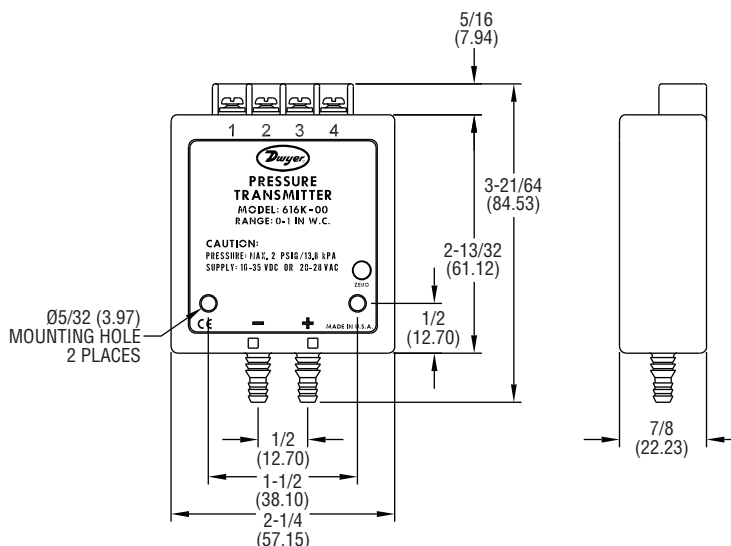




Series 616K Differential Pressure Transmitter

Specifications – Installation and Operating Instructions



The Dwyer Series 616K Differential Pressure Transmitter senses the pressure of air and compatible gases and sends a standard 4-20 mA output signal. A wide range of models are available factory calibrated to specific ranges as listed in the chart below. A single pushbutton allows zero adjustment. Versatile circuit design enables operation in 2 or 3-wire current loops.

INSTALLATION

Select a clean, dry mounting location free from excess vibration. Distance from the receiver is limited only by total loop resistance. See Electrical Connections below. The tubing supplying pressure to the instrument can be practically any length required, but long lengths will increase response time slightly.

Pressure Connections

Two integral barbed tubing connections are provided. They are dual-sized to fit both 1/8" and 3/16" (3.12 and 4.76 mm) I.D. tubing. Be sure the pressure rating of the tubing exceeds that of the operating ranges.

ELECTRICAL CONNECTIONS



CAUTION: Do not exceed specified supply voltage ratings. Permanent damage not covered by warranty will result. This unit is not designed for 120 or 240 volts AC line operation.

Shielding cabling is required. Cable shield must be attached to a reliable earth ground. Electrical connections are made to the terminal block located on the top of the transmitter. Terminals are marked 1, 2, and 3 (terminal 4 is never used). Determine which of the following circuit drawings applies to your application and wire accordingly.

Wire Length

The maximum length of wire connecting transmitter and receiver is a function of wire size and receiver resistance. Wiring should not contribute more than 10% of the receiver resistance to total loop resistance. For extremely long runs (over 1000 feet), choose receivers with lower resistance to minimize size and cost of connecting leads. Where wiring length is less than 100 feet, hook-up wire as small as 22 AWG can be used.

2-Wire Operation

An external power supply delivering 16-35 VDC with minimum current capability of 21 mA DC (per transmitter) must be used to power the control loop. See Figures C or E for connection of the power supply, transmitter and receiver. The range of appropriate receiver load resistance (RL) for the DC power supply voltage available is expressed by the formula and graph in Figure G.

SPECIFICATIONS

Service: Air and non-combustible, compatible gases.

Wetted Materials: Consult factory.

Accuracy: $\pm 2.0\%$ F.S.

Stability: $\pm 1\%$ F.S./yr.

Temperature Limits: 32 to 122°F (0 to 50°C).

Pressure Limits: 2 PSI (13.8 kPa).

Thermal Effect on Span: $\pm 0.11\%$ F.S./°F (+0.19% F.S./°C) typ.

Thermal Effect on Zero: 616K-X0: 0.6%/°F (1%/°C); 616K-X1: 0.3%/°F (0.5%/°C); 616K-X2: 0.2%/°F (0.33%/°C); 616K-X3: 0.12%/°F (0.2%/°C); 616K-X4: 0.06%/°F (0.1%/°C) F.S. max.

Power Requirements: 16-35 VDC (2 or 3 wire); 20-28 VAC (3 wire).

Output Signal: 4 to 20 mA.

Zero and Span Adjustments: Pushbutton.

Loop Resistance: DC: 1000 ohms maximum. AC: 1200 ohms maximum.

Current Consumption: 21 mA maximum.

Warm Up Time: 30 minutes.

Electrical Connections: Screw-type terminal block.

Process Connections: Barbed, dual size to fit 1/8" and 3/16" (3.12 mm and 4.76 mm) I.D. rubber or vinyl tubing.

Mounting Orientation: Position insensitive.

Weight: 1.8 oz (51 g).

