CES 447 DRAFT RANGE
OWNERS MANUAL

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SECTION 1 DESCRIPTION

1.1 GENERAL

The CES 447 is a loop powered draft range differential pressure transmitter designed to provide a low cost, low pressure transmitter without sacrificing performance. The transmitter is ideal for dry air and gas applications that require high performance at a reasonable cost.

The 447 uses a variable capactance pressure transducer, that features low hysteresis, and a broad temperature range, to convert the input pressure to a 4-2 0 mA signal that is proportional to square root or linear function curves. In addition the transducer is guaranteed to meet specifications even after 10,000,000 full scale cycles making the transmitter stable, reliable, repeatable and cost effective.

The 13 volt loop burden of the CES 447 ensures that up to 550 ohms of loop load can be driven with a standard 24 volt supply.

The CES 447 is housed in our standard extruded aluminum case to provides rugged protection and easy mounting as well as electrical shielding.

1.2 SPECIFICATIONS

Hysteresis and Repeatability: ±.05%
Non-linearity: ±.5% BFSL Max.
±1% BFSR
Pressure Range (.1 to 30"H 0)
Proof pressure: 3.5 PSI
Busrt pressure: 7 PSI
Line Pressure: 30 PSI Max
Output: 4-20 mA
Operating Temperature:0 to 60^0 C
Thermal Zero Shift: +.08%/^{0} C
Thermal Span Shift: +.08%/^{0} C
Operating Life:Within specifications after 10 million full scale cycles
Supply Voltage: 13 to 35 VDC
Load Resistance:
Maximum Load= 50 X supply voltage -650
Supply Configuration:2 wire loop powered
Electrical Termination: Screw type terminals
Pneumatic Termination:1\8"barb
Enclosure: Extruded aluminum housing.
Zero:Elevation & suppression available upon request
Pressure Ranges:See unit label

SECTION 2 RECEIVING AND INSTALLATION

2.1 UNPACKING AND INSPECTION

Your CES 447 Draft Range Pressure Transmitter has been carefully inspected and tested before shipment. Unpack the transmitter and visually inspect to insure that it has not been damaged during shipping. Insure that no packing material is lodged in the pneumatic fittings.

The CES 447 is a sensitive electronic instrument and should be treated with the utmost care. The only controls that may need adjustment are accessible through the front panel. Severe damage can occur if the unit is removed from the case. The warranty will be voided if the unit has been removed from the case or there are signs of unauthorized repairs.

2.2 INSTALLATION– MECHANICAL

Figure 1 in section 5 illustrates the method of mounting the transmitter. The unit should be mounted to a flat, level, grounded plate. All critical dimensions are also shown in figure 1.

2.3 INSTALLATION – PNEUMATIC AND ELECTRICAL

Figures 2, and 3 shows the electrical connection for the CES 447. Follow the wiring diagram, insuring the proper power supply is being used and that the polarity is correct, as CES is not responsible for damage caused by improper installation.
Please note that the unit must be mounted with the arrow pointing up. Mounting the unit in any other position places the transducer in the wrong plane and greatly affects the transmitters performance.

Connect the pneumatic lines to the unit as shown in figure 2 and 3. Insure that no water or other contaminant can enter the transmitter. Care should be taken to insure that the unit will not see more than 1 psi on the high side and .5 psi on the low side. Overpressuring of the unit for even a short period of time can cause problem with the span, zero drift, and repeatability of the unit. Overpressure damage is not covered under warranty.

SECTION 3 MAINTENANCE AND CALIBRATION

Under normal circumstances the CES 474 should need very little re-calibration. However, it may need to have the zero touched up from time to time. The following procedure will insure

proper operation of the unit. Failure to follow the direction could result in improper operation, or complete failure of the Transmitter.

3.1 Zero Re-Calibration

1. Check the output with a digital meter. The output should be 4mA.
2. Adjust the zero pot until the correct reading is obtained.

3.2 SPAN CALIBRATION

The span of the unit was adjusted to the span that was specified when the unit was ordered. The span should not need to be adjusted. However, if the need does arise follow the procedure below.

1. Connect a digital meter to the output of the unit.
2. Apply the desired full scale pressure.
3. Adjust the span pot unit the meter reads 20 mA
4. Remove full scale pressure and check zero reading.

Adjust as above if neccessary.

The unit should now be re-calibrated and ready to be returned to normal operation.

SECTION 4 WARRANTY

Custom Electronics Systems (CES) warrants its products against defects in materials and workmanship under normal and proper use and service for six years from date of shipment. CES's obligation under this warranty is limited to, at CES's election, furnishing without charge, F.O.B. Rural Hall, N.C. a replacement for any defective part or repairing such part after examination to CES's satisfaction that the equipment is defective and has not been subject to misuse, negligence, accident or failure to follow the appropriate operating manual. This warranty does not apply to any product which has been operated at other than specified voltages or currents or which has been subjected to abuse or in which case the product has been tampered with. CES shall under no circumstances be liable for any direct, special or consequential damages, expenses, or losses resulting from operation of or defects in equipment covered hereby.

SECTION 5 ORDERING INFORMATION:

SECTION 6 DRAWINGS AND DIAGRAMS

CES 447

DRAFT RANGE TRANSMITTER

OWNERS MANUAL

CUSTOM ELECTRONICS SYSTEMS,INC.
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RURAL HALL, NC 27045
PHONE (910)-969-2411 FAX (910)-969-2412

LOCATION_____
SERIAL NUMBER_____
SPAN_____
OUTPUT_____