BAT D/T MILLENNIUM

LCD Dual Totalizer (Resettable & Non-Resettable)

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

- RS485 Modbus Communications and Data Logger (optional)

- Setup Software Available for Easy Programming and Monitoring Using a PC and Special Serial Cable

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 magnetic pickup, DC pulse and switch closure inputs from pulse producing 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:
Expected Years of Operation for BATDT-M of various powering options at 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 standby-operation	10 yrs	10 yrs	10 yrs	10 yrs
BATDT-M -B/C External or loop power	Indefinite operation when externally powered			

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%.

DISPLAY:
Resettable Total Display
   5 Digits (99999), 0.35" High, Display updates once every second (8 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 there of (see Pulse scale divider).
   Type: Isolated photomos relay
   Max. voltage (off state): 30 VDC
   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
   CLASS 1, DIV 1, GROUPS B, C, D
   See Installation DWNG 17075-1

ENVIRONMENTAL:
OPERATING TEMPERATURE
   -4°F (-20°C) to + 158°F (70°C)
   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):
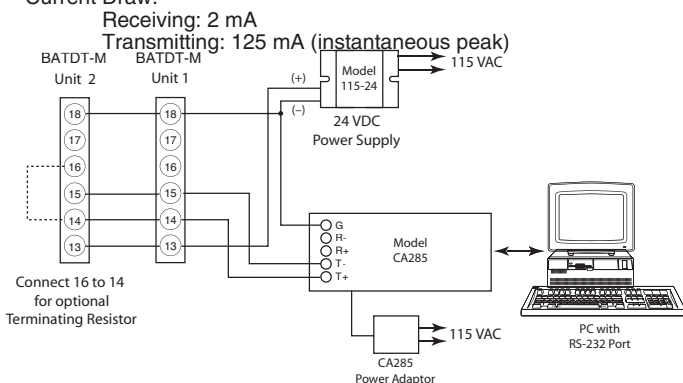RS232 SERIAL SETUP SOFTWARE OPTION:
  This option enables you to access a variety of process parameters through serial communications. PC compatible communications software is included with this option. With this software and a BATDTM Serial Adapter Cable (BSAC1) you will be able to setup the BATDTM through your PC.
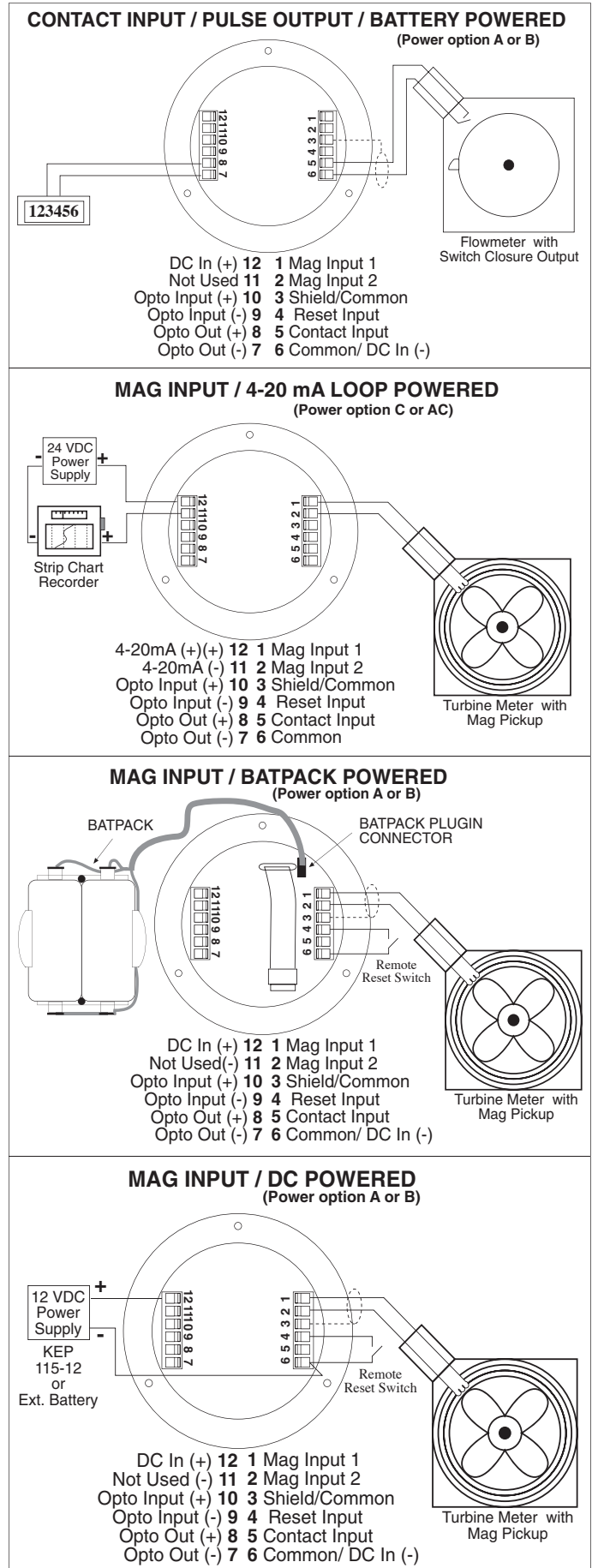
DATA STORAGE:
  Setup Information: Stored in flash memory
  Totalizer: Stored in battery backed RAM but can be saved to flash memory by operator for recall after battery change out.

