

Model **BR** series

Low Temperature Probes

Model BR series probes are ideal for measuring temperature inside of freezer, refrigerator, incubator or drying oven. Specific components may be combined to customize products for the needs of a customer's specific application.

BR 模式系列

BR 模式系列产品是可夹在门上的测棒，适合测量冷藏库，冷冻库，恒温实验箱，干燥炉等的内部温度。

通过组合各个规格的组件，可以按照客户的用途进行个性选配。

モデルBRシリーズは、冷凍庫・冷蔵庫・恒温槽・インキュベーターや乾燥炉の温度測定に適しています。

各パーツの仕様を組み合わせる事により、お客様の用途に合わせてカスタマイズする事が出来ます。

Typical probes of BR series

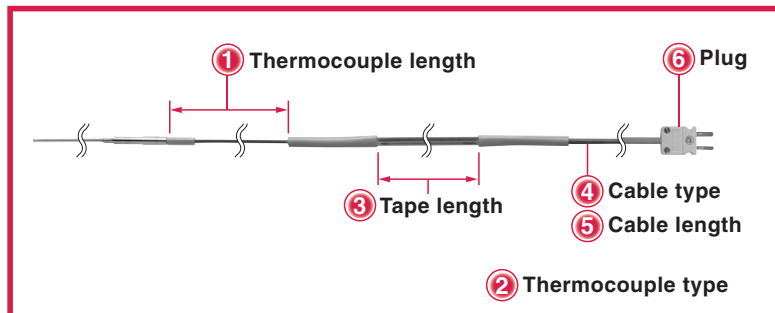
Type K Model	BR-10K-1-TS1-ANP
Type E Model	BR-10E-1-TS1-ANP

Temp. range	Tolerance	Response time	Durability
-100~200°C	±2.5°C (at 100°C)	1.5 s	C

Type K Model	BR-10K-0-TS1-ANP
Type E Model	BR-10E-0-TS1-ANP

Temp. range	Tolerance	Response time	Durability
-100~200°C	±2.5°C (at 100°C)	1.5 s	C

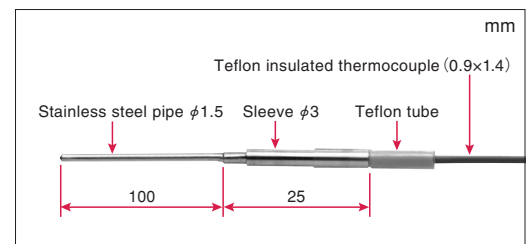
How to order of BR series



BR-01K-1-TS1-ANP

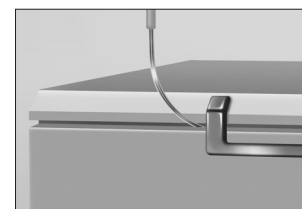


① Thermocouple length	01 : 100mm 02 : 200mm 90 : 9000mm
② Thermocouple type	K : Chromel-Alumel E : Chromel-Constantan
③ Tape length	0 : Without tape 1 : 100mm 9 : 900mm
④ Cable type (See page 5)	TS
⑤ Cable length	1 : 1m 1.5 : 1.5m 2 : 2m 2.5 : 2.5m
⑥ Plug (See page 4)	ANP ASP W



Specifications

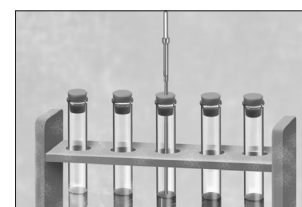
Tolerance	±2.5°C (at 100°C)
Response time	1.5 s
Durability rank	C
Temp. range	-100~200°C



It is possible to insert through a door.

厚度为0.2mm的导线可夹在门上。

厚さ0.2mmで扉に挟むことが出来ます。



Ideal for measuring temperature of liquid, semi-solid or air.

适合测量内部温度和环境温度。

内部温度や雰囲気温度の測定に適しています。

Model **BS** series

General Internal Probes

Model BS series probes are internal temperature sensors designed to measure the temperatures of liquid or semi-solid materials.

Specific components may be combined to customize products for the needs of a customer's specific application.

