Subject: Smart Meter Verification – Field Reference Point

Overview

To improve Smart Meter Verification's detection capability, the Field Reference Point is now incorporated in the Smart Meter Verification firmware (800ECP v4.7 and higher). This update applies to both Basic Smart Meter Verification and Professional Smart Meter Verification.

The Field Reference Point applies factors (close to 1) to the Factory Baseline values to reduce external biases on the stiffness measurement. Such biases include temperature, pressure, density, and viscosity. **The Field Reference Point is applied automatically during the first Smart Meter Verification test**.

To improve detection capability, the first Smart Meter Verification test must be run at the process's normal operating conditions. For best results, all Smart Meter Verification tests thereafter should be run at similar operating conditions to the first test that established the Field Reference Point.

If the Smart Meter Verification test fails, contact the factory, local sales, or local field service representatives for guidance.

Products Affected

- Any transmitter with a connected Enhanced Core Processor (800ECP) Firmware ≥ v4.7

- 2400S Analog Firmware ≥ v5.7

- 2400S DeviceNet Firmware ≥ v2.92

- 2400S PROFIBUS-DP Firmware ≥ v2.2

- 5700 Config I/O Firmware ≥ v3.10

- 5700 Ethernet Firmware ≥ v2.10

- 5700 FOUNDATION™ Fieldbus Firmware ≥ v1.40

- 5700 Intrinsically Safe Firmware ≥ v1.10

NAMUR NE 53 Rating

This release is rated at NAMUR NE 53 Level 3.

Symptoms

If the first Smart Meter Verification test is not run at normal operating conditions (e.g., the first test was a bench-test), the following may occur:

- Subsequent Smart Meter Verification failures

MICRO MOTION

EMERSON

- Erroneous Smart Meter Verification results

Resolution

The first Smart Meter Verification test establishes the Field Reference Point. It is critical that the first test be performed at the process's normal operating conditions and all tests thereafter at similar operating conditions. This is also the best practice to minimize variation in process or system parameters when performing a test or experiment.

- Allow enough time for the system to reach steady-state at normal process conditions prior to initiating the first Smart Meter Verification test

- Perform all subsequent Smart Meter Verification tests at steady-state normal operating conditions

If the Smart Meter Verification test fails, contact factory support for guidance.

Updates to product documentation, such as the Configuration & Use Manuals, will be released in the upcoming months to include Smart Meter Verification best practices for establishing the Field Reference Point.

MICRO MOTION

EMERSON.

Additional Features

This version of software adds the following:

Contact Information
Product information is available on the internet at: www.emerson.com.

Customer Service Phone Numbers:

Micro Motion USA	1-800-522-6277
Micro Motion Europe	31 (0) 318 495 555
Micro Motion Asia	65 6777-8211
Micro Motion UK	44 0870 240 1978
Micro Motion Japan	81 3 5769-6803

At Micro Motion we strive to stay on the leading edge of Coriolis technology. Upgrading to our latest MVD technology can pay for itself in a very short time period by improving your process measurement, improving diagnostic coverage, and improving the bottom line results of your process.

Thank you for your continued support.

MICRO MOTION

EMERSON

Frequently Asked Questions: Smart Meter Verification - Field Reference Point

This FAQ document supports information detailed in Service Bulletin MMI-SB-208, Rev. A

1. Are any special tools required to capture the Field Reference Point?

No special tools are required to capture the Field Reference Point. Smart Meter Verification will automatically capture the Field Reference Point during the first Smart Meter Verification test after Factory Baseline or Field Baseline**.**

2. Why is the Field Reference Point important?

The Field Reference Point is incorporated to reduce external biases on the stiffness measurement, thus improving detection capability of Smart Meter Verification. External biases include temperature, pressure, density, and viscosity.

3. Why is it critical to run the first test of Smart Meter Verification at the process's normal operating conditions?

The Field Reference Point reduces external biases (temperature, pressure, density, and viscosity) on the stiffness measurement. To accurately represent the external biases, the information must be captured at their most common state, i.e. the process's normal operating conditions. If the information is captured during an atypical state, incorrect factors will be applied, and the measurement will no longer be representative of the process. It is critical that the first test of Smart Meter Verification (after Factory Baseline or Field Baseline) is performed while the process is running at its normal operating conditions. It is recommended that all subsequent Smart Meter Verification tests are performed at similar conditions.

MICRO MOTION   **EMERSON**

4. How can I tell if a Field Reference Point was already taken?

Using ProLink III Basic or Professional and Smart Meter Verification Professional, the information can be found in the history .csv file export or on the report. ProLink III Basic can be downloaded for free off the Emerson website.

- Using ProLink III Basic or Professional, export, save, and open the Smart Meter Verification Professional history data (.csv file). Locate and examine the two columns labeled SMV Meter Factor LPO (column W) and SMV Meter Factor RPO (column X).

  OR

- Using ProLink III Basic or Professional, view the Smart Meter Verification Professional report. On the second page, locate and examine the two Sensor Operating Conditions characteristics labeled Inlet Stiffness Factor and Outlet Stiffness Factor.

