

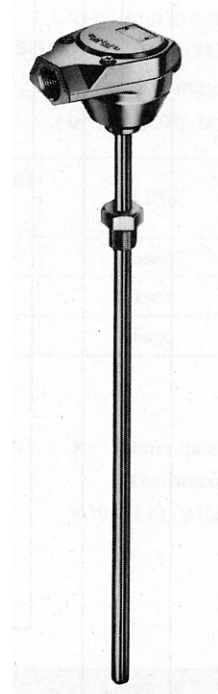
HIGH-PERFORMANCE THERMOCOUPLE
SOLIDPAK MODEL NC



The Solidpack is a high performance, general industrial thermocouple which features high sensitivity plus solidity and durability. The gap between the protective tube and the thermocouple wires is densely filled with an insulating material. The thick protective tube provides excellent response along with vibration resistance and impact resistance. In addition, it allows the sensor to withstand long-term continuous operation even in hot and unfavorable environments.

■ **FEATURES**

- The air tight protective tube provides excellent heat resistance, corrosion resistance and long life.
- Sensitivity and response are 6 to 10 times that of ordinary thermocouples.
- The Solid-pak structure resists vibration and mechanical shock. Since it can be bent, an L-type thermocouple without an elbow is available.
- The terminal head assures easy connection to extension wires.
- A double-element thermocouple is also available.



■ GENERAL SPECIFICATIONS

THERMOCOUPLE : Type K
CLASS : JIS class 2, class 1
PROTECTIVE TUBE MATERIAL :
 SUS316, SUS310S, SUH446, 253MA

OUTER DIAMETER OF PROTECTIVE TUBE
 (Thermocouple wire diameter) :
 $\phi 10(\phi 1.6)$, $\phi 15(\phi 1.6)$, $\phi 22(\phi 3.2)$

NORMAL WORKING LIMITS :

Type	Outer diameter	Protective tube material			
		SUS316	SUS310S	SUH446	253MA
K	$\phi 10$	900°C	1150°C		
	$\phi 15$	1000°C	1150°C		
	$\phi 22$	1000°C	1200°C	1200°C	1200°C

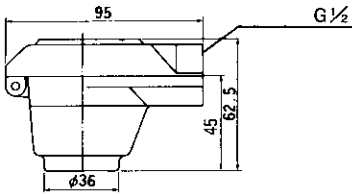
LENGTH OF PROTECTIVE TUBE :
 Up to 2000mm
TIP SHAPE : Closed non-grounded type
INSULATION RESISTANCE : More than 5M Ω (at 500V DC)
INSULATOR : High-purity magnesium oxide MgO
RESPONSE : (in 0 to 100°C boiling water)

Outer diameter of protective tube	Time constant	
	63.2%	90%
$\phi 10$	8sec	17sec
$\phi 15$	11sec	21sec
$\phi 22$	16sec	32sec

DOUBLE ELEMENT : K... Outer diameter of protective tube
 (Thermocouple wire diameter)
 $\phi 10(\phi 1.6)$, $\phi 15(\phi 1.6)$, $\phi 22(\phi 2.3)$

■ TERMINAL HEAD

Unit : mm

Dimensions	
Material	Diecast Aluminum
Coating	Aventurin chromium plating
Construction	Closed waterproof

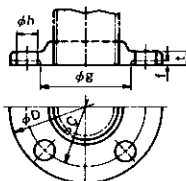
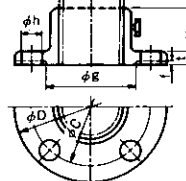
PROTECTIVE TUBE TYPES AND EXTERNAL DIMENSIONS

	CODE	MOUNTING FIXTURE	SHAPE AND EXTERNAL DIMENSIONS
Straight type	S 1	None	
	S 2	Sliding flange	
	S 3	Screw fixing nipple	
Flange type	F 1	Fixed flange	
	F 2	Fixed flange Stepped tube	
Nipple type	N 1	Fixed nipple	
	N 2	Fixed nipple Stepped tube	
L type	L 1	None	
	L 2 (L 3)	Sliding flange (Sliding flange on sleeve)	
	L 4 (L 5)	Sliding nipple (Screw fixing nipple on sleeve)	

