



# KF SERIES PRESSURE INDICATING CONTROLLER

## MODEL: KFK (ADJUSTABLE RANGE TYPE)

### General

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 pressures, temperatures, 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 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.
- ◆ The detecting section is identical with that of the pressure transmitter of PREX3000 Pneumatic Transmitter Series.

### Standard Specifications

Item		Specifications						
Model No.	Pressure element	Measuring range	Process connection	Pressure limit	Allowable overload	Suppression (max.)	Elevation(max.)	
Detector	Bourdon tube	0-50~0-700kgf/cm <sup>2</sup>	Welding nipple connection (φ13.6×50)	-1~+700kgf/cm <sup>2</sup>	-1~750kgf/cm <sup>2</sup>	-1kgf/cm <sup>2</sup>	650kgf/cm <sup>2</sup>	
		0-12.5~0-250kgf/cm <sup>2</sup>		-1~+300kgf/cm <sup>2</sup>	-1~320kgf/cm <sup>2</sup>		287.5kgf/cm <sup>2</sup>	
		0-3.5~0-70kgf/cm <sup>2</sup>		-1~+105kgf/cm <sup>2</sup>	-1~140kgf/cm <sup>2</sup>		101.5kgf/cm <sup>2</sup>	
		0-1.75~0-35kgf/cm <sup>2</sup>		-1~+52.5kgf/cm <sup>2</sup>	-1~70kgf/cm <sup>2</sup>		50.75kgf/cm <sup>2</sup>	
	Bellows	0-0.35~0-7kgf/cm <sup>2</sup>	PT ½ or PT ¼ internal thread ½ NPT or ¼ NPT internal thread	-1~+10.5kgf/cm <sup>2</sup>	-1~14kgf/cm <sup>2</sup>	-500mmHg -100mmHg	10.15kgf/cm <sup>2</sup>	
		0-0.1~0-2kgf/cm <sup>2</sup>		-1~+3kgf/cm <sup>2</sup>	-1~+3kgf/cm <sup>2</sup>		2.9kgf/cm <sup>2</sup>	
		0-25~0-500mmHg		-500~+500mmHg	-500mmHg/4.kgf/cm <sup>2</sup>		475mmHg	
		0-5~0-100mmHg		-100~+100mmHg	-100mmHg/4.kgf/cm <sup>2</sup>		95mmHg	
	Bellows (absolute pressure)	0-0.35~0-7kgf/cm <sup>2</sup> abs.	PT ½ or PT ¼ internal thread ½ NPT or ¼ NPT internal thread	0-7kgf/cm <sup>2</sup> abs.	14kgf/cm <sup>2</sup> abs.	--	HJ6.65kgf/cm <sup>2</sup> abs.	
		0-0.1~0-2kgf/cm <sup>2</sup> abs.		0-2kgf/cm <sup>2</sup> abs.	6kgf/cm <sup>2</sup> abs.		1.9kgf/cm <sup>2</sup> abs.	
		0-25~0-500mmHg abs.		0-500mmHg abs.	4kgf/cm <sup>2</sup> abs.		475mmHg abs.	
		0-5~0-100mmHg abs.		0-100mmHg abs.	4kgf/cm <sup>2</sup> abs.		95mmHg abs.	
	Remote seal diaphragm	71	0-50~0-700kgf/cm <sup>2</sup>	PF 1½ external thread (φ34 button diaphragm)	-1~+700kgf/cm <sup>2</sup>	-1~750kgf/cm <sup>2</sup>	-1kgf/cm <sup>2</sup>	650kgf/cm <sup>2</sup>
			0-12.5~0-250kgf/cm <sup>2</sup>	PF 1½ external thread (φ34 button diaphragm or 2" -ANSI wafer)	-1~+300kgf/cm <sup>2</sup>	-1~320kgf/cm <sup>2</sup>		287.5kgf/cm <sup>2</sup>
74		0-3.5~0-70kgf/cm <sup>2</sup>	2"-ANSI wafer	2"-ANSI wafer	-1~+105kgf/cm <sup>2</sup>	-1~140kgf/cm <sup>2</sup>	-1kgf/cm <sup>2</sup>	101.5kgf/cm <sup>2</sup>
			80mm-JIS 30K flush diaphragm	80mm-JIS 30K flush diaphragm	-1~+51kgf/cm <sup>2</sup>	-1~51kgf/cm <sup>2</sup>		49.25kgf/cm <sup>2</sup>
			100mm-JIS 10K extended diaphragm	100mm-JIS 10K extended diaphragm	-1~+37kgf/cm <sup>2</sup>	-1~37kgf/cm <sup>2</sup>		35.25kgf/cm <sup>2</sup>
			3"-ANSI 300 flush diaphragm	3"-ANSI 300 flush diaphragm	-1~+37kgf/cm <sup>2</sup>	-1~37kgf/cm <sup>2</sup>		
75		0-0.35~0-7kgf/cm <sup>2</sup>	80mm-JIS 10K flush diaphragm	80mm-JIS 10K flush diaphragm	-0.5~+10.5kgf/cm <sup>2</sup>	-0.5~14kgf/cm <sup>2</sup>	-0.5kgf/cm <sup>2</sup>	10.15kgf/cm <sup>2</sup>
			100mm-JIS 10K extended diaphragm					
76		0-0.1~0-2kgf/cm <sup>2</sup>	3"-ANSI 150 flush diaphragm	3"-ANSI 150 flush diaphragm	-0.5~+3kgf/cm <sup>2</sup>	-0.5~4kgf/cm <sup>2</sup>	-0.5kgf/cm <sup>2</sup>	2.9kgf/cm <sup>2</sup>
			4"-ANSI 300 extended diaphragm					
	80mm-JIS 10K flush diaphragm		80mm-JIS 10K flush diaphragm					
	100mm-JIS 10K extended diaphragm		100mm-JIS 10K extended diaphragm					

