

# Pressure Indicating Controller (Fixed range type)

## Model KFPA

### OVERVIEW

Model KFPA Pressures Indicating Controllers indicate and control a process variable by converting its pressure change into mechanical displacement of a bellows or a spiral pressure receiving element.

Indicating transmitter and indicating transmitting controllers also are available as well as indicating controllers. The controllers are available either in the local type to set the set-point value with the knob on the instrument or in the cascade type (remote type) to set the set-point value with a pneumatic signal.

### FEATURES

- A wide variety of measuring elements and control mechanisms are available to meet various applications.
- A pneumatic circuit board and a heat-resistant weather-proof sturdy hard case are used, thereby greatly improving the durability and reliability.
- The pneumatic circuit board system allows to readily add or eliminate control mechanisms and units, thereby enhancing the system modification and expansion flexibility.
- Interchangeable parts are used to the maximum practicable extent, thereby reducing the number of parts to be kept in stock.
- A balancing weight and a pulsation damping spiral (optional) are employed, thereby making the instruments highly resistant against mechanical vibration and process pulsation. (Type approvals awarded by Lloyd's Register of Shipping and Nippon Kaiji Kyokai.)



# SPECIFICATIONS

## Standard Specifications

Item	Specification
<b>Detector Section</b>	
Measuring range	SUS316 bellows : 0 to 50, 0 to 100, 0 to 150, 0 to 200 kPa {0 to 0.5, 0 to 1, 0 to 1.5, 0 to 2 kgf/cm <sup>2</sup> } gauge pressure SUS316 spiral : 0 to 300, 0 to 400, 0 to 500, 0 to 600, 0 to 1000 kPa {0 to 3, 0 to 4, 0 to 5, 0 to 6, 0 to 10 kgf/cm <sup>2</sup> } 0 to 1.5, 0 to 2, 0 to 2.5, 0 to 3.5, 0 to 5 MPa {0 to 15, 0 to 20, 0 to 25, 0 to 35, 0 to 50 kgf/cm <sup>2</sup> } 0 to 7, 0 to 10, 0 to 15, 0 to 25, 0 to 35 MPa {0 to 70, 0 to 100, 0 to 150, 0 to 250, 0 to 350 kgf/cm <sup>2</sup> } gauge pressure Phosphor bronze bellows : 20 to 100 kPa {0.2 to 1.0 kgf/cm <sup>2</sup> } pneumatic pressure signal SUS316 bellows : -101.3 to 0 kPa { -760 to 0 mmHg} negative pressure
Allowable over to range without recalibration	Span of 7 MPa {70 kgf/cm <sup>2</sup> } or less; Maximum pressure plus 50% of span Span of 10 MPa {100 kgf/cm <sup>2</sup> } or more; Maximum pressure plus 20% of span
Process connection	G1/4 internal thread
<b>Function</b>	
Accuracy	± 1% FS (± 1.5% FS for range of 0 to 15 MPa {0 to 150 kgf/cm <sup>2</sup> } or more.)
Repeatability	Within 0.3% FS (within 0.45% FS for range of 0 to 15 MPa {0 to 150 kgf/cm <sup>2</sup> } or more.)
Dead band	Within 0.2% FS (within 0.3% FS for range of 0 to 15 MPa {0 to 150 kgf/cm <sup>2</sup> } or more.)
<b>Indication</b>	
Angle	44 degrees
Scale length	150 mm
Pointer	Process variable : Red, Set to point value : Green
Output indicator (φ 40 mm)	Scale range : 0 to 200 kPa {0 to 2 kgf/cm <sup>2</sup> }, Indicator accuracy : ± 3% FS
<b>Set to point Section</b>	
Local Setting	Internal or external by setting knob
Remote setting	Pneumatic pressure setting of 20 to 100 kPa {0.2 to 1.0 kgf/cm <sup>2</sup> }
Setting range	0 to 100% FS
<b>Controller</b>	
Control action	P + Manual reset, PI, PID, PD +Manual reset, PI + Batch, On to Off, Differential gap, P + External reset, PD + External reset
Proportional band (P)	5 to 500% (direct or reverse action)
Integral (I)	0.05 to 30 min.
Derivative (D)	0.05 to 30 min.
Differential gap	1 to 100% FS, adjustable
Batch setting pressure	60 to 110 kPa {0.6 to 1.1 kgf/cm <sup>2</sup> }, adjustable
External reset pressure	20 to 100 kPa {0.2 to 1.0 kgf/cm <sup>2</sup> }
Manual reset	0 to 100% FS, adjustable (by pneumatic pressure setting.)
<b>General Specifications</b>	
Output	20 to 100 kPa {0.2 to 1.0 kgf/cm <sup>2</sup> }, 0 or Corresponding to supply air pressure (on to off, differential gap)
Minimum load	I.D. 4 mm × 3 m + 20 cm <sup>3</sup>
Supply air pressure	140 ± 14 kPa {1.4 ± 0.14 kgf/cm <sup>2</sup> }
Air consumption (50% output balanced)	Indicating transmitter (A0) : 4 L/min [normal] Indicating controller (A1, A3) : 4 L/min [normal] Indicating transmitting controller (A2, A4) : 8 L/min [normal] Manual controller (M) : +3 L/min [normal]
Maximum air deliver flowrate	Transmitter output : 40 L/min [normal] Controller Output : 40 L/min [normal] Manual control output : 30 L/min [normal]
Air connection	Rc 1/4 or 1/4 NPT internal thread
Ambient temperature	-30 to +80 °C
Relative humidity	10 to 90% RH
Case, Door	Enclosure : Rain to tight and dust to tight, NEMA 3, IEC IP 54 Vibration resistant .....Lloyd regulation or equivalent Materials : Case .....Aluminum die to cast Door.....Polyester with fiberglass Door-glass .....Reinforced glass (3 mm thick) Case finish : Acryl baking finish (for corrosion to resistant and silver finish, refer to the optional specification.) Color of finish : Case Light beige (munsell 4Y7.2 / 1.3) Door Light gray (munsell N8)
Mounting	Panel, wall or 2 to inch pipe mounting (mounting bolt, nut material : SUS304)
Weight	Approx. 7.8 kg (with Options)

