



## 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 I<sup>2</sup>C 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 I<sup>2</sup>C 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**

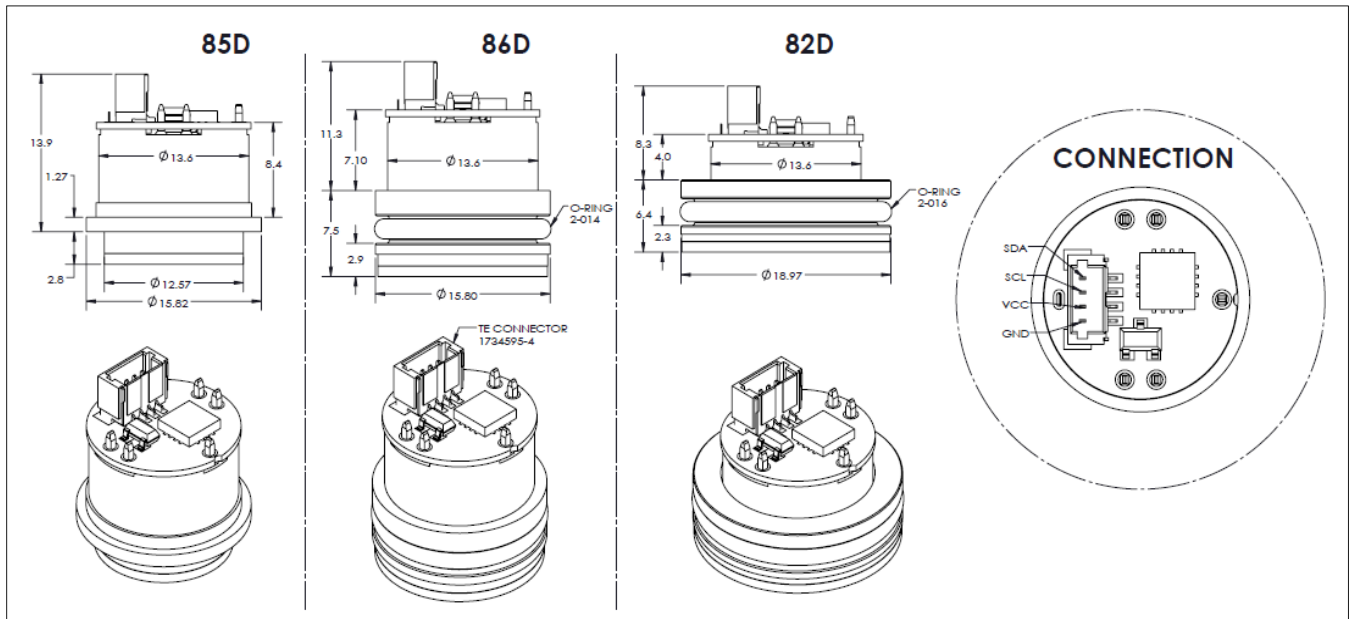
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**Specifications**

<b>Product Type Features</b>	
<b>Output Type</b>	I <sup>2</sup> C Digital
<b>Pressure Resolution</b>	24 Bit max
<b>Input Voltage Range</b>	2.5 ~ 3.6 VDC
<b>Total Error Band-TEB</b>	±0.2 %FS ±0.5 %FS (1~5PSI Gage)
<b>Temperature Accuracy</b>	±1.0°C
<b>Compensated Temperature</b>	-20 ~ 85°C 0 ~ 50°C (1~5PSI Gage)
<b>Consumption</b>	Sleep: <0.1mA; Active: <5mA
<b>Insulation Resistance</b>	50Mohm min @100VDC
<b>Startup Time</b>	60ms max
<b>ESD</b>	±4kV
<b>Mechanical Shock</b>	Half sine, 50G (11ms)
<b>Mechanical Vibration</b>	20G (10-2KHz)
<b>Long Term Stability</b>	0.2 %FS/year max
<b>Operating Temperature Range</b>	-25 ~ 85°C
<b>Storage Temperature Range</b>	-25 ~ 85°C
<b>Proof Pressure Range</b>	3x max
<b>Burst Pressure Range</b>	4x max
<b>Pressure Range</b>	Gage: 1~ 500 PSI ABS: 15~500 PSI
<b>Pressure Type</b>	Absolute, Gage
<b>Material in Contact with Media</b>	Stainless Steel AISI 316L (Alloy C276 optional) O-Ring: BUNA-N (exchangeable)
<b>Dimensions</b>	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 I<sup>2</sup>C communication with 7 bits I<sup>2</sup>C 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	

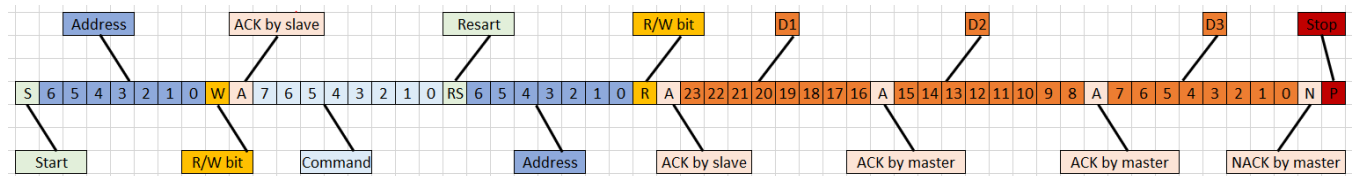
### User Commands

#### 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

High Accuracy Digital Output Pressure Sensor

## Ordering Information

Part Number  
**85D-A050PA-C**

### Model Diameter

85	Ø13mm
86	Ø16mm
82	Ø19mm

### Output

D	Digital Output
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### Wetted Material

A	316L SS
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Alloy C-276 Optional, Pls contact TE

### Pressure Range [PSI]

001	1 PSI	<i>Gage Only, Model 82 Only</i>
005	5 PSI	<i>Gage Only</i>
015	15 PSI	
030	30 PSI	
050	50 PSI	
100	100 PSI	
300	300 PSI	
500	500 PSI	

Others Pressure Range and configurations, Pls contact TE

### Electrical Termination

C	TE Connector 1734595-4
R	Ribbon Cable, Length 152mm <i>(Available)</i>

### Pressure Type

A	Absolute
G	Gage