Note: Elevation + Span ≦ Max. span

<b>Function</b>	<b>Accuracy</b>	Model No.	Measuring range	
		KFKB□□ 11/71	0-50 ~ 0-less than 100 kgf/cm <sup>2</sup>	0-100 ~ 0-700 kgf/cm <sup>2</sup>
		KFKB□□ 12/72	0-12.5 ~ 0-less than 25 kgf/cm <sup>2</sup>	0-25 ~ 0-250 kgf/cm <sup>2</sup>
		KFKB□□ 13/73	0-3.5 ~ 0-less than 7 kgf/cm <sup>2</sup>	0-7 ~ 0-70 kgf/cm <sup>2</sup>
		KFKB□□ 14/74	0-1.75 ~ 0-less than 3.5 kgf/cm <sup>2</sup>	0-3.5 ~ 0-700 kgf/cm <sup>2</sup>
		KFKB□□ 15/75	0-0.35 ~ 0-less than 0.7 kgf/cm <sup>2</sup>	0-0.7 ~ 0-700 kgf/cm <sup>2</sup>
		KFKB□□ 16/76	0-0.1 ~ 0-less than 0.2 kgf/cm <sup>2</sup>	0-0.2 ~ 0-2 kgf/cm <sup>2</sup>
		KFKB□□ 17	0-25 ~ 0-less than 50 mmHg	0-50 ~ 0-500 mmHg
		KFKB□□ 18	0-5 ~ 0-less than 10 mmHg	0-10 ~ 0-less than 70 mmHg <b>(*1)</b>
		KFKB□□ 25	0-0.35 ~ 0-less than 0.7 kgf/cm <sup>2</sup> abs.	0-0.7 ~ 0-7 kgf/cm <sup>2</sup> abs.
		KFKB□□ 26	0-0.1 ~ 0-less than 0.2 kgf/cm <sup>2</sup> abs.	0-0.2 ~ 0-2 kgf/cm <sup>2</sup> abs.
		KFKB□□ 27	0-25 ~ 0-less than 50 kgf/cm <sup>2</sup> abs.	0-50 ~ 0-500 mmHg abs.
		KFKB□□ 28	0-5 ~ 0-less than 10 kgf/cm <sup>2</sup> abs.	0-10 ~ 0-less than 70 mmHg abs. <b>(*2)</b>
Transmission/Indication		±1.0% FS / ±1.5%FS	±0.5% FS / ±1.0%FS	
Note: <b>(*1)</b> 0~70 to 0~100 mmHg: Transmitting accuracy ±0.75% FS      Indicating accuracy ±1.25% FS				
<b>(*2)</b> 0~70 to 0~100 mmHg abs.: Transmitting accuracy ±0.75% FS      Indicating accuracy ±1.25% FS				
Repeatability		Within 0.3% FS		
Dead band		Within 0.1% FS		
<b>Indication</b>	Angle	44 degrees		
	Scale length	150mm		
	Pointer	Process variable: Red      Set-point value: Green		
	Output indicator (φ40mm)	Scale range: 0~2 kgf/cm <sup>2</sup> abs.      Indicating accuracy: ±3% FS		
<b>Setpoint Section</b>	Local setting	Internal or external setting by knob.		
	Remote setting	Pneumatic pressure setting of 0.2~1.0 kgf/cm <sup>2</sup>		
	Setting range	0-100% FS		
<b>Controller</b>	Control action	P + Manual reset, PI, PID, PD + Manual reset, PI + Batch, On-Off, Differential gap, P + External reset, PD + External reset		
