

## PRESSURE TRANSMITTERS

# Model 88 Pressure Transmitter

## FEATURES

- ◆ A miniature, low-priced, full-featured transmitter—just 1.67 lb.
- ◆ All welded 316 stainless steel construction and wetted parts (no aluminum)
- ◆ Ranges from 0 to 3 to 0 to 5000 psig (0 to 0.2 to 0 to 350 bar)
- ◆  $\pm 0.25\%$  accuracy
- ◆ Zero and span adjustability
- ◆ Full 5:1 range turndown
- ◆ Integral junction box
- ◆ FM and CSA explosion-proof and intrinsically safe
- ◆ 4 to 20 mA output at 12 to 40 VDC
- ◆ 5-year warranty
- ◆ CENELEC-approved version available



**MODEL 88 PRESSURE TRANSMITTER**

## DESCRIPTION

The Model 88 is the most durable, accurate and cost-effective pressure transmitter presently available. A full-featured, all stainless steel transmitter, it is designed for years of stable performance in even the toughest environmental and media conditions.

Approvals include FM and CSA for both intrinsic safety and explosion-proof ratings. CENELEC approval for intrinsic safety available. The Model 88 also meets NACE standards for offshore applications. A five year warranty is standard for the 88C.

The small size and light weight of the Model 88 transmitter eliminates the need for complicated mounting hardware and mechanical supports, thereby reducing installation time substantially. The integral junction box permits simple field wiring without the

need for additional hardware, adding to the speed and ease of installation.

A 4 to 20 mA output is standard with a 12 to 40 VDC power supply. With all 316 stainless steel welded construction, the Model 88 is compatible with corrosive media and hazardous environments. With the cover retained by a stainless steel chain and no internal jumpers for span turndown, losses due to misplaced or dropped parts are eliminated.

## OPERATION

The heart of the Model 88 pressure transmitter is a silicon piezoresistive sensing chip. This miniature microetched semiconductor gives a voltage output proportional to the applied pressure. The chip is isolated from the process media by a stainless steel diaphragm. A silicone oil or other specified fill fluid is used to transmit the process pressure to the sensor.

