

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

Certificate Number: 5305-02

Page 1 of 3

California Type Evaluation Program
Certificate of Approval
for Measuring Devices

For:

Coriolis Mass Flow Meter
Digital Electronics Model: Promass 63
Sensor Models: Promass "F" and "M" Series
Flow Rate: See Page Two

Submitted by:

Endress + Hauser Inc.
2350 Endress Place
Greenwood, IN 46143
Tel: (800) 428-4344
Fax: (317) 535-1498
Contact: Stefan Grotzer

Standard Features and Options

Standard Features:

Dual tube design using Alloy C, 904L stainless steel, or titanium flow tubes
Pressure rated secondary containment
NEMA 4X enclosures
Class I Division 2 Ni
10 khz frequency/pulse output (mass flow only)
4-20 ma DC output

Options: Alpha numeric backlit display with touch controls

This (These) device(s) was (were) evaluated under the California Type Evaluation Program (CTEP) and was (were) found to comply with the applicable technical 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

Mike Cleary, Director

Endress + Hauser Inc.
Coriolis Mass Flow Meter
Digital Electronics Model: Promass 63
Sensor Models: Promass “F” and “M” Series

Application: For use in stationary installations only. The Promass device must be configured with mass assigned to the pulse output. The mass flow meter may be used to measure normal liquids with a specific gravity of 1.0 and compressed natural gas with a specific gravity of 0.6 to 0.8. This certificate does not cover any additional process fluids at this time.

Products:

Product Groups	Typical Products	Specific Gravity
Normal Liquids	Water, Alcohols, Glycols, Water mixes thereof, Agriculture Liquids, Fertilizers, Chemicals, Petroleum Solvents, Herbicides, and Suspensions	1.0
Compressed Gases	CNG	0.6 to 0.8

NOTE: Not all “typical products” listed in this table are covered by this Certificate. Only those products falling within the specific gravity listed in the last column are covered. Some products may have a specific gravity that falls into more than one product group. This Certificate covers only products, which fall into the product group and specific gravity, listed in the table above.

Model Designation:

Model Number	Meter Size	Flow Rate (lb/min)	Minimum Measured Quantity, MMQ (lb)
63MT15-XXXX9XXXXXA *63MP15-XXXX9XXXXXA 63FX15-XXXX9XXXXXA	1/2 inch	12 to 240 *2 to 55	12 *3
63MT25-XXXX9XXXXXA 63FX25-XXXX9XXXXXA	1 inch	33 to 660	33
63MT40-XXXX9XXXXXA 63FX40-XXXX9XXXXXA	1 1/2 inch	82 to 1653	82
63MT50-XXXX9XXXXXA 63FX50-XXXX9XXXXXA	2 inch	128 to 2573	128
63MT80-XXXX9XXXXXA 63FX80-XXXX9XXXXXA	3 inch	330 to 6600	330
63FX1H-XXXX9XXXXXA	4 inch	640 to 12 800	640

Any Position within the model number designated by an “X” is not a metrological feature.
The “T” in Model 63MT designates the low-pressure sensor, “P” designates high pressure sensor version.
Model number digit “9” (eleventh position from left) designates a custody transfer digital electronics version.
Last placeholder “A” in model number designates a frequency/pulse output only can be used.

* For CNG

Identification: A stainless steel identification badge is riveted on the front of the sensor body. The stainless steel identification badge for the transmitter is riveted on the left side of the enclosure. An additional non-destructive badge located on the transmitter displays the additional required information including: Model Number, National Institute of Standards and Technology Certificate of Conformance Number, Accuracy Class, Minimum and Maximum Flow Rate, and Minimum Measured Quantity.

Endress + Hauser Inc.
Coriolis Mass Flow Meter
Digital Electronics Model: Promass 63
Sensor Models: Promass “F” and “M” Series

Sealing: Calibration and configuration parameters are accessed through the Promass 63 transmitter touch control, using an access code, on the display inside the housing. A cover to disable the touch control must be installed before the device is sealed. The transmitter is sealed by a wire security seal threaded through two drilled head screws securing the cover to the transmitter housing. The sensor has no adjustable components that require use of a security seal.

Operation: For normal liquids, a complete system includes the Promass 63 digital electronics Promass sensor Models F or M, a means to provide a ticket or printed copy of the delivery, and a weights and measures approved Contrec 414 indicator/batch controller (Certificate of Approval Number 4753-98) for display of delivery total. The Contrec 414 also provides the printer interface. The Promass 63 display and touch control can be used to access the programming matrix. An access code must be used before any parameter may be changed. The Promass 63 digital electronics pulse output must be configured for mass flow. The Promass 63 digital electronics display is not required for normal operation. The Contrec indicator is used as the primary display. After configuration, access to the Promass 63 touch control can be sealed. Process temperature range for the “F” Sensor: -60 °F to 400 °F. Process temperature range for the “M” Sensor: -60 °F to 300 °F.

Test Conditions: The Promass M and F sensors were tested in the manufacturer’s facility interfaced with a Contrec batch controller Model 414 (Certificate of Approval Number 4753-98), Promass 63 digital electronics, 1/2 inch flow meter (Models 63MT15 and 63FX15), 1 inch flow meter (Models 63MT25 and 63FX25), 1-1/2 inch flow meter (Models 63MT40 and 63FX40), and 3 inch flow meters (Models 63MT80 and 63FX80). The tests were performed using water (specific gravity: 1) as the test liquid. The 63FX flow meters were initially tested on water at flow rates of 80, 40, 20, and 5 percent of maximum. The 63MT flow meters were initially tested on water at flow rates of 80, 40, and 5 percent of maximum. After the required throughput for each of the four meter sizes tested, the 63FX flow meters were subsequently tested, using water, over the same flow rates as on the initial evaluation. An acceptance tolerance of 0.2 percent was applied, as specified in the Mass Flow Meter Code of California Code of Regulations, Title 4, Division 9.

The Promass 63MP15 was tested gravimetrically while dispensing compressed natural gas (0.6 to 0.8 specific gravity) from a stationary dispenser. The emphasis of the evaluation was on device design, operation, and performance. Multiple test drafts were conducted at various flow rates ranging from 2.0 lb/min to 44 lb/min while results of the same flow rates were compared for repeatability. An acceptance tolerance of 1.5% was applied as specified above. Additionally, requirements for power interruption and low-flow cut-off were evaluated. The tests were repeated after approximately 60 days and 16 000 lb of throughput.

Results of these evaluations and a review of technical information supplied by the manufacturer indicate the devices comply with applicable requirements.

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

Tested By: R. Norman Ingram (CA) and R. W. Wotthlie (MD)