OPERATION MANUAL

EDD-600 FLOW
TOTALIZER RATE INDICATOR

Electronic Data Devices

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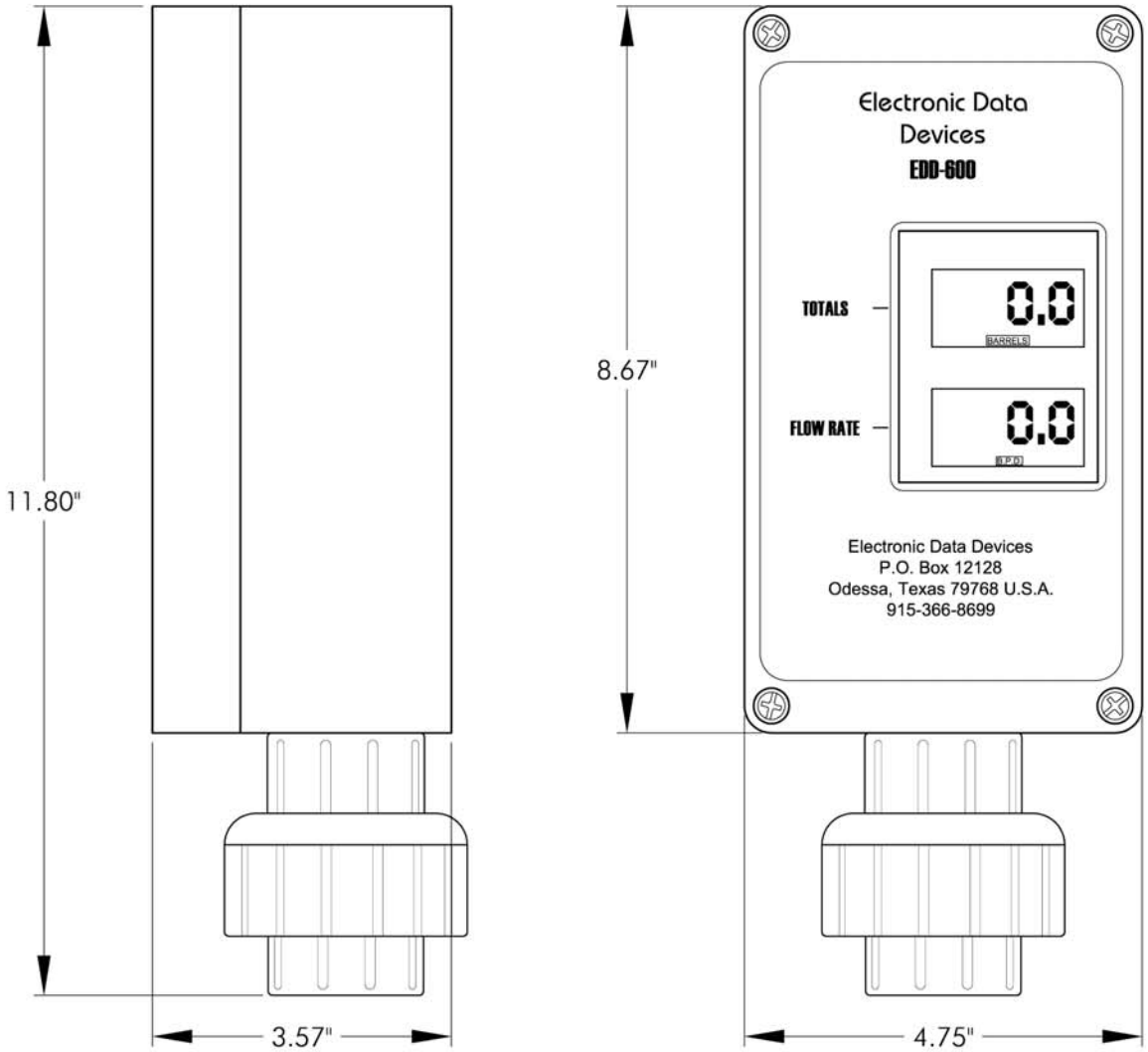

NOTE: DRAWING NOT TO SCALE

SPECIFICATIONS:
ACCURACY: ±1 COUNT
TEMPERATURE RATING: -20° F - +150° F

NOTE:

TOTALIZER INSTALLATION DRAWING
EDD-600, PART NO.9.600

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EDD-600

Digital Battery Powered Totalizer

The EDD-600 is a self-contained totalizer and flow rate indicator designed to mount directly on the turbine meter or may be remotely mounted with optional hardware. By using state of the art low power CMOS intergrated circuits and liquid crystal displays, long battery life is attained.

