

# KF Series Pressure Indicating Controller Model KFK

## OVERVIEW

The KF Series instruments are field installed type of pneumatic indicating controllers which are used to measure and control the various types of process variables such as temperatures, pressures, flows and liquid levels.

Model KFK Pressure Indicating Controllers (adjustable range type) indicate and control a process variable by converting its pressure into mechanical displacement of a bellows or a spiral pressure receiving element.

Indicating transmitters 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 weatherproof sturdy 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 modifications and expansion flexibility
- Interchangeable parts are used to the maximum practicable extent, thereby reducing the number of parts to be kept in stock.
- The detecting section is identical with that of the pressure transmitter of PREX3000 Pneumatic Transmitter Series.

**SPECIFICATIONS****Standard Specifications**

Item		Specifications					
Detector							
Model No.	Pressure element	Measuring range	Process connection	Pressure limit	Allowable overload	Suppression (max.)	Elevation (max.)
11	Bourdon tube	0-5 to 0-70 MPa {0-50 to 0-700 kgf/cm <sup>2</sup> }	Welding nipple connection (13.6 x 50)	-0.1 to +70 MPa {-1 to +700 kgf/cm <sup>2</sup> }	-0.1, 75 MPa {-1, 750 kgf/cm <sup>2</sup> }	-100 kPa {-1 kgf/cm <sup>2</sup> }	65 MPa {650 kgf/cm <sup>2</sup> }
12		0-1.25 to 0-25 MPa {0-12.5 to 0-250 kgf/cm <sup>2</sup> }		-0.1 to +30 MPa {-1 to +300 kgf/cm <sup>2</sup> }	-0.1, 32 MPa {-1, 320 kgf/cm <sup>2</sup> }		28.75 MPa {287.5 kgf/cm <sup>2</sup> }
13		0-0.35 to 0-7 MPa {0-3.5 to 0-70 kgf/cm <sup>2</sup> }		-0.1 to +10.5 MPa {-1 to +105 kgf/cm <sup>2</sup> }	-0.1, 14 MPa {-1, 140 kgf/cm <sup>2</sup> }		10.15 MPa {101.5 kgf/cm <sup>2</sup> }
14		0-0.175 to 0-3.5 MPa {0-1.75 to 0-35 kgf/cm <sup>2</sup> }		-0.1 to +5.25 MPa {-1 to +52.5 kgf/cm <sup>2</sup> }	-0.1, 7 MPa {-1, 70 kgf/cm <sup>2</sup> }		5.075 MPa {50.75 kgf/cm <sup>2</sup> }
15	Bellows	0-35 to 0-686 MPa {0-0.35 to 0-7 kgf/cm <sup>2</sup> }	Rc½ or Rc¼ internal Thread ½NPT or ¼NPT internal thread	-0.1 to +1.05 MPa {-1 to +10.5 kgf/cm <sup>2</sup> }	-0.1, 1.4 MPa {-1, 14 kgf/cm <sup>2</sup> }	-66.6 kPa {-500 mm Hg}	1.015 MPa {10.15 kgf/cm <sup>2</sup> }
16		0-10 to 0-196 kPa {0-0.1 to 0-2 kgf/cm <sup>2</sup> }		-100 to +300 kPa {-1 to +3 kgf/cm <sup>2</sup> }	-100, 400 kPa {-1, 4 kgf/cm <sup>2</sup> }		290 kPa {2.9 kgf/cm <sup>2</sup> }
17		0-3.4 to 0-66.6 kPa {0-25 to 0-500 mmHg}		-66.6 to +66.6 kPa {-500 to +500 mmHg}	-66.6, 400 kPa {-500 mmHg, 4 kgf/cm <sup>2</sup> }		63.2 kPa {475 mmHg}
18		0-0.7 to 0-13.3 kPa {0-5 to 0-100 mmHg}		-13.3 to +13.3 kPa {-100 to +100 mmHg}	-13.3, 400 kPa {-100 mmHg, 4 kgf/cm <sup>2</sup> }		12.6 kPa {95 mmHg}
