



NATIONAL TYPE EVALUATION PROGRAM

# *Certificate of Conformance*

*for Weighing and Measuring Devices*

**For:**

Meter Indicating Volume  
Digital Electromagnetic Flow Meter  
Digital Electronics Model: Promag 53, 100, 300 or 500  
Sensor Models: Promag W, H and P Series & Dosimag  
Flow Rate: See Page 2

**Submitted By:**

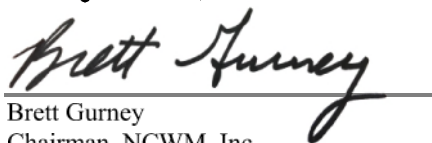
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**Standard Features and Options**

- NEMA 4X enclosures
- CD, Class I Division 2 Ni
- 10 khz frequency/pulse output
- 4-20 ma DC output
- Alphanumeric backlit display with touch controls
- Remote communication: FOUNDATION Fieldbus, HART, MODBUS, Profibus, Ethernet

**Options:** Contrec 414 batch controller,  
Endress+Hauser RA33 batch controller,  
Printer

This device was evaluated under the National Type Evaluation Program and was found to comply with the applicable technical requirements of "NIST Handbook 44: Specifications, Tolerances and Other Technical Requirements for Weighing and Measuring Devices." Evaluation results and device characteristics necessary for inspection and use in commerce are on the following pages. \*Editorial changes, not affecting the type or metrological content, corrected this certificate.

  
Brett Gurney  
Chairman, NCWM, Inc.

  
James Cassidy  
Committee Chair, National Type Evaluation Program Committee

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**Endress + Hauser Flowtec AG**

Meter Indicating Volume / Promag 53, 100, 300 or 500 (Sensor Models: Promag W, H and P Series) or Dosimag

**Application:** For use in stationary applications to measure Normal Liquids and Water with conductivity greater than 760 uS/cm. The Promag device is configured for volume assigned to the display and pulse or MODBUS output.

**Identification:** Identification badges are located on the Promag 53, 300 or 500 digital electronics housing and on the neck support attaching the electronic transmitter housing to the sensor. When the Promag 53 or 500 digital electronics housing is located remotely from the sensor, identification badges are located on the digital electronics housing and on the sensor wiring compartment. Identification badges are located on the Promag 100 or Dosimag digital electronics housing which is attached to the sensor.

**Sealing:** Promag 53: Calibration and configuration parameters are accessed through the digital electronics touch control using an access code. To disable the touch control, an access cover plate must be in place before sealing the device. The remote access feature (used with remote Communication protocols) must be set by moving a jumper on the output card for write protection when used in the operating mode. This allows information to be read but not changed in the device. The digital electronics is sealed by a wire security seal threaded through two drilled head screws securing the covers to the housing. Additionally, the remote programming access feature must be disabled by the manufacturer. The wiring compartment and the sensor have no adjustable components or metrological features that require provisions for sealing.

Promag 100: Calibration and configuration parameters are accessed through the transmitter by use of a computer connected to the transmitter terminals or connectors. The device is secured by moving a write protect position switch located on the circuit board inside the electronic housing under the black program data chip. A wire security seal may be applied through the electronic housing and the housing cover to prevent access to the wiring compartment and the security switch.

Promag 300 or 500: Calibration and configuration parameters are accessed through the digital electronics touch control using an access code. Programming is disabled by using an internal switch which places the device into a write protection mode. This allows information to be read but not changed in the device. The digital electronics is sealed by a wire security seal threaded through one drilled head screws with a crimp and eyelet on the housing to secure the cover to the housing. The wiring compartment and the sensor have no adjustable components or metrological features that require provisions for sealing.

Dosimag: Calibration and configuration parameters are accessed through a cable attached to the power and output cable. Programming of the pulse output version is disabled by securing a special cable to the power/output connector using a safety clamp around the cable connector and the connector on the housing and threading a wire seal through the holes of the safety clamp and another wire seal through the drilled head screws that secure the housing to the body of the meter. Programming of the MODBUS output version is disabled by first accessing the calibration and configuration parameters through a cable attached to the power/output cable and programming the security to locked. Then a dongle is attached to the connector on the opposite side of the electronics housing with a safety clamp around the dongle and the connector and then threading a wire seal through the holes of the safety clamp and a second wire seal through the drilled head screws that secure the housing to the body of the meter.

A pressure sensitive seal may be used in place of a wire seal by applying it across the seam between the access cover and the electronic housing.

