

# BAT D/T MILLENNIUM

## Features

- UL/C-UL Intrinsically Safe Listed
- Magnetic Pickup Input, Contact Closure Input, DC Pulse Input (Optically Isolated)
- Displays 5 Digit Resettable Total  
8 Digit Grand Total
- 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 Pulse Output
- Nonvolatile Flash Memory of Setup Data

## Description

Featuring 5 digits of resettable total and 8 digits of grand total, the BAT D/T Millennium (BATDTM) is a battery powered indicator capable of accepting

flowmeters. A scaled pulse output is standard. A 4-20mA loop and/or linearization is optional.

## Specifications

### 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 or 2 C size lithium battery(ies) for standby operation

Protection: Reverse Polarity Protection on Current Loop

Loop Burden: 8.5V maximum

## BATTERY LIFE EXPECTANCY:

equipment duty cycles

MODEL	RUN TIME			
	Idle	2hrs/day	8hrs/day	24hrs/day
BATDT-M-A	10 yrs	10 yrs	10 yrs	9.1 yrs
BATDT-M-A-4	10 yrs	10 yrs	10 yrs	8.4 yrs
BATDT-M-B/C	10 yrs	10 yrs	10 yrs	10 yrs
<u>standby-operation</u>				
BATDT-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 pulse output shortens battery life. **Example:** A pulse output of 0.06 sec. duration, once per second, would derate the battery life by 20%.

## LCD Dual Totalizer (Resettable & Non-Resettable)



- RS485 Modbus Communications and Data Logger (optional)
- Setup Software Available for Easy Programming and Monitoring Using a PC and Special Serial Cable

## DISPLAY:

Resettable Total Display

times per second if loop powered)

Grand Totalizer Display: (selectable decimal)

8 Digits (99999999), 0.2" High

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

Warning Displays: Low battery warning

## PULSE OUTPUT:

The pulse output advances with the least significant digit of the totalizer or decimal multiples thereof (see Pulse scale divider).

Type: Isolated photomos relay

Current (on state): 100mA

Pulse Duration: Selectable 0.5, 0.25, 0.125, 0.0625 seconds

Pulse Scale divider (Pulscale): User selectable, ÷1, ÷10, ÷100 or OFF

NOTE: Select OFF for max. battery life.

## ACCURACY:

±1 count

## SAFETY LISTINGS:

UL/C-UL File E225832

See Installation DWNG 17075-1

## ENVIRONMENTAL:

### OPERATING TEMPERATURE

Extended Temp: -22°F (-30°C) to + 158°F (70°C)

### HUMIDITY

0 - 90% Noncondensing

## 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)
- 3- Explosion Proof - Class I, Division I, Groups B, C & D  
Class II, Division I, Groups E, F & G
- 5- Wall Mount - NEMA 4X Enclosure (keypad mounted on cover)
- 6- Double Ended Explosion Proof - Class I, Division I, Groups B, C & D  
Class II, Division I, Groups E, F & G (contact factory for details)

**NOTE:** Meter mounting kits available for styles 2, 3 and 5  
Consult Factory

**INPUTS:**

**MAGNETIC PICKUP INPUT**

Frequency Range: 0 to 3500 Hz  
Trigger Sensitivity: 10 mV p-p  
Over Voltage Protected: ± 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 Data Logger 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 computation, 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 BATDT-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. Selectable analog output damping.

**COMMUNICATIONS OPTION (S1):**

**RS232 SERIAL SETUP SOFTWARE OPTION:**

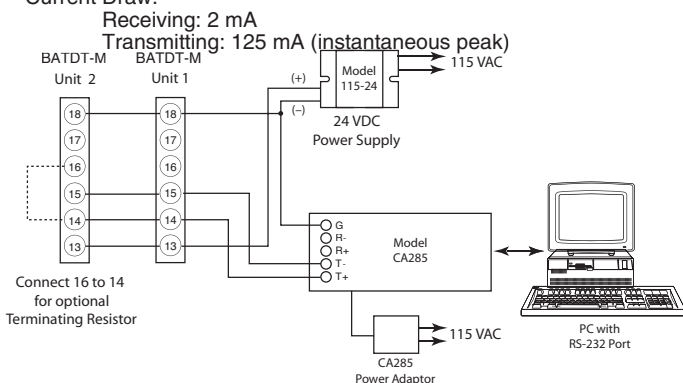
This option enables you to access a variety of process parameters through serial communications. PC compatible communications software is included with this option. With this software and a BATDTM Serial Adapter Cable (BSAC1) you will be able to setup the BATDTM through your PC.