25	Bellows (absolute pressure)	0-35 to 0-686 kPa abs. {0-0.35 to 0-7 kgf/cm <sup>2</sup> abs.}	Rc½ or Rc¼ internal Thread ½NPT or ¼NPT internal thread	0 to 686 kPa abs. {0 to 7 kgf/cm <sup>2</sup> abs.}	-1.4 MPa abs. {14 kgf/cm <sup>2</sup> abs.}	—	653 kPa abs. {6.65 kgf/cm <sup>2</sup> abs.}
26		0-10 to 0-196 kPa abs. {0-0.1 to 0-2 kgf/cm <sup>2</sup> abs.}		0 to 196 kPa abs. {0 to 2 kgf/cm <sup>2</sup> abs.}	0.6 MPa abs. {6 kgf/cm <sup>2</sup> abs.}		186 kPa abs. {1.9 kgf/cm <sup>2</sup> abs.}
27		0-3.4 to 0-66.6 kPa abs. {0-25 to 0-500 mmHg}		0 to 66.6 kPa abs. {0 to 500 mmHg} abs.	0.4 MPa abs. {4 kgf/cm <sup>2</sup> abs.}		63.2 kPa abs. {475 mmHg} abs.
28		0-0.7 to 0-13.3 kPa abs. {0-5 to 0-100 mmHg}		0 to 13.3 kPa abs. {0 to 100 mmHg} abs.	0.4 MPa abs. {4 kgf/cm <sup>2</sup> abs.}		12.6 kPa abs. {95 mmHg} abs.
71	Remote seal diaphragm	0-5 to 0-70 MPa {0-50 to 0-700 kgf/cm <sup>2</sup> }	G1½ external thread (34 button diaphragm)	-0.05 to +70 MPa {-0.5 to +700 kgf/cm <sup>2</sup> }	-0.05, 70 MPa {-0.5, 750 kgf/cm <sup>2</sup> }	-0.05 MPa {-0.5 kgf/cm <sup>2</sup> }	65 MPa {650 kgf/cm <sup>2</sup> }
72		0-1.25 to 0-25 MPa {0-12.5 to 0-250 kgf/cm <sup>2</sup> }	G1½ external thread (34 button diaphragm) or 2 in. ANSI wafer	-0.05 to +30 MPa {-0.5 to +300 kgf/cm <sup>2</sup> }	-0.05, 32 MPa {-0.5, 320 kgf/cm <sup>2</sup> }		28.75 MPa {287.5 kgf/cm <sup>2</sup> }
73		0-0.35 to 0-7 MPa {0-3.5 to 0-70 kgf/cm <sup>2</sup> }	2 in. -ANSI wafer	-0.05 to +10.5 MPa {-0.5 to +105 kgf/cm <sup>2</sup> }	-0.05, 14 MPa {-0.5, 140 kgf/cm <sup>2</sup> }		10.15 MPa {101.5 kgf/cm <sup>2</sup> }
74		0-0.175 to 0-3.5 MPa {0-1.75 to 0-35 kgf/cm <sup>2</sup> }	2 in. -ANSI wafer	-0.05 to +5.25 MPa {-0.5 to +52.2 kgf/cm <sup>2</sup> }	-0.05, 7 MPa {-0.5, 70 kgf/cm <sup>2</sup> }		5.075 MPa {50.75 kgf/cm <sup>2</sup> }
			80 mm-JIS30K flush diaphragm 100 mm-JIS30K extended diaphragm	-0.05 to +5.1 MPa {-0.5 to +51 kgf/cm <sup>2</sup> }	-0.05, 5.1 MPa {-0.5, 51 kgf/cm <sup>2</sup> }		4.925 MPa {49.25 kgf/cm <sup>2</sup> }
			3 in. -ANSI300 flush diaphragm 4 in. -ANSI300 extended diaphragm	-0.05 to +3.82 MPa {-0.5 to +37 kgf/cm <sup>2</sup> }	-0.05, 3.82 MPa {-0.5, 37 kgf/cm <sup>2</sup> }		3.525 MPa {35.25 kgf/cm <sup>2</sup> }
75		0-35 to 0-686 kPa {0-0.35 to 0-7 kgf/cm <sup>2</sup> }	80 mm-JIS10K flush diaphragm 100 mm-JIS10K extended diaphragm	-0.05 to +1.05 MPa {-0.5 to +10.5 kgf/cm <sup>2</sup> }	-0.05, 1.4 MPa {-0.5, 14 kgf/cm <sup>2</sup> }		1.015 MPa {10.15 kgf/cm <sup>2</sup> }
			3 in. -ANSI150 flush diaphragm 4 in. -ANSI150 extended diaphragm	-0.05 to +0.3 MPa {-0.5 to +3 kgf/cm <sup>2</sup> }	-0.05, 0.4 MPa {-0.5, 4 kgf/cm <sup>2</sup> }		0.29 MPa {2.9 kgf/cm <sup>2</sup> }
76	0-10 to 0-196 kPa {0-0.1 to 0-2 kgf/cm <sup>2</sup> }	80 mm-JIS10K flush diaphragm 100 mm-JIS10K extended diaphragm 3 in. -ANSI150 flush diaphragm 4 in. -ANSI150 extended diaphragm	-0.05 to +0.3 MPa {-0.5 to +3 kgf/cm <sup>2</sup> }	-0.05, 0.4 MPa {-0.5, 4 kgf/cm <sup>2</sup> }	0.29 MPa {2.9 kgf/cm <sup>2</sup> }		