Agency Approvals: CE

Tested to the following standards:

IEC 61000-4-2: 2001

IEC 61000-4-2: 2001

IEC 61000-4-3: 2006

IEC 61000-4-4: 2004

IEC 61000-4-5: 2005

IEC 61000-4-6: 2006

CENELEC EN 55011: 2007

FCC Part 15 CFR Title 47: 2007

ICES-003: 2004 Digital Apparatus (Industry Canada)

ANSI C63.4-2003

CENELEC EN 61326-1: 2006

2004/108/EC EMC Directive

Series 616K Transmitter Models and Ranges

Model Number	Range	Model Number	Range	Model Number	Range
616K-00	0-1 in wc	616K-10	0-250 Pa	616K-20	0-25 mm wc
616K-01	0-2 in wc	616K-11	0-500 Pa	616K-21	0-50 mm wc
616K-02	0-3 in wc	616K-12	0-750 Pa	616K-22	0-75 mm wc
616K-03	0-5 in wc	616K-13	0-1250 Pa	616K-23	0-125 mm wc
616K-04	0-10 in wc	616K-14	0-2500 Pa	616K-24	0-250 mm wc

3-Wire Operation

An external power supply delivering 16-35 VDC with minimum current capability of 40 mA DC (per transmitter) or 20-28 VAC with minimum current capability of 21mA (per receiver) is required. See Figure D or F for connection of power supply, transmitter and receiver. The range of appropriate receiver load resistance (RL) for DC and AC power supplies is expressed by the formula and graph in Figure H.

Current Output

For 4-20 mA operation wire according to Figures C and D.

Voltage Output

Series 616K Transmitters can be easily adapted for receivers requiring 1-5 or 2-10 VDC inputs. Insert a 249 ohm, 1/2 watt (1-5 VDC) or 499 ohm (2-10 VDC) resistor in series with the current loop but in parallel with the receiver input. Locate this resistor as close as possible to the input. Because resistor accuracy directly influences output signal accuracy, we recommend use of a precision ±0.1% tolerance resistor to minimize this effect. See Figures E and F below.

2-WIRE CONNECTIONS (4-20 mA)

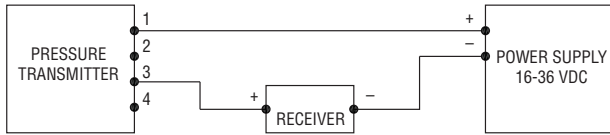


FIGURE C

3-WIRE CONNECTIONS (4-20 mA)

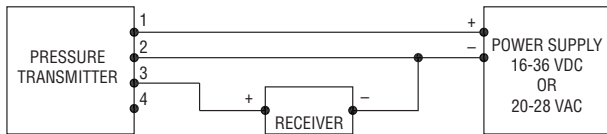


FIGURE D

2-WIRE CONNECTIONS (1-5 or 2-10 VDC)

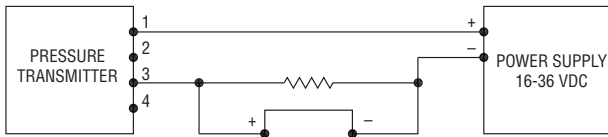


FIGURE E

3-WIRE CONNECTIONS (1-5 or 2-10 VDC)

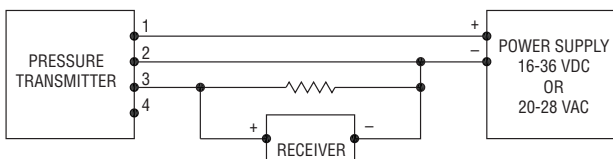


FIGURE F

Zero Adjustment

Allow transmitter to warm up for 30 minutes. Transmitter should be zeroed at the temperature it is to be operated at.

A single pushbutton is provided to zero the transmitter. Span is factory calibrated to the range specified on the label. There is no user span adjustment necessary.

MAINTENANCE

Upon final installation of the Series 616K Differential Pressure Transmitter, no routine maintenance is required. A periodic check of system calibration is recommended. The Series 616K is not field serviceable and should be returned if repair is needed (field repair should not be attempted and may void warranty). Be sure to include a brief description of the problem plus any relevant application notes. Contact customer service to receive a return goods authorization number before shipping.

MAXIMUM LOOP RESISTANCE (DC POWER)

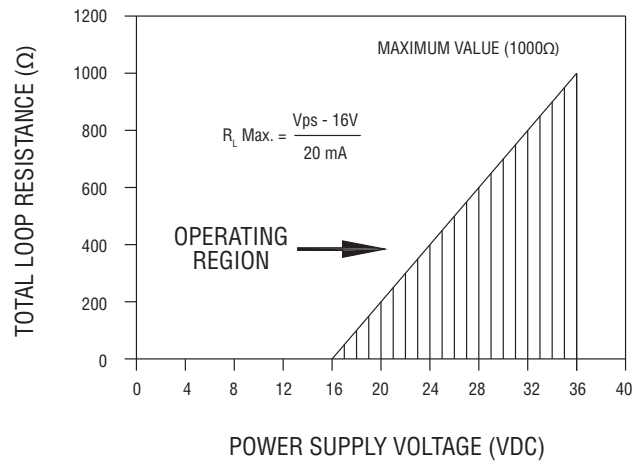


FIGURE G

MAXIMUM LOOP RESISTANCE (AC POWER)

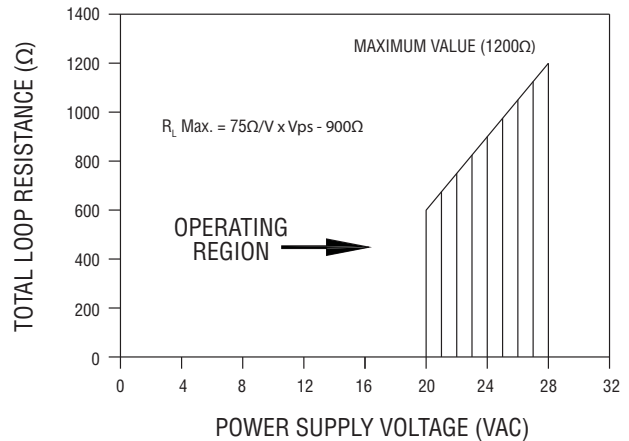


FIGURE H