If the Field Reference Point has not been established, the numbers will be exactly 1.

If the Field Reference Point has been established, the numbers will be close to 1. The numbers do not have to match.

5. How do I reset a Field Reference Point?

For every transmitter, except the 4200, if the Field Reference Point needs to be reset, contact factory support for guidance. If you are factory trained and certified, the procedural document can be found on the Flow Instrument and Technical Support SharePoint Site.

The 4200 2-wire transmitter has the option to reset the Field Reference Point at the display, ProLink III, or AMS Smart Meter Verification SNAP-ON. Resetting the Field Reference Point will erase the existing Field Reference Point and is not recommended unless necessary.

6. What impact does the Field Reference Point have on the Factory Baseline?

There is no impact. The Field Reference Point factors make a small adjustment to reflect the process conditions at the time the Field Reference Point was taken.

7. **What happens to Smart Meter Verification and the Field Reference Point if the 800 Enhanced Core Processor is replaced, missing a Factory Baseline, or the firmware is upgraded?**

The following applies to Direct Connect, 1500, 1700, 2400S, 2500, 2700, and Series 3000 only. It does not apply to the 5700.

The following is typically performed by factory trained and certified personnel.

If the 800 Enhanced Core Processor is replaced or the firmware is upgraded, the Factory Baseline and Field Reference Point are erased. A Smart Meter Verification Field Baseline must be established in all cases. Smart Meter Verification will automatically capture the Field Reference Point during the first run of Smart Meter Verification after the Field Baseline.

8. **What happens to Smart Meter Verification and the Field Reference Point if the 5700 firmware is upgraded?**

The following is typically performed by factory trained and certified personnel.

When upgrading the 5700 firmware, it will update the 800 Enhanced Core Processor firmware automatically.

The firmware upgrade will scan the information to see if there is an existing Factory Baseline. If there is no existing Factory Baseline, it will automatically execute a Smart Meter Verification test to establish one. If there is an existing Factory Baseline, it will scan the information to see if there is an existing Field Reference Point.

If there is an existing Field Reference Point, the information will be duplicated, and no action will be taken. If there is not an existing Field Reference Point, it will automatically execute a Smart Meter Verification test to establish one.

9. **What happens to Smart Meter Verification and the Field Reference Point if the 4200 2-wire firmware is upgraded?**

Smart Meter Verification and the Field Reference Point are not affected.

MICRO MOTION™

EMERSON™

10. What happens to Smart Meter Verification and the Field Reference Point if the transmitter is replaced?

The following is typically performed by factory trained and certified personnel.

In general, if a 4-wire transmitter is replaced, Smart Meter Verification and the Field Reference Point are not affected.

In general, if an integral or 9-wire transmitter is replaced, the Factory Baseline and Field Reference Point are lost. A Smart Meter Verification Field Baseline must be established. Smart Meter Verification will automatically capture the Field Reference Point during the first Smart Meter Verification test after the Field Baseline.

Refer to factory support for more specifics of field replacement of electronics and Smart Meter Verification.

11. What happens to Smart Meter Verification and the Field Reference Point if the sensor is replaced?

The following is typically performed by factory trained and certified personnel.

If a sensor is replaced that was connected to a 4-wire transmitter (and the 800 Enhanced Core Process firmware is v4.7 or higher) Smart Meter Verification will automatically capture the Field Reference Point during the first run of Smart Meter Verification.

If a sensor is replaced that was connected to an integral or 9-wire transmitter with the following revisions, a Field Baseline must be established. Smart Meter Verification will automatically capture the Field Reference Point during the first run of Smart Meter Verification after the Field Baseline.

- 800 Enhanced Core Process firmware ≥ v4.7

- 2400S Analog Firmware ≥ v5.7

- 2400S DeviceNet Firmware ≥ v2.92

- 2400S PROFIBUS-DP Firmware ≥ v2.2

- 5700 Config I/O Firmware ≥ v3.10

- 5700 Ethernet Firmware ≥ v2.10

- 5700 FOUNDATION™ Fieldbus Firmware ≥ v1.40

- 5700 Intrinsically Safe Firmware ≥ v1.10

Refer to factory support for more specifics of field replacement of sensors and Smart Meter Verification.

MICRO MOTION

EMERSON.

12. **How is Smart Meter Verification different for the 4200 2-wire transmitter?**

Due to the low power restriction of the 4200 2-wire transmitter, flow must be stopped to run Smart Meter Verification. During the first run of Smart Meter Verification, there will be a message to complete the capture of the Field Reference Point. The Field Reference Point can also be reset from the display, ProLink III, or AMS Smart Meter Verification SNAP-ON. No special tools are required to capture the Field Reference Point. Refer to the 4200 Configuration and Use Manual for instructions.

In addition, non-uniform coating detection, multiphase, and flow range features are not offered with the 4200 due to low power and memory restrictions.

MICRO MOTION

EMERSON.