No. SS2-611-010
(ISSUE 4)

Yamatake-Honeywell

SPECIFICATION

KF SERIES (FIELD TYPE) TEMPERATURE INDICATING CONTROLLER
MODEL:KFT

General

Each KF Series instrument consists of two major sections: the measuring element for process variables and the indicating controller common to each model. The KF Series instruments are pneumatic field-type indicating controllers that, with only the replacement of measuring elements, measure and control the basic process variables of temperature, pressure, flow rate and liquid level as well as uniform pneumatic pressure signals (0.2~1.0 kg/cm^2).

The KFT type temperature indicating controller measures and control temperatures ranged from −50°C ~ +500°C by each model provided with pertinent range.

Features

- **Ample Models and Versatile Functions**

By replacing measuring elements, the user can measure all the process variables except temperature (pressure, flow rate and liquid level) and receive and control pneumatic pressure signals. Versatile control functions include P, PI, PID, PD, PI batch action, on-off action, differential gap action, manual reset and external reset.

- **High Reliability**

Each KF Series instrument has adopted a pneumatic circuit board for the first time as a field type. Pneumatic piping by use of less durable tubes is abandoned, avoiding problems like air leakage, for remarkably improved reliability. The case is metallic and the door is made of noncombustible material. With full attention paid to heat and weather resistance, a rugged construction is materialized. Besides, each KF Series instrument has water and dust resistance conforming to JIS F 8001 Class 3 water splashing, NEMA3 and IP54.

- **Extendability and Flexibility of Functions**

The adoption of the pneumatic circuit board offers the user a wide choice of control functions and many combinations of additional facilities. For the first time as a field-type instrument, each KF Series instrument has materialized the instrumentation equivalent to a panel instrument.

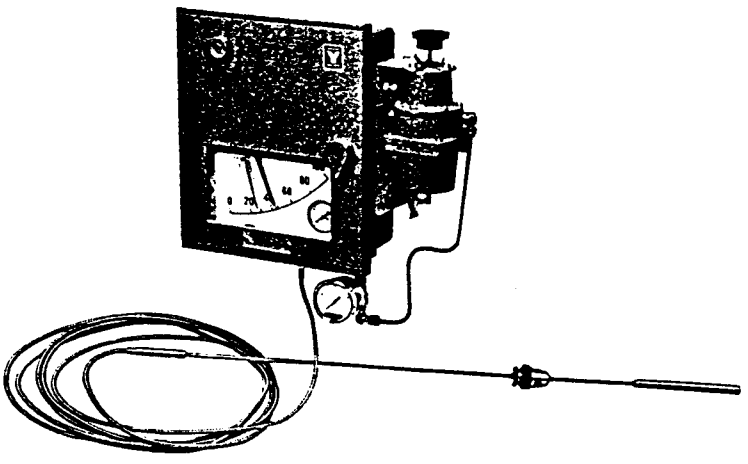


Figure 1

- **Excellent Economy with Ease of Operation and Maintenance**

Efficient management of parts is assured by the adoption of measuring elements common to Yamatake-Honeywell's existing group of pneumatic transmitters and the standardization of the KF Series internal parts except the measuring elements. Further, the extendability ensured by options that can be freely added and dismounted has substantially reduced the number of spare parts that have to be stocked for maintenance. These has remarkably improved the economy and the ease of operation and maintenance.

- **Prevention of Troubles**

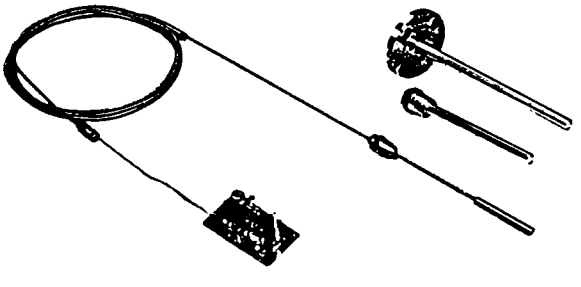
In the KF Series, "+" screws are used for fixing and "−" screws for adjustment. Besides, the KF Series provides a construction that does not permit the mounting of wrong parts. These and other features help prevent troubles that could occur by simple mistakes.