Note 1) Elevation + Span ≤ Max. span.

2) Refer to the annexed table about Max. working pressure on Remote seal diaphragm.

**Max working pressure**

Note 1 : Max working pressure depends on flange rating, flange materials and operating temperature. Please refer to the following data.

Operating range of temperature depends on specification of transmitters.

Note 2 : In case of remote sealed type (KKP75, KFKB□□-75), Max working pressure depends on the smaller value of either 1.05 MPa or following data.

	JIS	JPI/ANSI
<b>Carbon Steel</b>		
<b>SUS304</b>		
<b>SUS316</b>		
<b>SUS316L</b>		



## Optional Specifications

Item	Specifications
(1) External SP setting knob (for local setting)	A setting knob is mounted on the door. SP can be adjusted from outside.
(2) Built-in manual controller (with auto/manual transfer switch)	Consists of manual control regulator, two position transfer switch and balance check button.
(3) Elevation, Suppression	Elevation; The lower limit of input range is above zero. Suppression; The lower limit of input range is below zero.
(4) Air set (not applicable to panel mounting type)	Pressure regulator with filter plus 40 mm pressure gauge. (supply pressure; 200 to 970 kPa {2 to 9.7 kgf/cm <sup>2</sup> }, output; 140 kPa {1.4 kgf/cm <sup>2</sup> }, pressure gauge; 0 to 200 kPa {0 to 2 kgf/cm <sup>2</sup> })

