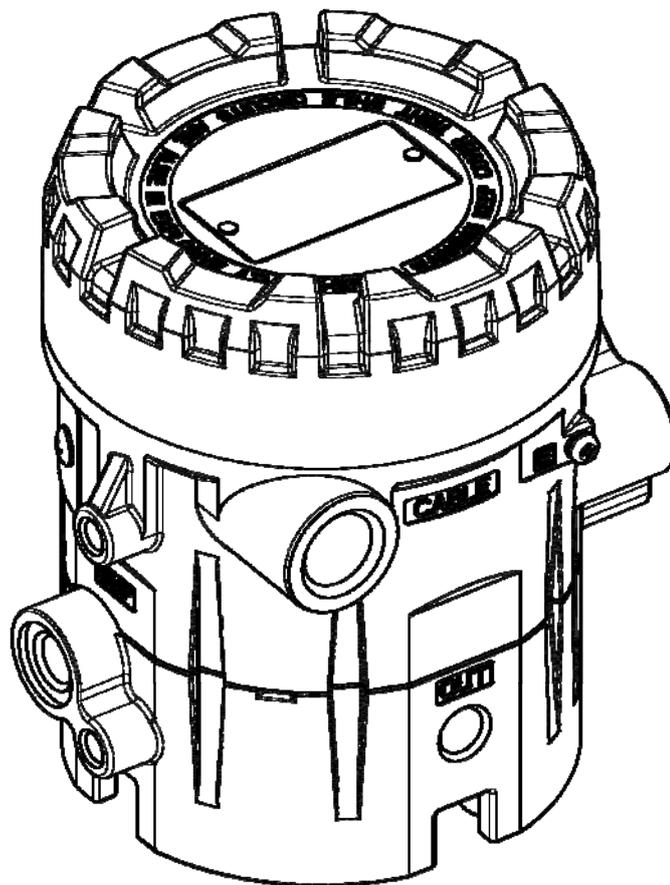


Electro-Pneumatic Converter YT-940 SERIES

PRODUCT MANUAL



VERSION 1.00

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1. Introduction

1.1 General Information for the users

Thank you for purchasing Young Tech Co., Ltd products. Each product has been fully inspected after its production to offer you the highest quality and reliable performance. Please read the product manual carefully prior to installing and commission the product.

- For the safety, it is important to follow the instructions in the manual. Young Tech Co., Ltd will not be responsible for any damages caused by user's negligence.
- The manual should be provided to the end-user.
- Any modifications or repairs to the product may only be performed if expressed in this manual.
- The manual can be altered or revised without any prior notice. Any changes in product's specification, design, and/or any components may not be printed immediately but until the following revision of the manual.
- The manual should not be duplicated or reproduced for any purpose without prior approval from Young Tech Co., Ltd, Gimpo-si, South Korea.

1.2 Manufacturer Warranty

- For the safety, it is important to follow the instructions in the manual. Manufacturer will not be responsible for any damages caused by user's negligence.
- Manufacturer will not be responsible for any damages or accidents as a result of any alteration or modification of the product and its parts. If any alteration or modifications are necessary, please contact Young Tech Co., Ltd directly.
- Manufacturer warrants the product from the date of original purchase of the product for one (1) year, except as otherwise stated.
- Manufacturer warranty will not cover products that have been subjected to abuse, accidents, alterations, modifications, tampering, negligence, misuse, faulty installation, lack of reasonable care, repair or service in any way that is not contemplated in the documentation for the product, or if the model or serial number has been altered, tampered with, defaced or removed; damages that occurs in shipment, due to act of God, failure due to power surge, or cosmetic damage. Improper or incorrectly performed maintenance will void this limited warranty.
- For detailed warranty information, please contact Young Tech Co., Ltd – South Korea.

1.3 Explosion Proof Warning

Please ensure the unit is being used and installed within the explosion proof certified environment.



- YT-900 series explosion proof grade is **Ex d IIC T5 / T6**
(Amb. Temp. T5 : -40~85°C, T6 : -40~75°C)
- Explosion proof type of cables and gaskets should be used, when explosion gases are present at the installation site. Please make sure that the sealing has been done completely.
- Power should be turned off completely when opening product's cover. When opening the cover, ensure that there is no power remaining in any electrical parts nearby.
- Cable rug with surface area of more than 0.195mm² with M4 spring washer should be used to connect the power.
- For external ground terminal, cable rug with surface area of more than 5.5mm² should be used.