- **Vibration Resistance Characteristics**

The pressure receiving element section has adopted bellows instead of spirals, which are less resistant to vibration. Therefore, large torque can be generated, with the vibration resistance improved. (Equivalent to Lloyd's requirement)

- **Ambient Temperature Compensation**

The whole system is provided with ambient temperature compensation to prevent a deterioration of the measurement accuracy that could be caused by changes in the ambient temperature.



Temperature Element and Well

Figure 2

Issue 1 October, 1978
Issue 4 May, 1982

Standard Specifications

	Item	Specifications
Sensing element	Measuring range	Liquid-fill type (Kerosene) 0～50, 0～100, 0～150, 0～200, 0～300, 50～100, 100～200, 100～300, −50～+50, −50～+100(°C) Gas-fill type (Nitrogen) 0～400, 0～500, 100～400 (°C)
	Allowable overrange without recalibration	Maximum temperature + 20% of span
	Material	Bulb ; SUS 304 st. st. Capillary ; SUS 304 st. st. Pressure element ; Phosphor bronze bellows
	Capillary tube length	5m (Standard) , 10m (Semi-standard)
Function	Accuracy	±1% FS
	Repeatability	Within 0.3% FS
	Dead band	Within 0.2% FS
Indication	Angle	44 degrees
	Scale length	150 mm
	Pointer	Process variable ····· Red, Setpoint value ····· Green
	Output indicator	Scale range ; 0～2 kg/cm² Indicator accuracy ; ±3% FS
Set-point section	Local setting	Internal or external setting by setting knob.
	Remote setting	Pneumatic pressure setting of 0.2～1.0 kg/cm².
	Setting range	0～100% FS
Controller	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)	0.05～30 min.
	Derivative (D)	0.05～30 min.
	Differential gap	1～100% FS, adjustable
	Batch setting pressure	0.6～1.1 kg/cm², adjustable
	External reset pressure	0.2～1.0 kg/cm²
	Manual reset	0～100% FS, adjustable (By pneumatic pressure setting.)
General specifications	Output	0.2～1.0 kg/cm²
	Minimum load	I.D. 4 mm × 3m + 20 cm³
	Supply air pressure	1.4 ±0.14 kg/cm²
	Air consumption (50% output balanced)	Indicating and transmission ; 4 Nℓ/min. Indicating and control ; 4 Nℓ/min. Indicating and control and air pressure transmission ; 8 Nℓ/min.
	Saturated air supply capacity	Pneumatic transmission ; 40 Nℓ/min. Output ; 40 Nℓ/min. Manual pneumatic pressure ; 30 Nℓ/min.
	Air connection	PT ¼ (ISO R7 ¼") or ¼" NPT tap thread
	Ambient temperature	−30～+80°C (Up to −30～+60°C for 0～50°C range)
	Relative humidity	10～90% RH

Item		Specifications
General specifications	**Case , Door**	Enclosure ; Rain-tight and dust-tight, meets JIS F 8001 class III splash-proof, NEMA 3, IEC IP54 Vibration resistant . . . Lloyd regulation or equivalent Materials ; Case . . . . . Aluminium die-cast Door . . . . . Polyester with fiberglass Door-glass . . . Reinforced glass (3mm thick, JIS R 3206, equivalent) Case finish ; Acryl baking finish (For corrosion-resistant and silver finish, refer to the optional specification.) Color of finish ; Dark beige (Munsell 10YR 4.7/0.5)
	Mounting	Wall, 2-inch pipe or panel mounting.
	Net weight	Approx. 7.8 kg (Pipe mounting type, Local mode PI controller using 0～100°C element.)

Options (Accessories)

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) With union	Threaded union nut provided for conection with thermal well provided.
(4) With well (Model no. KFZ1)	Drilled and welded well are available.
(5) Air set	Adjustable combination regulator with 50 mm gauge mounted and piped to controller, not available with panel mounted controller.

