FMC Technologies

Smith Meter™ Transmitter

Model E Pulse Transmitter

Specifications

Issue/Rev. 0.2 (11/97) Bulletin SS01044

*The **Smith Meter™ Model "E" Transmitter** is a heavy-duty, mercury-wetted switch-type transmitter that produces pulses in proportion to meter throughput.*

Features

- Wide variety of output rates.
- AC or DC compatibility.
- Mercury-wetted switch for minimal contact bounce.
- Long life - over one billion switch closures.
- Encapsulated switch to protect against dust, dirt, and humidity.
- UL Listed/CSA Certified, explosion-proof.

Principle of Operation

The "E" Transmitter consists of a:

- **Gear Train** that can be supplied in a wide variety of ratios to provide a definite number of switch actuations per volume unit of meter throughput.
- **Two-Pole Permanent Magnet** that rotates in a plane parallel to the switch capsule.
- **Mercury-Wetted SPDT Encapsulated Switch** that makes contact (on-time) when the magnet and switch are nearly aligned. When the magnet is nearly crosswise to the switch, it breaks contact (off-time). For each full rotation of the magnet, there are two switching cycles (two pulses).

Application

The Model "E" Transmitter normally adapts to a Rotary Vane Positive Displacement Meter and is available in a wide variety of outputs as listed. It can be used to pulse:

- **Remote Counters**.
- **Remote Totalizers** - Such as Smith CMOS, LCMOS, and GP Totalizers.
- **Remote Ticket Printers** - Such as Model 7690.
- **Samplers and Additive Injection Systems.**

Specifications

Pulse Frequency

25 Hz maximum.

Contact Rating

Maximum rating 120-250 Vac, 120 Vdc, 1A, 100 VA resistive.

Model E Pulse Transmitter

Type Switch

Single-pole, double-throw (SPDT) heavy-duty, mercury-wetted form "C" contact.

Actuating Time

3 milliseconds.

Pulse Timing

40 to 50% on-time.

Temperature

-40°F to 158°F (-40°C to 70°C).

Torque

2-10 oz.-in., depending on gear ratio.

Life Expectancy

One billion pulses at maximum load rating.

Contact Protection

A 50 Ω, 0.01 micro-Farad protective network is standard (both sides of switch) on all "E" Transmitters. This network is optimized for a current load of approximately 0.3A, but is satisfactory for loads between 0.15A and 0.6A. Information on special protective networks for other loads is provided in "E" Transmitter Installation and Operation Manual, Bulletin MN01019.

Mounting Position

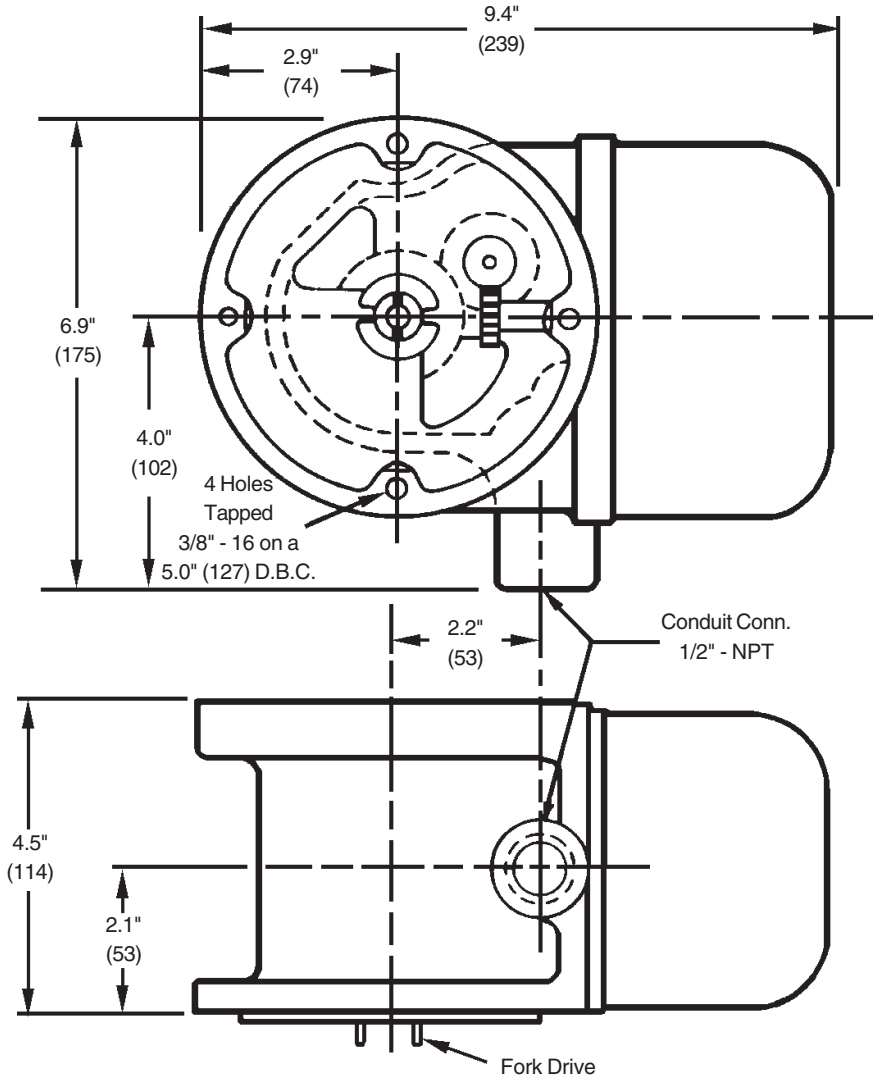
The transmitter must be mounted so that the switch capsule is vertical (mounted on meter or similar position).