2. Product Description

2.1 General

YT-940 series, I/P converter receives DC 4~20mA signal from the control room and outputs 0.02 ~ 0.1 MPa signal to pneumatic-pneumatic positioner to operate a control valve system. YT-940 series is designed to be used in explosion proof environment. Also, YT-940 has a wide range of uses with IP66 protection grade.

2.2 Main Features and Functions

- Low air consumption level yields to lower plant operating cost.
- Designed for use in **Ex d IIC T5 / T6**
- (Amb. Temp. T5 : -40~85°C, T6 : -40~75°C)
- Can be used at low voltage (8.5 V) and can be compatible with most of general controllers.
- Polyester painting makes the product strong against corrosion environment.
- Easy dial adjustment for Zero and Span.
- Modularized inner parts make maintenance easy and simple.
- I/P converter operates normally during sudden changes in supply pressure and / or high vibration environment.
- Air filter regulator <YT-200 series> can be directly installed without any pneumatic pipings.

2.3 Label Description

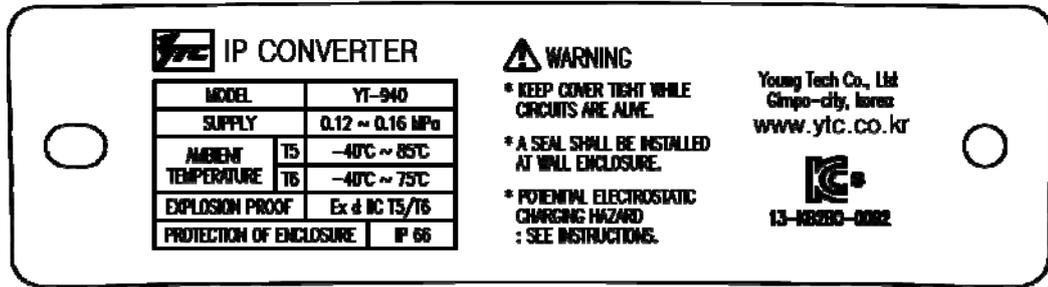


Fig. 1: YT-940 Body Label <STS plated>

- A. Model: Indicates the model number
- B. Supply: Indicates the supply pressure range.
 - For general application, YT-940 series supplies 0.12 ~ 0.16 MPa (1.2 ~ 1.6 bar). For special application, YT-940 series can supply 0.02 MPa higher than output pressure.
- C. Ambient Temperature: Indicates allowed ambient temperature range.
- D. Explosion Proof: Indicates certified explosion proof grade.
- E. Protection of Enclosure: Indicates protection grade.

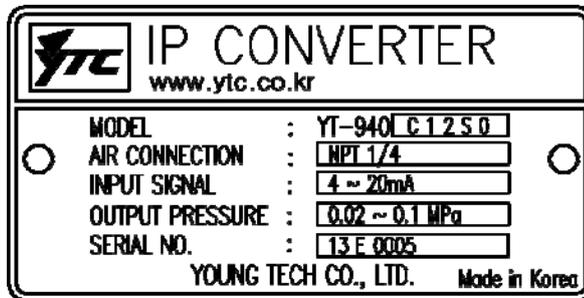


Fig. 2: YT-940 Body Label

- A. Model: Indicates the model number.
- B. Air Connection: Indicates air connection type
- C. Input Signal: Indicates input signal range.
- D. Output Pressure: Indicates output pressure range.
- E. Serial No.: Indicates the unique serial number.