Semi-Standard Options

Item	Specifications
(1) Corrosion-resistant and silver finish (Y 138)	Corrosion-resistant (Acryl baking) finish (Y 138A); Resistance for corrosive gases. Corrosion-proof (Epoxy baking) finish (Y 138B); Resistance for corrosive liquids. Silver-normal (Acryl baking) finish (Y 138C); Protection for temperature rise of device caused by direct sun light, radiation heat, etc. Silver-corrosion-resistant (Acryl baking) finish (Y 138D) Protection for above-mentioned temperature rise and resistance for corrosive gases. (Note: Silver finish is not applicable for alkaline gases.)
(2) Long type capillary tube (Y 160)	10 m

Model Number Table

Temperature Indicating Controller

Ex.;KFT 102-06105AT-K, M, W, 7

Basic Model No.			Selections				Options	Description
Type	Function	Control action	Sensing element	Measuring range	Air connection	Mounting method.		
KFT								Temperature indicating controller
	0							Indicating transmitter
	1							Indicating controller (Local type)
	2							Indicating transmitting controller (Local type)
	3							Indicating controller (Cascade type)
	4							Indicating transmitting controller (Cascade type)
		00						No selection
		01						P + Manual reset
		02						PI
		03						PID
		04						PD + Manual reset
		52						PI + Batch
		65						On-Off
		66						Differential gap
		71						P + External reset
		74						PD + External reset
			−06					Liquid-fill type
			−07					Gas-fill type
				105				Liquid-fill type −50 ~ 50°C
				155				" −50 ~ 100°C
				050				" 0 ~ 50°C
				100				" 0 ~ 100°C
				150				" 0 ~ 150°C
				200				" 0 ~ 200°C
				300				" 0 ~ 300°C
				400				Gas-fill type 0 ~ 400°C
				500				" 0 ~ 500°C
				055				Liquid-fill type 50 ~ 100°C
				101				" 100 ~ 200°C
				201				" 100 ~ 300°C
				301				Gas-fill type 100 ~ 400°C
					A			PT ¼ (ISO R7 ¼") tap thread
					B			¼" NPT tap thread
						P		Panel mounting
						S		Wall mounting
						T		2-inch pipe mounting
							−X	No selection
							−K	With external SP setting knob
							−M	Built-in manual controller (with auto/manual switch)
							−W*	With well (See Notes 2 and 4.)
							−U*	With union (See Notes 2 and 3.)
							−7	With air-set

[Note]

1) When specifying semi-standard option (Y□), please write as: (KFT102Y-06105AT-K, M, W, 7 (Y 138))
2) When neither option−W (with well or−U (union) is specified, only nut is provided to ship. (Nut: liquid-fill type: PF¾, gas-fill type: PF1)
3) Air connecting screw and union screw

Type of air connecting screw	Union screw (Material: SUS 304 st.st.)
PT ¼	Liquid-fill ; PT ¾*
	Gas-fill ; PT 1
¼ NPT	Liquid-fill ; ¾ NPT*
	Gas-fill ; 1 NPT

*: For liquid-fill type, either PT 1 or 1 NPT is available, please specify it.

4) Specify KFZ type in the following page.

