



82D, 85D, 86D

Media Isolated High Accuracy Digital Output Pressure Sensor

SPECIFICATIONS

- **316L SS Media Isolated**
- **High Accuracy Pressure/temperature read-out**
- **Absolute, Gage**
- **Low-power consumption**
- **Digital I²C Output**
- **13~19mm Diaphragm Diameter**

This series of products is composed of a 316L stainless steel housing packaged ultra-stable piezoresistive silicon pressure sensor, a signal compensation PCBA which includes an ultra-low power 24bits $\Delta\Sigma$ ADC with internal factory calibrated coefficients and a MCU with TE self-developed computing program.

It provides a precise digital pressure and temperature signal. A high-resolution temperature output allows the implementation of a pressure/temperature function without any additional sensor.

It also supports different operation modes that allow the user to optimize for conversion speed and current consumption.

Each model was calibrated by ASIC and MCU in factory. it has been compensated offset, span, non-linearity of the measure pressure and temperature signal.

TE provided the support to customize I²C communication protocol.

Applications

- **Medical Instruments**
- **Electronic Volume Corrector (EVC)**
- **Level controls**
- **Pressure Transmitters**
- **OEM Equipment**

Features

- **Weld Flange or O-Ring seal Mount**
- **Up to $\pm 0.2\%$ FS Pressure Accuracy**
- **Low and Medium Pressure**
- **Customize I2C protocol**

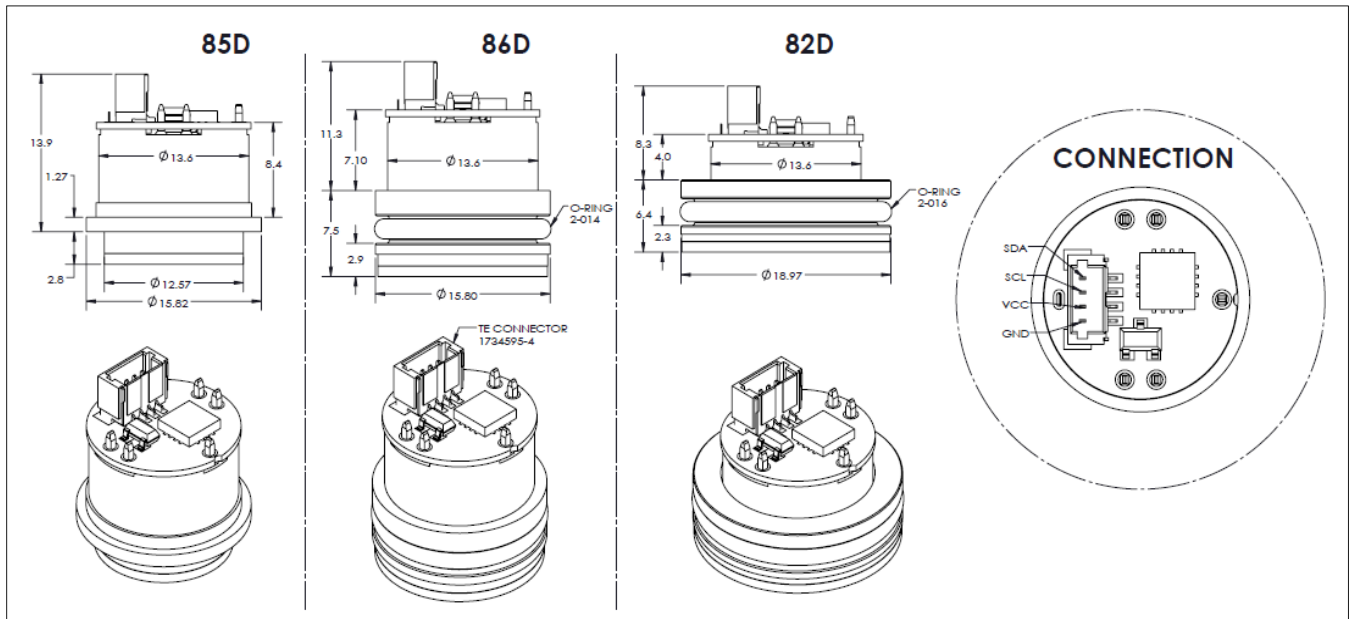
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CONNECT WITH A SPECIALIST

