

SHEATH RESISTANCE THERMOMETER

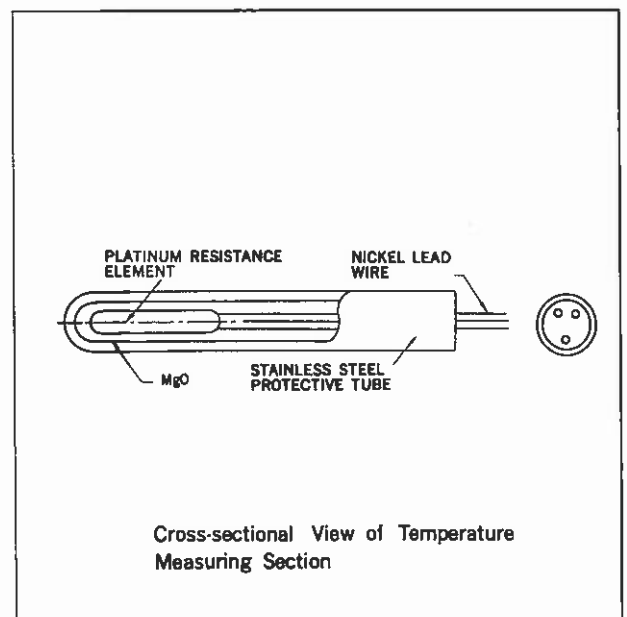
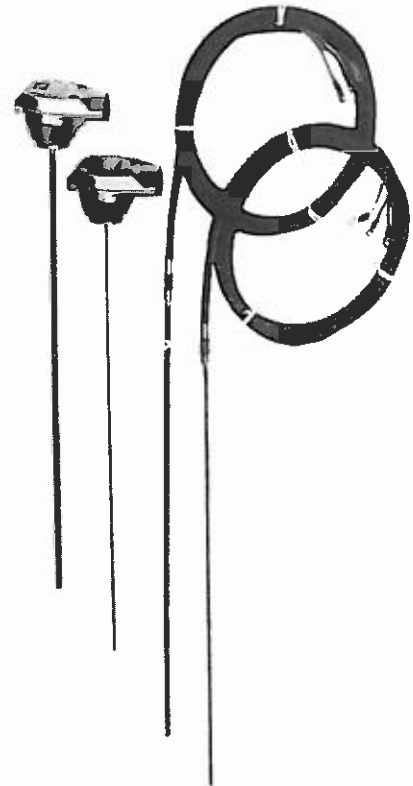


The sensor is designed as a high performance resistance thermometer with high sensitivity plus the solidity and durability required in a general industrial sensor. It is constructed by densely filling the gap between the protective tube and the resistance element with an insulating material.