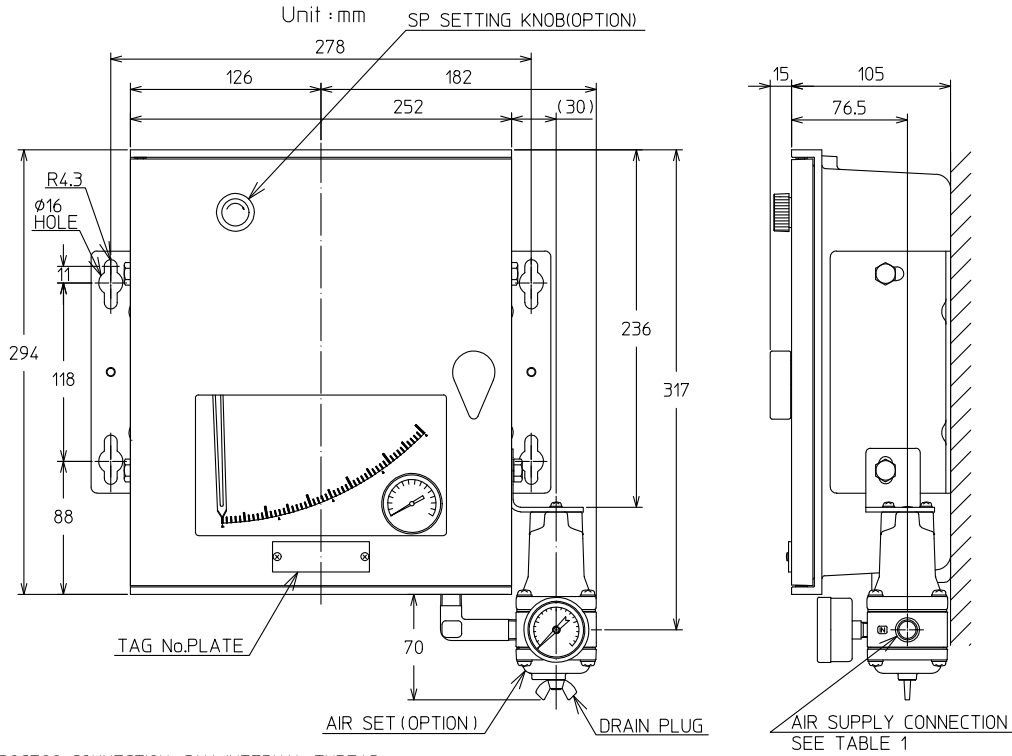


**MODEL SELECTION**

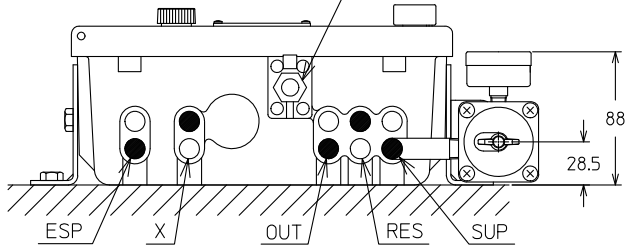
Basic Model No.			Selections					Options	Description
Type	Function	Control action	Type of detector	Measuring range	Air connection	Output Pressure unit	Mounting method		
KFP								Pressure indicating controller	
	0							Indicating transmitter	
	1							Indicating controller (local type)	
	2							Indicating transmitter controller (local type)	
	3							Indicating controller (cascade type)	
	4							Indicating transmitter controller (cascade type)	
		0							No selection
		1							P + Manual reset
		2							PI
		3							PID
		4							PD + Manual reset
		5							PI + Batch
		6							On-Off
		7							Differential gap
		8							P + External reset
		9							PD + External reset
									Spiral type
									Bellows type
									Pneumatic signal receiving type
					003				Spiral type 0 to 300 kPa {3 kgf/cm <sup>2</sup> }
					004				" 0 to 400 kPa {4 kgf/cm <sup>2</sup> }
					005				" 0 to 500 kPa {5 kgf/cm <sup>2</sup> }
					006				" 0 to 600 kPa {6 kgf/cm <sup>2</sup> }
					010				" 0 to 1000 kPa {10 kgf/cm <sup>2</sup> }
					015				" 0 to 1500 kPa {15 kgf/cm <sup>2</sup> }
					020				" 0 to 2000 kPa {20 kgf/cm <sup>2</sup> }
					025				" 0 to 2500 kPa {25 kgf/cm <sup>2</sup> }
					035				" 0 to 3500 kPa {35 kgf/cm <sup>2</sup> }
					050				" 0 to 5000 kPa {50 kgf/cm <sup>2</sup> }