2.4 Product Number

YT-940 1 2 3 4 5

1 Explosion Proof	C	Ex d IIC T5/T6
-------------------------------------------------------------------------------	---	----------------

2 Output Pressure	1	0.02 ~ 0.1 MPa
	2	0.00 ~ 0.12 MPa
	3	0.04 ~ 0.2 MPa
	4	0.00 ~ 0.23 MPa

3 Connection Type	1	PT
	2	NPT

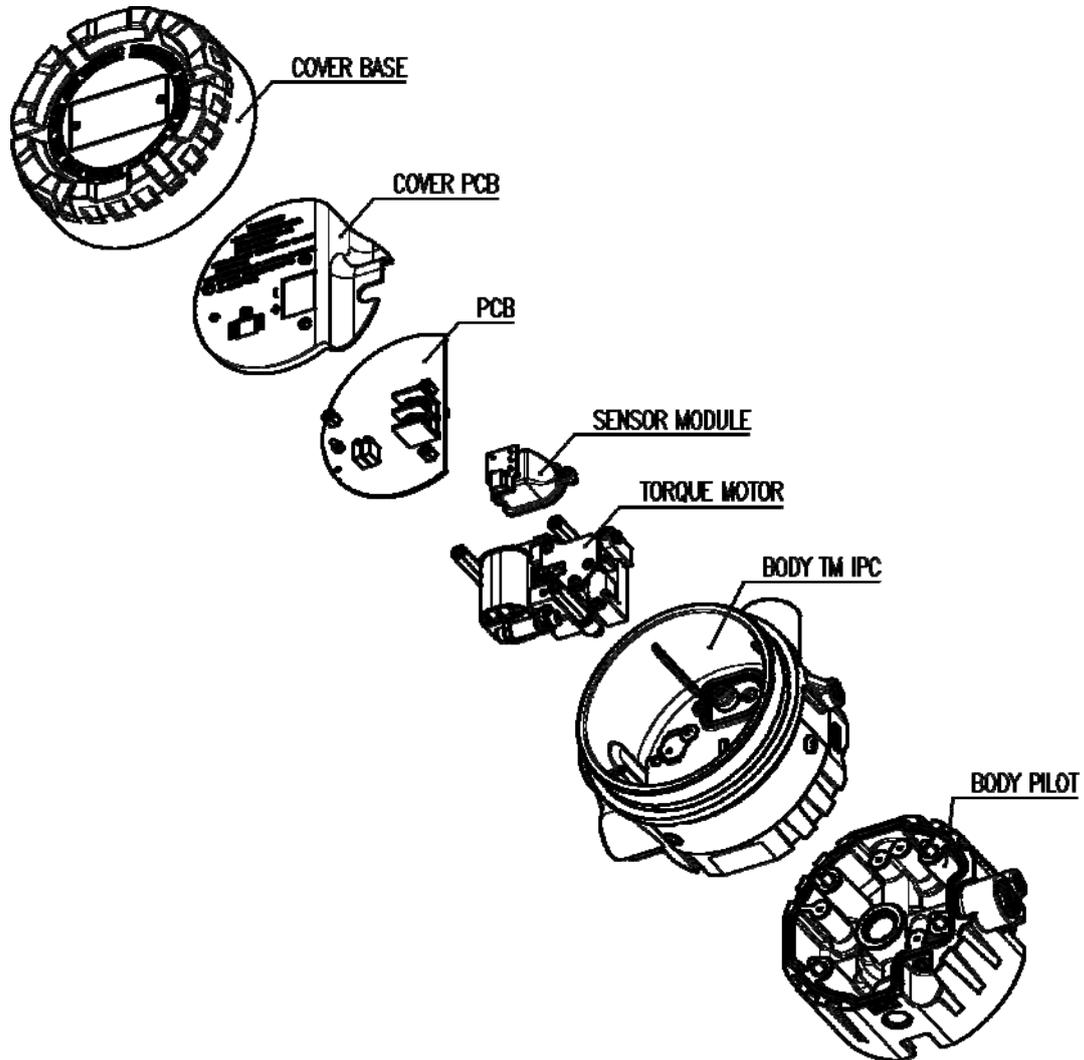
4 Ambient Temp.	L	-40 ~ 85 °C
-----------------------------------------------------------------------------	---	-------------

