

Electro-Pneumatic Transducer

IT600



SMC Electro-Pneumatic Transducer IT600

The model IT600 Electro-Pneumatic Transducer is designed to transform an electrical signal into a pneumatic pressure.

Wide output pressure range

0.2 ~ 6kgf/cm².

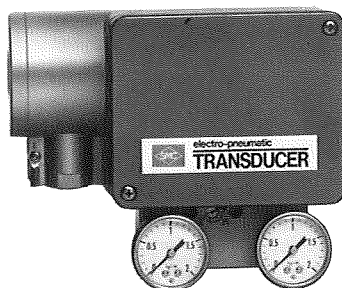
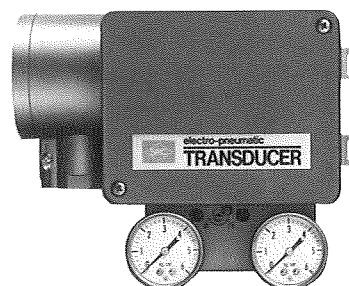
Fast response, Large flow.

Explosion proof electrical housing.

Easy span adjustment.

Specifications

Type	IT600 (Low Pressure)	IT601 (High Pressure)
Supply air pressure	1.4 ~ 2.4kgf/cm ²	2.4 ~ 7kgf/cm ²
Output pressure	0.2 ~ 1kgf/cm ² Max. 2kgf/cm ²	0.4 ~ 2kgf/cm ² Max. 6kgf/cm ²
Input current	4 ~ 20mA DC	
Input impedance	235Ω (4 ~ 20mA, 20°C)	
Linearity	±1.0% or less	
Hysteresis	0.75% or less	
Repeatability	±0.5% or less	
Air consumption	7 Nℓ/min (SUP: 1.4kgf/cm ²) 22 Nℓ/min (SUP: 7kgf/cm ²)	
Ambient and fluid temperature	-10° ~ 60°C	
Air port	1/4 (female)	
Electrical connection	1/2 (female)	
1 proof rating	d2g4	
Material	Aluminum diecast body	
Weight	3kgf	



Options

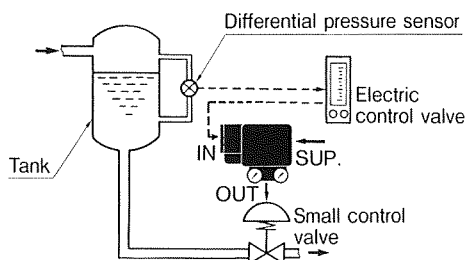
Description	Part No.	Remark
Bracket	P255010-5	For pipe assembly
Allen Wrench	P2240181	For tightening terminal cover
Flameproof packings (Applicable cable O.D. mm)	P224010-12 ~ 17	7 ~ 7.9, 8 ~ 8.9, 9 ~ 9.9 10 ~ 10.9, 11 ~ 11.5, 5 packing set

Applications

① Level Control

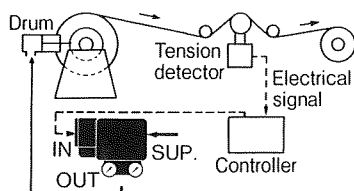
Feedback from differential pressure sensor goes to pressure to current transducer which supplies a 4 ~ 20mADC signal for the IT600.

The IT600 then adjusts the exhaust valve to modulate the fluid level in the tank.



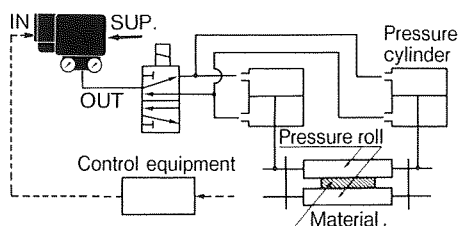
② Tension Control

A tension detector electrically communicates to a controller the tension of material being processed. The IT600 converts the electronic signal from the controller into a pneumatic signal which controls the drum brake pressure to maintain unified tension of the material.



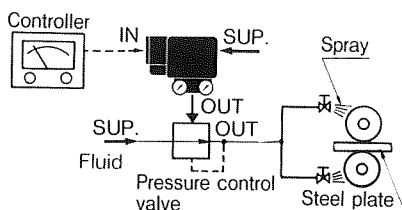
③ Control System for Pressure Roll

A pressure controller electrically signals the IT600 the roll pressure, which then converts this signal into a pneumatic signal to the cylinder to accurately control pressure.



④ Setting Pressure of Fluid

Avoids imbalance in thickness of steel plating due to temperature fluctuation by keeping the temperature of the rollers within a certain range by means of a controlled supply of air.



Construction

• Terminal box

Explosion proof

• Transmission arm

Since all components are explosion proof, adjustment of null and span can be performed even in explosive environments.