					070				" 0 to 7000 kPa {70 kgf/cm <sup>2</sup> }
					100				" 0 to 10 MPa {100 kgf/cm <sup>2</sup> }
					150				" 0 to 15 MPa {150 kgf/cm <sup>2</sup> }
					250				" 0 to 25 MPa {250 kgf/cm <sup>2</sup> }
					350				" 0 to 35 MPa {350 kgf/cm <sup>2</sup> }
					760				Bellows type 0 to -101.3 kPa{-760 mmHg} (Negative pressure)
				805				" 0 to 50 kPa {0.5 kgf/cm <sup>2</sup> }	
				810				" 0 to 100 kPa {1.0 kgf/cm <sup>2</sup> }	
				815				" 0 to 150 kPa {1.5 kgf/cm <sup>2</sup> }	
				820				" 0 to 200 kPa {2 kgf/cm <sup>2</sup> }	
				821				Pneumatic signal 20 to 100 kPa {0.2 to 1.0 kgf/cm <sup>2</sup> } receiving type	
					A			Rc 1/4 internal thread (When this option chosen, instruction plate becomes Japanese version)	
					B			1/4 NPT internal thread (When this option chosen, instruction plate becomes English version)	
						1		0.2 to 1.0 kgf/cm <sup>2</sup>	
						2		3 to 15 PSI	
						3		0.2 to 1.0 bar	
						4		20 to 100 kPa	
						8		19.6 to 98.1 kPa (equality to 0.2 to 1.0 kgf/cm <sup>2</sup> )	
							P	Panel mounting (pressure regulator with filter cannot be installed)	
							S	Wall mounting	
							T	2-inch pipe mounting	
							-X	No option	
							-K	With external SP setting knob (applicable to type 1 or 2 controller.)	
							-M	Built-in manual controller (with auto/manual switch)	
							-R	Pressure Regulator with air filter (RA1B)	