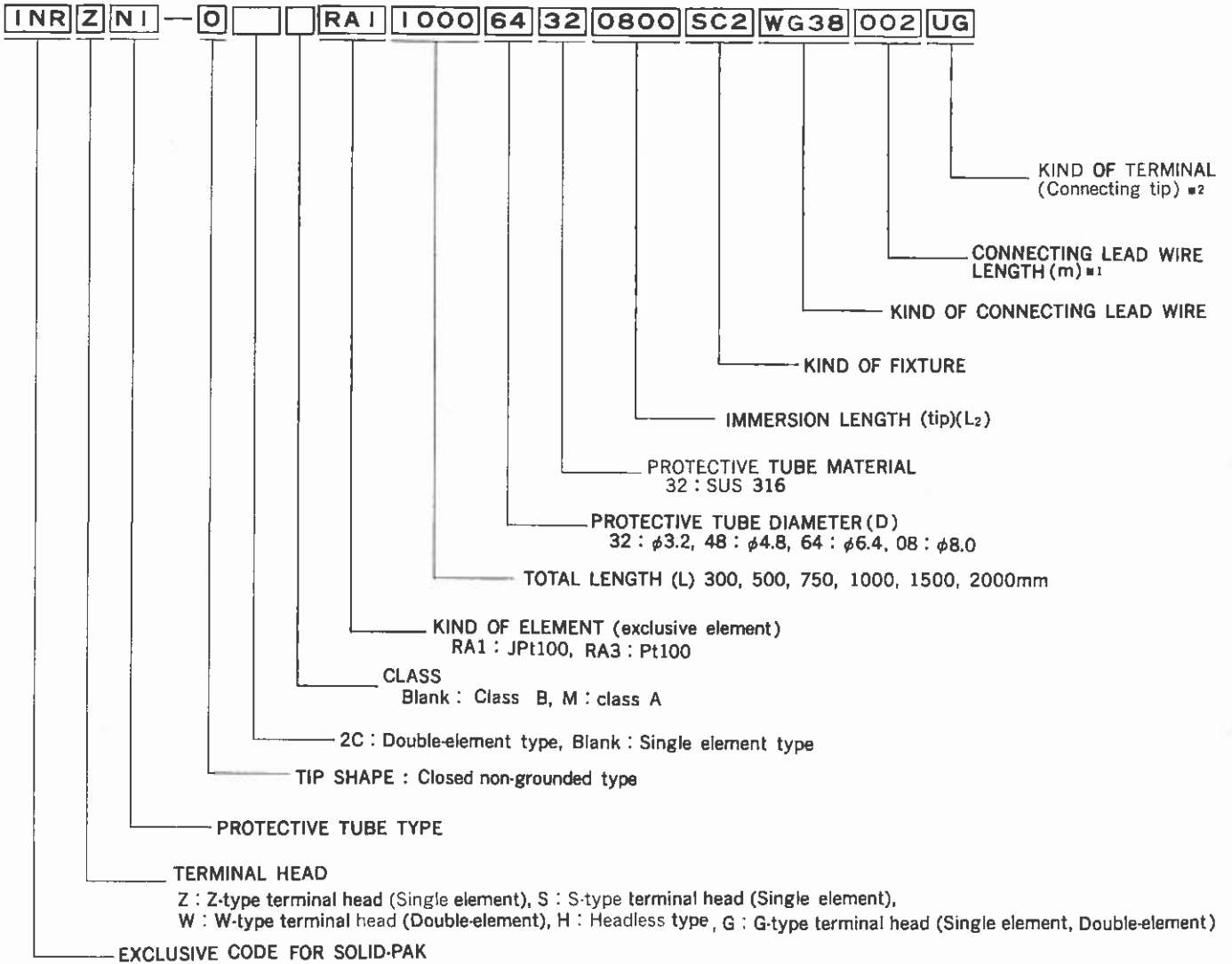
This sensor has excellent response, vibration resistance, and impact resistance, and it will withstand prolonged continuous use in hot and unfavorable environments.

■ FEATURES

- The protective tube has excellent corrosion resistance due to the elimination of the internal air layer.
- The sensor provides high sensitivity and excellent response corresponding to 2~3 times that of ordinary resistance thermometers.
- The sensor is resistant to vibrations and mechanical shock.
- The Z-type terminal head with a hatch structure ensures easy cable connections.

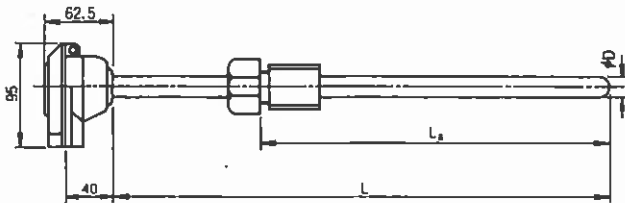


■ MODELS

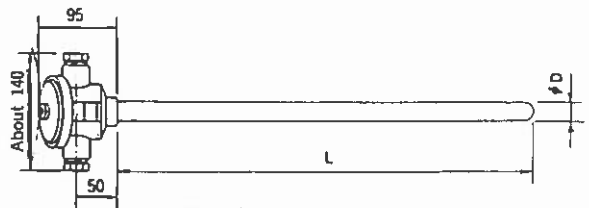


※1 Headless type : Specify the length (standard : 2m)

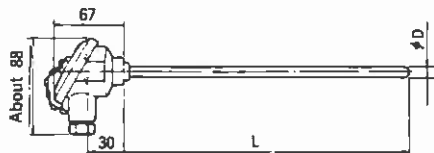
※2 Specify the ones of both ends, Headless type : A□