• Vector mechanism

Permits easy adjustment of span

• Span adjusting knob

Clockwise rotation reduces span and counterclockwise increases it.

• Zero adjusting knob

Clockwise rotation decreases 0 point, and counterclockwise increases it.

• Zero adjusting spring

• Bellows feedback

For precision and accuracy output feedback via bellows valve

• Gain suppressing spring

Exhaust valve provides feedback to this spring to stabilize output pressure.

• Pressure gauge

kgf, bar, psi all available

• Electrical wiring

Flameproof threaded metal conduit and flameproof packing.

• Outlet connection port

• Fixed orifice cleaning pin

• Pilot valve

Non-bleed design minimizes air loss. Large porting leads to fast response time.

• Air supply port

Built-in mesh filter

Principle of Operation (Normal Operation Type)

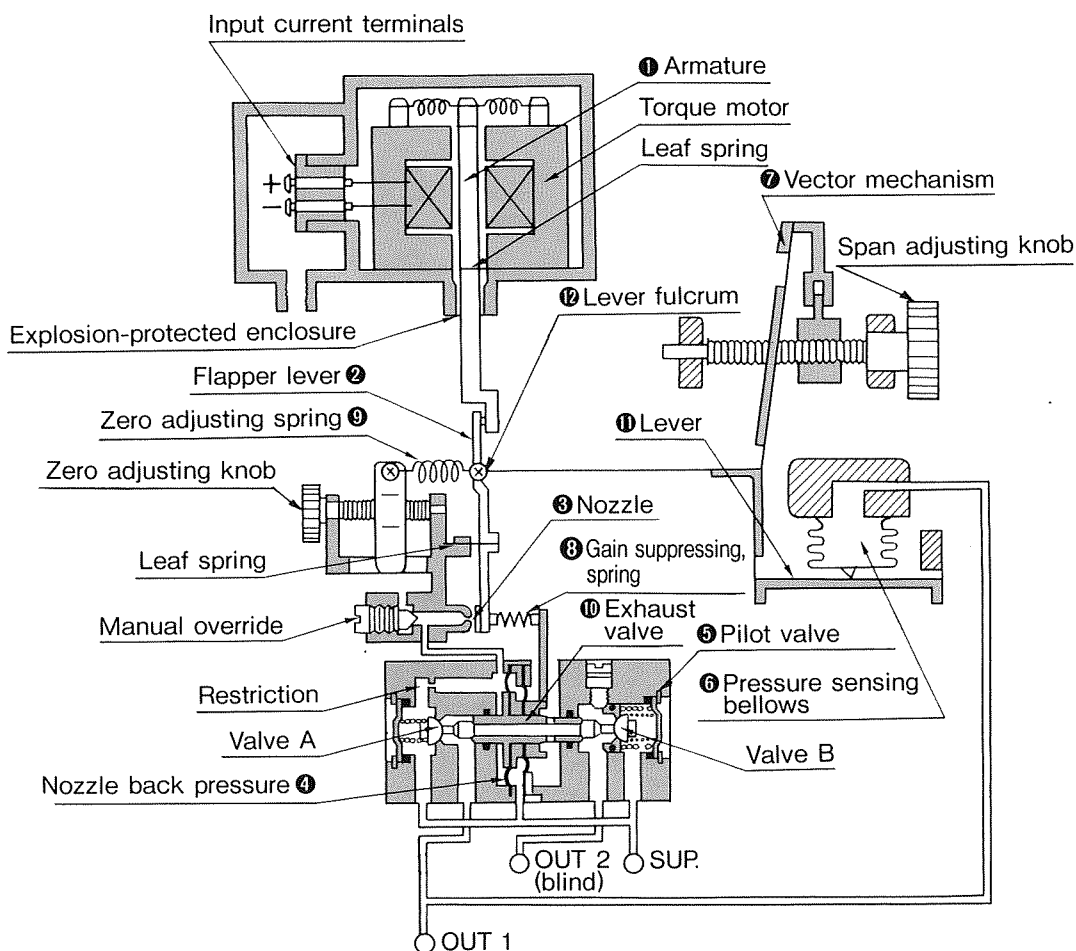
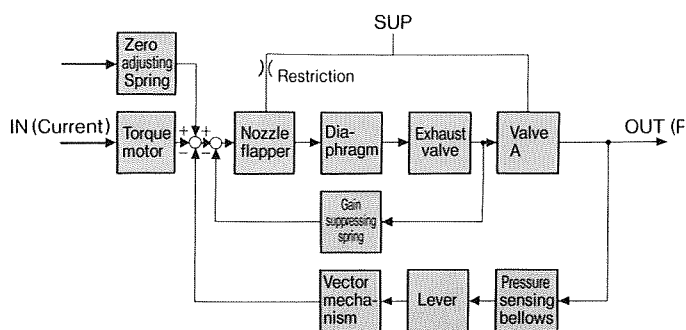
When the input current increases, armature ① in the torque motor will be subjected to a clockwise torque, pushing flapper lever ② to the left. As a result, the clearance between nozzle ③ and the flapper will increase and the nozzle back pressure will decrease. This moves exhaust valve ⑩ of pilot valve ⑤ to the left, causing the output air pressure of OUT 1 to increase.

