

TURBINE FLOWMETERS BY **HOFFER**

The Turbine Flowmeter Company



HRT1

Rate Indicator/Totalizer with HART®
Communication Protocol

Product Bulletin HRT 1-111B

TECHNICAL DATA SHEET

OUTSTANDING FEATURES



- ◆ **HART® Field Communication Protocol.**
- ◆ **5 Digit Rate, 8 Digit Totalizer LCD display with configurable decimal point location.**
- ◆ **8 Digit, Non-resettable Grand Total display.**
- ◆ **Pulse Input supports turbine as well as many other pulse generating flowmeters.**
- ◆ **4-20mA Analog Output.**
- ◆ **Up to 20 Point Linearization.**
- ◆ **Optional Scaled Pulse Output representing an increment of volume for each pulse.**
- ◆ **Two Optional Alarm Outputs configurable for Rate and Total.**
- ◆ **Magnetically operated reed switch for Total reset.**
- ◆ **Internal battery backup.**
- ◆ **Configuration and Grand Total stored in non-volatile memory. Grand Total saved once per minute.**

GENERAL DESCRIPTION

Featuring 5 digits of rate and 8 digits of total, the HRT1 is a loop powered indicator capable of accepting magnetic pickup, DC pulse or switch closure inputs. The HRT1 uses the 4-20mA loop to provide power when this output is used and to provide the HART® communication link.

SPECIFICATIONS

GENERAL

TOTAL DISPLAY:

8 Digits 0.26" high. Resettable.

Total Units: GAL, LIT, FT3, M3, BBL & "blank".

GRAND TOTAL:

8 Digits 0.26" high, Non-resettable. Value stored once per minute in non-volatile memory. Grand Total is displayed for 15 seconds after pressing the > button.

RATE DISPLAY:

5 Digits 0.5" High, Display updates once every two seconds.

Rate Units: /SEC, /MIN, /HR, & /DAY.

K-factor: The pulses per unit of Total (e.g. pulses/gallon) are configurable in the range 0.001 to 99,999,999.

Linearization: Up to 20 points.

Decimal Points: Configurable for 0, .0, .00 or .000 for rate and total.

Accuracy: Total: ± 1 count, Rate: $\pm 0.01\%$

INPUTS

Magnetic Pickup:

Frequency Range: 0.2 Hz to 5000 Hz.

Signal Level: 30 mV_{p-p} to 30V_{p-p}.

Opto-Isolated DC Pulse:

Frequency Range: 0 Hz to 5000 Hz.

Signal Type: DC Pulse.

High (Logic 1): 4 to 30 VDC

Low (Logic 0): <1 VDC

Min Pulse Width: 0.1 msec

Contact Closure:

Frequency Range: 0 to 5000 Hz.

Signal Type: Contact closure, Sig+ Terminal to DC common.

Internal Pull-up: 220 K Ω to +3.3 VDC

Reset:

Signal Type: Contact closure, Reset Terminal to DC common.

Min On: 25 msec

Internal Pull-Up: 100K Ω to +3.3 VDC

External Magnet: Activates internal reed switch.

DC POWER/LOOP POWERED

Voltage: 8 to 30 VDC.

Current: <24 mA

Loop Burden: 8 VDC maximum

Supply Backup: (1) C-size Lithium battery.

Battery Life: 6 years typical.

Protection: Reverse polarity protected.

ANALOG OUTPUT

Scale: 4-20mA follows rate.

Accuracy: 0.02% of Full Scale @ 20°C.

Temperature drift: 40 ppm/°C.

Update Time: 2.0 seconds.

Connection: Two wire.

PULSE OUTPUT

Type: 0-5 TTL, 0-Supply Voltage, open collector (30 VDC, 100mA)

ALARM 1 AND ALARM 2

Type: 0-5V TTL, 0-Supply voltage, open collector (30 VDC, 100 mA)

Function: Rate or Total.

PHYSICAL

Operating Temperature:

-4°F (-20°C) to + 158°F (70°C)

Humidity: 0 - 90% Non-condensing

Packaging: NEMA 4X, Panel mount or Explosion-proof

Dimensions for NEMA 4X enclosure:

4.33" (110 mm) wide x 4.33" (110 mm) long x 4.33" (110 mm) tall.

HRT1 ORDERING INFORMATION

Basic Model Number

HRT1 - (A) - (B) - (C) - (D) - (E) - (F) - (G)

Series:

A. Enclosure Style:

- 2 NEMA 4X Enclosure (HRT1 mounted behind clear cover).
- 3 Explosion-Proof Housing. Class I, Division I, Groups B, C & D. Class II, Division I, Groups E, F & G.
- 3A ATEX Exd Enclosure.
- P Panel Mount Enclosure.
- PD Panel Mount Enclosure with Door and Lock.
- 4 NEMA 4X enclosure (HRT1 mounted to the outside of clear cover).

B. Pulse Input:

- M Magnetic coil, Pulse, Dry contact.
- R Isolated Pulse, RPM, RPR, Hall Effect coils.

C. Analog Output:

- W Wired 4-20mA Loop Powered.
- T Wireless 4-20mA Ouput. TBA. (Coming in near future).

D. Pulse Output:

- 5 0-5 TTL/CMOS.
- OC Open Collector.
- V 8-30 VDC with Pullup to V+.

E. Alarms: (Two opto-isolated alarms with user-defined levels for rate and/or total)

- 5 0-5 TTL/CMOS.
- OC Open Collector.
- V 8-30 VDC with Pullup to V+.

F. Mounting:

- F Nema 4X Style 2 enclosure mounted on turbine. Must be used with "X" riser turbine option.
- FHT 8" long temperature riser for Nema 4X Style 2 enclosure mounted on turbine. Required when fluid temperature exceeds 140 deg. F. Must be used with "X" riser turbine option.
- FX Explosion-proof Style 3 enclosure mounted on turbine. Must be used with "X" riser option on turbine.
- FXHT 8" long temperature riser for Explosion-Proof Style 3 enclosure mounted on turbine. Required when temperatures exceed 140 deg. F. Must be used with "X" riser turbine option.
- NP Nema 4X enclosure pipe mounting kit 2" pipe or smaller. Specify if pipe is vertical or horizontal.

G. Special Features:

- CE CE Mark required for Europe.
- SP Any special features that are not covered in the model number use a written description of the -SP.

H **HOFFER FLOW CONTROLS, INC.**
 107 Kitty Hawk Lane, P. O. Box 2145, Elizabeth City, NC 27906-2145
 800-628-4584 252-331-1997 FAX 252-331-2886
 www.hofferflow.com email: info@hofferflow.com

The specifications contained herein are subject to change without notice and any user of said specifications should verify from the manufacturer that the specifications are currently in effect. Otherwise, the manufacturer assumes no responsibility for the use of specifications which may have been changed and are no longer in effect.



The quality system covering the design, manufacture and testing of our products is certified to International Standard ISO 9001.