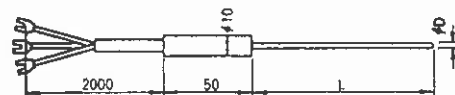
Z-TYPE TERMINAL HEAD



W-TYPE TERMINAL HEAD



S-TYPE TERMINAL HEAD



HEADLESS TYPE

Unit : mm

■ GENERAL SPECIFICATIONS

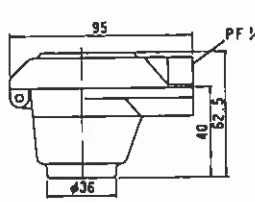
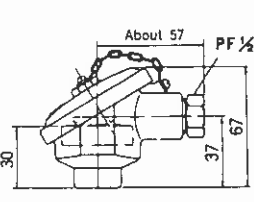
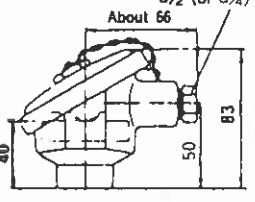
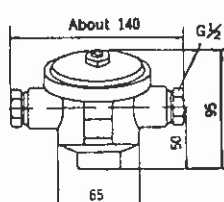
ELEMENT	: Pt100, JPt100 3-wire type, 100Ω at 0°C
CLASS	: JIS Class A, Class B
MEASURING CURRENT	: Class A — 1mA, 2mA Class B — Less than 5mA
MEASURING RANGE	: (-) 200°C to 500°C
PROTECTIVE TUBE MATERIAL	: SUS 316
OUTER DIAMETER OF PROTECTIVE TUBE	: φ3.2, φ4.8, φ6.4mm, φ8.0mm, 4 sizes available
PROTECTIVE TUBE LENGTH	: 300, 500, 750, 1000, 1500, 2000mm 6 lengths available
TIP SHAPE	: Closed type
BENDING RADIUS	: More than twice the protective tube diameter (R ≥ 2D)
NON-FLEXIBLE LENGTH	: 100mm from the tip
FIXTURE	: Not mountable within 70mm from the tip
INSULATION RESISTANCE	: Higher than 5MΩ (at 500V DC, φ3.2 : 250VDC)
INSULATOR	: High-purity magnesium oxide MgO
DOUBLE-ELEMENT	: Outer diameter of protective type φ3.2, φ4.8, φ6.4, φ8.0mm

RESPONSE (Room temperature→100°C boiling water)

Response	63.2%	90%
Outer diameter of protective tube		
φ3.2mm	2.0sec	4.6sec
φ4.8mm	3.0sec	7.0sec
φ6.4mm	6.8sec	15.7sec
φ8.0mm	7.2sec	17.9sec

■ TERMINAL HEAD

Unit : mm

Code	Z	S	G	W
Dimensions				
Material	Diecast aluminum			
Coating	Aventurin chromium plating			
Construction	Closed waterproof			

PROTECTIVE TUBE TYPES AND EXTERNAL DIMENSIONS

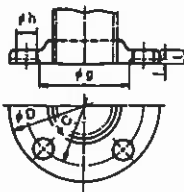
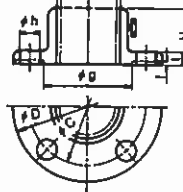
	CODE	MOUNTING FIXTURE	SHAPE AND EXTERNAL DIMENSIONS
Straight types	S 1	None	
	S 2	Sliding flange	
	S 3	Screw-fixing nipple	
Flange types	F 1	Fixed flange	
Nipple types	N 1	Fixed nipple	
L types	L 1	None	 ※R : More than twice the protective tube diameter ($R \geq 2D$)
	L 2 (L 3)	Sliding flange (Sliding flange sleeve type)	 ※R : More than twice the protective tube diameter ($R \geq 2D$)
	L 4 (L 5)	Screw-fixing nipple (Screw-fixing nipple sleeve type)	 ※R : More than twice the protective tube diameter ($R \geq 2D$)

(Note) Terminal box is indicated in Z type. For using the S and W type terminal head 4, see (Terminal head).

■ MOUNTING FIXTURES

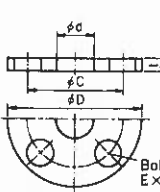
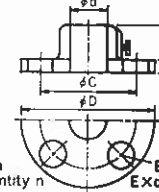
● JIS Flange