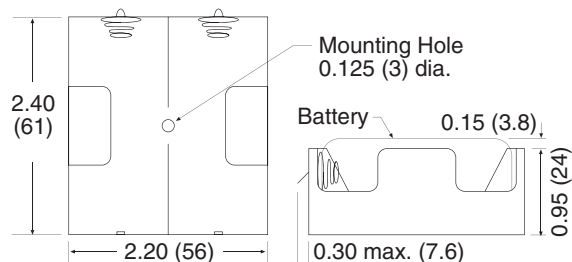## RS-485 MODBUS and DATA LOGGER OPTION (S2):
  The optional RS-485 card utilizes Modbus RTU protocol to access a variety of process parameters. The Data Logger stores the totalizer to flash memory once every 24 hours at the time you set. The data logger can hold 24 days of totals, on the 25th day the oldest total in the logger is dropped. Requires external DC power: 6-28VDC (input is reverse polarity protected)
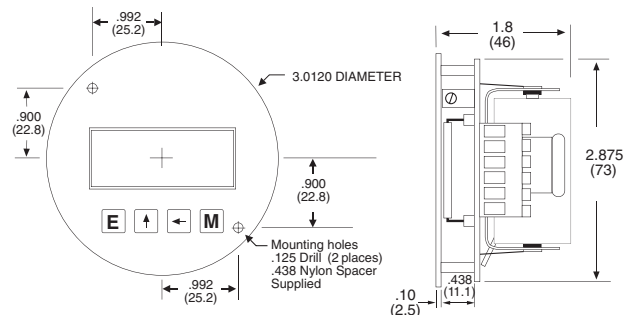 Current Draw:
        Receiving: 2 mA
        Transmitting: 125 mA (instantaneous peak)

Typical Wiring:

CONTACT INPUT / PULSE OUTPUT / BATTERY POWERED
(Power option A or B)

Flowmeter with
Switch Closure Output

DC In (+) **12**	**1** Mag Input 1
Not Used **11**	**2** Mag Input 2
Opto Input (+) **10**	**3** Shield/Common
Opto Input (-) **9**	**4** Reset Input
Opto Out (+) **8**	**5** Contact Input
Opto Out (-) **7**	**6** Common/ DC In (-)

MAG INPUT / 4-20 mA LOOP POWERED
(Power option C or AC)

24 VDC Power Supply

Strip Chart Recorder

Turbine Meter with Mag Pickup

4-20mA (+)(+) **12**	**1** Mag Input 1
4-20mA (-) **11**	**2** Mag Input 2
Opto Input (+) **10**	**3** Shield/Common
Opto Input (-) **9**	**4** Reset Input
Opto Out (+) **8**	**5** Contact Input
Opto Out (-) **7**	**6** Common

MAG INPUT / BATPACK POWERED
(Power option A or B)

BATPACK

BATPACK PLUGIN CONNECTOR

Remote Reset Switch

Turbine Meter with Mag Pickup

DC In (+) **12**	**1** Mag Input 1
Not Used(-) **11**	**2** Mag Input 2
Opto Input (+) **10**	**3** Shield/Common
Opto Input (-) **9**	**4** Reset Input
Opto Out (+) **8**	**5** Contact Input
Opto Out (-) **7**	**6** Common/ DC In (-)

MAG INPUT / DC POWERED
(Power option A or B)

12 VDC Power Supply
KEP 115-12 or Ext. Battery

Remote Reset Switch

Turbine Meter with Mag Pickup

DC In (+) **12**	**1** Mag Input 1
Not Used (-) **11**	**2** Mag Input 2
Opto Input (+) **10**	**3** Shield/Common
Opto Input (-) **9**	**4** Reset Input
Opto Out (+) **8**	**5** Contact Input
Opto Out (-) **7**	**6** Common/ DC In (-)

KEP   Kessler-Ellis Products • 800-631-2165

BATPACK

2.40 (61)

Mounting Hole 0.125 (3) dia.