The output pressure thus increased is passed through the path inside the pilot valve to pressure sensing bellows ⑥, where it is converted to the force. This force acts on vector mechanism ⑦ via lever ⑪. Because the force will balance the force generated by means of the input current at lever fulcrum ⑫, the output air pressure proportional to the input current will be obtained.

Gain suppression spring ⑧ functions to immediately feedback the movement of the exhaust valve to the flapper lever, thereby contributing to loop stability.

Zero point and span adjustments are performed by varying the tension force of zero adjusting spring ⑨ and the angle of the vector mechanism, respectively.

Block Diagram Illustrating Operating Principle



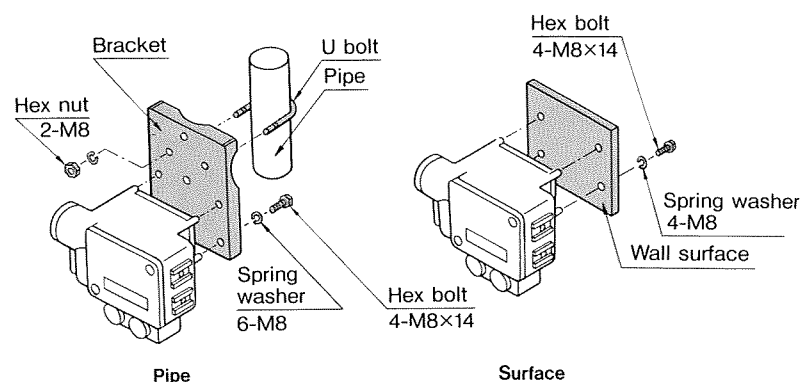
Precautions

Installation location

- ❶ Explosion proof electrical housing (d2G4) allows installation in hazardous environments up to those meeting the d2G4 standards.
- ❷ Ambient and fluid temperature range must be $-10 \sim 60^{\circ}\text{C}$.

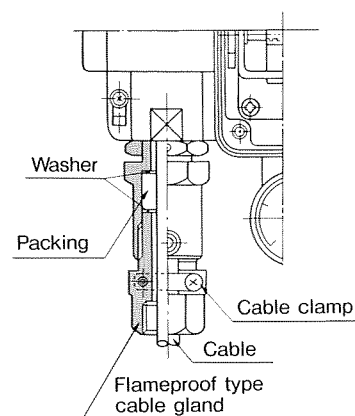
Installation

- ❶ Attaching the unit to a 1.5 ~ 2" O.D. pipe is possible using an optional bracket and "U" bolt. (See ordering information)
- ❷ Existing mounting holes are used for installation to a flat surface.



Part No.

Description	Part No.	Applicable cable O.D.
A set of flameproof packings	P224010-12	7 ~ 7.9mm
	P224010-13	8 ~ 8.9mm
	P224010-14	9 ~ 9.9mm
	P224010-15	10 ~ 10.9mm
	P224010-16	11 ~ 11.5mm
	P224010-17	5-packing set
Allen wrench (For tightening terminal cover)	P2240181	—
Flameproof packing type cable gland	P224010-18	—



Piping

- ❶ Use clean dust free, dry air for the supply.
- ❷ Be careful to prevent the entry of piping scale into the positioner. Blow out all lines and fittings before use.

Electrical wiring

Connect the lead wires from output terminals "+" and "-" of a controller to input terminals "+" and "-" inside the terminal box of the positioner, respectively.

Conduit pipe connection ports are female parallel pipe threads PF 1/2 with 20 mm deep.

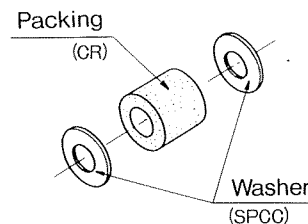
A Flameproof threaded-joint metal conduit type.

