BAT RAT MILLENNIUM

Features

- UL/C-UL Intrinsically Safe Listed
- Magnetic Pickup Input, Contact Closure Input, DC Pulse Input (Optically Isolated)
- · Displays Rate & Total Simultaneously
- 5 Digit Rate Display, 8 Digit Totalizer Display
- 4-20mA Analog Output (optional)
- Powered From Internal Battery, External DC Supply or 4-20 mA Output Loop
- 20 Point Linearization (optional);
 10 Point Linearization with Data Logger option
- Isolated High/Low Flow Rate Alarm Output
- Nonvolatile Flash Memory of Setup Data
- RS485 Modbus Communications and Data Logger (optional)
- Setup Software Available for Easy Programming and Monitoring Using a PC and Special Serial Cable (optional)

Description

Featuring 5 digits of rate and 8 digits of total, the BAT RAT-M is a battery powered indicator with flow rate alarm output. It is capable of accepting magnetic pickup, DC pulse and switch closure inputs from pulse producing flowmeters. The unit can be ordered with an optional 4-20mA output. When this option is used, it uses the 4-20mA loop to provide power when this output is used. The BATRAT-M is available with an optional setup program (S1 Option). Alternately it is available with a RS485 Modbus RTU communications and a datalogger.

Specifications

Display:

- Rate Display: (selectable decimal)
- 5 Digits (99999), 0.35" High, Display updates once per second with battery power, 8X per second with DC or Loop power. (Slow input pulse rates, large delay setting and internal math operations may delay the update rate.)

Rate Descriptors: /SEC, /MIN, /HR

/MIN, /HR, /DAY with "D" option

Min. Input Frequency: 0.01 Hz to 10 Hz (selectable delay of 0.1 to 99.9 seconds)*

Selectable Rate Display Damping

Totalizer Display: (selectable decimal)

8 Digits (99999999), 0.2" High

Totalizer Descriptors: GAL, LIT, FT3, M3, "blank"

GAL, BBL, MCF, M3, "blank" with "D" option Warning Displays: Low battery warning

Alarm Output:

Combination High-Low flow rate alarm output activates when flow rate is less than low set point or greater than high set point. Type: Opto-isolated photomos relay Max. voltage (off state): 30 VDC Current (on state): 100 mA

Battery Powered Ratemeter & Totalizer with Alarm Output





Mounting Style 1

Mounting Style 2





Mounting Style 3NE

Mounting Style 3SS



Mounting Style 5



Mounting Style 6

INDUSTRIAL FLOW SYSTEM www.IFSTech.org +1 805 638 7654

Power:

BATTERY POWERED

Supplied with 2 C size Lithium battery pack.

- EXTERNAL POWER INPUT
 - Voltage: 8.5 to 30 VDC

Current: Less than 5 mA

Supplied with 1 C size lithium battery for standby operation Protection: Reverse Polarity Protection on DC Power Input LOOP POWERED

Voltage: 8.5 to 30 VDC

Supplied with 1 C size lithium battery for standby operation Protection: Reverse Polarity Protection on Current Loop Loop Burden: 8.5V maximum

BATTERY LIFE EXPECTANCY:

Expected Years of Operation for BAT RAT-M of various powering options at equipment duty cycles

MODEL	RUN TIME				
	Idle	2hrs/day	8hrs/day	24hrs/day	
BAT RAT-M-A	10 yrs	10 yrs	10 yrs	9.1 yrs	
BAT RAT-M-A-4	10 yrs	10 yrs	10 yrs	8.4 yrs	
BAT RAT-M-B/C	10 yrs	10 yrs	10 yrs	10 yrs	
standby-operation	1				

BAT RAT-M -B/C Indefinite operation when externally powered External or loop power

NOTE: Battery shelf life is rated at 10 years by manufacturer Life expectancy based on rated battery capacity at 20°C The above table is shown with pulse output inactive. Use of alarm output shortens battery life.

MOUNTING STYLES:

0- Circuit Board-	OEM option (consult factory)
1 - Panel Mount -	NEMA 4X Front
2- Wall Mount -	NEMA 4X Enclosure
	(keypad mounted behind clear cover)
3NE- Explosion Proof -	White, Includes Third Conduit Entry
	Class I, Division I, Groups B, C & D
	Class II. Division I. Groups E. F & G
3SS- Explosion Proof -	Stainless Steel
	Class Division Groups B C & D
	Class II Division I Groups E E & G
5- Wall Mount -	NEMA 4X Enclosure
	(keynad mounted on cover)
6- Double Ended Explosi	n Proof -
	Class Division Groups B C & D
	Class II Division I Groups E E & G
	(contact factory for details)
NOTE: Motor mounting	kite available for styles 2, 3, 5 and 6
Consult Eactory	Rits available for styles 2, 3, 5 and 6
Environmental:	
OPEDATING TEMPEDA	TUDE
-4 F (-20 C) 10 + 156	F (70 C)
Extended remp: -22°F	(-30°C) 10 + 158 F (70^{\circ}\text{C})
	_
0 - 90% Noncondensing	g
	-1
0.01% Reading, ±1 col	
Temperature Drift: 50 p	pm/°C worst Case
SAFETY LISTINGS (MOL	Inting Styles 3, 3NE, 355):
CSA File 091109 (cert.	1120094)
UL/C-UL File E225832	
CLASS 1, DIV 1, GROU	JPS B, C, D
Additional "enclosure o	nly" approvals available for ATEX and IEC
INPUTS:	
MAGNETIC PICKUP INP	UT
Frequency Range: 0 to	3500 Hz
Trigger Sensitivity: 10 r	nV p-p
Over Voltage Protected	I: ± 30 VDC