**DATA STORAGE:**

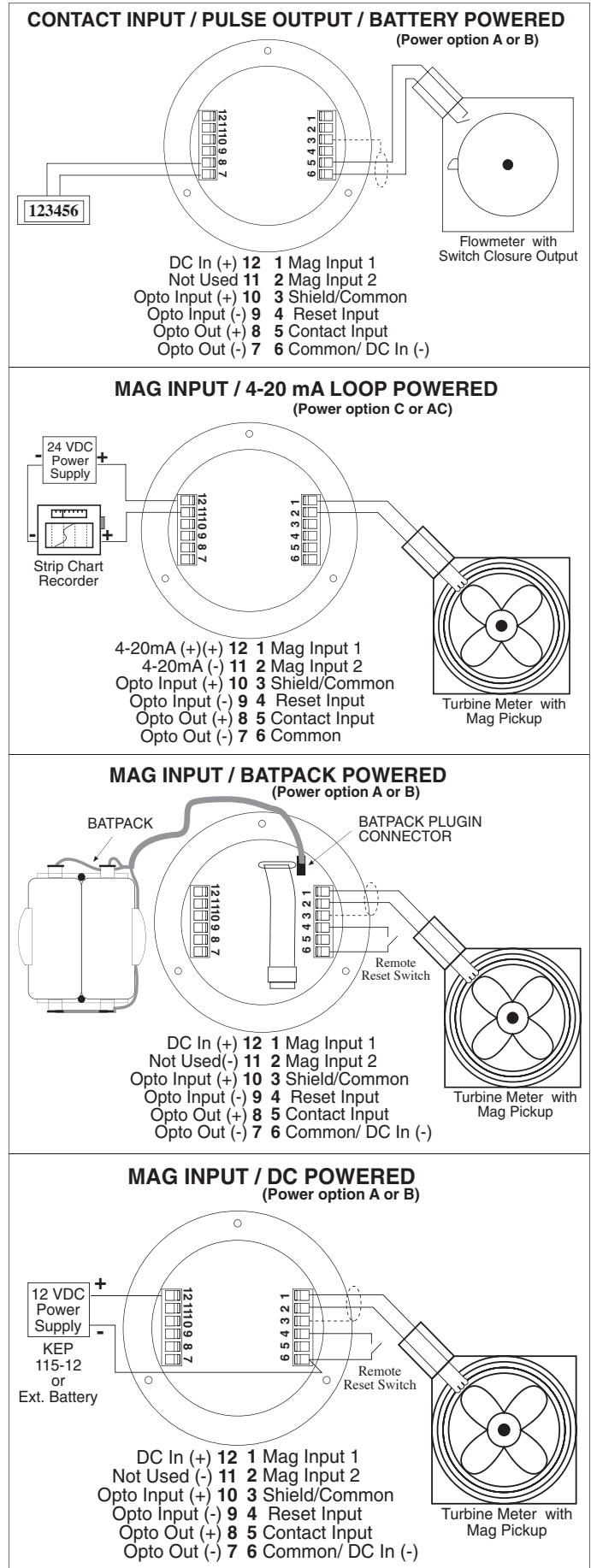
Setup Information: Stored in flash memory  
Totalizer: Stored in battery backed RAM but can be saved to flash memory by operator for recall after battery change out.

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

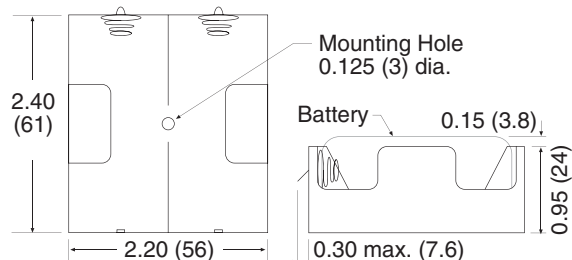
The optional RS-485 card utilizes Modbus RTU protocol to access a variety of process parameters. The Data Logger stores the totalizer to flash memory once every 24 hours at the time you set. The data logger can hold 24 days of totals, on the 25th day the oldest total in the logger is dropped. Requires external DC power: 6-28VDC (input is reverse polarity protected)  
Current Draw:



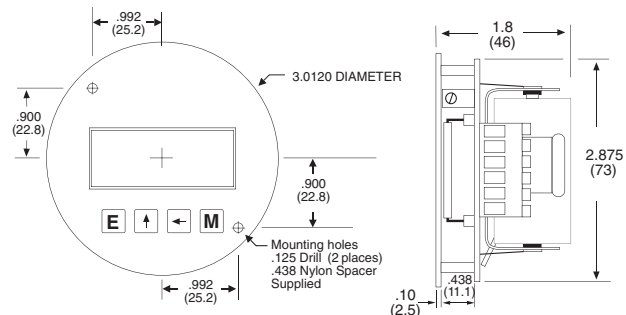
**Typical Wiring:**



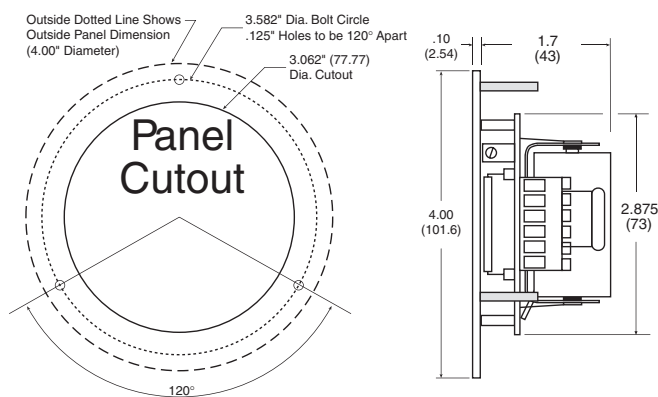
### BATPACK



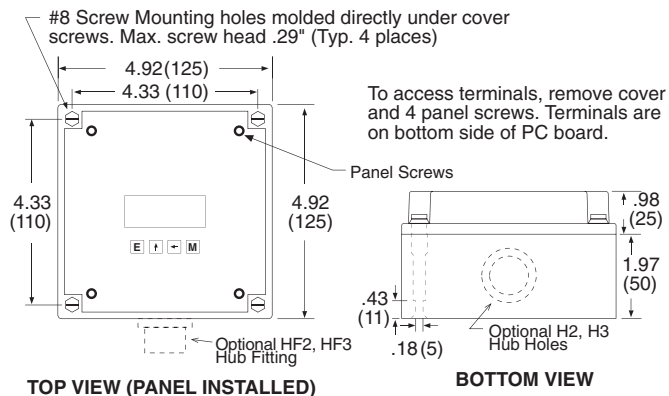
### BATDT-M-0



### BATDT-M-1

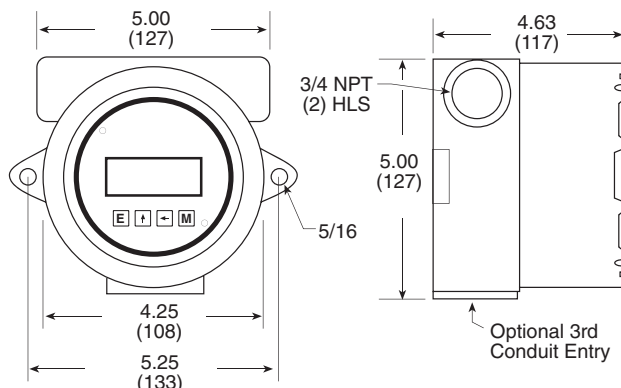


### BATDT-M-2

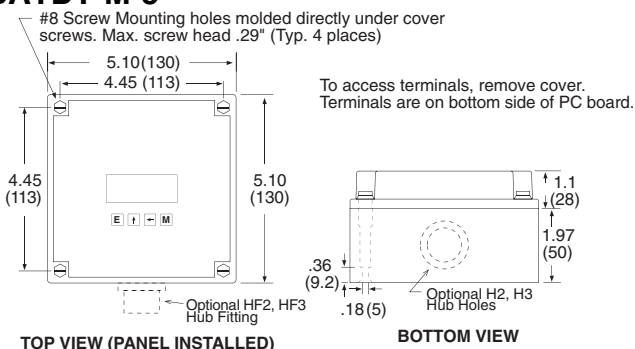


### BATDT-M-3

To access terminals, unscrew cover and loosen 2 panel screws. Terminals are on bottom side of PC board.



### BATDT-M-5



## Ordering Information

**EXAMPLE: BATDTM 3 A 4 ET**

**Series:** \_\_\_\_\_

**Mounting:** \_\_\_\_\_

- \* 0 = OEM
- \* 1 = Panel Mount
- 2 = NEMA 4X Box (BATDTM behind clear cover)
- 3 = Explosion Proof Housing
- 5 = NEMA 4X Box (BATDTM outside opaque cover)
- 6 = Double Ended Explosion Proof Housing (consult factory)

**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
- S2 = RS485/Modbus/Data Logger - Isolated (power options B, C only)
- 4 = 20 Point Linearization (10 point with S2 option)
- D = Rate per Day, Hour or Minute
- ET = Extended Temp.: -22°F to 158°F (-30°C to 70°C)
- CE\*\* = CE Compliant
- CSA\*\* = CSA Listed Explosion Proof
- IS\*\* = UL/C-UL Listed IS
- TRX = NEMA7 Explosion Proof Reset Switch (mounting style 3 only)
- RN = External Magnetic Reset
- T = Third Conduit Entry in Ex-Proof Housing (mounting style 3)
- H2 = 0.875" Hole for mounting styles 2 and 5
- HF2 = 0.5" Female NPT Hub fitting for mounting styles 2 and 5
- H3 = 1.125" Hole for mounting styles 2 and 5
- HF3 = 0.75" Female NPT Hub fitting for mounting styles 2 and 5

**Accessories:**

- BATPACK= External Batt. Pack with 2 C Size Batteries & 12" leads
- BATC = Single Battery: Tadiran P/N TL2200/S 3.6V 7200mAh or equal
- 115-24 = 115 VAC to 24 VDC power supply
- BSAC1 = RS232 Serial Adapter Cable with setup software

\* External battery pack supplied with models BATDTM0A & BATDTM1A  
\*\* Contact factory for latest information