5 Option	0	None
	1	Feedback Signal(4~20mA DC)

2.5 Product Specification

Model		YT-940	
Input Signal		4~20mA DC	
Output Signal	Standard	0.02 ~ 0.1 MPa (0.2 ~ 1.0 bar)	
	Multi-range	0.00 ~ 0.12 MPa (0 ~ 1.2 bar)	
		0.04 ~ 0.2 MPa (0.4 ~ 2.0 bar)	
		0.00 ~ 0.23 MPa (0 ~ 2.3 bar)	
Supply Pressure	Standard	0.12 ~ 0.16 MPa (1.2 ~ 1.6 bar)	
	Minimum		
	Maximum	0.24 MPa (2.4 bar)	
Explosion Proof		Ex d IIC T5 / T6	
Temperature	Explosion proof	T5	-40 ~ 85°C (-40 ~ 185°F)
		T6	-40 ~ 75°C (-40 ~ 167°F)
	Operating	-40 ~ 85°C (-40 ~185°F)	
Air Consumption		Below 2 LPM (sup = 0.14 MPa)	
Flow Capacity		70 LPM (sup = 0.14 MPa)	
Hysteresis		±0.5% F.S.	
Sensitivity		±0.2% F.S	
Repeatability		±0.3% F.S.	
Air Connection		PT / NPT 1/4	
Conduit Entry		PF 1/2 (G 1/2)	
Protection		IP 66	
Operating Voltage		Min 6.0 V (at 4mA)	
		Max 7.2 V (at 20mA)	
Material		Aluminum Diecasting	
Weight		3.0kg (6.61 lb)	
Painting		Polyestere Powder Coating	
Internal Free Volume		700 cm ³	

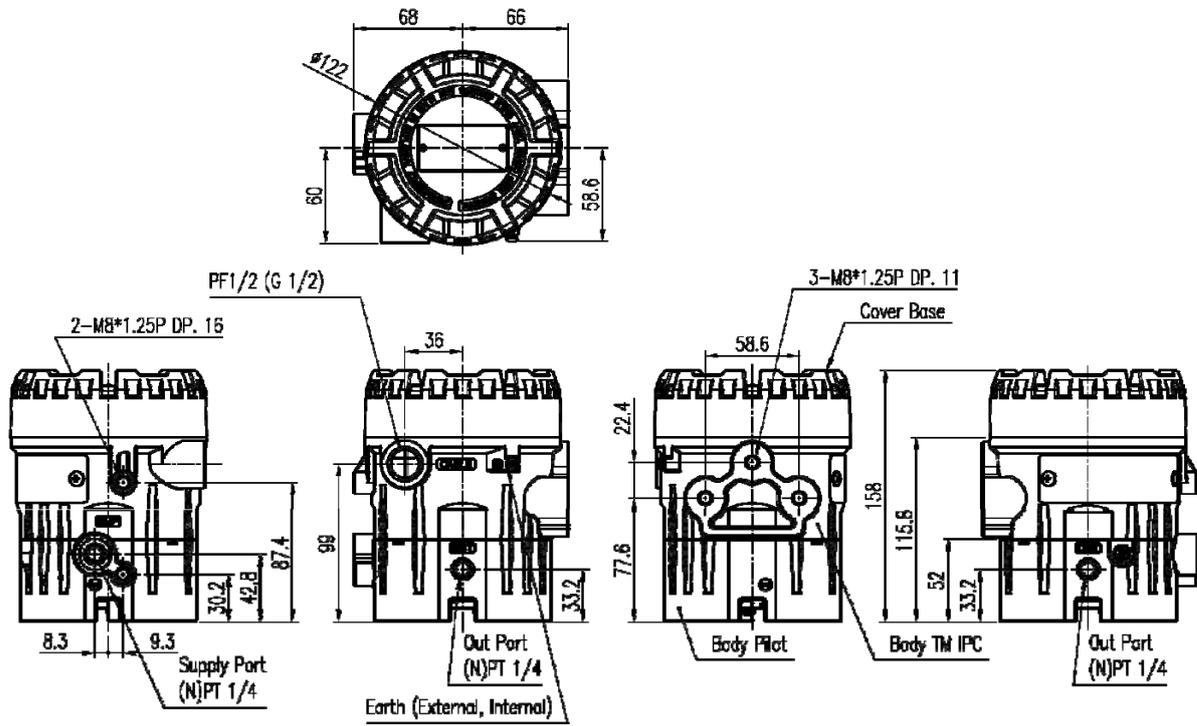
2.6 Parts and Assembly and Operation Logic



