State of California
Department of Food and Agriculture
Division of Measurement Standards

Certificate Number: 5273(a)-02

California Type Evaluation Program
Certificate of Approval
for Measuring Devices

For:

Mass Flow Meter
Digital Electronic
Sensor Model: CNG050
Mass Flow Transmitter Model: 2700 Series
Flow Rates: 2.5 lb/min to 130 lb/min
Meter Size: 0.5-inch Diameter Tube Inlet
Class: 2.0

Submitted by:

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Standard Features and Options

5000 PSI (345 BAR) pressure rating
Frequency/pulse, 4-20 ma, HART and Modbus RS485 outputs

Sensor Model Number	Transmitter Model Number
CNG050yyyyyyyyyyyy* (18 characters total)	2700yyyyyyyyWy (14 characters total)

* Numbers or letters in the model number represented by a "y" represent non-metrological features of the device.
However, the 13th character of the transmitter model number must be a "W" which represents the weights and measures secure mode of sealing.

Options: NEMA 4X enclosure
Model 275 HART communicator
ProLink II communications software for PC
Local display on Model 2700 series transmitter

This device was evaluated under the California Type Evaluation Program (CTEP) and was found to comply with the applicable requirements of California Code of Regulations for "Weighing and Measuring Devices." Evaluation results and device characteristics necessary for inspection and use in commerce are on the following pages.

Effective Date: September 5, 2002

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Mike Cleary, Director

Micro Motion, Inc.
Mass Flow Meter
Sensor Model: CNG050
Mass Flow Transmitter Model: 2700 Series

Application: For use in stationary applications. The mass flow meter is used to measure compressed natural gas.

Identification: The sensor and transmitter have separate identification tags. The identification information for the sensor is located on the sensor body. The identification information for the transmitter is located on the side of the main enclosure.

Sealing: This device is Category 2 method of sealing with limited remote calibration and configuration capability. Entry into the calibration and configuration mode is accomplished through the Model 2700 transmitter which contains the enabling/inhibiting hardware and is under a physical seal (described below). The enabling/inhibiting hardware will be:

- A switch (labeled with two positions: "configure" and "operate"), or
- Service port pins for the purpose of changing an electronic address to gain entry into the calibrate/configure mode.

With access granted, calibration and configuration may be accomplished through the use of:

- A hand-held communicator, or
- A personal computer running ProLink II software provided by the manufacturer, or
- The transmitter Model 2700 display when present (for a limited set of parameters).

The transmitter will not respond to changes from the optional display, HART communicator, or the ProLink II software while in the secure mode. To verify the device is secure without breaking the security seal, observe the functioning of the meter under flowing conditions. In secure mode, the flow rate is displayed and the total will increment. If it is in the configure mode, the flow rate will stay at zero and the total will not increment.

Access to the enabling/inhibiting hardware is protected by threading a wire security seal through the drilled head cap screw, securing the end cap clamp to the main terminal access cover, and other drilled head cap screw securing the other end cap clamp at the opposite end of the main transmitter enclosure.

The CNG050 sensor has no adjustable components that require the use of a security seal.

Operation: The mass flow transmitter Model 2700 has an optional 16 character, two-line liquid crystal display. Two operation buttons activated by an optical switch are located below the display. The "scroll" button is used to increment the display through the range of process variables such as flow rate, density, temperature, and total quantity. The "select" button is used for various maintenance functions. The HART communicator or the ProLink II software may still be used to view process variables while the device is secured.

Micro Motion, Inc.
Mass Flow Meter
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Test Conditions: This certificate supersedes Certificate of Approval Number 5273-01 and is issued to add the service port pin access method of sealing. No additional testing is necessary. Previous test conditions are listed below for reference.

Certificate of Approval Number 5273-01: The mass flow meter Model CNG050 (0.5 inch diameter tube inlet) and mass flow transmitter Model 2700 were submitted for evaluation installed in a stationary field location. The meter was tested gravimetrically while measuring compressed natural gas (0.6 to 0.8 specific gravity). The emphasis of the evaluation was on device design, operation, and performance. Multiple test drafts were conducted at various flow rates ranging from 2.5 lb/min to 105 lb/min while results of the same flow rates were compared for repeatability. The tolerance of 1.5% was applied as per the mass flow meter code for accuracy class 2.0 devices. Additionally, requirements for power interruption and low-flow cut-off were evaluated. The tests were repeated after approximately 60 days and 230 000 pounds of throughput.

Results of the evaluation and information supplied by the manufacturer indicate the device complies with applicable requirements.

Type Evaluation Criteria Used: Title 4, California Code of Regulations, 2002 Edition

Updated By: Aimee Harris (CA)

Tested By: Norman Ingram (CA)