BS模式系列

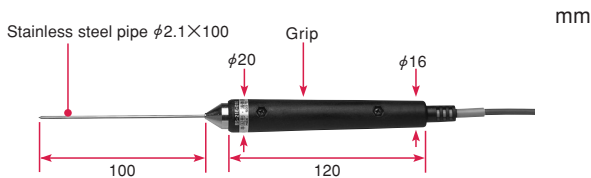
BS模式系列产品是适用于液体或半固态物体温度测试的内部温度感应器。通过组合各个规格的组件，可以按照客户的用途进行个性选配。

モデルBSシリーズは、液体または半固形物の温度測定に適した内部用温度センサです。

各パーツの仕様を組み合わせる事により、お客様の用途に合わせてカスタマイズする事が出来ます。

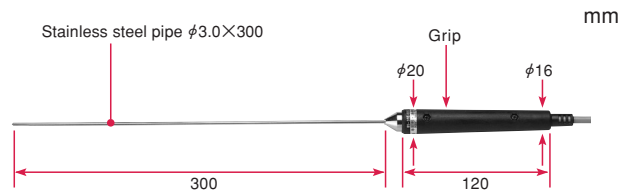
Typical probes of BS series

Type K Model BS-21K-010-TC1-ANP
Type E Model BS-21E-010-TC1-ANP



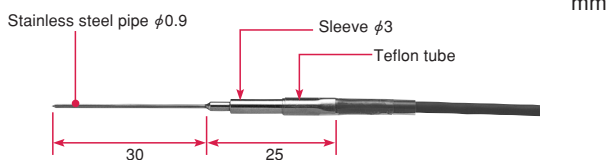
Temp. range	Tolerance	Response time	Durability
-200~500°C	±2.5°C (at 100°C)	2.5 s	B

Type K Model BS-31K-030-TC1-ANP
Type E Model BS-31E-030-TC1-ANP



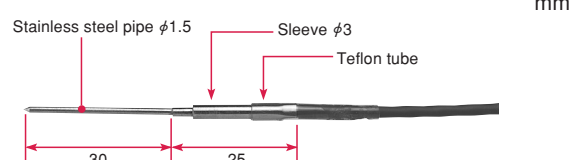
Temp. range	Tolerance	Response time	Durability
-200~500°C	±2.5°C (at 100°C)	3.0 s	B

Type K Model BS-91K-003-TS1-ANP
Type E Model BS-91E-003-TS1-ANP



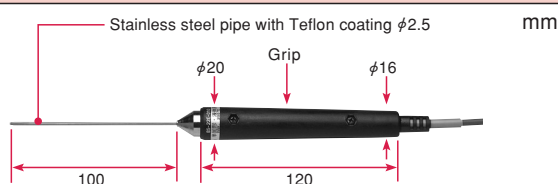
Temp. range	Tolerance	Response time	Durability
-200~300°C	±2.5°C (at 100°C)	0.5 s	C

Type K Model BS-11K-003-TS1-ANP
Type E Model BS-11E-003-TS1-ANP



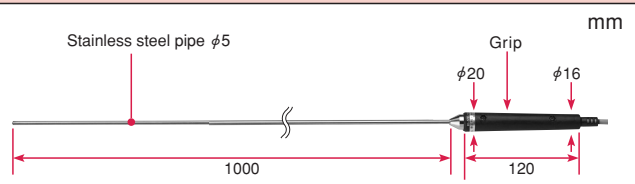
Temp. range	Tolerance	Response time	Durability
-200~300°C	±2.5°C (at 100°C)	1.5 s	C

Type K Model BS-22K-010-TC1-ANP
Type E Model BS-22E-010-TC1-ANP



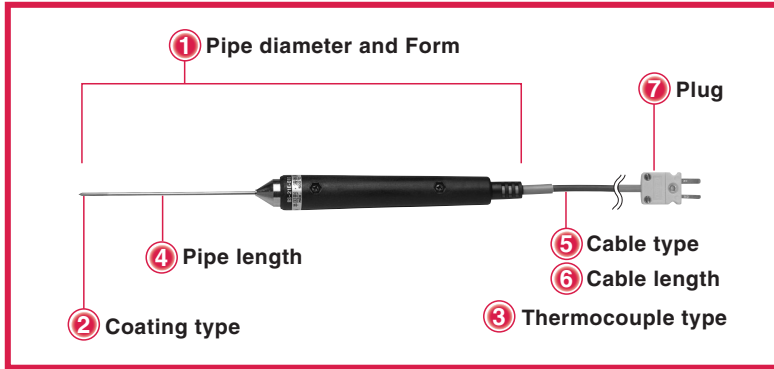
Temp. range	Tolerance	Response time	Durability
-200~200°C	±2.5°C (at 100°C)	20 s	B