Specifications

Power	4 Alkaline or Optional 2 Lithium
Battery Life	2 - 4 Years
Flow Rate	Digital 6 Digit
Flow Rate Units	Specified by customer
Totalizer	6 Digit
Totalizer Units	Specified by customer
Totalizer Reset	With optional switch
Divisor Capability	From 1 - 131071
Accuracy Totalizer	$\pm$ 1 Count
Mounting	Directly on meter
Temperature Range	-20° - +155° F
Housing	Polyester Weatherproof
Input Frequency	0 - 2500 Hz.
Input Amplitude	20 - 5000 Mv. peak to peak

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Installation Instructions

The EDD-600 flow totalizer was designed to be mounted directly atop its companion flow meter. The Edd-600 may be pipe mounted or directly panel mounted.

The EDD-600 comes calibrated from the factory for use with its companion flow meter. If the EDD-600 is not ordered with a turbine flow meter, it will need to be calibrated at the time of installation. The calibration can be specified at the time when the unit is ordered.

It is good practice to orient the EDD-600 so the sunlight does not shine directly upon the display.

Remote Mounting

Remote mounting of the EDD-600 may be accomplished two different ways. It may be pipe mounted with the optional pipe mounting kit, or directly panel mounted. Panel mounting is performed by removing the front cover, which is held on by four stainless steel screws. With the cover removed, access is gained to four holes in the remaining housing body that are use for mounting with customer supplied screws. It is a good idea to go to remote mounting when vibration is present, or when viewing the unit would be difficult.

Operation

After the EDD-600 is installed and calibrated, no further action is required in order to use the totalizer. The only operator controls on the EDD-600 is a manual totalizer reset switch. The reset button is located on the bottom side of the unit out of the normal viewing area, to help prevent unauthorized resetting of the totalizer. The reset switch can be disabled by disconnecting the switch inside the unit which requires front cover removal.

Maintenance

Periodic maintenance of the EDD-600 is not required to keep it operational.

Battery Replacement

The batteries used in the EDD-600 are any high quality C-cell sized 1.5 Volt industrial alkaline batteries, available from any of the major battery companies. Be sure to observe proper battery polarity when replacing the batteries, always replace the battery hold down clips to keep the batteries in the proper position. As an option we also offer lithium batteries for use in the EDD-600.

The front cover must be removed to replace the batteries along with removing the circuit card mounting screws. Remove the battery retaining clips and note the battery polarity, then remove the old batteries and install the new batteries. Install the battery retaining clips, replace the circuit card retaining screws, and then the front cover. The unit is now ready for normal operation.

Recalibration

Recalibration is required only when there is a change in meter repair kit or the meter size is changed. No recalibration is required on a periodically scheduled basis.

If it is determined that the totalizer reading does not appear to be correct, it is a good idea to check the calibration of the unit to determine the accuracy. If it is determined there is a calibration problem then go to the calibration section of the manual.

Totalizer Reset

The totalizer may be reset by pressing the push button located on the bottom of the EDD-600. If the totalizer does not reset when the button is pushed, the button has been disconnected.

Calibration

The EDD-600 may be calibrated for any number between 1 and 131071. The number that is entered into the divisor section is called the divisor. To enter and calculate the number proceed as follows.

The divisor is calculated as follows:

Calibration factor X units of indication equal divisor.

Example: 1" meter calibration factor equal 860.14 pulses per gallon
Units of indication reading barrels per day in 1/10.
860.14 x 42 x 1/10 = 3612.59 Round this number off to the nearest whole number, equals 3613

To set and enter the divisor proceed as follows. The number will be entered on 17 DIP switches.

Top Switch	7	65536
	6	32768
	5	16384
	4	8192
	3	4096
	2	2048
	1	1024

Bottom Switch	10	512
	9	256
	8	128
	7	64
	6	32
	5	16
	4	8
	3	4
	2	2
	1	1

Totalizer Divisor Example

Divisor = 3613
Subtract binary numbers from 3613 until there is a remainder of 0.

```
 3613
-2048
 1565
-1024
  541
 -512
   29
  -16
   13
  - 8
    5
   -4
    1
   -1
    0
```

Turn on the following binary numbers 2048, 1024, 512, 16, 8, 4 and 1; the sum of the above binary numbers equals 3613, the divisor.

Flow Rate Display Calibration

To calibrate the digital flow rate section proceed as follows.

This operation will require a signal generator that has a sine or square wave output of at least 50 mV. Calibrate using the following example, with the signal generator hooked to the signal input and the generator set to 500 Hz, the rate should be set to read 1196 barrels per day. The calibration is performed on a DIP switch and a potentiometer. Depress the DIP switches until an approximate reading is obtained, then fine adjust with the potentiometer until the exact reading is obtained.

Signal Generator Frequency Reading Calculation

Use the following example.