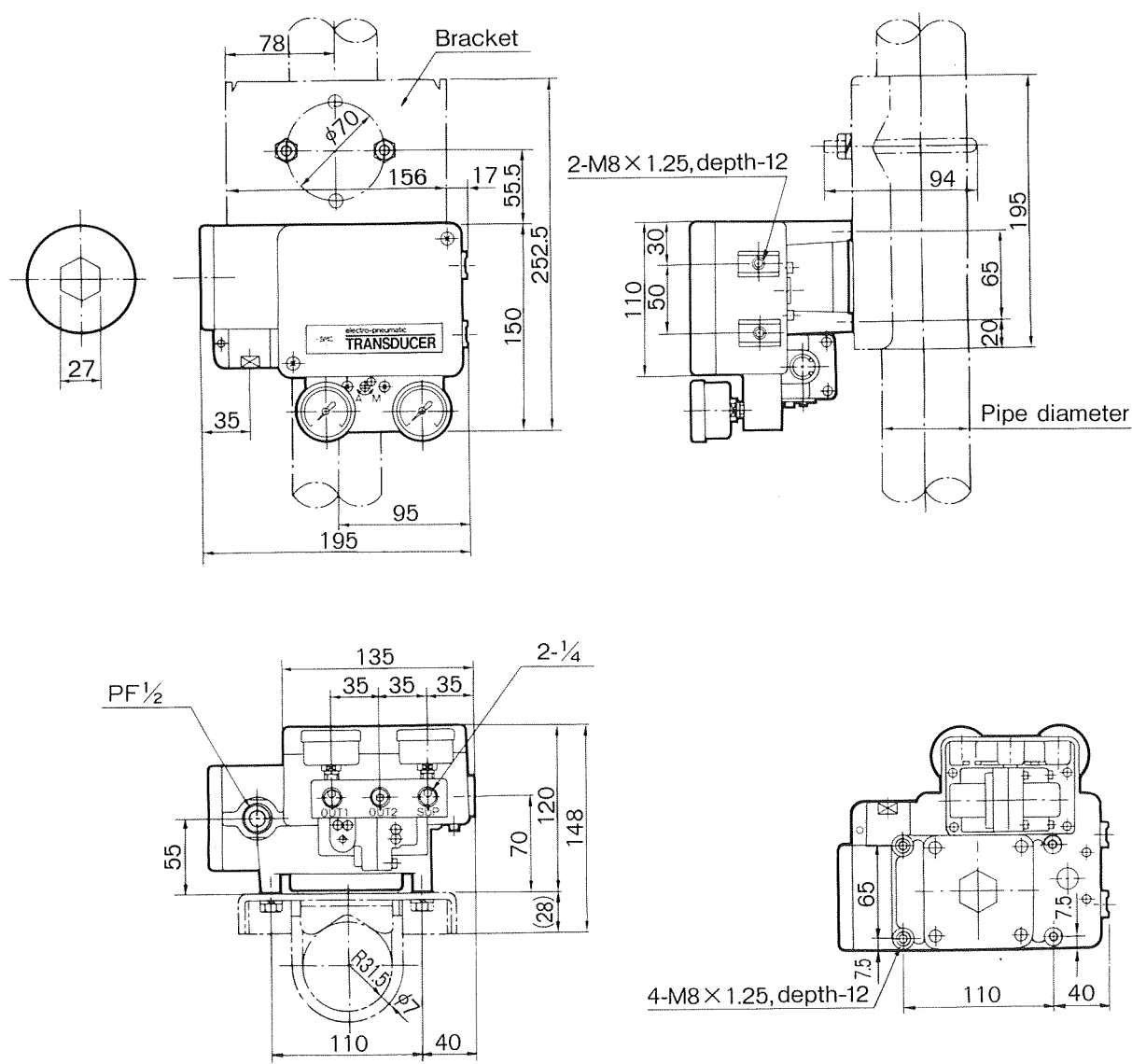
Use heavy gauge steel conduits (Steel Rigid Conduits) and securely connect by lock nuts (Lock Nut Used for Heavy Gauge Steel Conduit). Use insulated conductors for lead wires.

B Flameproof packing type.

In applications where rubber or plastic cables are used, use the attached cable gland.

A set of flameproof packing





How To Order

IT60 0 0 1 0 1

Output pressure ●

- 0 0.2 ~ 2kgf/cm²
 1 0.4 ~ 6kgf/cm²

Input current ●

- 0 4 ~ 20mADC
 1 1 ~ 5mADC
 2 2 ~ 10mADC
 3 5 ~ 25mADC
 4 10 ~ 50mADC

Pressure gauge ●

- 0 Not used
 1 2kgf/cm²
 2 3kgf/cm²
 3 10kgf/cm²
 4 4kgf/cm²
 6 6kgf/cm²

● Options

- B Serration joints (2^B Pipe installation)
 J Allen wrench (For tightening terminal cover)

● Seal type

- 0 Not used
 1 Applicable cable O.D. : 7 ~ 7.9mm
 2 Applicable cable O.D. : 8 ~ 8.9mm
 3 Applicable cable O.D. : 9 ~ 9.9mm
 4 Applicable cable O.D. : 10 ~ 10.9mm
 5 Applicable cable O.D. : 11 ~ 11.5mm
 6 A complete set of 5 types of flameproof packing

● External wiring connection

- 0 Flameproof threaded-joint metal conduit and normal joint not requiring explosion-proof design.
 1 Flameproof packing type cable gland.