## Optional Semi-standard and Special Specifications

Item	Applicable Models	Specifications
(1) Steam block (Y29)	Except remote seal diaphragm type	Max. operating pressure; 5 MPa {50 kgf/cm <sup>2</sup> } Max. operating temperature; 250 °C (below 120 °C at meter body) Steam piping connection; PT <sup>1</sup> / <sub>4</sub> or <sup>1</sup> / <sub>4</sub> NPT internal thread Material; Carbon steel (SF45A)
(2) High temperature use (Y62)	Remote seal diaphragm type	Operating temperature; Fluid -10 to +200 °C Ambient -10 to +80 °C Sealing liquid; Special silicon oil
(3) Stainless steel bolts (Y66)	Model; KFKB□□-11 to16	SUS304 stainless steel is used for meter body fixing bolts.
(4) For oil-free (Y67)	Except remote seal diaphragm type	Liquid-contacting sections are degreased.
(5) Corrosion-resistant and silver finish (Y138)	All the KFK models	Corrosion-resistant finish with baked acryl (Y138A): Resistant against corrosive gases.
		Corrosion-proof finish with baked epoxy resin (Y138B): Resistant against corrosive liquids.
		Regular silver finish with baked acryl (Y138C): To suppress temperature rise caused by direct sunlight or other cause.
		Corrosion-resistant silver finish with baked acryl (Y138D): To suppress temperature rise caused as above and to be resistance against corrosive gases.
		(note: silver finish is not resistant against alkaline gases.)
(6) For oxygen measurement (Y182)	Remote seal diaphragm type (when measuring element material is SUS316 or SUS316L)	Liquid-fill; Fluorine oil Operating temperature (both fluid and ambient); -10 to +60 °C Wet-parts treatment; Treated for degreasing
(7) For chlorine gas measurement (Y183)	Model; KFKB□□-74~76 (when measuring element material is tantalum.)	Liquid-fill; Fluorine oil Operating temperature (both fluid and ambient); -10 to +80 °C Wet-parts treatment; Treated for degreasing.
(8) Special order items (the items mentioned in the right are available as special order items.)	All the KFK models	1) Door lock 2) Stainless steel tag plate 3) AUTO/MAN switch viewing window 4) Pressure gauge (40 mm) for transmitting signal.

**MODEL SELECTION**

Ex.: KFKB12-7112050210A1T-M, K, 6, 7  
KFKB12-1122A1T-M, K, 6, 7

Basic model no.				Selectable specifications								Options
Type	Func-tion	Control action	Type of detector	Cover, flange or mounting screw materials	Element materials	Flange or mounting screw rating	Capillary tube length	Length of extended parts of flange	Air connection	Output pressure unit	Mounting method	
KFK	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	

I	B0	Indicating transmitter	
	B1	Indicating controller (local type)	
	B2	Indicating transmitting controller (local type)	
	B3	Indicating controller (cascade type)	
	B4	Indicating transmitting controller (cascade type)	

II	0	No selection	5	PI + Batch
	1	P + Manual reset	6	On-Off
	2	PI	7	Differential gap
	3	PID	8	P + External reset
	4	PD + Manual reset	9	PD + External reset

III	-11	Bourdon tube type	0-5 {0-50}	to 0-70 MPa to 0-700 kgf/cm <sup>2</sup>
	-12	Bourdon tube type	0-1.25 {0-12.5}	to 0-25 MPa to 0-250 kgf/cm <sup>2</sup>
	-13	Bourdon tube type	0-0.35 {0-3.5}	to 0-7 MPa to 0-70 kgf/cm <sup>2</sup>
	-14	Bourdon tube type	0-0.175 {0-1.75}	to 0-3.5 MPa to 0-35 kgf/cm <sup>2</sup>
	-15	Bellows type	0-35 {0-0.35}	to 0-686 MPa to 0-7 kgf/cm <sup>2</sup>
	-16	Bellows type	0-10 {0-0.1}	to 0-196 kPa to 0-2 kgf/cm <sup>2</sup>
	-17	Bellows type	0-3.4 {0-25}	to 0-66.6 kPa to 0-500 mm Hg
	-18	Bellows type	0-0.7 {0-5}	to 0-13.3 kPa to 0-100 mm Hg
	-25	Bellows type (abs. press.)	0-35 {0-0.35}	to 0-686 kPa abs. to 0-7 kgf/cm <sup>2</sup>
	-26	Bellows type (abs. press.)	0-10 {0-0.1}	to 0-196 kPa abs. to 0-2 kgf/cm <sup>2</sup>
	-27	Bellows type (abs. press.)	0-3.4 {0-25}	to 0-66.6 kPa abs. to 0-500 mm Hg
	-28	Bellows type (abs. press.)	0-0.7 {0-5}	to 0-13.3 kPa abs. to 0-100 mm Hg} abs.
	-71	Remote seal diaphragm type	0-5 {0-50}	to 0-70 MPa to 0-700 kgf/cm <sup>2</sup>
	-72	Remote seal diaphragm type	0-1.25 {0-12.5}	to 0-25 MPa to 0-250 kgf/cm <sup>2</sup>
	-73	Remote seal diaphragm type	0-0.35 {0-3.5}	to 0-7 MPa to 0-70 kgf/cm <sup>2</sup>
	-74	Remote seal diaphragm type	0-0.175 {0-1.75}	to 0-3.5 MPa to 0-35 kgf/cm <sup>2</sup>
	-75	Remote seal diaphragm type	0-35 {0-0.35}	to 0-686 kPa to 0-7 kgf/cm <sup>2</sup>
	-76	Remote seal diaphragm type	0-10 {0-0.1}	to 0-196 kPa to 0-2 kgf/cm <sup>2</sup>