	Proportional band (P)	5-500% (direct or reverse action)		
	Integral (I)	0.05-30min.		
	Derivative (D)	0.05-30min.		
	Differential gap	1-100% FS, adjustable		
	Batch setting pressure	0.6-1.1 kgf/cm <sup>2</sup> , adjustable		
	External reset pressure	0.2-1.0 kgf/cm <sup>2</sup>		
	Manual reset	0-100% FS, adjustable (by pneumatic pressure setting.)		
<b>General Specifications</b>	Output	0.2-1.0 kgf/cm <sup>2</sup> , 0 or 1.4 kgf/cm <sup>2</sup> (on-off, differential gap)		
	Minimum load	I.D. 4mm×3m + 20cm <sup>3</sup>		
	Supply air pressure	1.4±0.14 kgf/cm <sup>2</sup>		
	Air consumption (50% output balanced)	Indicating transmitter: 9 N ℓ /min    Only indicating: 5 N ℓ /min Indicating controller: 9 N ℓ /min    Manual control: +3 N ℓ /min    Indicating controlling transmitter: 9 N ℓ /min		
	Saturated are supply capacity	Pneumatic transmission: 40 N ℓ /min. Manual pneumatic pressure: 30 N ℓ /min. Output: 40 N ℓ /min.		
	Air connection	PT ¼ or ½ NPT internal thread		
	Ambient temperature	At meter body (process fluid): -40 to +120°C      At transmitter (ambient): -30 to +80°C		
	Relative humidity	10-90% RH		
	Case, Door	Enclosure: Rain-tight and dust, meets JIS F8001 Class 3 splash-proof, NEMA 3, IEC IP54 Vibration resistant.....Lloyd regulation or equivalent Materials: Case.....Aluminum die-cast Door.....Polyester with fiberglass Door-glass.....Reinforced glass (3mm thick) Case finish: Acryl baking finish (for corrosion-resistant and silver finish, refer to the optional specification.) Color of finish: Dark beige (MUNSELL 10YR4.7/0.5)		
	Mounting	Panel or 2-inch pipe mounting		
	Net weight	Approx. 9.3kg (when model KFKB12-1412A1T-X)		

## 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 a manual control regulator, two position transfer switch and balance check button.
(3) Air set (not applicable to panel mounting type)	Pressure regulator with filter plus φ40mm pressure gauge. (supply pressure: 2-9.9 kgf/cm <sup>2</sup> , output: 1.4 kgf/cm <sup>2</sup> , pressure gauge: 0-2 kgf/cm <sup>2</sup> )