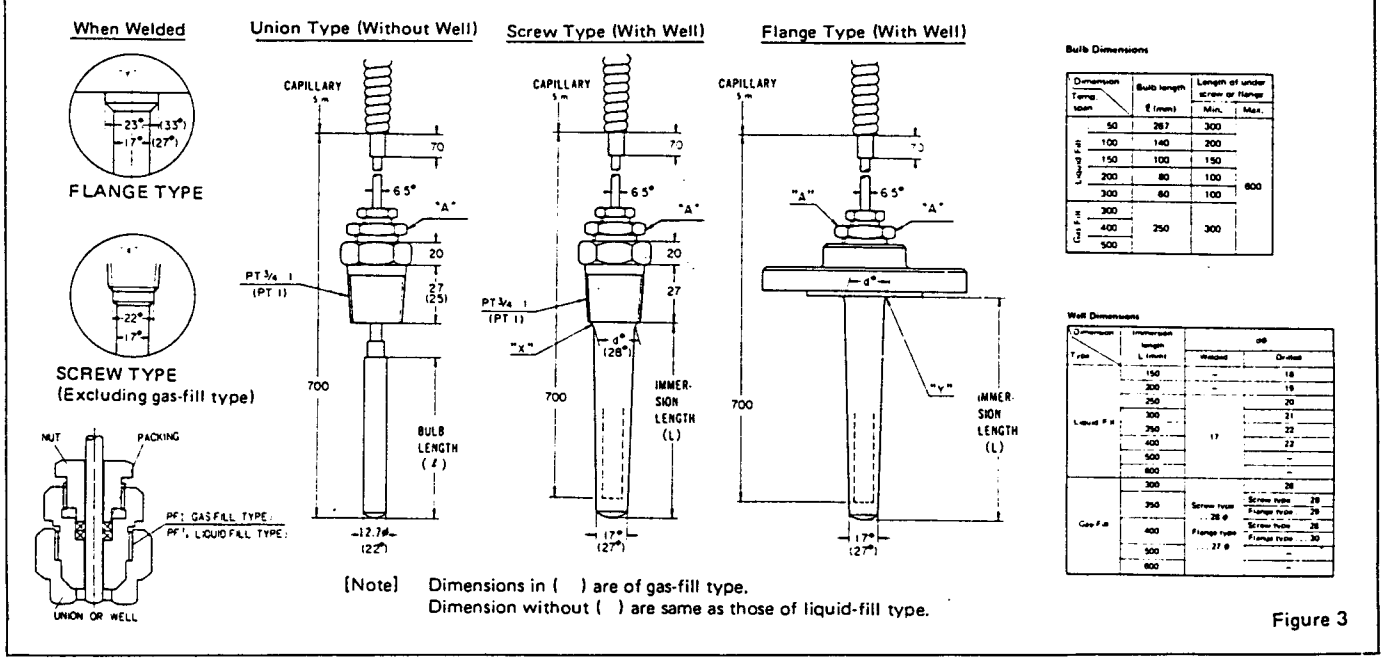
Model Number Table

Well

Ex.: KFZ1-1112-15

Basic Model No.	I	Selections: Type II	Connection III	Material IV	Options	Description		
K F Z	1					Well for temperature element		
		−1				For liquid-fill type (Drilled)		
		−2				" (Weld)		
		−3				For gas-fill type (Drilled)		
		−4				" (Weld)		
			11			Flange connection	JIS 10K-20mm RF	(Only liquid-fill)
			12			"	JIS 10K-25mm RF	(")
			13			"	JIS 10K-40mm RF	(Only gas-fill)
			21			"	JIS 20K-20mm RF	(Only liquid-fill)
			22			"	JIS 20K-25mm RF	(")
			23			"	JIS 20K-40mm RF	(Only gas-fill)
			31			"	ANSI (or JPI) 150-¾"	(Only liquid-fill)
			32			"	ANSI (or JPI) 150-1"	(")
			33			"	ANSI (or JPI) 150-1½"	(Only gas-fill)
			41			"	ANSI (or JPI) 300-¾"	(Only liquid-fill)
			42			"	ANSI (or JPI) 300-1"	(")
			43			"	ANSI (or JPI) 300-2½"	(Only gas-fill)
			51			Screw connection	PT¾	(Only liquid-fill)
			52			"	PT1	(Excluding welded of gas-fill)
			61			"	¾" NPT	(Only liquid-fill)
			62			"	1" NPT	(Excluding welded of gas-fill)
				2		SUS 316 st. st.		
				7		SUS 304 st. st.		
				8		SUS 316L st.st.		
					−15	Immersion length 150 mm		
					−20	" 200 mm		
					−25	" 250 mm	Liquid-fill (Drilled)	
					−30	" 300 mm		
					−35	" 350 mm	Liquid-fill (Welded) / Gas-fill (Drilled) / Gas-fill (Welded)	
					−40	" 400 mm		
					−50	" 500 mm		
					−60	" 600 mm		