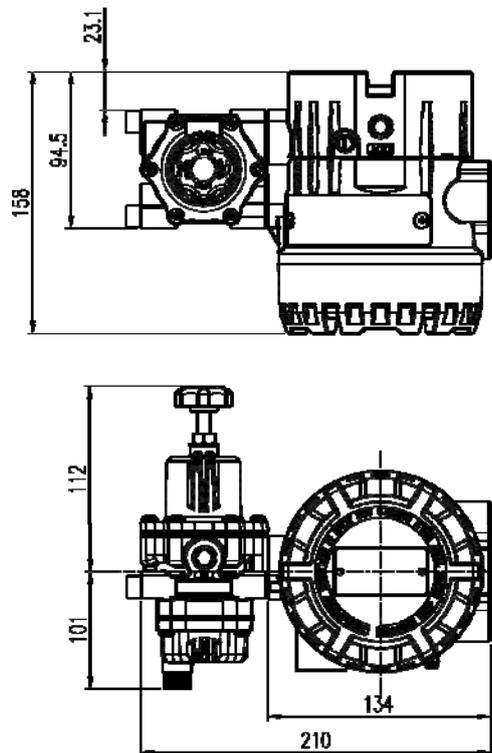
As input signal is being supplied to YTC-940, the pressure sensor which is being connected to output port, will sense the pressure level. The main PCB will compare the input signal and output pressure level and increase or decrease the electric current of torque motor.

2.7 Product Dimension

2.7.1 YT-940 series



2.7.2 YT-940 + YT-200 AFR directly mounted



3. Installation

3.1 Safety and Installation Tips

When installing the unit, please ensure to read and follow safety instructions.



- Any input or supply pressures to valve, actuator, and / or to other related devices must be turned off.
- Use bypass valve or other supportive equipment to avoid entire system “shut down”.
- In case of hazardous area, please ensure there is no explosion gas in the atmosphere.
- When installing the unit, please ensure the cover base is headed upward, so internal dew condensation can go out through the draining hole.

4. Connections

4.1 Safety

- Supply pressure should be clean and dry air – avoiding moisture, oil or dust.
- Always recommended to use air filter regulator (i.e. YT-200 series).
- Young Tech Co., Ltd **has not tested positioner’s operation with any other gases other than clean air. Please contact Young Tech Co., Ltd for any questions.**

4.2 Supply Pressure Condition



- Dry air with at least 10°C lower than ambient temperature.
- Avoid from dusty air. Positioner’s inner filter can only filter 5 micron or larger.
- Avoid oil.
- Comply with ANSI/ISA-57.3 1975(R1981) or ISA S7.3-1975(R1981).
- Is designed to be used with the pressure below 0.24 MPa (2.4 bar).
- Set air filter regulator’s pressure level 0.02 MPa (0.2 bar) higher than required pressure.