Battery

0.15 (3.8)

0.95 (24)

2.20 (56)

0.30 max. (7.6)

BATDT-M-0

.992 (25.2)

3.0120 DIAMETER

.900 (22.8)

.900 (22.8)

E ↑ ← M

Mounting holes .125 Drill (2 places) .438 Nylon Spacer Supplied

.992 (25.2)

1.8 (46)

2.875 (73)

.438 (11.1)

.10 (2.5)

BATDT-M-1

Outside Dotted Line Shows Outside Panel Dimension (4.00" Diameter)

3.582" Dia. Bolt Circle .125" Holes to be 120° Apart

3.062" (77.77) Dia. Cutout

Panel Cutout

120°

.10 (2.54)

1.7 (43)

4.00 (101.6)

2.875 (73)

BATDT-M-2

#8 Screw Mounting holes molded directly under cover screws. Max. screw head .29" (Typ. 4 places)

4.92 (125)

4.33 (110)

To access terminals, remove cover and 4 panel screws. Terminals are on bottom side of PC board.

Panel Screws

4.33 (110)

4.92 (125)

E ↑ ← M

Optional HF2, HF3 Hub Fitting

.43 (11)

.18 (5)

.98 (25)

1.97 (50)

Optional H2, H3 Hub Holes

TOP VIEW (PANEL INSTALLED)

BOTTOM VIEW

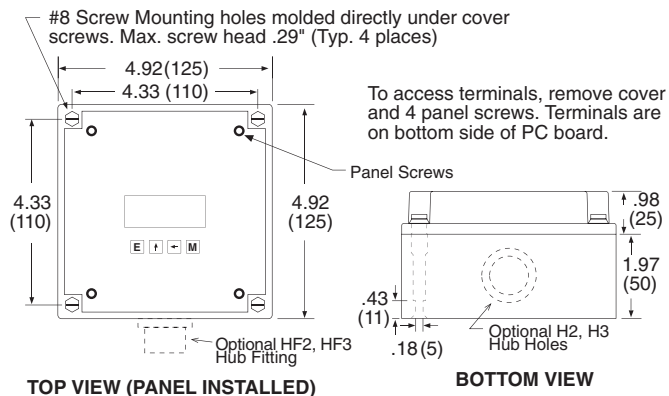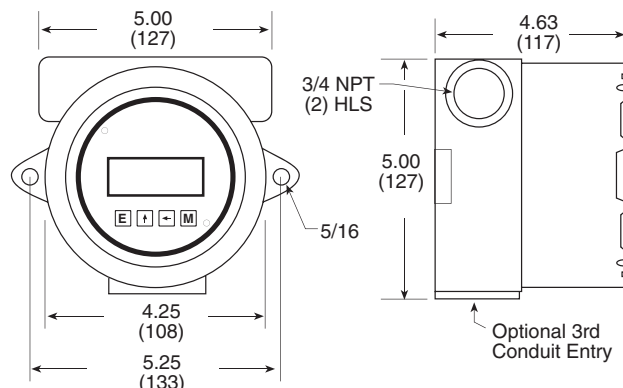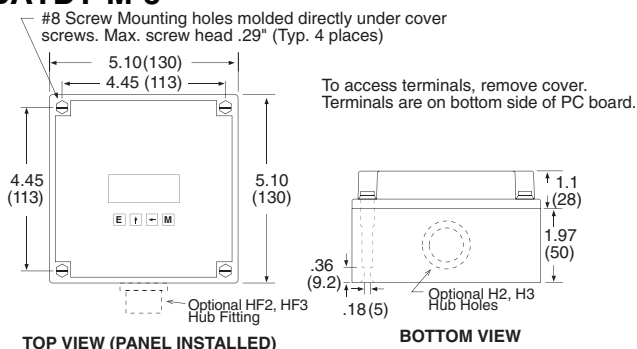## BATDT-M-3

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

5.00 (127)

4.63 (117)

3/4 NPT (2) HLS

5.00 (127)

5/16

4.25 (108)

5.25 (133)

Optional 3rd Conduit Entry

BATDT-M-5

#8 Screw Mounting holes molded directly under cover screws. Max. screw head .29" (Typ. 4 places)

5.10(130)

4.45 (113)

To access terminals, remove cover. Terminals are on bottom side of PC board.

4.45 (113)

5.10 (130)

E ↑ ← M

Optional HF2, HF3 Hub Fitting

.36 (9.2)

.18 (5)

1.1 (28)

1.97 (50)

Optional H2, H3 Hub Holes

TOP VIEW (PANEL INSTALLED)

BOTTOM VIEW

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