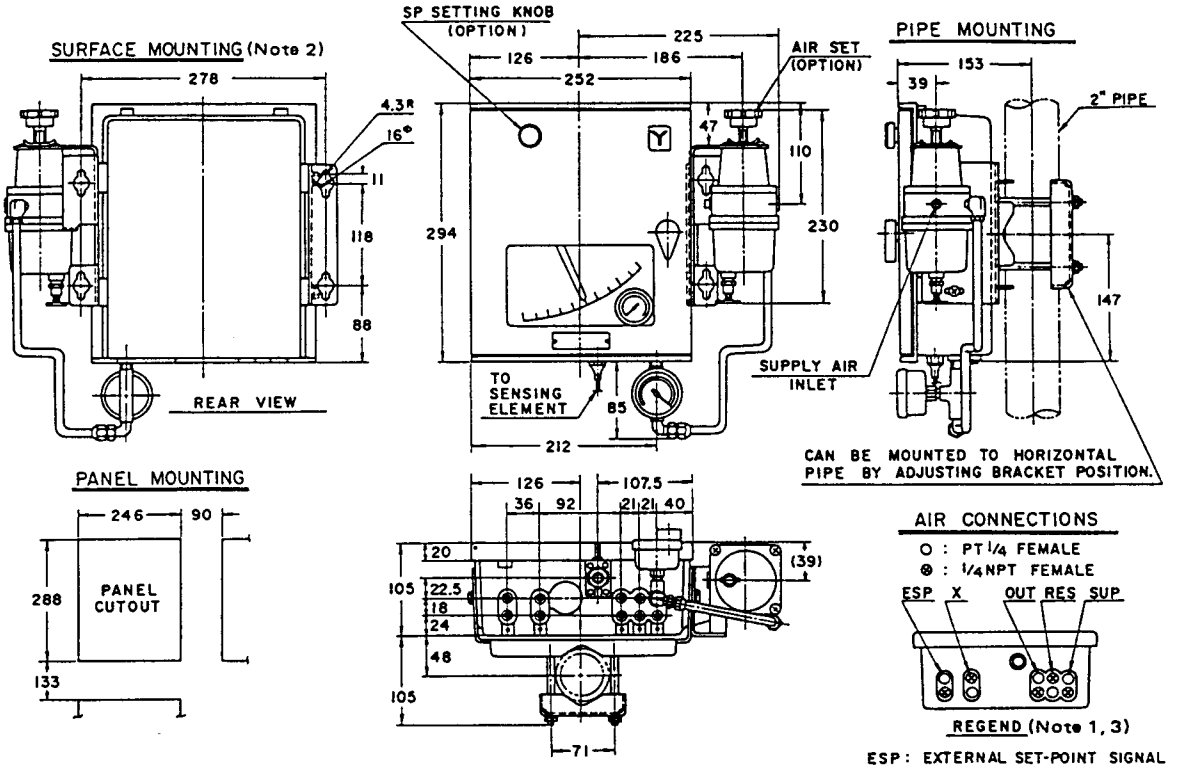
Dimensions of Temperature Elements



[Note] Dimensions in ( ) are of gas-fill type.
Dimension without ( ) are same as those of liquid-fill type.

Figure 3

Overall Dimensions



Note:

1) The holes not to be used for connection are plugged.
2) If two or more instruments are to be mounted on a surface, keep them apart at least 80mm (163mm for instruments with air set) horizontally and at least 126mm vertically.
3) For manual reset provision, "SUP" and "RES" have been preconnected.

Figure 4

Ordering Information

When ordering, please specify;

1) Model no.
2) Temperature range
3) Type of sensing element
4) Options

Reference instruction manual OM2-611-010

* Specifications are subject to change without notice.

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