Model Number Table

Ex: KFKB12-7112050210A1T-M.K.6.7

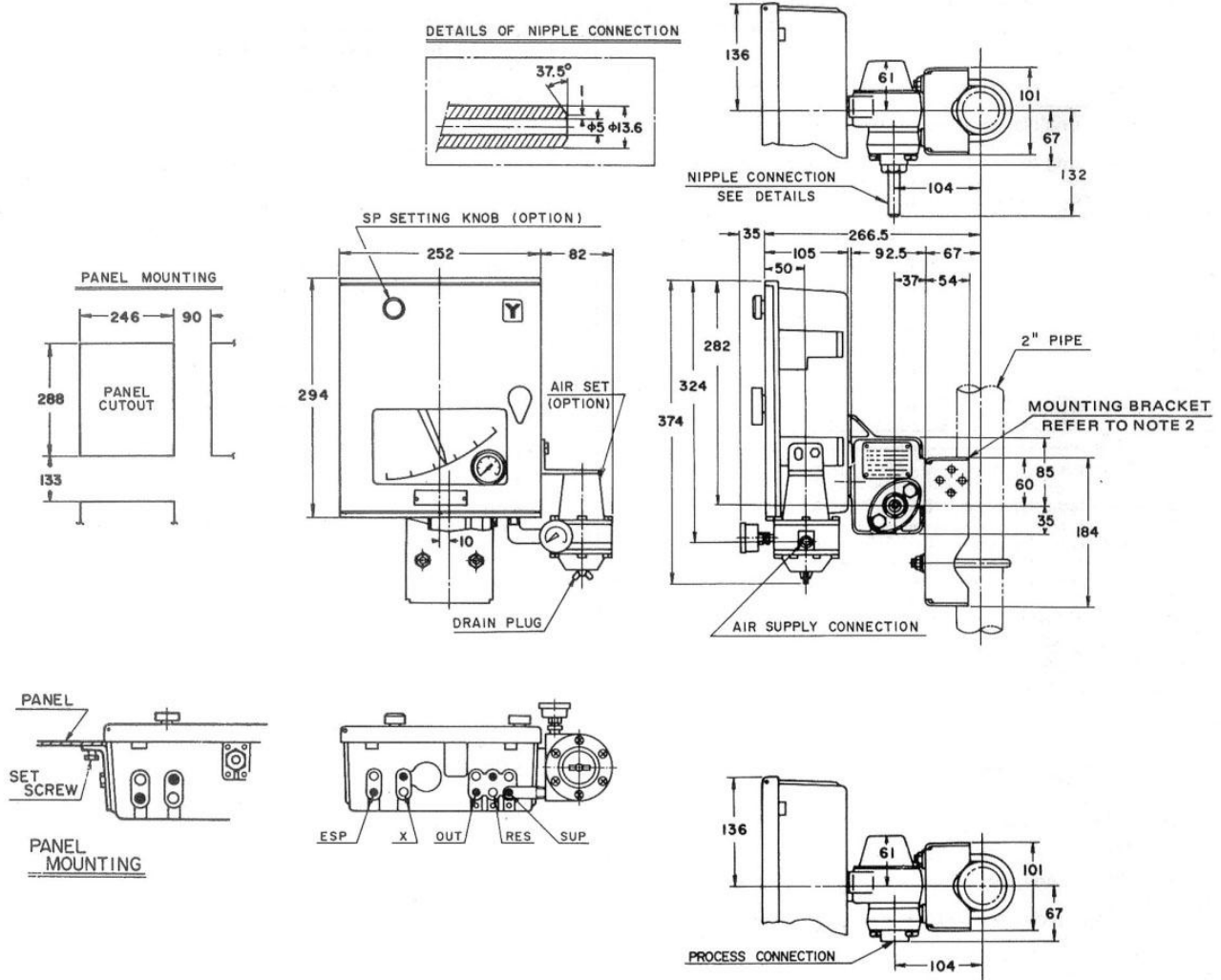
KFKB12-1122A1T-M

Basic model no.		Selections										Options	Description
Type	Function	Control action	Type of detector	Cover, flange or Mounting screw materials	Elements	Flange or Mounting Screw rating	Capillary tube length	Length of Extended part of flange	Air Connection	Signal pressure	Mounting method		
KFK													Pressure indicating controller
	B0												Indicating transmitter
	B1												Indicating controller (local type)
	B2												Indicating transmitter and controller (local type)
	B3												Indicating controller (cascade type)
	B4												Indicating transmitter and 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
	-11												Burdon tube type 0-5 ~ 70MPa (0-50 ~ 0-700kgf/cm <sup>2</sup> )
	-12												Burdon tube type 0-1.25 ~ 25MPa (0-12.5 ~ 0-250kgf/cm <sup>2</sup> )
	-13												Burdon tube type 0-0.35 ~ 7MPa (0-3.5 ~ 0-70kgf/cm <sup>2</sup> )
	-14												Burdon tube type 0-0.175 ~ 3.5MPa (0-1.75 ~ 0-35kgf/cm <sup>2</sup> )
	-15												Bellow type 0-35 ~ 700KPa (0-0.35 ~ 0-7kgf/cm <sup>2</sup> )
	-16												Bellow type 0-10 ~ 200KPa (0-0.1 ~ 0-2kgf/cm <sup>2</sup> )
	-17												Bellow type 0-25 ~ 0-500mmHg
	-18												Bellow type 0-5 ~ 100mmHg
	-25												Bellow type (abs. Press.) 0-35 ~ 700KPa (0-0.35 ~ 0-7kgf/cm <sup>2</sup> abs.)
	-26												Bellow type (abs. Press.) 0-10 ~ 200KPa (0-0.1 ~ 0-kgf/cm <sup>2</sup> abs.)
	-27												Bellow type (abs. Press.) 0-25 ~ 0-500mmHg abs.
	-28												Bellow type (abs. Press.) 0-5 ~ 0-100mmHg abs.
	-71												Remotes seal diaphragm type 0-5 ~ 70MPa (0-50 ~ 0-700kgf/cm <sup>2</sup> )
	-72												Remotes seal diaphragm type 0-1.25 ~ 25MPa (0-12.5 ~ 0-250kgf/cm <sup>2</sup> )
	-73												Remotes seal diaphragm type 0-0.35 ~ 7MPa (0-3.5 ~ 0-70kgf/cm <sup>2</sup> )
	-74												Remotes seal diaphragm type 0-0.175 ~ 3.5MPa (0-1.75 ~ 0-35kgf/cm <sup>2</sup> )
	-75												Remotes seal diaphragm type 0-35 ~ 700KPa (0-0.35 ~ 0-7kgf/cm <sup>2</sup> )
	-76												Remotes seal diaphragm type 0-10 ~ 200KPa (0-0.1 ~ 0-2kgf/cm <sup>2</sup> )