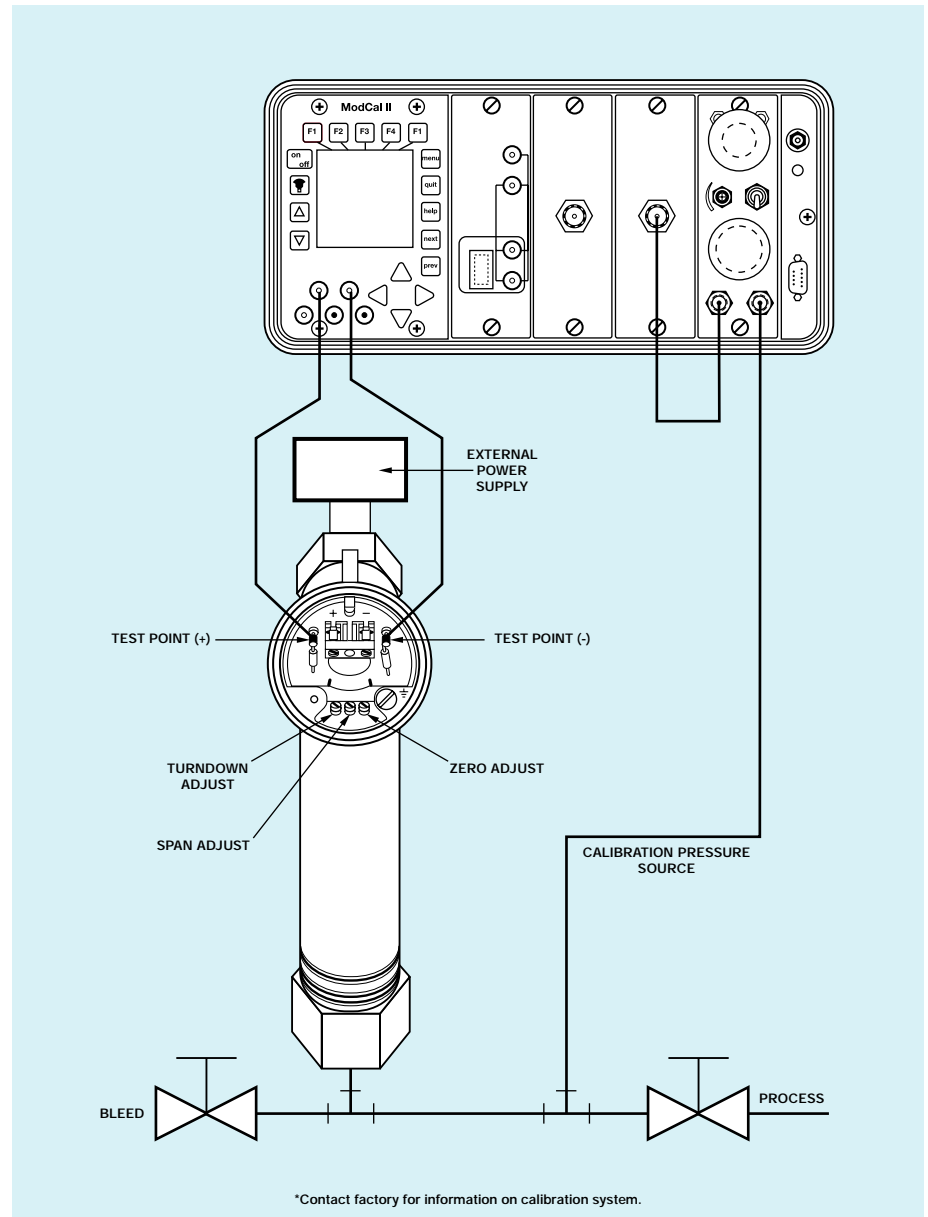
An amplifier PCB enclosed in a sealed chamber is used to convert the millivolt signal from the sensor to a calibrated 4 to 20 mA transmitter output. Feedthroughs for EMI and RF protection are used between the amplifier board and the terminal housing.

Each transmitter is tested over both pressure and temperature ranges. A compensator circuit is used to bring the output of the sensor into specification. After compensation, every transmitter is tested a second time for pressure and temperature effects to ensure that it meets performance and specifications.

## PMT QUALITY COMMITMENT

AMETEK's commitment to quality in Pressure Measurement Technology is unequalled in the industry. Behind

## IN-SYSTEM CALIBRATION



every Model 88 transmitter is more than 20 years of piezoresistive sensor chip and stainless steel isolation technology. Over these years AMETEK has developed and perfected test methods and quality checks to ensure that every transmitter will operate within specification in tough environments for years of service. The most advanced automated test systems in the industry are used to characterize

and final test every transmitter.

In addition, every transmitter goes through numerous quality checks which verify secure assembly methods all the way through the production process. Nothing less than a 100% quality level is accepted. With this PMT quality commitment and our zero defect philosophy, the AMETEK five year warranty is backed with confidence.

# SPECIFICATIONS

## FUNCTIONAL SPECIFICATIONS

### SERVICE

Liquid, gas or vapor

### RANGE LIMITS

0/3 to 0/6 psi (0/0.2 to 0/0.4 bar) consult factory

0/6 to 0/15 psi (0/0.4 to 0/1 bar)

0/15 to 0/30 psi (0/1 to 0/2 bar)

0/20 to 0/100 psi (0/1.4 to 0/7 bar)

0/60 to 0/300 psi (0/4 to 0/20 bar)

0/200 to 0/1000 psi (0/14 to 0/70 bar)

0/600 to 0/3000 psi (0/40 to 0/200 bar)

0/1000 to 0/5000 psi (0/70 to 0/350 bar)