Type K Model BS-51K-100-TC1-ANP
Type E Model BS-51E-100-TC1-ANP



Temp. range	Tolerance	Response time	Durability
-200~500°C	±2.5°C (at 100°C)	5 s	B

How to order of BS series



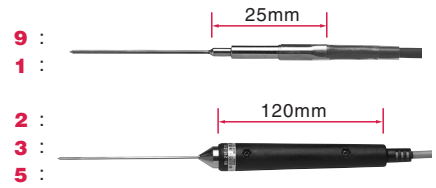
BS-21K-010-TC1-ANP



① Pipe diameter and Form (Max. temp.)	9 : ϕ 0.9mm: Sleeve type (300°C) 1 : ϕ 1.5mm: Sleeve type (300°C) 2 : ϕ 2.1mm: Grip type (500°C) 3 : ϕ 3.0mm: Grip type (500°C) 5 : ϕ 5.0mm: Grip type (500°C)	
② Coating type	1 : Non-coating 2 : Teflon coating (BS-5* cannot be manufactured.)	
③ Thermocouple type	K : Chromel-Alumel E : Chromel-Constantan	
④ Pipe length	003 : 30mm 005 : 50mm 008 : 80mm 010 : 100mm 015 : 150mm 020 : 200mm 030 : 300mm 040 : 400mm 050 : 500mm 100 : 1000mm	The pipe length is fixed for certain pipe diameters. For more information, see the table to the right.
⑤ Cable type (See page 5)	TS : For BS-9*, BS-1* (Sleeve type) TC : For BS-2*, BS-3*, BS-5* (Grip type)	
⑥ Cable length	1 : 1m 1.5 : 1.5m 2 : 2m 2.5 : 2.5m	
⑦ Plug (See page 4)	ANP ASP W	

① Pipe diameter and Form

You can choose pipe diameter and form as below.

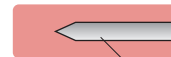


② Coating type

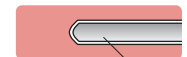
You can choose coating type as below.

1 : Non-coating

2 : Teflon coating



Stainless steel pipe



Stainless steel pipe

The operating temperature limit of Teflon-coated probes is 200°C, regardless of pipe diameter.

④ Pipe length

	Pipe diameter (mm)				
	BS-9* (ϕ 0.9)	BS-1* (ϕ 1.5)	BS-2* (ϕ 2.1)	BS-3* (ϕ 3.0)	BS-5* (ϕ 5.0)
003 :	●	●			
005 :	●	●	●		
008 :	●	●			
010 :	●	●	●	●	
015 :		●	●	●	
020 :			●	●	
030 :				●	
050 :				●	●
100 :					●

Specifications

Pipe diameter	Response time	Tolerance	Durability rank
BS-9*	0.5 s	\pm 2.5°C	C
BS-1*	1.5 s	\pm 2.5°C	C
BS-2*	2.5 s	\pm 2.5°C	B
BS-3*	3.0 s	\pm 2.5°C	B
BS-5*	5.0 s	\pm 2.5°C	B
Teflon coating	20 s	\pm 2.5°C	—*

*Varies with pipe diameter.

Model BT series

Needle Type Probes

BT模式系列

BT模式系列产品的顶端呈针形，是可以插入半固态物体中的温度感应器。其中一部分型号产品的针形顶端可更换，可以单独购买针形顶端配件。通过组合各个规格的组件，可以按照客户的用途进行个性选配。

Model BT series probes feature needle tips that can be inserted into semi-solid materials.

Needle tips for models with replaceable tips can be purchased separately.

Specific components may be combined to customize products for the needs of a customer's specific application.

モデルBTシリーズは、先端の針部を半固形物に突き刺す事ができる温度センサです。

針部の交換が可能なモデルでは、針部のみの購入も可能です。各パーツの仕様を組み合わせる事により、お客様の用途に合わせてカスタマイズする事が出来ます。

Typical probes of BT series

Type K Model BT-31K-TC1-ANP
Type E Model BT-31E-TC1-ANP

Temp. range	Tolerance	Response time	Durability
-200~300°C	±2.5°C (at 100°C)	1.5 s	S

Type K Model BT-92K-TC1-ANP
Type E Model BT-92E-TC1-ANP

Temp. range	Tolerance	Response time	Durability
-200~500°C	±2.5°C (at 100°C)	3.0 s	B

