

5001 Campus Drive
College Park, MD 20740-3835

M-b-379

October 31, 2018

TO: Director, Office of State Cooperative Programs
Attn: All Staff, Division of Milk Safety

FROM: Milk and Milk Products Branch (HFS - 316)

SUBJECT: Endress+Hauser Promag H 100 Series Electromagnetic Flowmeter
0.5", 1", 1 1/2", 2", 2 1/2", 3", 4" and 6".

In accordance with M-I-00-2, *Milk and Milk Product Equipment-A Guide for Evaluating Construction*, FDA's Milk Specialists and CFSAN's Milk and Milk Products Branch have specifically evaluated the Endress+Hauser Promag H 100 Series Electromagnetic Flowmeter, Sizes 0.5", 1", 1 1/2", 2", 2 1/2", 3", 4" and 6" and have validated and confirmed the technical information submitted by Endress+Hauser and reviewed by the Atlantic Midwest Dairy Equipment Review Committee (AMDERC).

When constructed, installed, operated and maintained as outlined in the instructions of the manufacturer's manual and the Supplement attached: Endress+Hauser Proline Promag H 100 Series Electromagnetic Flowmeter, BA01171D/06/EN/02.14 71249918 Valid as of version 01.00. zz (Device firmware) has been found to meet the applicable provisions of Item 16p-Pasteurization and Aseptic Processing of the *Grade "A" Pasteurized Milk Ordinance* (PMO).

The technical information that was submitted and reviewed addressing the Endress+Hauser Promag H 100, H 300 and H 500 Series Electromagnetic Flowmeter Sizes 0.5", 1", 1 1/2", 2", 2 1/2", 3", 4" and 6" constitutes the AMDERC's Engineering Design and Technical Construction File (EDTCF). The material in the EDTCF is the property of the manufacturer and may be shown at their discretion.

For additional information regarding this equipment, and to request a copy of the manufacturer's referenced manual please contact:

Ola Wesstrom
Senior Industry Manager Food & Beverage
Endress+Hauser USA
2350 Endress Place
Greenwood, IN 46143
317-535-2134
Ola.wesstrom@us.endress.com

FDA's review and acceptance of the Endress+Hauser Promag H 100 Series Electromagnetic Flowmeter Sizes 0.5", 1", 1 1/2", 2", 2 1/2", 3", 4" and 6" does not constitute FDA or State Regulatory Agency endorsement or approval. Any representation on a label or in printed literature citing or indicating as "FDA Approved" would be considered as false and misleading.

An electronic version of this memorandum is available for distribution to FDA Milk Specialists, Milk Regulatory/Rating Agencies and Milk Sanitation Rating Officers in your region. The electronic version should be widely distributed to representatives of the dairy industry and other interested parties and will also be available on the FDA Web Site at <http://www.fda.gov> at a later date.

If you would like an electronic version of this document prior to it being available on the FDA Web Site, please e-mail your request to monica.metz@fda.hhs.gov.



Donald R. Goldsmith
Milk Specialist



Chief
Milk and Milk Products Branch

Attachments:

BA01171D/06/EN/02.14
71249918
Valid as of version
01.00.xx (Device firmware)

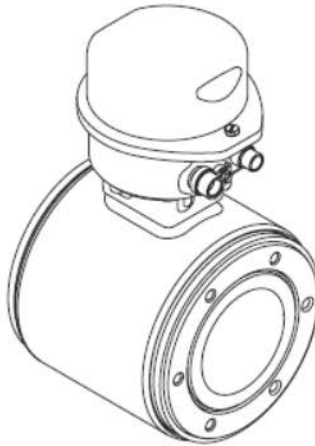
Products

Solutions

Services

Operating Instructions Proline Promag H 100 HART

Electromagnetic flowmeter



Endress+Hauser 
People for Process Automation

Promag H100: Supplemental Setup instructions for Endress + Hauser sanitary magnetic flowmeter series Promag H100 for use in HTST or Aseptic processing systems.

All applicable parts of PMO (2017 revision) appendix H and I apply.