### OUTPUT

4 to 20 mA DC, limited to 30 mA DC

### POWER SUPPLY

12 to 40 VDC with reverse polarity protection

### LOOP RESISTANCE

1400 ohms maximum at 40 volts

### TURNDOWN

5:1

### ZERO ADJUST

±10%

### SPAN ADJUST

±10%

### TEMPERATURE LIMITS

**Electronics (Ambient):** -40° to 140° F (-40° to 60° C)

**Process Interface:** -40° to 212° F (-40° to 100° C)

**Storage:** -40° to 212° F (-40° to 100° C)

### OVERRANGE

300% upper range limit

### HUMIDITY LIMITS

0 to 100% RH

## PERFORMANCE SPECIFICATIONS

### ACCURACY

±0.25% of calibrated span including linearity, hysteresis and repeatability

### RESPONSE TIME

Time constant of 20 milliseconds

### STABILITY

±0.5% of upper range limit for six months

### TEMPERATURE EFFECT (INCLUDES ZERO AND SPAN)

**Compensated:** -20° to 180° F (-29° and 82° C)

**Between 30° and 130° F (-1° and 54° C):** ±1% of URL per 50° F (28° C)

**Between -20° and 180° F (-29° and 82° C):** ±1.6% of URL per 50° F (28° C)

### POWER SUPPLY EFFECT

±0.005 full scale per volt

### SURGE PROTECTION

Standard

### VIBRATION EFFECT

±0.1% of upper range limit for 3 g to 200 Hz

### POSITION EFFECT

0.05%/90° tilt

### OVERRANGE EFFECT

±0.15% full scale per 200% of maximum range

## PHYSICAL SPECIFICATIONS

### MATERIALS OF CONSTRUCTION

#### PROCESS WETTED PARTS

316 stainless steel

#### NONWETTED PARTS

316 stainless steel

#### CAST HEAD

CF-8M (316 cast stainless steel)

#### O RING

Buna N

#### FILL FLUID

DC 200 Silicone (standard)

#### PROCESS CONNECTION

1/2 NPTF

#### ELECTRICAL CONNECTION

1/2 NPTF

#### WEIGHT

1.67 lbs.

## CLASSIFICATIONS

### MODEL 88C

#### FACTORY MUTUAL

Intrinsically safe for Class I, II, III, Division 1, Groups A, B, C, D, E, F, G for hazardous locations per AMETEK Dwg. BK750407.

Entity requirement: I<sub>max</sub> = 105 mA, V<sub>max</sub> = 36 V, C<sub>I</sub> = 0.103 uf, L<sub>I</sub> = 0mH.

Explosion-proof for Class I, II, III, Division 1, Groups B, C, D, E, G for hazardous locations. NEMA 4 Enclosure.

#### CANADIAN STANDARDS ASSOCIATION

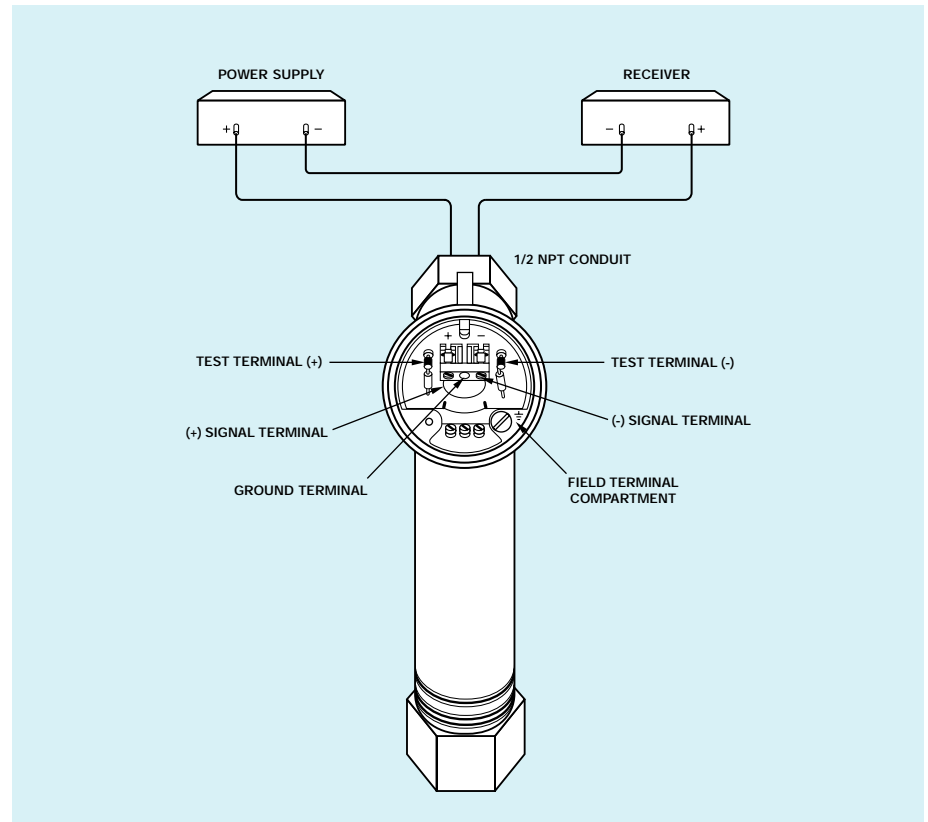
Exia-intrinsically safe for Class I, Division 1 and 2, Groups A, B, C, D; Class II, Groups E, F, G when connected per AMETEK Dwg. BK750483.

