty electronics	• Perform the test with no flow in the pipe • Check calibration with an external standard like the 8714D • Perform a digital trim • Replace the electronics
Sensor Calibration Verification Failed	• Moisture in the terminal block of the sensor • Calibration shift caused by heat cycling or vibration	• Perform the sensor checks as detailed in transmitter manual.(1) • Remove the sensor and send back for evaluation and recalibration
Coil Circuit Health Failed	• Moisture in the terminal block of the sensor • Shorted Coil	• Perform the sensor checks as detailed in transmitter manual.(1)
Electrode Circuit Health Failed	• Moisture in the terminal block of the sensor • Coated Electrodes • Shorted Electrodes	• Perform the sensor checks as detailed in transmitter manual.(1)

(1) 8732E Manual 00809-0100-4444 - Chapter 12
8712E Manual 00809-0100-4445 - Chapter 12

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