4.3 Piping Condition

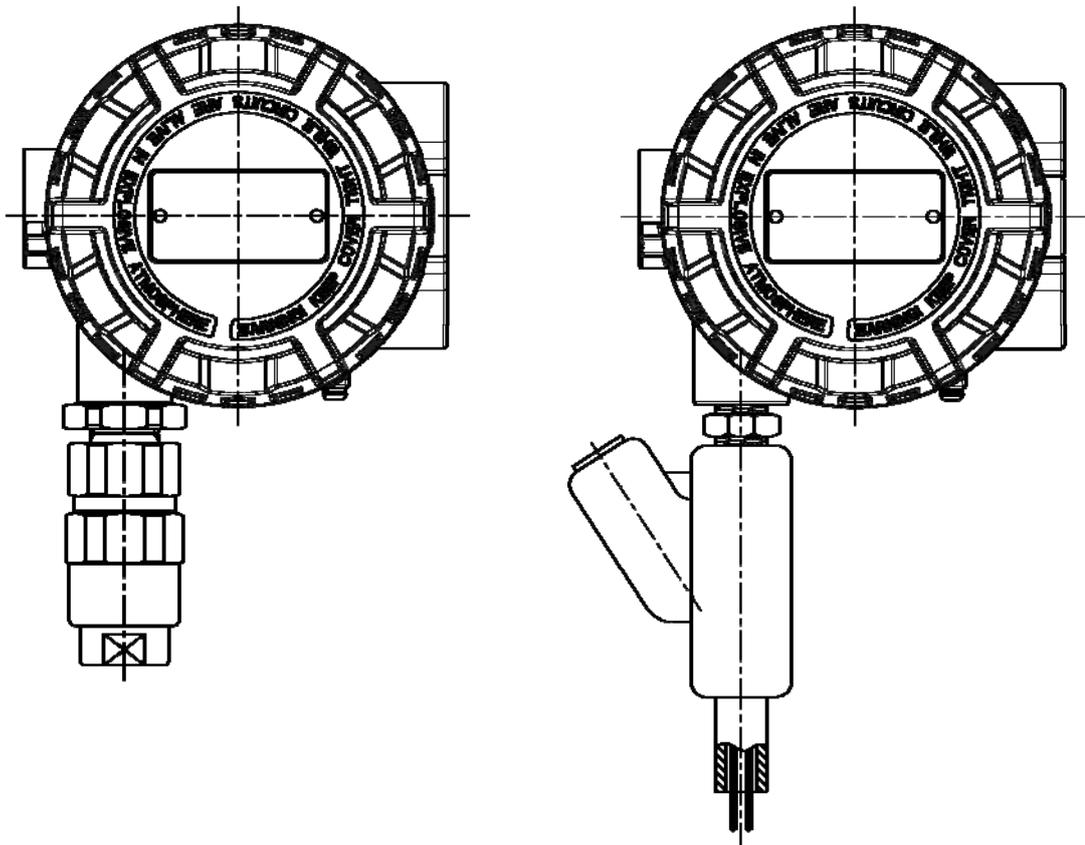


- Ensure inside of pipe is clean of obstructions.
- Do not use pipeline that is squeezed or shows any type of damages.
- Pipeline should have more than 6mm of inner diameter (10mm outer diameter) to maintain flow rate.
- The length of pipeline system should not be extremely long. Longer pipeline system may affect flow rate due to the friction inside of the pipeline.