Explosion-proof for Class I, Division 1, Groups B, C, D; Class II, Groups E, F, G; Class III for hazardous locations. Enclosure 4, temperature Code T3C (160° C)

### MODEL 88D

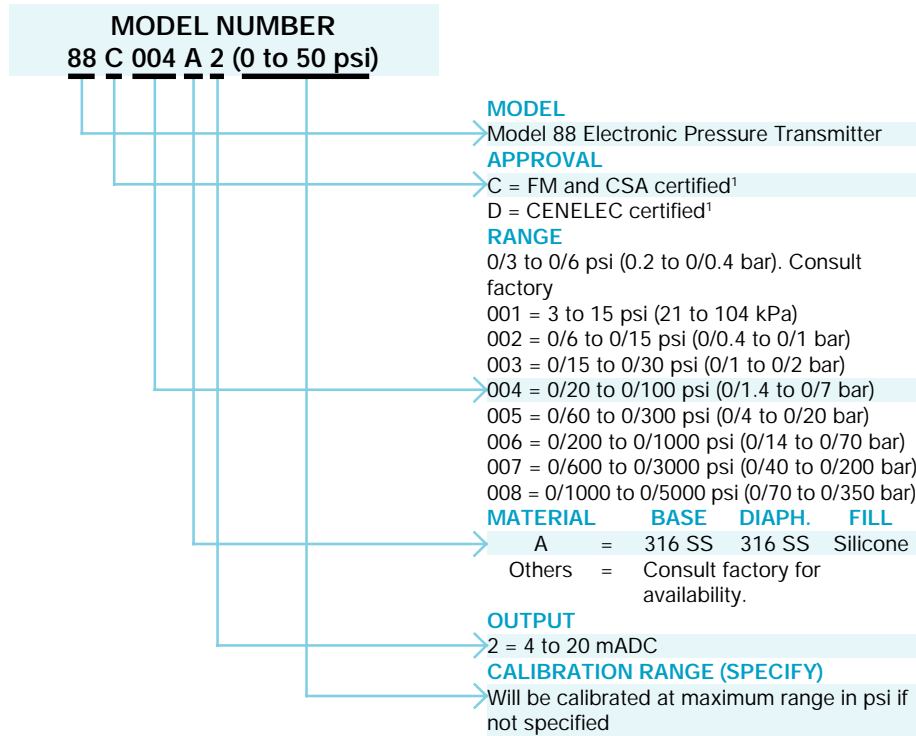
CENELEC, Intrinsically Safe: EExiallCT3

## WIRING DIAGRAM



# Model 88 Pressure Transmitter

## ORDERING INFORMATION



**Example:**

**88 C 004 A 2 (0 to 50 psi)**

Model 88C Pressure Transmitter, FM and CSA certified, 100 psi maximum range, 316 stainless steel base and diaphragm, silicone oil fill, output at 4 to 20 mADC and calibrated to 0 to 50 psi.

<sup>1</sup> Ref Product Specification for Certification Ratings

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE



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