**Model Designation:**

Model Number	Meter Size	Flow Rate (gal/min)
5BH08-XXXXNXXXXXXXXX 53H08-XXX9XXXXXXXXXX 5H1B08-XXXXXXXXXXXXX9 5H3B08-XXXXXXXXXXXXX9 5H5B08-XXXXXXXXXXXXX9	3/8	3 to 14
5BH12-XXXXNXXXXXXXXX 5BH15-XXXXNXXXXXXXXX 53P15-XXX9XXXXXXXXXX 5H1B15-XXXXXXXXXXXXX9 5H3B15-XXXXXXXXXXXXX9 5H5B15-XXXXXXXXXXXXX9 5P1B15-XXXXXXXXXXXXX9 5P3B15-XXXXXXXXXXXXX9	1/2 inch	7 to 28



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5P5B15-XXXXXXXXXXXXX9 5BH22-XXXXNXXXXXXXXXX 5BH26-XXXXNXXXXXXXXXX 53W25-XXX9XXXXXXXXXX 5W1B25-XXXXXXXXXXXXX9 5W3B25-XXXXXXXXXXXXX9 5W5B25-XXXXXXXXXXXXX9 53H22-XXX9XXXXXXXXXX 53H26-XXX9XXXXXXXXXX 5H1B22-XXXXXXXXXXXXX9 5H3B22-XXXXXXXXXXXXX9 5H5B22-XXXXXXXXXXXXX9 5H1B26-XXXXXXXXXXXXX9 5H3B26-XXXXXXXXXXXXX9 5H5B26-XXXXXXXXXXXXX9 53P25-XXX9XXXXXXXXXX 5P1B25-XXXXXXXXXXXXX9 5P3B25-XXXXXXXXXXXXX9 5P5B25-XXXXXXXXXXXXX9	1 inch	16 to 250
53W50-XXX9XXXXXXXXXX 5W1B50-XXXXXXXXXXXXX9 5W3B50-XXXXXXXXXXXXX9 5W5B50-XXXXXXXXXXXXX9 53H50-XXX9XXXXXXXXXX 5H1B50-XXXXXXXXXXXXX9 5H3B50-XXXXXXXXXXXXX9 5H5B50-XXXXXXXXXXXXX9 53P50-XXX9XXXXXXXXXX 5P1B50-XXXXXXXXXXXXX9 5P3B50-XXXXXXXXXXXXX9 5P5B50-XXXXXXXXXXXXX9	2 inch	32 to 500
53W80-XXX9XXXXXXXXXX 5W1B80-XXXXXXXXXXXXX9 5W3B80-XXXXXXXXXXXXX9 5W5B80-XXXXXXXXXXXXX9 53H80-XXX9XXXXXXXXXX 5H1B80-XXXXXXXXXXXXX9 5H3X80-XXXXXXXXXXXXX9 5H5X80-XXXXXXXXXXXXX9 53P80-XXX9XXXXXXXXXX 5P1B80-XXXXXXXXXXXXX9 5P3B80-XXXXXXXXXXXXX9 5P5B80-XXXXXXXXXXXXX9	3 inch	65 to 1 000
53W1H-XXX9XXXXXXXXXX 5W1B1H-XXXXXXXXXXXXX9 5W3B1H-XXXXXXXXXXXXX9 5W5B1H-XXXXXXXXXXXXX9 53H1H-XXX9XXXXXXXXXX 5H1B1H-XXXXXXXXXXXXX9 5H3B1H-XXXXXXXXXXXXX9 5H5B1H-XXXXXXXXXXXXX9 53P1H-XXX9XXXXXXXXXX 5P1B1H-XXXXXXXXXXXXX9 5P3B1H-XXXXXXXXXXXXX9	4 inch	130 to 2 000



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5P5B1H-XXXXXXXXXXXXX9		
53W1F-XXX9XXXXXXXXXX		
5W1B1F-XXXXXXXXXXXXX9		
5W3B1F-XXXXXXXXXXXXX9		
5W5B1F-XXXXXXXXXXXXX9		
53H1F-XXX9XXXXXXXXXX		
5H1B1F-XXXXXXXXXXXXX9		
5H3B1F-XXXXXXXXXXXXX9		
5H5B1F-XXXXXXXXXXXXX9		
53P1F-XXX9XXXXXXXXXX		
5P1B1F-XXXXXXXXXXXXX9		
5P3B1F-XXXXXXXXXXXXX9		
5P5B1F-XXXXXXXXXXXXX9		
Any Position within the model number designated by an "X" is not a metrological feature. Model number digit "9" (9 <sup>th</sup> or 19 <sup>th</sup> position from left) designates a custody transfer digital electronics version. The Promag sensor is available with flow tube liners constructed with hard rubber, polyurethane (W), and PFA, PTFE (P) or PTFE (H) fluorocarbons.		