IV	1	Carbon steel (SF45A) (applicable to type 17/18/2□/7□ detector excluding wafer type and diaphragm type)	
	2	SUS316 (except flange type and button diaphragm type)	
	7	SUS304 (applicable to type 7□ detector except wafer)	
	8	SUS316L (applicable to type 7□ detector except button diaphragm and flange)	

V	2	SUS316 (seal diaphragm; SUS316L)	
	3	Monel	(applicable to type 11-28 or 7□ detector except
	4	Tantalum	extended flange, wafer and button diaphragm type)
	8	SUS316L (applicable to type 7□ detector)	

VI	Blank (applicable to type 1□ or 2□ detector)	
	01	Flush diaphragm type 80mm-JIS 10K (RF) equiv. flange
	02	Flush diaphragm type 80mm-JIS 30K (RF) equiv. flange
	03	Flush diaphragm type 3 in.-ANSI 150 (RF) equiv. flange
	04	Flush diaphragm type 3 in.-ANSI 300 (RF) equiv. flange
	05	Extended diaphragm type 100 mm-JIS 10K (RF) equiv. flange
	06	Extended diaphragm type 100 mm-JIS 30K (RF) equiv. flange
	07	Extended diaphragm type 4 in.-ANSI 150 (RF) equiv. flange
	08	Extended diaphragm type 4 in.-ANSI 300 (RF) equiv. flange
	09	2 in.-ANSI 1500 (RF) equiv. wafer
	11	PF 1½ external thread (button diaphragm type)

(applicable to type 7□ detector)

VII	Blank (applicable to type 1□ or 2□ detector)	
	02	2m (applicable to type 7□ detector)
	03	3m (applicable to type 7□ detector)
	05	5m (applicable to type 7□ detector)

VIII	Blank (applicable to type 1□ or 2□ detector)	
	00	Applicable to flush diaphragm, wafer or button diaphragm type.
	10	Length; 100 mm (applicable to extended diaphragm)
	15	Length; 150 mm (applicable to extended diaphragm)

IX	A	Rc¼ internal thread (instruction plate: Japanese)
	B	¼NPT internal thread (instruction plate: English)

X	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> )

XI	P	Panel mounting (Pressure regulator with filter cannot be installed)
	T	2-inch pipe mounting

