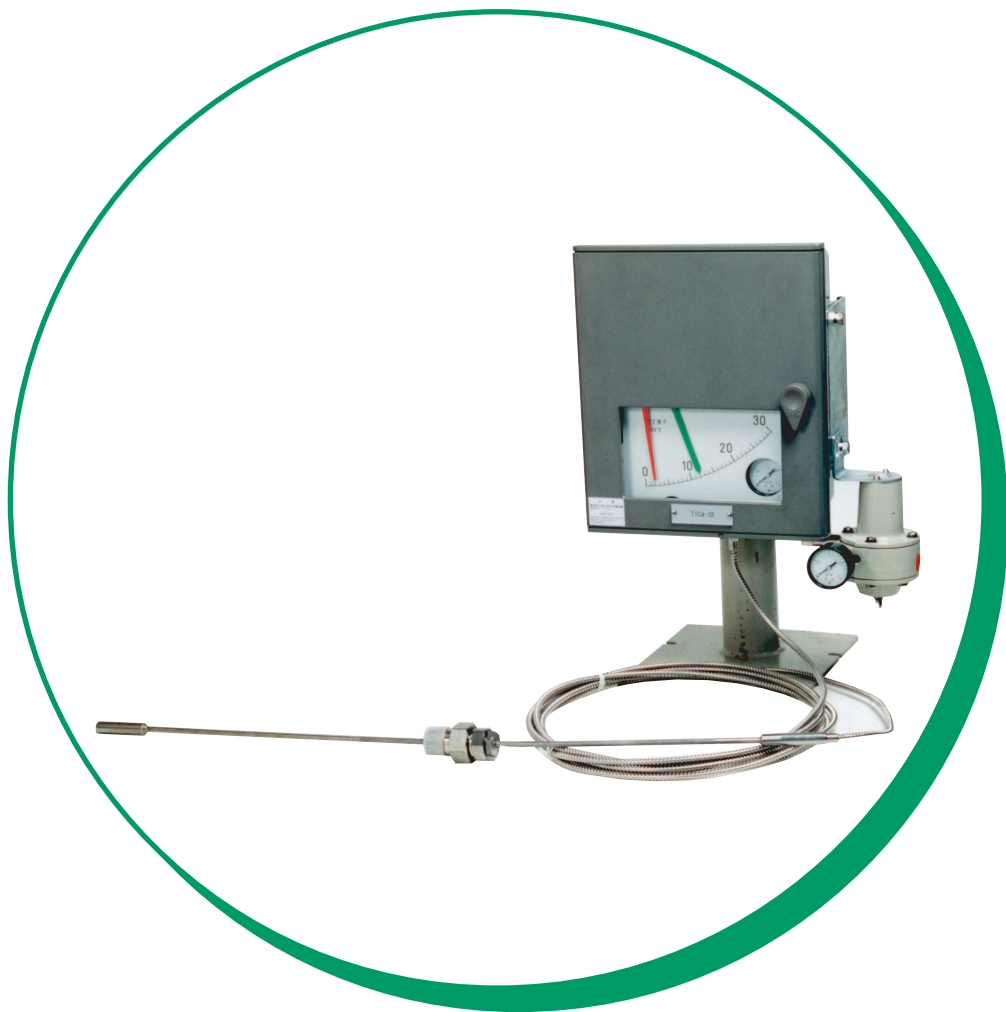


Field Mount type Pressure (Temperature) Indicating Controller

Model KFPA/KFTA

User's Manual



Azbil Corporation

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Safety

Safety instructions

Preface

Correct installation and periodic maintenance are essential to the safe use of your differential pressure transmitters.

Read the safety instructions provided in this manual carefully and understand them fully before starting installation, operation, and maintenance work.

Inspection

On delivery, make sure that the specifications are correct and check for any damage that may have occurred during transportation. This equipment was tested under a strict quality control program before shipment. If you find any problem in the quality specifications, please contact an Azbil Corp. representative immediately, providing the model name and serial number.

The name plate is mounted on the top of the enclosure.

Precautions

The following symbols are used in this manual to ensure user safety.

WARNING

Denotes a potentially hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION

Denotes a potentially hazardous situation which, if not avoided, could result in operator minor injury or damage to device.

Safety messages

Installation

WARNING

- When installing the transmitter, ensure that the transmitters gaskets do not protrude from the process connection parts, such as flanges contacting the process pipes.
- Never use the transmitter in applications that are outside the rated pressure or temperature range. Always observe connection specifications. Damage to the transmitter, or leakage, may endanger plant, equipment or human safety.

CAUTION

- After installation, do not step on the transmitter as this may damage it, or cause physical injury.
- The glass indicator may break if hit with a tool or other object, and cause physical injury.
- This transmitter is heavy. During installation, please ensure that your footing is safe, and always wear safety shoes.

Maintenance

WARNING

- Before disconnecting the transmitter from the process for any reason including maintenance, wait for safe levels in residual pressure, fluid or gas. Extreme caution should be taken to avoid fluid eruption.
- Prevent burns. Check venting or draining direction, and keep plant personnel out of the way of vented gas or drained fluid.

CAUTION

Strict product controls were exercised during the manufacture of this transmitter. Never modify the transmitter in any way. In-plant modifications may result in damage to the transmitter or to property and human safety.