■ MOUNTING FIXTURES

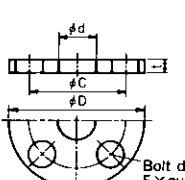
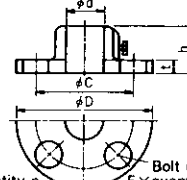
● JIS Flange

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	3/4	FC4	FM4	80	9	1	44	34	60	12	4
		20	3/4	FC5	FM5	85	10	1	49	35	65	12	4
		25	1	FC6	FM6	95	10	1	59	35	75	12	4
		40	1 1/2	FC9	FMD	120	12	2	75	37	95	15	4
		50	2	FC9	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	FCH	FMH	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	3/4	JC4	JM4	95	12	1	51	37	70	15	4
		20	3/4	JC6	JM6	100	14	1	56	39	75	15	4
		25	1	JC6	JM6	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	JCH	JMH	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	23	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	KCH	KMH	270	26	2	195	51	225	25	8

● Flange(CHINO)

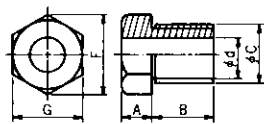
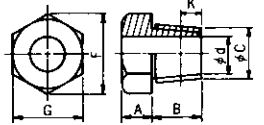
Unit : mm

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 φG	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		

*SAA, SAB: Aluminum

● 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, R3/8	Less than 10	SC3	SM3	TC3	TM3	16.6	14.9	19	21	24.2	10	15	6.4
		G, R1/2	Less than 12	SC4	SM4	TC4	TM4	20.9	18.6	14	26	30	12	20	8.2
		G, R3/4	Less than 16	SC6	SM6	TC6	TM6	26.4	24.1	14	32	37	16	25	9.5
		G, R1	Less than 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

■ GENERAL SPECIFICATIONS OF EXTENSION WIRES

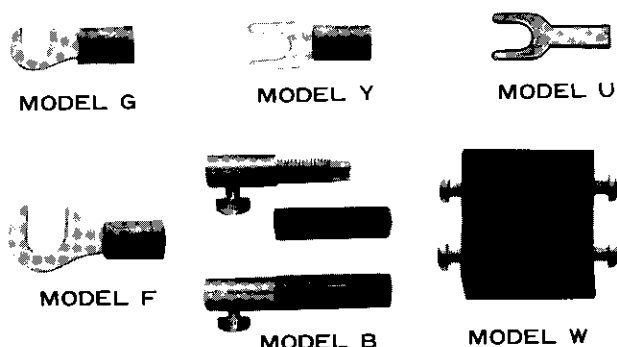
Type	Applications	Code	Composition of core (mm)		Covering of core		Resistance (Ω/m)	Working temperature (°C)	Allowance of error (μV)	Finished outer diameter (mm)	
			+ side	- side	Material	Color					
K	Precision class	For heat-resistant	KXHS	Chromel 0.65×7	Alumel 0.65×7	Glass wool braid	Blue	0 to 150	±100	4×6.5	
		For water-proof	KXVS			Vinyl					(-20 to 90)
	Normal class	Thin type for heat-resistant	KXJS	Chromel 0.32×7	Alumel 0.32×7	Glass wool braid		0 to 150		±60	3×4.9
			Thin type for general use			KXIS		Vinyl			
		For heat-resistant	WXH	Iron 0.65×7	Constantan 0.65×7	Glass wool braid		0 to 150		4×6.5	
		Thin type for heat-resistant	WXJ	Iron 0.3×7	Constantan 0.3×7	Glass wool braid		0 to 150		2.4×4	
		Thin type for general use	VXI	Copper 0.3×7		Vinyl		(-20 to 90)		3×4.9	
		For water-proof	VXV	Copper 0.65×7	Constantan 0.65×7	Vinyl		0 to 90		5×8	
		With sheath shield	WXA	Iron 0.3×7	Constantan 0.3×7	Stainless braid		0 to 150		2.8×4.5	

Note) Fine type extension wires are used for head less type and Y head type.

■ 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 relaying terminals	
Applications	For instruments terminals			For sensor terminals	For connecting extension wires and wires	
Code	G	Y	F	U	B	W
Specifications						
Covering color	+ : Red - : White	+ : Red - : White	+ : Red - : White		+ : Red - : Black	(Black)

Note) The U type tips are used in the terminals head.