Unit : mm

Fixed flange 	Sliding flange 	Nominal size		Code		φD	Dimension of each part of flange				Bolt hole		
		A	B	SUS304	SUS316		t	f	φg	H	φC	φh	Quantity
		Standard dimensions of 5kg/cm ² flange											
		10	3/4	FC3	FM3	75	9	1	39	34	55	12	4
		15	1 1/4	FC4	FM4	80	9	1	44	34	60	12	4
		20	1 3/4	FC6	FM6	85	10	1	49	35	65	12	4
		25	1	FCB	FMB	95	10	1	59	35	75	12	4
		40	1 1/2	FCD	FMD	120	12	2	75	37	95	15	4
		50	2	FCE	FME	130	14	2	85	39	105	15	4
		65	2 1/2	FCF	FMF	155	14	2	110	39	130	15	4
		80	3	FCG	FMG	180	14	2	121	39	145	19	4
		100	4	FCH	FMH	200	16	2	141	41	165	19	8
		125	5			235	16	2	176	41	200	19	8
Standard dimensions of 10kg/cm ² flange													
		10	3/4	JC3	JM3	90	12	1	46	37	65	15	4
		15	1 1/4	JC4	JM4	95	12	1	51	37	70	15	4
		20	1 3/4	JC6	JM6	100	14	1	56	39	75	15	4
		25	1	JCB	JMB	125	14	1	67	39	90	19	4
		40	1 1/2	JCD	JMD	140	16	2	81	41	105	19	4
		50	2	JCE	JME	155	16	2	96	41	120	19	4
		65	2 1/2	JCF	JMF	175	18	2	116	43	140	19	4
		80	3	JCG	JMG	185	18	2	126	43	150	19	8
		100	4	JCH	JMH	210	18	2	151	43	175	19	8
		125	5			250	20	2	182	45	210	23	8
Standard dimensions of 20kg/cm ² flange													
		25	1	KCB	KMB	125	16	1	67	41	90	19	4
		40	1 1/2	KCD	KMD	140	18	2	81	43	105	19	4
		50	2	KCE	KME	155	18	2	96	43	120	19	8
		65	2 1/2	KCF	KMF	175	20	2	116	45	140	19	8
		80	3	KCG	KMG	200	22	2	132	47	160	23	8
		100	4	KCH	KMH	225	24	2	160	49	185	23	8
		125	5			270	26	2	195	51	225	25	8

● CHINO Flange

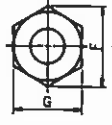

Unit : mm

Fixed flange 	Slide flange 	Nominal size	Applicable tube diameter φd	Code			Flange dia. φD	Dimension of each part of flange		Bolt hole		Mounting bolt	
				Sliding flange	Fixed flanges			t	h	Diameter of center circle φC	n		Diameter φE
					SUS304	SUS316							
A	17 to 32	SAA	FCA	FMA	100	10	34	70	4	10	M8		
B	8 to 16	SAB	FCB	FMB	70	7.5	28	50	4	8	M6		
C	Less than 6.4	SAC	FCC	FMC	50	3	13	35	4	4.5	M4		

*SAA, SAB is aluminum, SAC is cast iron.

● Nipples

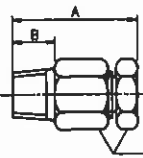
Unit : mm

Parallel screw 	Taper screw 	Nominal size (B)	Applicable tube diameter φd	Code				Screw sizes		No. of threads (Per inch)	Opposite distance and diagonal distance		A	B	K
				Parallel screw		Taper screw		Outer diameter C	Root diameter of screw		G	F			
				SUS 304	SUS 316	SUS 304	SUS 316								
G-R 1/2	6	SC1	SM1	TC1	TM1	9.7	8.56	28	14	16.2	6	10	4.0		
G-R 3/4	8	SC2	SM2	TC2	TM2	13.1	11.4	19	17	19.6	8	12	6.0		
G-R 1	10	SC3	SM3	TC3	TM3	16.6	14.9	19	21	24.2	10	15	6.4		
G-R 1 1/2	12	SC4	SM4	TC4	TM4	20.9	18.6	14	26	30	12	20	8.2		
G-R 2	16	SC6	SM6	TC6	TM6	26.4	24.1	14	32	37	16	25	9.5		
G-R 1	22	SC8	SM8	TC8	TM8	33.2	30.2	11	41	47.3	20	30	10.4		

Dimensions of screw-fixing nipple is the same

● Compression fitting nipple

Unit : mm

	Nominal size (B)	Applicable tube diameter φd	Code		Dimension of each part		
			Copper ring	Teflon ring	A	B	NUT HEX
			R 1/2	φ 3.2, 4.8	CF1	CR1	30
R 3/4	φ 6.4, 8.0	CF2	CR2	40	13	17×19.6	

