Installation and Maintenance Instructions for ZT16 High Purity Transmitter

ZT16 C-Seal

ZT16 W-Seal

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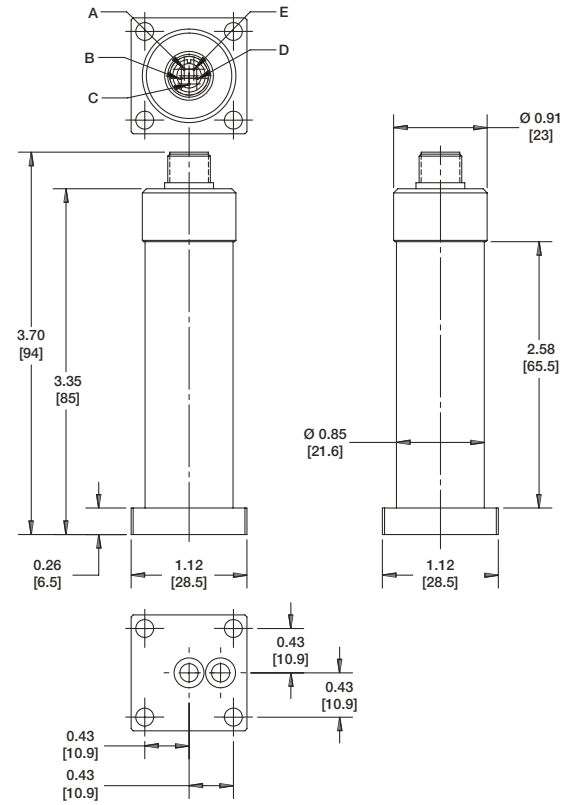
1. GENERAL DESCRIPTION

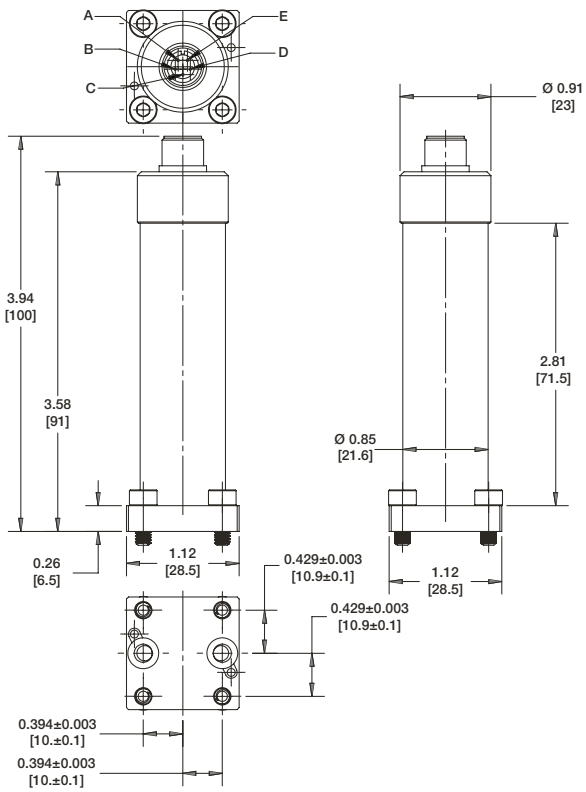
The ZT16 pressure transmitter is an ultra-compact pressure transmitter designed for the semiconductor industry. The ZT16 uses a Polysilcone stain gauge to translate pressure into an electrical signal. Certified to EN standards, the ZT16 offers excellent reliability and repeatability, while its all welded design provides protection from leakage.

2. PRODUCT DRAWINGS

ZT16 C-Seal



ZT16 W-Seal



3. INSTALLATION AND STORAGE

3.1 Installation

Open sealed bag in clean environment.
Do not expose wetted parts to moisture and dust.
Only use specified electrical output and gaskets for installation.
Take the following precautions when transporting and installing product:

⚠ PRECAUTION:

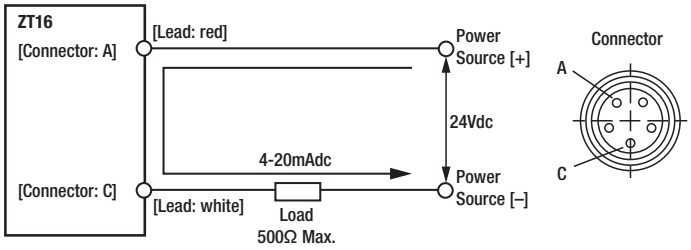
- Do not drop instrument or subject to extreme shock and vibration.
- Do not install in direct sunlight or areas subject to dust or surface particles.
- Do not to touch or breathe on the wetted parts as this may result in damage to the sealing surface.
- Do not use excessive force when installing the mating connector.
- Do not conduct snoop test to the sensor as this may deteriorate insulation resistance.
- It is recommended to purge the device with inert gas to remove atmospheric compositions, particles or foreign materials.
- Instrument for indoor use only.

3.2 Wiring

Refer to wiring schematic below:
Note: Load (max.) rated @ 500 ohms.