Model Number and Option Inclusion List for PMO applications:

5H1Bxx- 010 015 020 030 040 050 060 070 075 080

5 = Promag Magnetic Flowmeter

H= Hygienic Sensor

1= 100 series electronic

B = Generation index (b,c...)

xx = sizes 2 through 150mm or 1/12th through 6". See set-up table for flow ranges per meter diameter

010 = Non-Hazardous Area Classification or Class 1 Division 2 Area Classification

015 = 24 VDC Power Supply

020 = Limited to Output Code **Option B = 4-20mA, HART + Pulse/Frequency/ Switch Output**

030 = With or Without Display. * Local Display is Display only and includes no local keypad/ buttons

040 = Transmitter housing material. All allowed with unique security seal kit

050 = Electrical Connection. Conduit entry or M12 Cord set

060 = Process connection Seal. Aseptic Shape Only allowed. (e.g. Aseptic EPDM FDA Listed material)

070 = Process Connection. (e.g. Tri-clamp®)

075= Electrode material and shape. (e.g. Stainless Steel 1.4435/ 316L electropolished measuring sensors)

080 = Flowmeter volumetric laboratory calibration. (e.g. 0.2% or 0.5%)

Additional Options Allowed for PMO Applications:

500: Display Language. (e.g. English, Spanish, French, etc.)

520: Sensor Options for internal potting, inclusion of temperature sensor, and IP69 wash down construction

540: Heartbeat Verification and Monitoring (May be used at set-up or as output condition only after seal is applied)

580: Material certificates and additional factory certificates and test protocols. (e.g. hydrostatic test)

590: Additional Approval Markings applied to the device: 3A, EHEDG, CRN

850: Firmware Version generation in case of documented requirement for in-place device

895: Marking/ Tagging / RFID identification to customer specific request at manufacturer

In order to meet FDA “PMO” requirements for magnetic flow meter based timing systems for HTST pasteurizers, the meter programming and configuration function must be disabled before regulatory seals are affixed. The procedures below must be followed in order to program the device parameters using the web browser, disable the possibility of reprogramming, and seal the device properly.

Endress + Hauser, model Promag H 100 ...

Web Browser Device Configuration Interface: The web browser is used to configure the device so that the parameter values are specific to HTST pasteurizer applications. (See appendices A or Promag 100 operating instructions manual for details.)

Disabling Configuration interfaces: When using a Promag 100 device, configuration functionality of the flow meter must be turned off using “Write Protection.” This can be done using a dip switch after removing the device cover. After enabling write protection, configuration will be disabled from editing by HART protocol, service interface (CDI connection,) and the web browser. (See appendix A or Promag 100 operating instructions manual for details.)

Regulatory Seals: It is necessary to install seals on the flow meter housing covers to prevent unauthorized access to the flow meter. Special enclosure screws are available, which accommodate a wire seals. (See appendix C, D for details.)

Appendix A - Promag H 100 Web Browser

Connecting to the Web Browser:

Configuring the Internet Protocol of the Computer:

1. Switch on the measuring device and connect to the computer via the Ethernet cable.

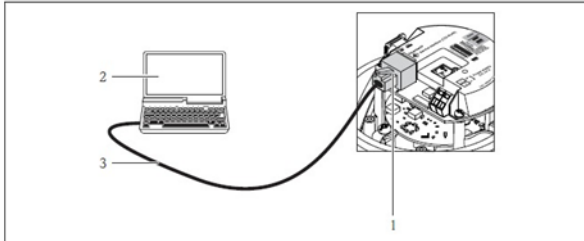


Figure 1: Connecting the Ethernet Cable

2. If a 2nd network card is not used: all the applications on the notebook should be closed, or all the applications that require the Internet or network, such as e-mail, SAP applications, Internet or Windows Explorer, i.e. close all open Internet browsers.
3. Configure the properties of the Internet protocol (TCP/IP) as defined in the table below.