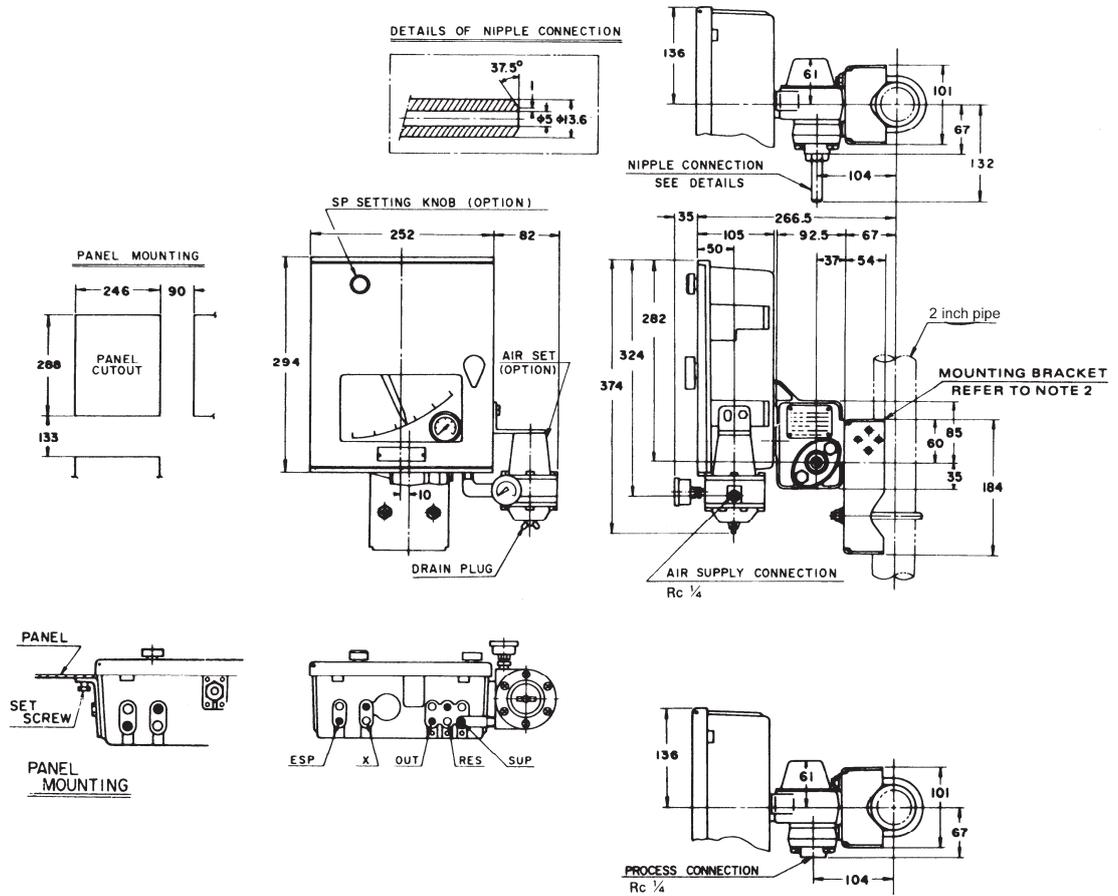
XII	-X	No option
	-M	Built-in manual controller (with auto/manual switch) (applicable to type B1, B2, B3 or B4 controller.)
	-K	With external SP setting knob (applicable to type B1 or B2 controller)
	-5	Elevation or high elevation
	-6	Suppression
	-7	With Pressure regulator with filter

[Note] When specifying semi-standard option (Y□) not listed in model no table, please write as: KFKB12-1122A1T-M,K,6,7 (Y67, Y 138) (Please consult with factory in case of a multiple of "Y" spec. are required.)

# DIMENSIONS

(Unit:mm)

## TYPE-11 DETECTOR



## TYPE-12, 13, 14 DETECTORS

### AIR CONNECTIONS (Refer to note 1, 3)

- : Rc 1/4 internal
- : 1/4 NPT internal

### REGEN

ESP : EXTENAL SP SIGNAL  
(FOR CASCADE TYPE ONLY)  
 × : TRANSMITTING SIGNAL  
(FOR TRANSMITTER ONLY)  
 OUT : CONTROLLED SIGNAL  
 RES : EXTERNAL RESET SIGNAL  
(FOR EXTERNAL RESET TYPE ONLY)  
 SUP : SUPPLY AIR PRESSURE

### Notes:

- 1) The holes not to be used for connection are plugged.
- 2) These holes in the bracket enable the controller to be mounted in various position.
- 3) For manual reset provision, "SUP" and "RES" have been preconnected.
- 4) This dimensions are of bourdon type detector. (detector model nos 11 to 14).  
Caution must be taken to dimensions which depend on the shape of elements.  
(refer to the reference specification sheets at the rear of this sheet.)

## Ordering Information

When ordering please specify;

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

Please, read 'Terms and Conditions' from following URL before the order and use.

<http://www.azbil.com/products/bi/order.html>

*Specifications are subject to change without notice.*

**azbil**

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