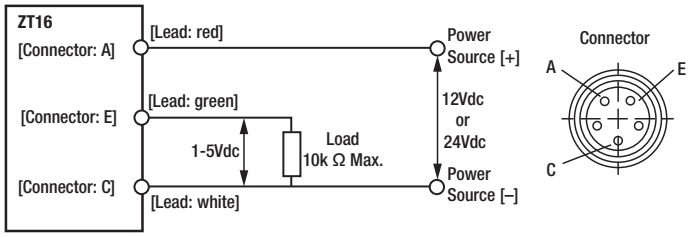
4 to 20mA DC output (current output)

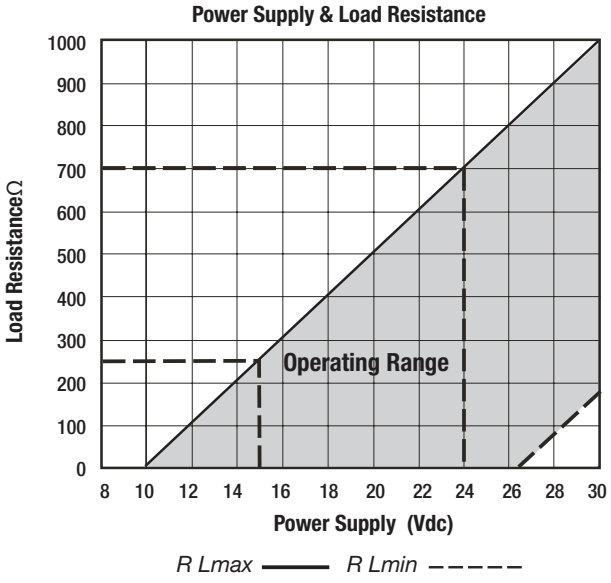
- [Connector: A] ➞ [Lead: Red] ➞ [Power source (+)]
- [Connector: C] ➞ [Lead: White] ➞ [Power source (+)]



1 to 5mV DC output (voltage output)

- [Connector: A] ➞ [Lead: Red] ➞ [Power source (+)]
- [Connector: C] ➞ [Lead: White] ➞ [Power source (-), Output(-)]
- [Connector: E] ➞ [Lead:: Green ➞ [Output (+)]





⚠ PRECAUTION:

- Do not pull or bend cable with excessive force.
- Use regulated Power supply. If you are using a 4-20mA output, please refer to the Voltage Power Supply vs Loop Resistance Chart for the minimum voltage requirements.
- When soldering, take care that the soldering iron does not touch the sheath of the case or cable.

3.3 Cable Specifications

Specifications for connecting cables are as follows:
Use connectors which conform to the specification below.

[Cable specifications]

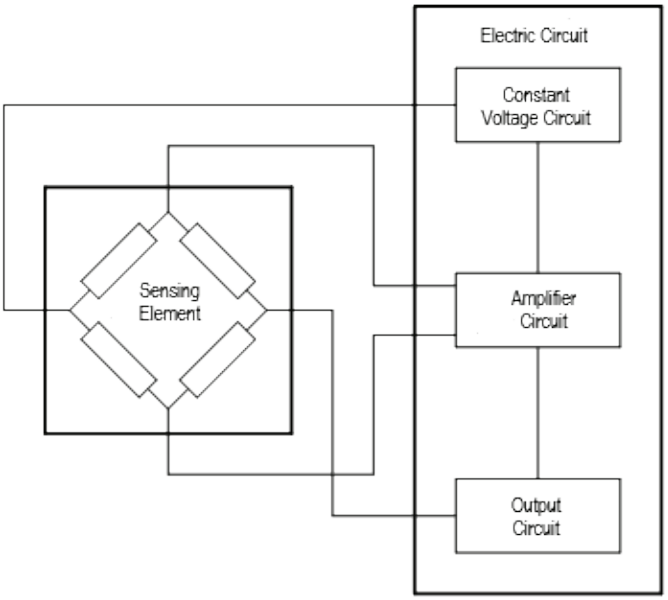
Current output (2 wire system)	• Conductor OD: Approx. 0.75mm (23AWG) • Insulator OD: Wire sheaths (Red, White)*1… Approx.1.35mm / Coat (Black)…Approx.6.0mm
Voltage output (3 wire system)	• Conductor OD: Approx. 0.75mm (23AWG) • Insulator OD: Wire sheaths (Red, White, Green) *2… Approx.1.35mm / Coat (Black)…Approx.6.0mm

*1: Where the cable sheath is peeled off, please note that the cable consists of 4 wires. Besides red and white, it also has green and blue wires. Note that the green and blue wires are not used as they do not have any internal connection.

*2: Where the cable sheath is peeled off, please note that the cable consists of 4 wires. Besides red, white and green, it also has blue wires. Note that the blue wires are not used as they do not have any internal connection.

3.4 Principal of Operation

The transmitter's sensing diaphragm converts pressure to an electrical signal by use of strain gages. The circuit is a full-bridge system where the strain gages are positioned on all four sides bridge and are used to detect the amount of strain. An electrical signal, proportional to the amount of strain, is then amplified to a specific value by the electrical circuit and transmitted as direct current output.