Enclosure

Explosion-proof UL Listed/CSA Certified for hazardous locations, Class I, Groups C and D, Division 1.

Dimensional Outline Drawing

Inches (mm)



Note: *Dimensions — Inches to the nearest tenth (millimetres to the nearest whole mm), each independently dimensioned from respective engineering drawings.*

Table 1: Output in Pulses/Volume Unit

Provides selection of transmitters for remote counters, totalizers, printers, and data systems.

Other selections are available - consult factory.

Table 1 - Pulses per Volume Unit

Meter Gearing - 1 Vol. Unit/Rev. of Meter Output Shaft

Pulses/Vol. Unit (Gal., Dek., or Bbl.)	Model	Max. Flow Rate* Vol. Units/Minute
1	E-AC	1,500
2	E-AT	750
4	E-BX	375
5	E-AL	300
10	E-BB	150
20	E-BV	75

Meter Gearing - 1 Gal./Rev. of Meter Output Shaft

Pulses/Barrel	Model	Max. Flow Rate* Barrels/Hour
1	E-AO	90,000
5	E-AE	18,000
10	E-BL	9,000
25	E-X	3,600
50	E-BC	1,800

Meter Gearing - 5 Gals./Rev. of Meter Output Shaft

Pulses/Barrel	Model	Max. Flow Rate* Barrels/Hour
1	E-AE	90,000
2	E-BL	45,000
10	E-BC	9,000

Meter Gearing - 5 Vol. Units/Rev. of Meter Output Shaft

Pulses/Vol. Unit (Gal., Dek., or Bbl.)	Model	Max. Flow Rate* Vol. Units/Minute
1	E-AL	1,500
2	E-BB	750
4	E-BV	375
5	E-CA	300

Meter Gearing - 10 Vol. Units/Rev. of Meter Output Shaft

Pulses/Vol. Unit (Gal., Dek., or Bbl.)	Model	Max. Flow Rate* Vol. Units/Minute
1	E-BB	1,500
2	E-BV	750

Meter Gearing - 50 Dekaliters/Rev. of Meter Output Shaft

Pulses/Cubic Meter	Model	Max. Flow Rate* Cubic Meters/Hour
1	E-H	90,000
2	E-AC	45,000
5	E-AB	18,000
10	E-AL	9,000
20	E-BB	4,500
40	E-BV	2,250
50	E-CA	1,800

**Maximum flow rate based on the maximum output of 25 Hz.*

Table 2: Output in Volume Units/Pulse

Provides selection of transmitters for samplers and additive injectors.

Other selections are available - consult factory.

Table 2 - Volume Units per Pulse

Meter Gearing - 1 Vol. Unit/Rev. of Meter Output Shaft

Vol. Units/Pulse (Gal., Dek., or Bbl.)	Model	Vol. Units/Pulse (Gal., Dek., or Bbl.)	Model
1.0	E-AC	10	E-AN
2.0	E-H	15	E-BO
3.0	E-AU	20	E-BN
4.0	E-AX	25	E-BJ
4.2	E-BL	42	E-AO
5.0	E-M	84	E-BW

Meter Gearing - 5 Vol. Units/Rev. of Meter Output Shaft

Vol. Units/Pulse (Gal., Dek., or Bbl.)	Model	Vol. Units/Pulse (Gal., Dek., or Bbl.)	Model
1.0	E-AL	30	E-BP
2.0	E-AB	40	E-CE
4.0	E-BA	42	E-AE
4.2	E-BC	50	E-AN
5.0	E-AC	75	E-BO
10.0	E-H	100	E-BN
15.0	E-AU	125	E-BJ
20.0	E-AX	210	E-AO
21.0	E-BL	420	E-BW
25.0	E-M		

Meter Gearing - 10 Vol. Units/Rev. of Meter Output Shaft

Vol. Units/Pulse (Gal., Dek., or Bbl.)	Model	Vol. Units/Pulse (Gal., Dek., or Bbl.)	Model
1	E-BB	20	E-H
2	E-AL	100	E-AN
4	E-AB	200	E-BN
5	E-AT	250	E-BJ
10	E-AC	420	E-AO

Meter Gearing - 50 Dekaliters/Rev. of Meter Output Shaft

Cubic Meters/Pulse	Model	Cubic Meters/Pulse	Model
1	E-H	10	E-BN
2	E-AX	21	E-AO
5	E-AN	42	E-BW

Meter Gearing

To determine available meter gearing on new applications, refer to the respective meter specification bulletin or Gear Train Bulletin.

To determine meter gearing on installed meters, consult factory providing meter serial number.

Revisions included in SS01044 Issue/Rev. 0.2 (11/97):

Page 1: Changed maximum contact rating from 125 VA to 100 VA.

Page 3: Models E-CC and E-CD have been obsoleted because of high driving torque.

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