**DIMENSIONS**

**WALL MOUNTING**



PROCESS CONNECTION, G1/4 INTERNAL THREAD  
 A BLIND PLATE WILL BE PROVIDED IN CASE OF RECEIVING AIR-PRESSURE SIGNAL



**Air Connection (See note 1.2)**  
 ○ Rc1/4  
 ● 1/4NPT (Internal thread)

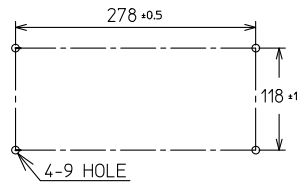
**Legend**  
 ESP : External set-point Signal  
 X : Pneumatic Pressure Receiving or Transmitting Signal  
 OUT : Controlled output Signal  
 RES : External Reset Signal  
 SUP : Supply Air Pressure

**Table 1**

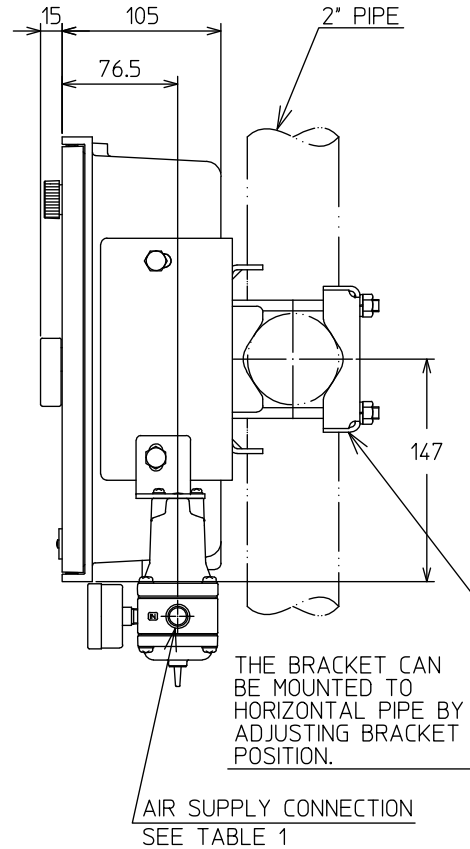
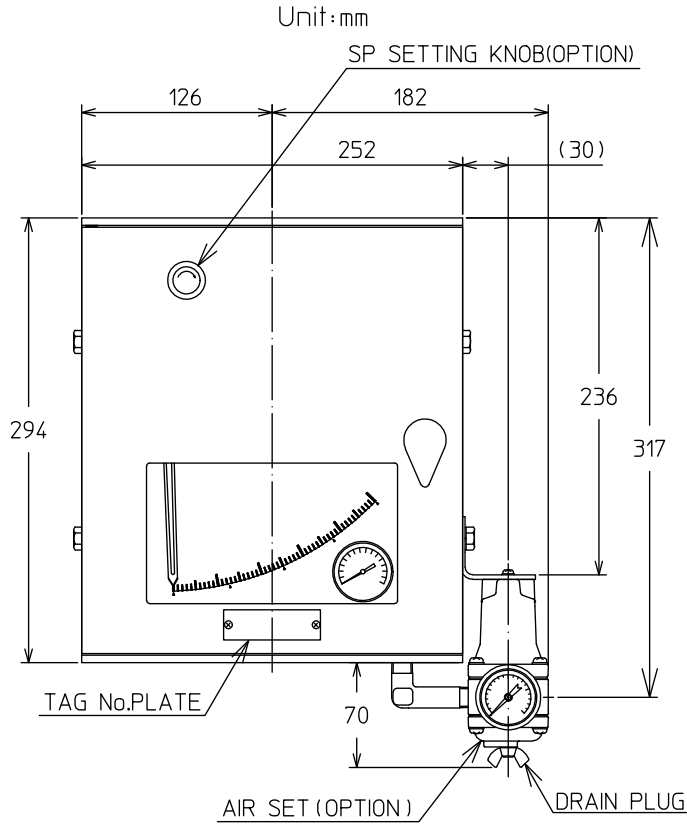
Model	Air piping Connection
A	Rc1/4
B	R1/4NPT Internal thread