3.5 Storage Precautions

⚠ CAUTION:

Do not store the transmitter under the following conditions:

- Exposed to water.
- Susceptible to adverse effects due to air pressure, temperature, humidity, ventilation, sunlight, particles, salt or sulfur in the air.
- Exposed to inclination, vibration or shock (including transportation time).
- Exposed to chemicals (chemicals' storage area) or gas.
- Exposed to direct sunlight or high temperature.
- Deformation and discoloration of resin parts may occur when product is stored in a sealed in a bag under high temperature and high humidity.

3.6 Operations

Before powering the device, verify the wiring connection is correct. Verify power supply meets instrument and load power requirements.

Power unit and allow for 5 minute warm-up; perform zero adjustment if required.

⚠ PRECAUTION:

- Do not apply pressure exceeding the rated pressure listed on the instrument's faceplate label.
- If used with corrosive gas, it is highly recommended that the pressure transmitter be fully purged with nitrogen gas prior to being removed for maintenance or other servicing. Leaving corrosive gas within a device will accelerate corrosion by forming strong acid or alkaline substance generated internally by moisture or oxygen within the atmosphere.

4. MAINTENANCE

4.1 Maintenace

It is recommended that units undergo regular inspection once every 6 months. Calibration method or calibration standards should be determined and performed by qualified personnel.

[Inspection Checklist]

- External product appearance/condition.
- Check insulation resistance between each terminal and case (measure with ≥100MΩ / ≤50 VDC).
- Leak test of pressure connection.
- Verify output signal.

4.2 Zero and Span Adjustment

The adjustment can be performed once the rubber plug is removed; return plug after adjustment.

⚠ PRECAUTION:

- Prior to adjusting, power unit for 5 minutes or more with current applied.
- Adjustment is made by using a slotted resin or ceramic screwdriver to rotate the zero-point adjustment potentiometer and span adjustment potentiometer (shown in the following figure). Make sure the position and direction of the adjustment potentiometers are correct. Do not apply over-torque to the potentiometers.
- Be extremely careful not to cause a short circuit with the screwdriver.
- Use properly calibrated and traceable instrumentation to verify adjustments

(1) Zero adjustment

Adjust by turning the zero adjustment potentiometers (shown below) with a slotted screwdriver. The two adjustment methods each for gage pressure range and the compound range are as follows.

< Gage pressure range >

Adjust to 4mA DC or 1V DC without no pressure applied

< Compound range >

Calculate the output with no pressure applied according to the following formula:

- 4 to 20mA DC output (current output)
  [Output with no pressure applied mA DC] = [16 mA DC] / ([Upper limit of pressure range MPa]—[—0.1 MPa]) × 0.1+ [4 mA DC]
  Example) 0.5MPa compound range: 6.67mA Dc
  1.0MPa compound range: 5.45mA DC

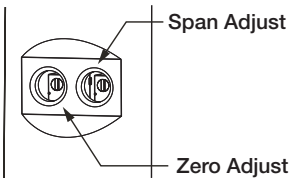
- 1 to 5V DC output (voltage output)
  [Output with no pressure applied V DC] = [4 V DC] / ([Upper limit of pressure range MPa]—[—0.1 MPa]) × 0.1+ [1 V DC]
  Example) 0.5MPa compound range: 1.667V DC
  1.0MPa compound range: 1.363V DC

Adjust the output with no pressure applied to the calculated value.

(1) Span adjustment
When attempting span adjustment with a pressure reference device, please follow the instructions listed below.
Zero/span adjustment is performed by rotating zero/span adjustment potentiometer shown in the figure with Phillips screwdriver.

The procedure of the span adjustment is as follows:
Note: The zero point shifts as the span adjustment potentiometer is turned.

❶ Adjust output same as [(1) Zero adjustment].
❷ Adjust the output to the 20mA or 5Vdc using the span adjustment potentiometer with the maximum pressure applied.
❸ Adjust the span by repeating ❶ and ❷ for a few times.
❹ Refer to the figure for the position of each potentiometer.



5. WARRANTY
If Ashcroft determines that a product return within its warranty period (one year from date of shipment) to have a defect due to design or manufacturing, Ashcroft will repair or replace the unit free of charge.

However, note that the following cases are excluded.

(1) Where the delivered products are disassembled, altered or where their parts are replaced or new function is add by the customer or any third party

(2) Where directions described in the instruction manual or catalog are not observed.

(3) Where the non-conformance is caused by deterioration due to use, natural disaster, fire or other force majeure events

(4) The secondary damage caused by non-conformance of the products including the above.

Returned instruments are subject to evaluation by Ashcroft to determine warranty.

6. OTHERS
This instruction manual is not intended to cover all equipment and/or installation and maintenance details. Please contact Ashcroft if additional detail is sought, or in the event that the instrument does not adequately serve your company's intentions.

Additionally, this instruction manual may be changed, at any time, without prior notice for the purposes of version upgrades, revisions etc.

Thank you for your understanding and cooperation.