

## ESS350 Flat Diaphragm Pressure Sensor



■ Range: 0.035~6MPa ■ Overload Pressure: 150%~300% ■ Stability: 0.2 ■ Diameter: Φ50mm ■ O-Ring: DN1.5

### Description

ESS350 Flat Diaphragm Pressure Sensor design with Φ50mm diaphragm and uses a high-sensitivity piezoresistive silicon die as sensing component, which is protected against ambient influences by SS316 housing sealed with a concentrically corrugated diaphragm. Inside the housing, the filled silicone oil assures the measured pressure can be transmitted onto silicon die and then transform the pressure to electric signal.

ESS350 Series OEM Pressure Sensor is available all pressure ranges from 35Kpa to 6MPa.

### Key Features & Benefits

- Pressure range 0.035~6MPa
- Gauge, Absolute, Sealed gauge
- Constant current/Voltage power supply
- Isolated construction, measure various media
- Φ50mm diameter pressure sensor
- Full Stainless Steel 316
- Wide temperature compensation -10°C~80°C
- Long-term stability ±0.2%FS/year

### Application

- Industrial process control
- Level measurement
- Gas, liquid pressure measurement
- Pressure checking meter
- Pressure calibrator
- Liquid pressure system and switch
- Cooling equipment & A/C system
- Aviation and navigation inspection
- Pneumatics and hydraulics systems

### Standard Range

| Range     | Overload | Output/F.S (mV) | Typical Value(mV) | Pressure Type |
|-----------|----------|-----------------|-------------------|---------------|
| 0~10KPa   | 300%     | 35~60           | 45                | G             |
| 0~20KPa   | 300%     | 70~110          | 90                | G/A           |
| 0~35KPa   | 300%     | 55~80           | 70                | G/A/D         |
| 0~70KPa   | 300%     | 55~80           | 60                | G/A/D         |
| 0~100KPa  | 300%     | 60~85           | 75                | G/A/D         |
| 0~200KPa  | 300%     | 60~85           | 75                | G/A/D         |
| 0~400KPa  | 300%     | 60~80           | 70                | G/A/D         |
| 0~600KPa  | 200%     | 90~120          | 100               | G/A/D         |
| 0~1.0 MPa | 200%     | 125~185         | 150               | G/A/D         |

### Technical Parameters

| Parameters               | Typ. | Max. | Unit       |
|--------------------------|------|------|------------|
| Nonlinearity             | 0.2  | 0.5  | %FS        |
| Hysteresis               | 0.05 | 0.1  | %FS        |
| Repeatability            | 0.05 | 0.1  | %FS        |
| Zero Output              | ±1   | ±2   | mV DC      |
| FS Output                | 100  |      | mV DC      |
| Input/ Output Impedance  | 3.0  | 4.0  | kΩ         |
| Zero Temp. Drift*        | ±0.4 | ±0.8 | %FS, @25°C |
| Sensitivity Temp. Drift* | ±0.4 | ±0.8 | %FS, @25°C |
| Long-term Stability      | 0.2  |      | %FS/year   |

## ESS350 GID-3-EV03.0

|           |      |         |     |       |
|-----------|------|---------|-----|-------|
| 0~1.6 MPa | 200% | 80~120  | 100 | G/A/D |
| 0~2.0 MPa | 200% | 50~70   | 60  | G/A/D |
| 0~3.5 MPa | 200% | 100~120 | 110 | G/A/D |
| 0~7.0 MPa | 200% | 120~150 | 135 | G/A   |
| 0~10 MPa  | 200% | 180~230 | 200 | G/A   |
| 0~25 MPa  | 150% | 140~170 | 150 | S     |
| 0~40 MPa  | 150% | 230~280 | 250 | S     |
| 0~60 MPa  | 150% | 100~160 | 130 | S     |
| 0~100 MPa | 150% | 100~150 | 120 | S     |

**Notes:** G for Gauge pressure; A for Absolute pressure; D for Differential pressure; S for Sealed gauge.

Range -100kPa~100MPa

\*The typical value of 0~10kPa and 0~20kPa's zero temperature drift and sensitivity temperature drift is 0.4%FS@25°C, max value is 1.6%FS@25°C



## Construction Performance

**Diaphragm:** Stainless Steel 316L  
**Housing:** Stainless Steel 316L  
**Pressure leading tube:** Stainless Steel 316L  
**O Ring:** DN1.5 (nitrile rubber or viton)  
**Measuring Medium:** Which is compatible with SS316L, viton, nitrile rubber  
**Packing Medium:** Silicon Oil  
**Net weight:** 50-90g