- Note**
1. The Holes not to be used for Air Connection are plugged.
  2. For Manual Reset Provision SUP and RES have been Preconnected.
  3. If Two Or More Instruments Are To Be Mounted On A Surface. Keep Them Apart At Least 80mm (137mm For Instruments With Air Set) Horizontally And At Least 126mm Vertically.

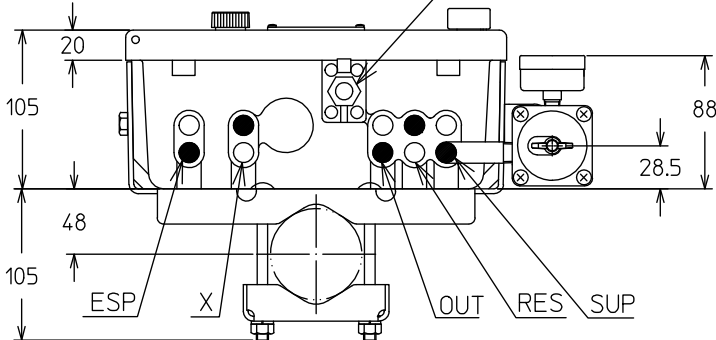
SURFACE MOUNTING DIMENSIONS



**PIPE MOUNTING**



PROCESS CONNECTION. G1/4 INTERNAL THREAD  
A BLIND PLATE WILL BE PROVIDED IN CASE OF RECEIVING AIR-PRESSURE SIGNAL



Air Connection (See note 1,2)	
○	Rc1/4
●	1/4NPT (Internal thread)
<b>Legend</b>	
ESP	: External set-point Signal
X	: Pneumatic Pressure Receiving or Transmitting Signal
OUT	: Controlled output Signal
RES	: External Reset Signal
SUP	: Supply Air Pressure