■ GENERAL SPECIFICATIONS OF CONNECTING LEAD WIRES

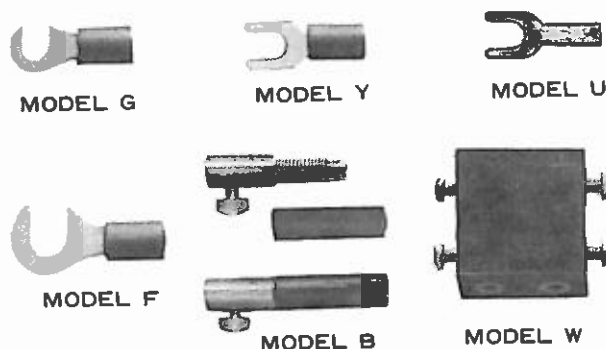
Kind	Code	Sectional area	Composition of cores	Resistance Value (per m)	Allowable temperature	Sheath material	Finished outer	Applications
3-core cord	WV38	0.75mm ²	30/0.18	0.025 Ω	(-) 20 to 60°C	Vinyl	φ8	Heat-resistant Chemical resistant
	WP38	0.75mm ²	30/0.18	0.025 Ω	(-) 20 to 100°C	Heat-resistant vinyl	φ8	Heat-resistant Chemical resistant
	WP35	0.3mm ²	12/0.18	0.055 Ω	(-) 20 to 100°C	Heat-resistant vinyl	φ8	Heat-resistant Chemical resistant
	WP33	0.18mm ²	32/0.08	0.110 Ω	(-) 20 to 100°C	Heat-resistant vinyl (three single twisted wires)	About φ3.5	Heat-resistant Chemical resistant
	WS33	0.18mm ²	32/0.08	0.110 Ω	(-) 60 to 250°C	Silicone rubber (three single twisted wires)	About φ3.5	Heat-resistant
	WS36	0.5mm ²	20/0.18	0.037 Ω	(-) 60 to 250°C	Silicone rubber	φ8	Heat-resistant
	WN38	0.5mm ²	20/0.18	0.037 Ω	(-) 40 to 70°C	Neoprene rubber	φ8	Atmospheric resistant
	WM34	0.5mm ²	45/0.12	0.037 Ω	(-) 50 to 250°C	Teflon and glass wool braided	About φ4	Heat-resistant
	WF32	0.18mm ²	7/0.18	0.110 Ω	(-)180 to 250°C	Teflon (FEP) (three single twisted wires)	About φ2.2	Heat-resistant Cold-resistant
	WY34	0.3mm ²	12/0.18	0.055 Ω	(-) 40 to 60°C	Cold-resistant vinyl	About φ3.8	Flexible
4-core cord	WY36	0.5mm ²	20/0.18	0.037 Ω	(-) 40 to 60°C	Cold-resistant vinyl	φ6	Flexible
	WL31	0.5mm ²	20/0.18	0.037 Ω	(-) 40 to 70°C	Lead sheathed neoprene rubber	φ10	For inner soil mounting
	WG38	0.75mm ²	30/0.18	0.025 Ω	(-) 20 to 100°C	Vinyl with internal shield	φ7	Noise resistant
	WV46	0.5mm ²	20/0.18	0.055 Ω	(-) 20 to 60°C	Vinyl	φ5.5	For 4-wire type
	WG47	0.3mm ²	12/0.18	0.037 Ω	(-) 20 to 60°C	Vinyl with internal shield	φ6.5	Noise resistant 4-wire type
	WS44	0.15mm ²	30/0.08	0.130 Ω	(-) 60 to 250°C	Silicone rubber	φ4	Heat-resistant
6-core cord	WV61	0.5mm ²	20/0.18	0.037 Ω	(-) 20 to 60°C	Vinyl	φ10	Double-element type RTD R320 series
	WS68	0.5mm ²	20/0.18	0.037 Ω	(-) 60 to 250°C	Silicone rubber	φ8	Heat-resistant
	WN61	0.5mm ²	20/0.18	0.037 Ω	(-) 40 to 70°C	Neoprene rubber	φ10	Double-element type RTD R320 series
	WL61	0.5mm ²	20/0.18	0.037 Ω	(-) 40 to 70°C	Lead sheathed neoprene rubber	φ12	For inner soil mounting

(Note) The sectional area, composition of cores and resistance value are figures per wire.

■ CONNECTION TIPS

The connection tips can roughly be divided into the tips for termination and tips for extension wires. The tips for termination are used for terminating extension wires and they are convenient for connections to terminals in a terminal box.

The connection tips are easily used for connecting mutual thermocouple wires and extension wires securely.



Unit : mm

Classification	For connecting terminals				For connecting lead wires and wires	
	For instrument terminals		For sensor terminals	For EB series instrument terminals	For connecting lead wires and wires	
Applications	G		Y	U	F	W
Code	G	Y	U	F	B	W
Specifications						
Covering color	+ : Red - : White		+ : Red - : White	+ : Red - : White	+ : Red - : Black	(Black)

Note) The U type tips are used in the terminal head for the sheath resistance thermometer.

Specifications subject to change without notice. Printed In Japan (I) 2003. 11 Recycled Paper

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