Specifications

Product Type Features	
Output Type	I ² C Digital
Pressure Resolution	24 Bit max
Input Voltage Range	2.5 ~ 3.6 VDC
Total Error Band-TEB	±0.2 %FS ±0.5 %FS (1~5PSI Gage)
Temperature Accuracy	±1.0°C
Compensated Temperature	-20 ~ 85°C 0 ~ 50°C (1~5PSI Gage)
Consumption	Sleep: <0.1mA; Active: <5mA
Insulation Resistance	50Mohm min @100VDC
Startup Time	60ms max
ESD	±4kV
Mechanical Shock	Half sine, 50G (11ms)
Mechanical Vibration	20G (10-2KHz)
Long Term Stability	0.2 %FS/year max
Operating Temperature Range	-25 ~ 85°C
Storage Temperature Range	-25 ~ 85°C
Proof Pressure Range	3x max
Burst Pressure Range	4x max
Pressure Range	Gage: 1~ 500 PSI ABS: 15~500 PSI
Pressure Type	Absolute, Gage
Material in Contact with Media	Stainless Steel AISI 316L (Alloy C276 optional) O-Ring: BUNA-N (exchangeable)
Dimensions	Compatible With TE Model 85,86,82

Dimensions and Connection

unit: mm



Communication protocols

General:

- It defined data output format and calculation method for pressure and temperature. TE has developed transfer PCB based on the communication protocols to complete the output conversion between XXD 24bits product
- Only the read pressure command will start conversion of pressure and temperature
- The read pressure and temperature command will return the last data but not real time data. The max sample rate is about 10Hz

Interface

- This is universal I²C communication with 7 bits I²C address (0b 1011 111x), SCK frequency is 100kh

Action	Address	Commands	Address	Read Data							
Read Pressure	0xBE	0X6C	0xBF	D1	D2	D3					
Read Temperature	0xBE	0X54	0xBF	D1	D2						
Read SN	0xBE	0X31	0xBF	D1	D2	D3	D4	D5	D6	D7	

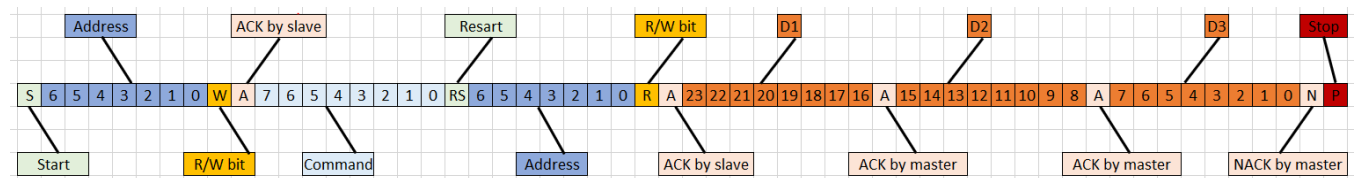
User Commands

Instruction

- S: START
P: STOP
RS: RESTART
D: DATA

1. READING PRESSURE

S 0XBE 0X6C RS 0XBF D1 D2 D3 P



PRESSURE VALUE D1, D2, D3 (HEX)

THE LAST BIT OF D3 IS THE FLAG OF SIGN (0: + ;1: -)

CALCULATION FORMULA: $P = D1 * 256 + D2 + D3 / 256$ (NOTES: NEED TO SHIELD THE LAST BIT OF D3)

FOR EXAMPLE:

A. PRESSURE = 101.32KPA

S 0XBE 0X6C RS 0XBF 0X00 0X65 0X52 P

B. PRESSURE = -101.32KPA

S 0XBE 0X6C RS 0XBF 0X00 0X65 0X53 P

2. READING TEMPERATURE

S 0XBE 0X54 RS 0XBF D1 D2 P

TEMPERATURE VALUE D1, D2(HEX)

CALCULATION FORMULA:

IF $D1 < 128$ THEN THE TEMPERATURE IS POSITIVE: $T = D1 + D2/256$

IF $D1 > 127$ THEN THE TEMPERATURE IS NEGATIVE: $T = -((255 - D1) + (255 - D2)/256)$

FOR EXAMPLE:

C. TEMPERATURE = 20.0 °C

S 0XBE 0X54 RS 0XBF 0X14 0X00 P

D. TEMPERATURE = -20.0 °C

S 0XBE 0X54 RS 0XBF 0XEC 0X00 P

3. READING ID (SERIES NUMBER)

S 0XBE 0X31 RS 0XBF D1 D2 D3 D4 D5 D6 D7 P

ID DEFINITION:

FOR EXAMPLE:

S 0XBE 0X31 RS 0XBF 0X20 0X18 0X03 0X15 0X04 0X14 0X21 P

2022 0315 0414 21

2022: YEAR

0315: MONTH/DATE

0414: SERIAL NUMBER

XXD

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Ordering Information