IP address	192.168.1.XXX; for XXX all numerical values except: 0, 212 and 255 → e.g. 192.168.1.213
Subnet mask	255.255.255.0
Default gateway	192.168.1.212 or leave cells empty

Table 1: Configuring Internet Protocol of Computer

Starting the Web Browser:

1. Start any Web browser on the computer.
2. If the IP address of the measuring device is known, enter the defined device address in the address line of the Web browser. If it is unknown, set DIP switch No. 10 to ON, restart the device and enter the standard IP address: 192.168.1.212
3. The following page should appear:

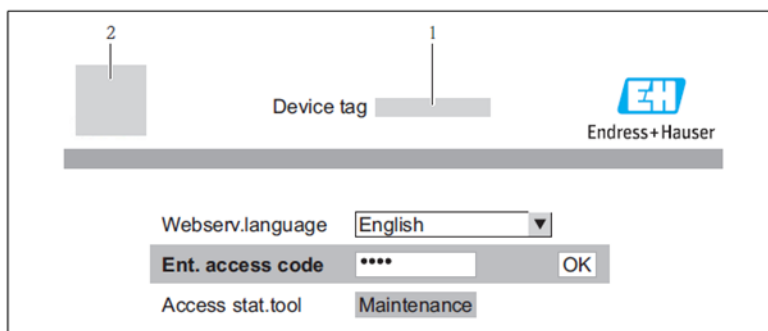


Figure 2: Web Browser Login Page

4. Enter access code "0000" and press "Enter."

Changing Parameters:

1. Click the “Menu” tab on the top of the screen. This will take you into the menu structure where all programmable parameters can be changed. See the figure below for what this page will look like.

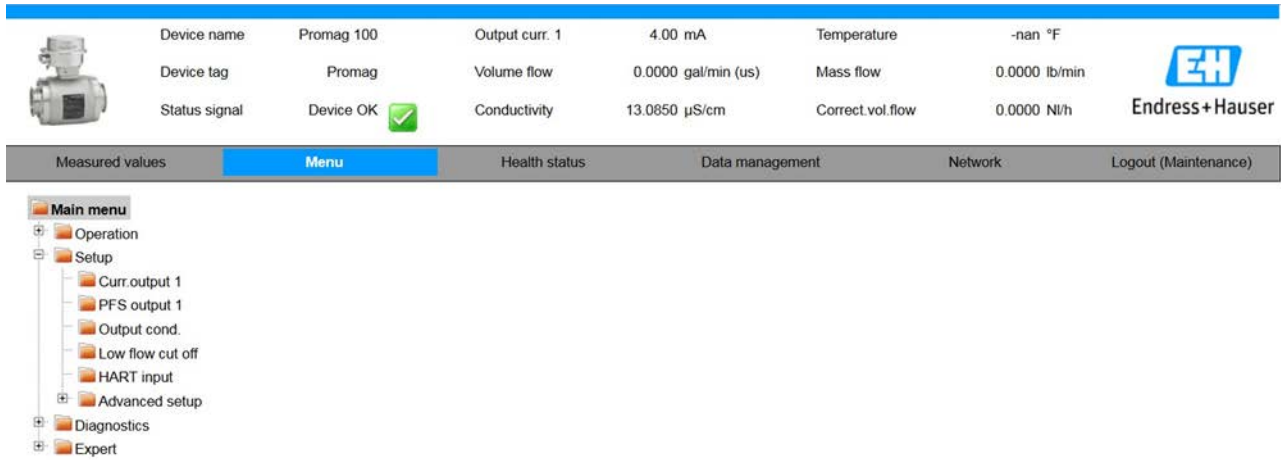


Figure 3: Web Browser Menu Screenshot

2. See appendix B for default configuration values. NOTE: When inputting values, you will need to press “Enter” or “Apply” to store the new entry.
3. When finished programming the device, simply disconnect the Ethernet cable.