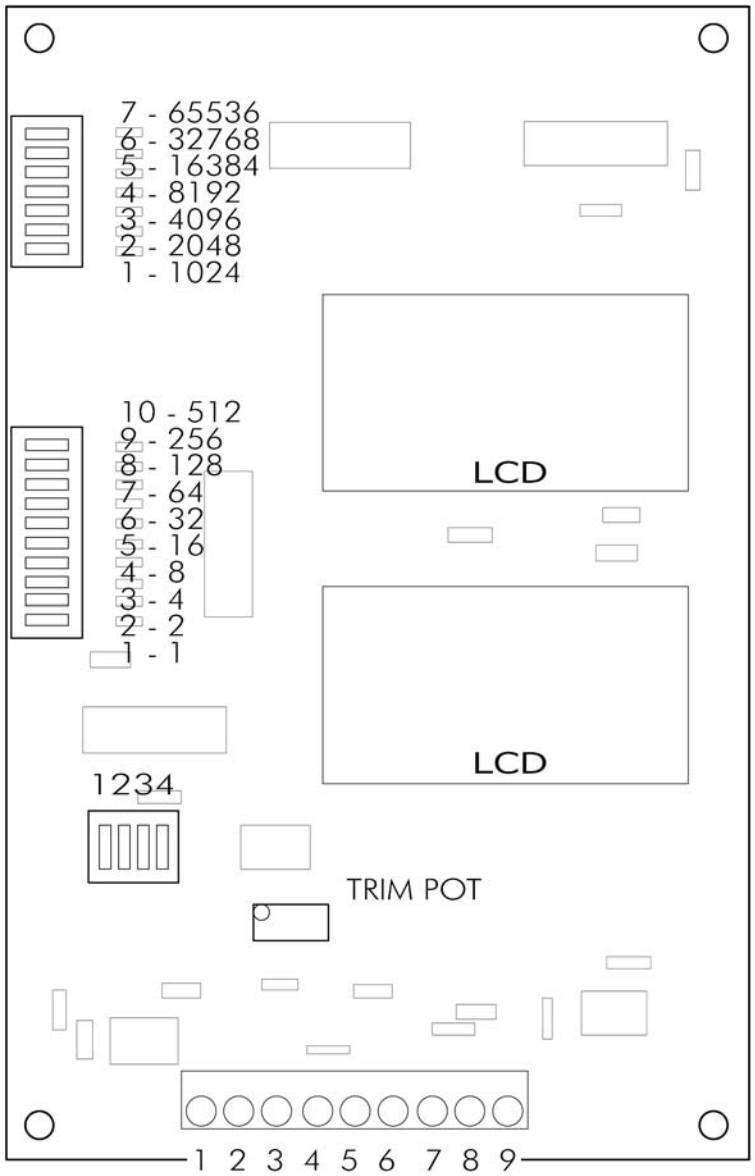
For this example we will set the signal generator as 500 Hz and we will check the totalizer for one minute and set the rate for barrels per day.

500 Hz. x 60 sec./min. = 30,000 pulses per minute

To obtain the counts per minute on the totalizer divide 30000/3613 = 8.3 counts per minute and the first digit is 1/10 barrels, so the unit will actually count 8/10 of a barrel per minute.

To calculate the flow rate take the reading for one minute and multiply it by 1440 minutes per day. .83 x 1440 = 1196 B.P.D.

Connector Pin-out Diagram



1 - Power + VDC
2 - Power - Ground
3 - Shield
4 - Signal
5 - Signal
6 - Totals Reset Switch
7 - Totals Reset Switch
8 - No Connection
9 - No Connection

Turbine Flow Meter Installation

1. The flow direction should correspond with the directional flow arrow stamped on the meter body.

2. The meter may be installed vertically or horizontally.

3. The meter requires a straight section of pipe the same size as the meter and five pipe diameters long both upstream and downstream. The five pipe diameters are minimum requirements.

   Example:
   Meter size - 4″
   Pipe size - 4″
   Meter Run - 5 x meter size = 5 x 4 = 20″

4. Throttling valves must not be installed upstream of the turbine flow meter.

5. Observe the following precautions when installing and operating the turbine flow meter.
   Clean all upstream lines before installing the meter.
   Do not blow out the lines with compresses air after installing the meter.
   Do not slug the meter with fluid.
   Do not exceed maximum flow rates through the meter.
   Avoid sharp blows to the meter to prevent damage to the internals.

6. The meter is pre-calibrated with water at the factory and tagged with the calibration factor in pulses per gallon. for maximum accuracy with fluids other than water, the meter should be calibrated in the flow line using the actual fluid at the normally anticipated flow rates. The meter may be proved by any of the conventional methods used to prove turbine flow meters.

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