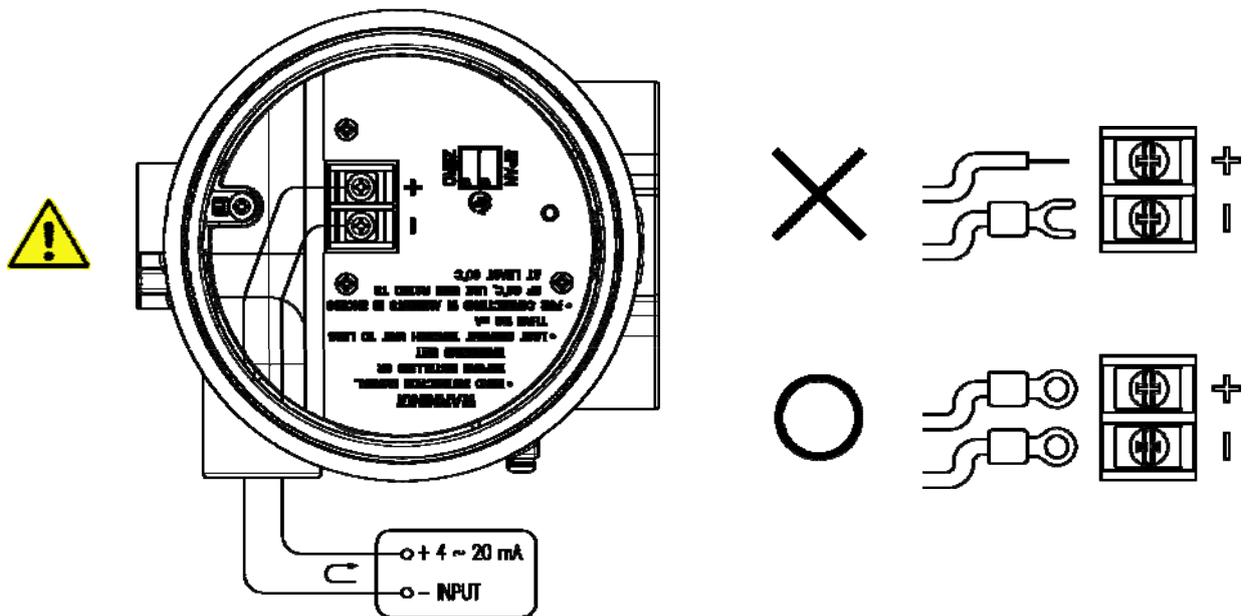
4.4 Connection – Power

4.4.1 Safety

- When installing in hazardous and explosive gas area, conduit tube or pressure-proof packing union must be used. The compound charging box should be the flameproof type and must be sealed completely.
- Conduit entry connection tap is PF 1/2 or G 1/2.
- Before connecting terminal, ensure that the power is off completely. **Do not open the cover when the power is still alive.**
- Please use ring-type rug to protect against vibration or any other external impact.
- YT-940 series should be grounded at outside of terminals or grounding point on the PCB.
- Please use twisted cable with conductor section are 1.25mm^2 and that is suitable for 600V (complying to the conductor table of NEC Article 310.) The outer diameter of the cable should be between 6.35 ~ 10mm. Use shield wire to protect against electro-magnetic field and noise.
- Please do not install the cable near high noise equipments, such as high-capacity transformer or motor. Please use shielded cable if necessary.



4.4.2 Terminal Overview



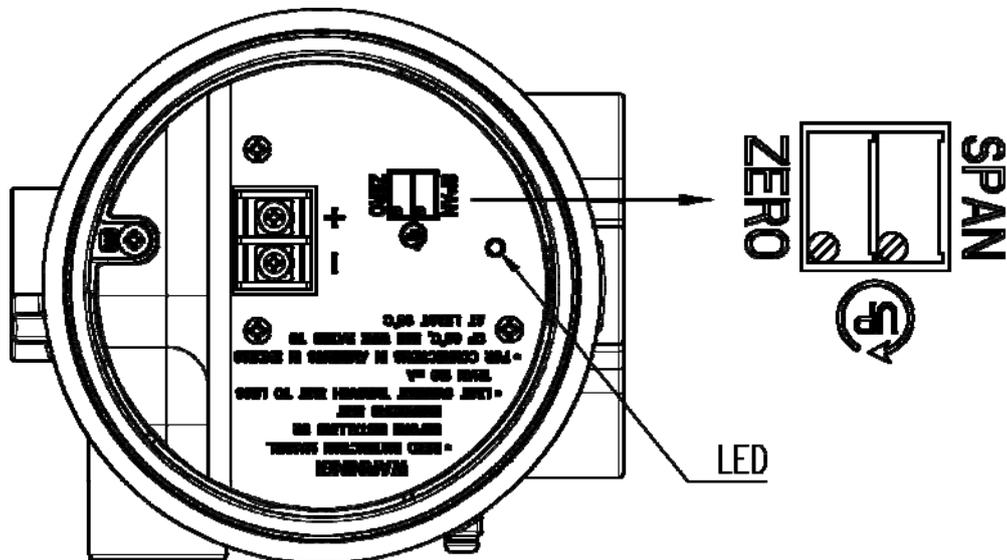
4.4.2.1 Input Signal Terminal

1. Open cover base.
2. Please use appropriate entry by considering the operating condition. Insert cable with using proper flameproof type packing union
3. Locate terminal of input signal on the left hand bottom side of the positioner. Insert terminal bolts into the conduit entry and secure them with (+) and (-) terminals on the plate. Make sure to tighten bolts with 1.5 Nm (15 kgf/cm²) torque. Please check the polarity of the terminals.
4. There are two terminals for grounding.
5. Ground resistance must be below 100 ohm.
6. Close the terminal cover.

5. Adjustments

5.1 Zero and Span Adjustments

1. After wirings have been completed, please supply 4mA as input signal to YT-940 series. Please check output pressure and adjust zero adjustment bolt to required zero output. In general, zero should be set at 0.02 MPa.
2. Supply 20mA. Please check output pressure and adjust span adjustment bolt to required end output. In general, span should be set at 0.1 MPa.
3. Supply 4mA again. Please check the output pressure and repeat step 1 and 2 until required point have been set completely.
4. Close the cover base completely.



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