		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)
		9											ICr18Ni9Ti
			2										SUS316 (seal diaphragm: SUS316L)
			3										MONEL (applicable to type 11-28 or 7□ detector tended flange, wafer and button diaphragm type)
			4										Tantalum
			8										SUS316L (applicable to type 7□ detector)
													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" -ANSI 150 (RF) equiv. Flange
			04										Flush diaphragm type 3" -ANSI 300 (RF) equiv. Flange
			05										Extended diaphragm type 100mm-JIS10K (RF) equiv. Flange
			06										Extended diaphragm type 100mm-JIS30K (RF) equiv. Flange
			07										Extended diaphragm type 4" -ANSI 150 (RF) equiv. Flange
			08										Extended diaphragm type 4" -ANSI 300 (RF) equiv. Flange
			09										2" -ANSI 1500 (RF) equiv. Flange
			11										PF 1½ extended thread (button diaphragm type)
													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.)
													Blank (applicable to type 1□ or 2□ detector.)
			00										Applicable to flush diaphragm, wafer or button diaphragm type.
			10										Length: 100mm (applicable to extended diaphragm)
			15										Length: 150mm (applicable to extended diaphragm)
				A									PT ¼ internal thread (instruction plate: Japanese)
				B									¼ NPT internal thread (instruction plate: English)
									1				0.2~1.0 kgf/cm <sup>2</sup>
									2				3~15 psi
									3				0.2~1.0 bar
									4				20~100 KPa
										P			Panel mounting (air-set cannot be installed.)
										T			2-inch pipe mounting
													-X No options
													-K Built-in manual controller (with auto / manual transfer switch)
													-M With external SP setting knob
													-5 Elevation or high elevation
													-6 Suppression
													-7 With air-set

# Overall Dimensions

(Unit: mm)

## TYPE-11 DETECTOR



## TYPE-12, 13, 14 DETECTORS

### AIR CONNECTIONS (REFER TO NOTE 1, 3)

- : PT 1/4 FEMALE
- : 1/4 NPT FEMALE

### REGEND

- ESP : EXTERNAL SP SIGNAL  
(FOR CASCADE TYPE ONLY)
- X : 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 11~14). Caution must be taken to dimensions which depend on the shape of elements. (refer to the reference spec. sheets at the rear of this sheet.)