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1: Description

1-1: General

The field mount type indicating controllers measure and indicate various types of process variable (PV) and, at the same time, they compare the process variable with the set point (SP) and generate a pneumatic control output signal of 20 to 100 kPa {0.2 to 1.0 kgf/cm²}.

Setting of the set point value can be done either in the local mode with the manual setting knob (this knob is adjustable either inside the casing or from outside of the casing) or in the remote mode with an external pneumatic signal. These instruments also can transmit a pneumatic signal of 20 to 100 kPa {0.2 to 1.0 kgf/cm²} which is corresponding to the measured process value.

The only difference between pressure measuring instruments and temperature measuring instruments is their sensor element.

1-2: Structure

The KF instrument is comprised of three major units, namely, casing, circuit board on which various units are mounted, and pressure sensor (or temperature sensor).

1-3: Specifications

1-3-1: Common specifications

Indication	Accuracy of indication	$\pm 1\%$ F.S.
	Indicating angle	44°
	Scale length	150 mm
Setting	Manual setting	Inside or outside of the case
	External air pressure setting	20 to 100 kPa {0.2 to 1.0 kgf/cm ² }
Control action	P + Manual reset, PI, PID PD + Manual reset, PID, PI + Batch switch, PID + Batch switch, P + External reset, PD + External reset, ON-OFF action, Differential gap operation; Direct or reverse action available for all actions.	
	Proportional band	5 to 500%
	Integral time	0.05 to 30 min.
	Derivative time	0.05 to 30 min.
	Differential gap	1 to 100%
	Manual reset	20 to 100 kPa {0.2 to 1.0 kgf/cm ² } air pressure setting
	Batch switch	Set pressure 60 to 110 kPa {0.6 to 1.1 kgf/cm ² }
	Air pressure specifications	Supply air pressure
	Controller output;	20 to 100 kPa {0.2 to 1.0 kgf/cm ² } (Load $\phi 4 \times 3$ m + 20 c.c.min.) 0 or supply air pressure (on-off, differential gap)
	Connection	Rc1/4 (PT1/4) or 1/4NPT, female
Air consumption	4 ℓ /min(N) (at 50% equilibrium)	
Output air pressure gauge	0 to 200 kPa {0 to 2 kgf/cm ² }, 40 mm	
Ambient temperature range	-30 to 80°C	
Ambient humidity range	10 to 90% RH	
Case, door	Water proof type	Equivalent to JIS F 8001, Class III splash proof, IEC IP54, NEMA3
	Case	Aluminium diecasting, dark beige, acryl baking
	Door	Glass fiber reinforced polyester resin, dark beige
Weight	Approx. 5.5 kg (for PI indicating controller, excluding the element)	

1-3-2: Specifications of pressure element

Measuring range	Bellow type	-101.3 to 0 kPa {-760 to 0 mmHg} to 0 to 200 kPa {0 to 2 kgf/cm ² }
	Spiral bourdon type	0 to 300 kPa {0 to 3 mmHg} to 0 to 35 MPa {0 to 350 kgf/cm ² }
	Bellows receiving air pressure type	20 to 100 kPa {0.2 to 1.0 kgf/cm ² }
Material	SUS316 Bellows receiving air pressure type is phosphorus bronze.	
Connection	Process	G1/4 (RF1/4) female
	Pneumatic signal	Rc1/4 (PT1/4) or NPT1/4 female

1-3-3: Specifications of temperature element

Measuring range	-50°C to +50°C min. ~ 0°C to +500°C max.	
Material sealed	Measuring range	Material sealed
	0 ~ 50	Kerosine
	0 ~ 100	
	0 ~ 150	
	0 ~ 200	Silicon
	0 ~ 300	
	0 ~ 400	
	0 ~ 500	N ₂ gas
	50 ~ 100	
	100 ~ 200	Silicon
	100 ~ 300	
	100 ~ 400	
	-50 ~ 50	Ethyl alcohol
	-50 ~ 100	Silicon
Material for wetted section	Heat sensitive section	SUS304
	Protecting tube	SUS316, SUS316L or SUS304 Refer to “3-4: Temperature element” on page 13 for details
	Material for lead and armored tube	SUS304

1-3-4: Specifications of accessories

Transmitter mechanism	Transmitting air pressure	20 to 100 kPa {0.2 to 1.0 kgf/cm ² } (load $\phi 4 \text{ mm} \times 3 \text{ mm} + 20 \text{ c.c.min.}$)
	Air consumption	4 $\ell/\text{min(N)}$
Manual operation unit:	Balance-bumpless type	
	Manual pressure setting range	10 to 130 kPa {0.1 to 1.3 kgf/cm ² }
	Air consumption	3 $\ell/\text{min(N)}$
Air set:	Pressure regulator valve with filter 40 mm, 0 to 200 kPa {0 to 2 kgf/cm ² } pressure gauge	
	Maximum primary pressure	970 kPa {10 kgf/cm ² }
	Air consumption	0.95 $\ell/\text{min(N)}$ (at output pressure 140 kPa {1.4 kgf/cm ² })
Protecting tube:	Use only for the temperature indicating controller	
	Flange type	JIS 10K, 20K, ANSI 150, 300
	Screw-in type	R3/4, 1 (PT3/4, 1)