**Operation:** A complete system includes the Promag 53 or 100 or 300 or 500 or Dosimag digital electronics and Promag sensor models "W" or "H" or "P". The Promag 53 display and touch control is used to access the programming matrix. An access code must be entered before any parameter may be changed. The Promag 53 or 300 or 500 digital electronic display may be used as a non-resetting primary display. The programming of the Promag 100 and Dosimag digital electronics are accessed with a computer connected to the terminals or connector. The Promag 53 or 100 or 300 or 500 or Dosimag digital electronics provides a pulse output or digital communication output which represents volume flow when used with an optional approved indicator. An approved and compatible indicator/batch controller may be used for display of delivery total, system control, and to provide a printer interface.

**Test Conditions:** This Certificate supersedes NTEP Certificate of Conformance 06-019A2. The Promag 5H3B22 and the Dosimag 5BH15 electromagnetic flow meters were tested in the manufacturer's facility. The tests were performed on a gravimetric calibration rig using water (1.0 specific gravity) as the test liquid. The calibration rig was evaluated against NIST traceable weights. An acceptance tolerance of 0.2 percent was applied. Additional sizes of flow sensors have been added. The model code has been corrected at the request of the manufacturer. Previous test conditions are listed below for reference.

**Certificate of Conformance Number 06-019A2:** The Promag 5P1B50 electromagnetic flow meter was tested in the manufacturer's facility. The tests were performed using water (1.0 specific gravity) as the test liquid. The Promag 53H80 electromagnetic flow meter was tested in the manufacturer's facility. An acceptance tolerance of 0.2 percent was applied.

**Certificate of Conformance Number 06-019A1:** This certificate was issued to correct information in the application section and the test conditions. No additional testing is required.

**Certificate of Conformance Number 06-019:** The Promag 53P1H electromagnetic flow meter was tested in the manufacturer's facility interfaced with a Contrec batch controller Model 414 (Certificate of Conformance Number 98-058). The tests were performed using water (specific gravity: 1) as the test liquid. The emphasis of the evaluation was on device design, performance, and operation of the system. The meter was tested in the volumetric indication mode with multiple test drafts at normal, intermediate, and slow delivery flow rates without a change in calibration factor or flow meter zero reference. The meter non-resetting display and a Contrec 414 indicator (Certificate of Conformance Number 98-058) were both used as primary indicators during the testing. After 30 days and a throughput of 3 495 614 gallons the tests were repeated over the same flow rates as on the initial evaluation. An acceptance tolerance of 0.2 percent was applied.

The Promag 53P80 electromagnetic flow meter was tested at a field installation using a clear liquid fertilizer 10-34-0 to determine the performance of the meter. The meter was tested with multiple test drafts at normal, intermediate, and slow delivery flow rates. The non-resetting display was used as the primary indicator during the testing. After 90 days and a throughput of 305 715 gallons the tests were repeated over the same flow rates as on the initial evaluation. An acceptance tolerance of 0.2 percent was applied.

**Type Evaluation Criteria Used:** NIST Handbook 44, 2018 Edition, NCWM Publication 14, 2018 Edition



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**Tested By:** C. Nelson (CA), N. Ingram (CA) 06-019; Allen Katalinic, (NC) 06-019A2; Randy Ramsey (NC), Hunter Hairr (NC) 06-019A3

**Conclusion:** The results of the evaluations and information provided by the manufacturer indicate the devices comply with applicable requirements.

**Information Reviewed By:** S. Patoray (NCWM), L. Bernetch (NCWM) 06-019. 06-019A1; J. Truex (NCWM) 06-019A2, 06-019A3.

Example of Promag 53:



Example of Promag 100:



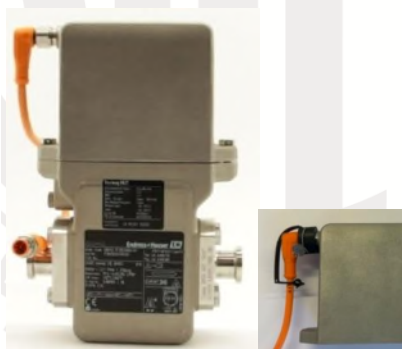
Example of Promag 300



Example of Promag 500



Example of Dosimag  
(with Pulse Output):



Example of Dosimag  
(with MODBUS Output):

