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

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 mVp-p to 30Vp-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 KΩ to +3.3 VDC

Reset:
Signal Type: Contact closure, Reset Terminal to DC common
Min On: 25 msec
Internal Pull-Up: 100KΩ to +3.3 VDC
External Magnet: Activates internal magnetic switch
DC POWER/LOOP POWERED
Voltage: 8 to 30 VDC
Current: <24 mA
Loop Burden: 8 VDC maximum
Supply Backup: C-size Lithium battery or battery pack for Ex d certified system
Battery Life: 8 months w/no DC power
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:
-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

PHYSICAL

**HRT1 ORDERING INFORMATION**

<table>
<thead>
<tr>
<th>Enclosure Style</th>
</tr>
</thead>
<tbody>
<tr>
<td>(2) NEMA 4X</td>
</tr>
<tr>
<td>(3*) Aluminum casting powder coated enclosure (IP66)</td>
</tr>
<tr>
<td>(F) Panel mount (IP40)</td>
</tr>
<tr>
<td>(PD) Panel mount w/door and lock (IP40)</td>
</tr>
<tr>
<td>(4) NEMA 1 Enclosure for indoor/dry installation</td>
</tr>
<tr>
<td>(5) NEMA 4X Enclosure w/sunshade</td>
</tr>
<tr>
<td>(7*) Stainless steel enclosure (IP66)</td>
</tr>
</tbody>
</table>

**Options for 3 and 7**
- (M) M20 thread
- (S) Sunshade

**Pulse Input**
- (M) Magnetic Coil
- (R) Isolated pulse, RP, Hall Effect coils

**Analog Output**
- (W) Wired 4-20mA Loop Powered

**Pulse Output**
- (5) 0-5V TTL/CMOS
- (OC) Open Collector
- (V) 8-30 VDC with Pullup to VDC+

**Alarms**
- (5) 0-5V TTL/CMOS
- (OC) Open Collector
- (V) 8-30 VDC with Pullup to VDC+

**Ex d Ratings Certified Systems Style 3 & 7:**

<table>
<thead>
<tr>
<th>CSA/US Zones</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ex db IIb+H2 T6: Gb; Ex tb IIIC T72°C Db; IP66</td>
</tr>
<tr>
<td>CLASS 1, Zone 1, AEx db IIb+H2 T6: Gb; Zone 21, AEx tb IIIC T72°C Db; IP66.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ATEX/IECEx:</th>
</tr>
</thead>
<tbody>
<tr>
<td>II 2 G Ex db IIb+H2 T6 Gb</td>
</tr>
<tr>
<td>II 2 D Ex tb IIIC to T72°C Db IP66</td>
</tr>
<tr>
<td>T1-T6= -40°C to +70°C</td>
</tr>
</tbody>
</table>

**Certified Mounting Options for Style 3 and 7 Enclosures:**

- (FX) Style 3 or 7 enclosure mounted on turbine
- (FXHT) Style 3 or 7 enclosure w/8” riser mounted on turbine
- (NP) NEMA 4X w/pipe mounting kit

**Communication Port**
- (T) Internal terminal block
- (U) External USB
- (X) None

**Mounting**
- (F) NEMA4X mounted on turbine
- (FHT) NEMA4X w/8” riser mounted on turbine
- (MA) Meter Mounted w/ ATEX riser. 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”x3/4” 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

Sample ordering information:


**Special Features**
- (CE) CE mark required for Europe
- (X) None

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