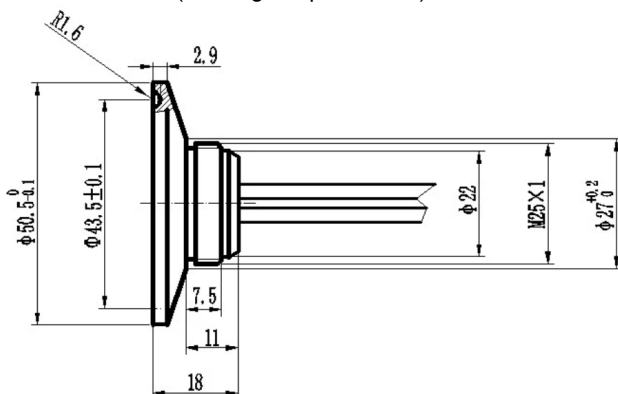
## Electric & Environment Performance

**Power supply:** 1.5mA/5V (Max input voltage is 10VDC)  
**Insulation Resistance:** 500MΩ@500VDC  
**Overpressure:** 1.5~3 times FS  
**Vibration (20~500Hz):** 20G  
**Useful Time (25°C):** >1\*100 Million Times @Pressure Circulation(80%FS)  
**Response Time:** ≤1ms  
**Storage Temp.:** -40~+125°C  
**Operating Temp.:** -40~+85°C; -40~+150°C  
**Compensation Temp.:** 0~50°C@Current, ≤250Kpa; -10~80°C@Current, >250Kpa

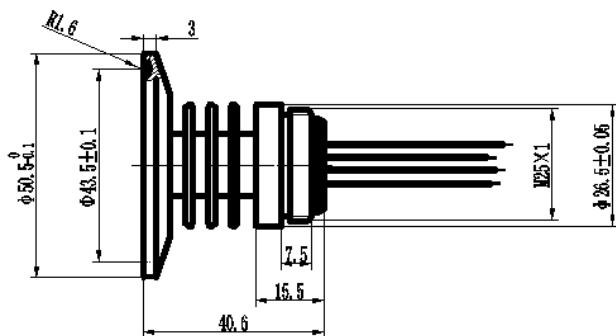
## Drawing

### ESS350 Flat Diaphragm Pressure Sensor Range: 35Kpa~6Mpa

Without Radiator (working temp.-40-85°C)



With Radiator (working temp.-40-150°C)



| Red Wire | Black Wire | Blue Wire | Yellow Wire |
|----------|------------|-----------|-------------|
| +IN      | -IN        | -OUT      | +OUT        |

## Ordering Procedure

|      |                                |  |                                      |      |           |      |      |
|------|--------------------------------|--|--------------------------------------|------|-----------|------|------|
| ESS3 | Flat Diaphragm Pressure Sensor |  |                                      |      |           |      |      |
|      | Code                           | Model  |                                      |      |           |      |      |
|      | 50                             | Flat Diaphragm Pressure Sensor               |                                      |      |           |      |      |
|      | 50R                            | Flat Diaphragm Pressure Sensor with Radiator |                                      |      |           |      |      |
|      |                                | Cod  | Span                                 | Code | Span      | Code | Span |
|      |                                | R03  | 0~35KPa                              | R09  | 0~1.0 MPa |      |      |
|      |                                | R04  | 0~70KPa                              | R10  | 0~1.6 MPa |      |      |
|      |                                | R05  | 0~100KPa                             | R11  | 0~2.0 MPa |      |      |
|      |                                | R06  | 0~200KPa                             | R12  | 0~3.5 MPa |      |      |
|      |                                | R07  | 0~400KPa                             | R13  | 0~7.0 MPa |      |      |
|      |                                | R08  | 0~600KPa                             |      |           |      |      |
|      |                                | Code   | Pressure Type                        |      |           |      |      |
|      |                                | G  | Gauge                                |      |           |      |      |
|      |                                | A  | Absolute                             |      |           |      |      |
|      |                                | S  | Sealed Gauge                         |      |           |      |      |
|      |                                | Code   | Power Supply                         |      |           |      |      |
|      |                                | M  | 1.5mA                                |      |           |      |      |
|      |                                | V5   | 5V                                   |      |           |      |      |
|      |                                | V10  | 10V                                  |      |           |      |      |
|      |                                | Code   | Pressure connection                  |      |           |      |      |
|      |                                | 0  | O-ring -NBR                          |      |           |      |      |
|      |                                | 1  | O-ring -Viton                        |      |           |      |      |
|      |                                | Code   | Electric connection                  |      |           |      |      |
|      |                                | 1  | Kovar pin                            |      |           |      |      |
|      |                                | 2  | Rubber flexible silicon wires (10cm) |      |           |      |      |
| ESS3 | 50                             | R03  | G                                    | M    | 0         | 2    |      |

**Note:** ❶ Extremely attention must be paid to sensor installation process to avoid any miss conduction that affect the sensor performance, ❷ please protect the diaphragm and the compensated board carefully to prevent any damage. ❸ Please contact us if your requested working temperature lower than -20°C