OPTO-ISOLATED DC PULSE INPUT High (logic 1): 4-30 VDC Low (logic 0): Less Than 1 VDC Minimum Current: .5 mA Hysteresis: 0.4 VDC Frequency Range: 0 to 5 kHz Min. Pulse Width: 0.1 msec CONTACT CLOSURE INPUT (contact closure to common) Internal Pullup Resistor: 100 KΩ to +3.6 VDC High (logic 1): Open or 4-30 VDC Low (logic 0): Less Than .5 VDC Internal Switch Debounce Filter: 0 to 40 Hz NOTE: Sustained contact closure will shorten battery life. RESET INPUT (contact closure to common) Internal Pullup Resistor: 100 KΩ to +3.6 VDC High (logic 1): Open or 4-30 VDC Low (logic 0): Less Than .5 VDC Minimum On : 25 msec NOTE: Sustained contact closure will shorten battery life. **K-FACTOR**

Range: 0.001 to 99999999

Decimal Point Locations: XXXX.XXXX to XXXXXXXX

20 Point Linearization Option (10 Point with S2 option) This feature allows the user to enter 20 different frequencies with 20 different corresponding K-Factors to linearize non linear signals.

ANALOG OUTPUT OPTION:

Type: 4-20 mA follows rate display, Two wire hookup Accuracy: 0.025% Full Scale at 20° C Temperature Drift: 50 ppm/°C Typical Reverse Polarity Protected Update Rate: 8 times/second

NOTE: The BAT RAT-M uses the 4-20 mA loop power as its primary power source when this option is used. The battery is still required for standby battery operation.

DATA STORAGE:

Setup Information: Stored in flash memory Totalizer: Stored in battery backed RAM but can be saved to flash memory by operator for recall after battery change out.

COMMUNICATIONS OPTION (S1):

RS232 SERIAL SETUP SOFTWARE OPTION:

This option enables you to access a variety of process parameters through serial communications. PC compatible communications software is included with this option. With this software and a BAT RAT-M Serial Adapter Cable (BSAC1) you will be able to setup the BAT RAT-M through your PC.

RS-485 MODBUS and DATA LOGGER OPTION (S2):

The optional RS-485 card utilizes Modbus RTU protocol to access a variety of process parameters. The Data Logger stores the totalizer to flash memory once every 24 hours at the time you set. The data logger can hold 26 days of totals, on the 27th day the oldest total in the logger is dropped. Requires external DC power: 6-28VDC (input is reverse polarity protected)

Current Draw:

Receiving: 2 mA Transmitting: 125 mA (instantaneous peak)





NOTE: Additional entry holes may be provided on styles 2 and 5.

Typical Wiring:



Ordering Information						
EXAMPLE: BATRATM 3 A 4 ET						
Series:						
Mounting:						
$\dagger 0 = OEM$						
† 1 = Panel Mount						
2 - NEWA 4A BOX (Reypau berning clear cover) 3NE = Explosion Proof Housing White						
Includes Third Conduit Entry						
3SS = Stainless Steel Ex-Proof Housing (consult factory)						
5 = NEMA 4X Box (Keypad outside opaque cover)						
6 = Double Ended Explosion Proof Housing						
Power Supply:						
+ A = Battery (2 supplied)						
B = External Power Supply (8.5 to 30 VDC)						
C = Loop Powered with 4-20 mA Output AC = Loop Powered with 4-20 mA Output						
and 2 Batteries						
Options (Multiple Options Available)						
S1 = Serial Setup Software for use with BSAC1						
(power options B. C only)						
4 = 20 Point Linearization (10 point with S2 option)						
D = Rate per Day, Hour or Minute FT = Fxtended Temp : -22°F to 158°F (-30°C to 70°C)						
CE = CE Approved Version (LVD & EMC only)						
CSA = CSA Approved Version (explosion proof)						
IS^^ = UL LISTED IS (consult factory) ATEXCASE** = European Elame Proof						
ATEX Case (consult factory)						
TRX = NEMA7 Explosion Proof Reset Switch						
on Third Conduit Entry (mounting style 3 only) RN = External Magnetic Reset						
H2 = 0.875 " Hole for mounting styles 2 and 5						
HF2 = 0.5" Female NPT Hub fitting (mount styles 2 & 5)						
H3 = 1.125° Hole for mounting styles 2 and 5						
Special Battery Options						
NB = No Battery						
AB = Supplied with A size batteries						
Accessories:						
2 C Size Batteries & 12" leads						
BATC = Single Battery: Tadiran P/N TL2200/S						
3.6V 7200mAh or equal						
BSAC1 = RS232 Serial Adapter Cable						
with setup software						
IFMMK-1 = Turbine Flowmeter Mounting Kit for flow meters with a 1" Male NP riser						
TFMMK-3/4 = Turbine Flowmeter Mounting Kit						
for flow meters with a 3/4" Male NP riser						
CA-TFM-2-18FL = 18" Long Turbine Flowmeter						
Gable Assembly						
+ External battery pack supplied with models						
** Contact factory for latest information						
RoHS Compliant planned						
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