Appendix B – Configuration Values

Key Parameters for verification of Flow meter settings

Applicable to Endress+Hauser electromagnetic flow meter **Promag H 100**

If the Promag H 100 was ordered without a display – Order Code: 51HBxx-xxxAXXXXXXXXX:

Programming location	Function description	Required setting	Notes	Default
Diagnostics, Device Info	Serial number	Sensor serial #		Device Specific
Diagnostics, Device Info	Firmware version	x.xx.xx		Device Specific Revision
Set Up/ System units	Unit volumetric flow	gal/min		Gal/min
System units	Unit volume	gal		Gal
Diagnostics	Current simulation	Off		off

Set Up/ Current Output 1	Assign current output	Volume flow		Volume flow
Current Output 1	Current Span	4-20mA		4-20mA
Current Output 1	Value at 4mA flow	Set during start-up to application specific value	Example: 0gpm	Size dependent
Current Output 1	Value at 20mA (Flow full scale)	Set during start-up to application specific value	Example: 75gpm for 2" sensor	Size Dependent
Output Condition	Damping output 1	1	Same as damping constant	0s
Current Output	Failure mode	Min. Current	Drives current to 4mA in case of failure	Min. Current
Process parameters	Flow Damping	6	Same as system damping	6
Set Up/ Advanced SetUp/ Sensor Adjustment	Installation Direction	Forward Flow	Forward flow direction only	In Direction of Arrow (on flow tube label)

Process Parameters	Low Flow cut-off	<p>Factory default On" Volume flow"</p> <p>Off % = 50% default.</p> <p>Ex> 3" meter reads 0 as flow drops below 1.25GPM. Begins reading at 2.5 GPM.</p>	<p>Use factory default values (based on meter size)</p> <p>1-1/2" = 0.75gpm</p> <p>2" = 1.25gpm</p> <p>2-1/2" = 2.0gpm</p> <p>3" = 2.5gpm</p> <p>4" = 4.0gpm</p>	<p>1-1/2" = 0.75gpm</p> <p>2" = 1.25gpm</p> <p>2-1/2" = 2.0gpm</p> <p>3" = 2.5gpm</p> <p>4" = 4.0gpm</p>
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If the Promag H 100 was ordered with a display – Order Code: 51HBxx-xxxBxxxxxxxx, the display can be configured freely as display values has no influence on output signal, suggested values are:

Programming location	Function description	Required setting	Notes	Default
Display	Display language	English		English
Display	Format display	1 value, max. size		1 value, max. size
Display	Value 1 display	Volume flow		Volume flow
Display	Decimal places 1	x.xx		x.xx
Display	Display damping	0.0 s		0.0 s

Table 2: Additional HTST Configuration Values for Display

Notes: Flow Damping value = 6. 1 measuring period = 16.7ms x 6 = 1 second maximum allowable damping to flowmeter system.

CIP Standard Filter is allowable during normal operation and does not bias measurement value underflowing process conditions. CIP standard filter is activated at a rapid change in conductivity values e.g. milk >water>cleaning agent and supports measurement tracking under intermediate cleaning process.

(Activation allowable via: Main Menu: Expert: Sensor: Process Parameters: Filter Options)

Device specific software and Firmware Revision Management -The device manufacturer delivers new instruments with controlled firmware. The firmware can be monitored and managed in the manufacturers equipment record. Only manufacturer information that states a required corrective action to change firmware should be considered as the control decision for device behavior of a previously placed-in-service instrument.

Below is an exploded image of a Promag H 100 device with and without a display:

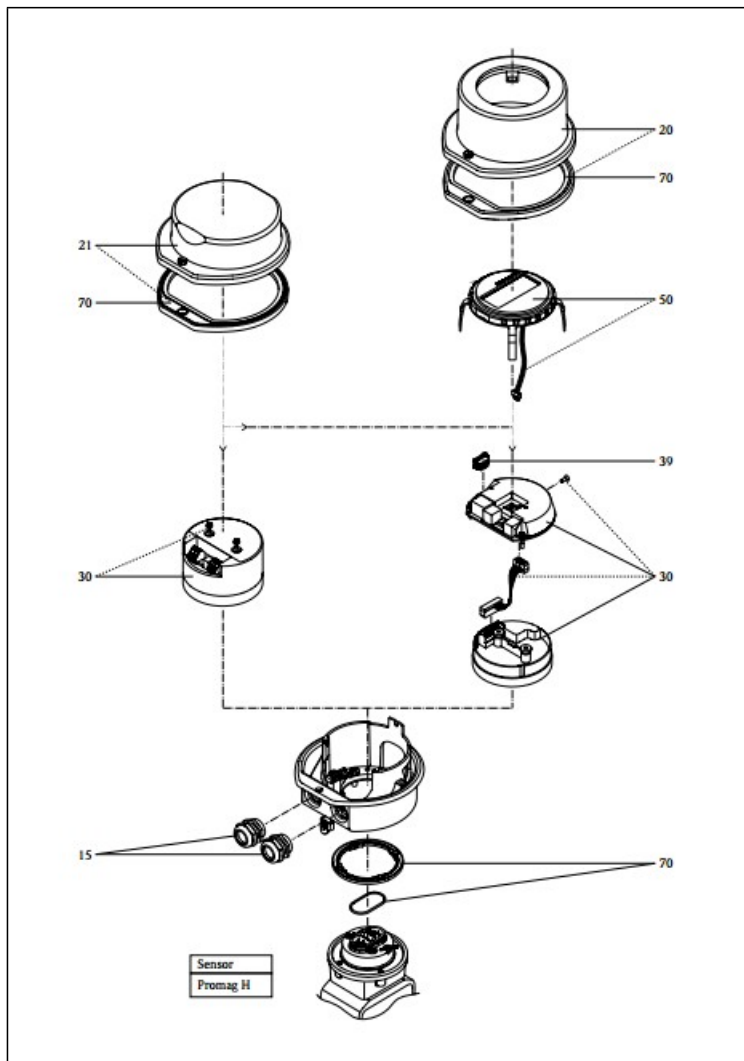


Figure 4: Exploded Drawing of Promag H 100 with and without Display

Appendix C – Write Protection via Write Protection Switch

To Enable Write Protection:

1. First, loosen the securing clamp or fixing screw of the housing cover.
2. Depending on the housing version, unscrew or open the housing cover and disconnect the local display from the main electronics module where necessary.
3. Disconnect the T-DAT from the main electronics module. See Figure below.

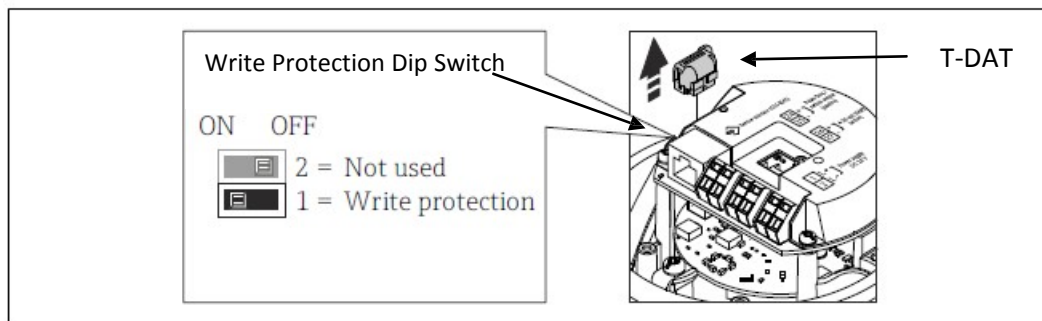


Figure 5: Image of T-DAT Removal and Write Protection Switch

4. Setting the write protection switch on the main electronics module to the ON position enables the hardware write protection. Setting the write protection switch on the main electronics module to the OFF position (factory setting) disables the hardware write protection.

The write protection must be in “ON” position prior to sealing the meter

➤ If hardware write protection is enabled, the Locking status parameter displays the Hardware locked option; if disabled, the Locking status parameter does not display any option.

*Note: T-DAT must be engaged to prevent device from producing alarm mode. If device T-DAT is removed, the T-DAT must be re-inserted. Once engaged, the alarm can be cleared with a device reset or power cycle.

Appendix D – Regulatory Sealing Instructions

Note: Special screws with drilled holes from screw kit must be installed in the locations indicated below, so that regulatory seals can be affixed to prevent access to the flow meters programming.



Figure 6: Special Screw Insertion Diagram for Regulatory Seals