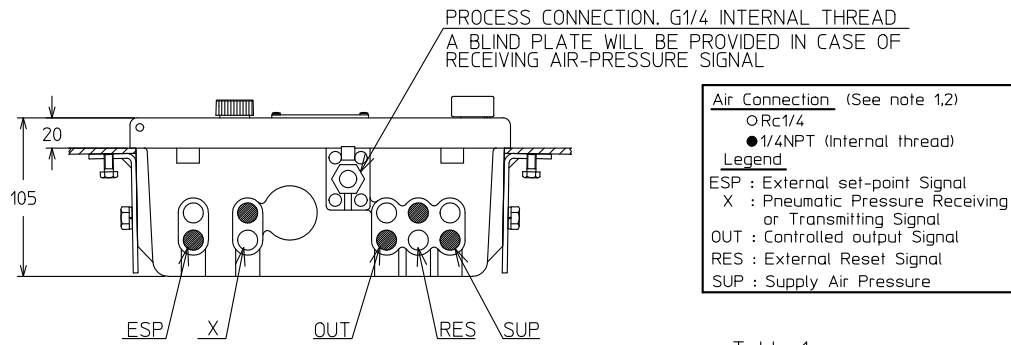
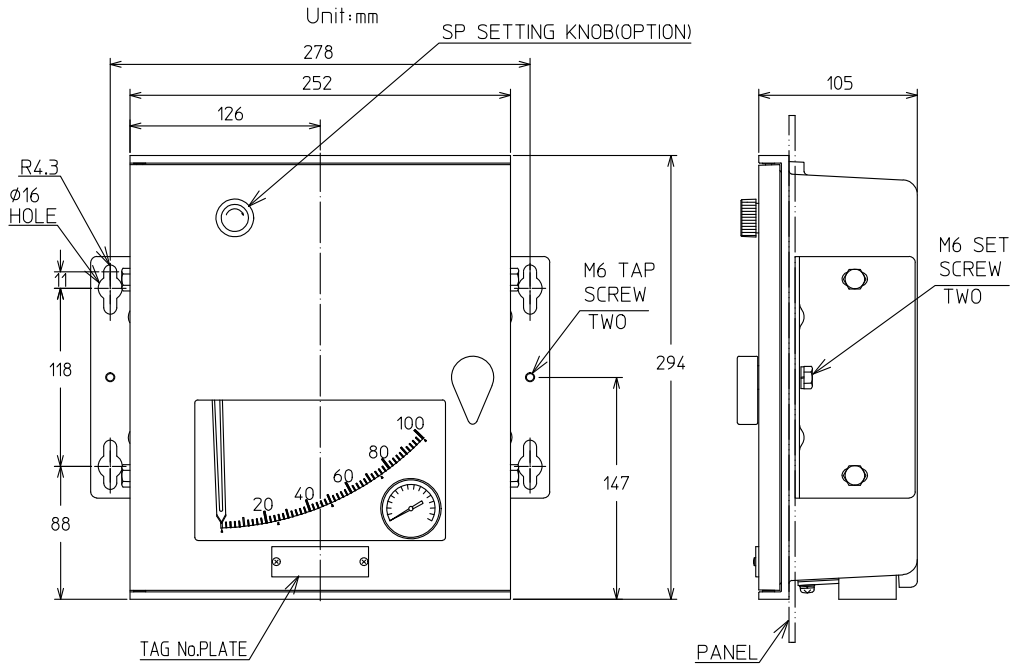
Table 1

Model	Air piping Connection
A	Rc1/4
B	R1/4NPT Internal thread

**Note**

1. The Holes not to be used for Air Connection are plugged.
2. For Manual Reset Provision SUP and RES have been Preconnected.

**PANEL MOUNTING**

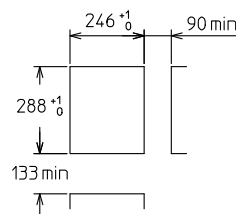


Note 1. The Holes not to be used for Air Connection are plugged.  
 2. For Manual Reset Provision SUP and RES have been Preconnected.

Table 1

Model	Air piping Connection
A	Rc1/4
B	1/4NPT Internal thread

PANEL CUTOUT DIMENSIONS



**Ordering Information**

When ordering, please specify;

- 1) Model No.
- 2) Pressure range
- 3) Options

Please read "Terms and Conditions" from the following URL  
before ordering and use.

<https://www.azbil.com/products/factory/order.html>

*Specifications are subject to change without notice.*

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