



Rate Indicator/Totalizer with

HART® Communication Protocol Product Bulletin HRT1-111M

TECHNICAL DATA SHEET



Perfecting Measurement TM

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 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: ±0.01%

INPUTS

Magnetic Pickup:

Frequency Range: 0.2 Hz to 5000 Hz Signal Level: 30 mV_{\rm p-p} to $30V_{\rm p-p}$

Opto-Isolated DC Pulse:

Frequency Range: 0 Hz to 3000 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: $100K\Omega$ to +3.3 VDC External Magnet: Activates internal magnetic switch

Proudly Distributed By

Current: <24 mA



DC POWER/LOOP POWERED Voltage: 8 to 30 VDC HRT1-<u>A</u>-<u>B</u>-<u>C</u>-<u>D</u>-<u>E</u>-<u>F</u>-<u>G</u> Loop Burden: 8 VDC maximum A. Enclosure Style Supply Backup: C-size Lithium battery or (2) NEMA 4X battery pack for Ex d certified system (3*) Aluminum casting powder coated enclosure (IP66) Battery Life: 8 months w/no DC power (P) Panel mount (IP40) Protection: Reverse polarity protected (PD) Panel mount w/door and lock (IP40) (X) None ANALOG OUTPUT (4) NEMA 1 Enclosure for indoor/dry installation Scale: 4-20mA follows rate F. Mounting (5) NEMA 4X Enclosure w/sunshade Accuracy: 0.02% of Full Scale @ 20°C (7*) Stainless steel enclosure (IP66) Temperature drift: 40 ppm/°C *Options for 3 and 7 Update Time: 2.0 seconds (M) M20 thread (S) Sunshade Connection: Two wire on turbine **PULSE OUTPUT B.** Pulse Input Type: 0-5 TTL, 0-Supply Voltage, open (M) Magnetic Coil collector (30 VDC,100mA) (R) Isolated pulse, RP, Hall Effect coils ALARM 1 AND ALARM 2 C. Analog Output Type: 0-5V TTL, 0-Supply voltage, open collector (30 VDC, 100 mA) (W) Wired 4-20mA Loop Powered Function: Rate or Total **D.** Pulse Output (5) 0-5V TTL/CMOS

Operating Temperature: -40°F (-40°C) to + 158°F (70°C)

Humidity: 0 - 90% Non-condensing Packaging: NEMA 4X, Panel mount or Aluminum casting Dimensions for NEMA 4X enclosure:

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

E. Alarms -(5) 0-5V TTL/CMOS (OC) Open Collector

(V) 8-30 VDC with Pullup to VDC+

(V) 8-30 VDC with Pullup to VDC+

(OC) Open Collector

HRT1 ORDERING INFORMATION

G. Special Features (CE) CE mark required for Europe

(F) NEMA 4X style 2 enclosure mounted on turbine

(FHT) NEMA 4X style 2 enclosure w/8" long riser mounted on turbine

(FX) Style 3 or 7 enclosure mounted

(FXHT) Style 3 or 7 enclosure w/8" long riser mounted on turbine

(NP) NEMA 4X enclosure pipe mounting kit 2" pipe or smaller

Certified Mounting Options for Style 3 and 7 Enclosures:

(MX_) Meter mounted. Process temp -40°C to +70°C

(MA_) Meter Mounted w/ ATEX riser. Process temp -40°C to +70°C.

(RX_) Remote mounted. Includes E2 junction box and $1^{\circ}x3/4^{\circ}$ SS adapter. (RA_) Remote mounted w/ ATEX riser.

Includes E2 junction box. Union Options:

(_U1) 1" Ex-proof union for MX or RX (_U2) 3/4" Ex-proof union for MA or RA

Ex d Ratings Certified Systems Style 3 & 7:

CSA/US Zones

PHYSICAL

Ex db IIB+H2 T6: Gb; Ex tb IIIC T72°C Db; IP66 CLASS I, Zone 1, AEx db IIB+H2 T6: Gb: Zone 21, AEx tb IIIC T72°C Db· IP66

ATEX/IECEx:

II 2 G Ex db IIB+H2 T6 Gb II 2 D Ex tb IIIC to T72°C Db IP66 T1-T6= -40°C to °+70°C



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Hoffer Flow Controls Quality Management System