Type K Model BT-72K-TC1-ANP
Type E Model BT-72E-TC1-ANP

Temp. range	Tolerance	Response time	Durability
-200~300°C	±2.5°C (at 100°C)	1.5 s	S

Type K Model BT-22K-TC1-ANP
Type E Model BT-22E-TC1-ANP

Temp. range	Tolerance	Response time	Durability
-200~300°C	±2.5°C (at 100°C)	1.5 s	C

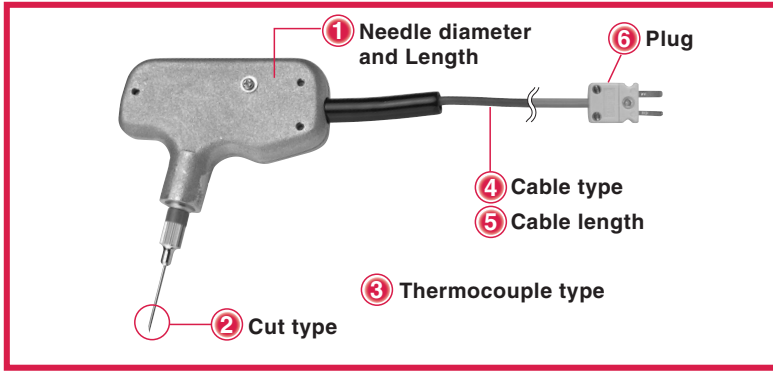
Type K Model BT-11K-TC1-ANP
Type E Model BT-11E-TC1-ANP

Temp. range	Tolerance	Response time	Durability
-200~210°C	±2.5°C (at 100°C)	0.5 s	C

Type K Model BTN-41K
Type E Model BTN-41E

Temp. range	Tolerance	Response time	Durability
-200~300°C	±2.5°C (at 100°C)	1.5 s	S

How to order of BT series



BT-31K-TC1-ANP



1 Needle diameter and Form

You can choose grip form as below.

	Form
BT-1* BT-2*	90mm
BT-3* BT-4* BT-5* BT-6* BT-7* BT-8*	96mm With replaceable tips
BT-9*	120mm

2 Cut type

You can choose cut type as below.

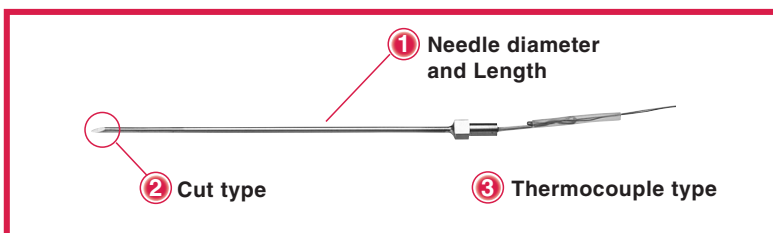


1 Needle diameter and Length (Max. temp.)	1 : ϕ 0.9mm : 15mm (210°C) 2 : ϕ 1.5mm : 30mm (300°C) 3 : ϕ 1.6mm : 30mm (300°C) 4 : ϕ 1.6mm : 40mm (300°C) 5 : ϕ 1.6mm : 50mm (300°C) 6 : ϕ 1.6mm : 60mm (300°C) 7 : ϕ 1.6mm : 70mm (300°C) 8 : ϕ 5.0mm : 75mm (500°C) 9 : ϕ 5.0mm : 100mm (500°C) (Top is ϕ 3mm)
2 Cut type	1 : Cut 2 : Sharp
3 Thermocouple type	K : Chromel-Alumel E : Chromel-Constantan
4 Cable type (See page 5)	TC
5 Cable length	1 : 1m 1.5 : 1.5m 2 : 2m 2.5 : 2.5m
6 Plug (See page 4)	ANP ASP W

Specifications

Needle diameter	Response time	Tolerance (at 100°C)	Durability rank
BT-1*	0.5 s	\pm 2.5°C	C
BT-2*	1.5 s	\pm 2.5°C	C
BT-3*~BT-7*	1.5 s	\pm 2.5°C	S
BT-8*	3.0 s	\pm 2.5°C	S
BT-9*	3.0 s	\pm 2.5°C	B

How to order of Spare needle



Spare needle is a five-pieces set

BTN-41K



1 Needle diameter and Length (Max.temp.)	3 : ϕ 1.6mm : 30mm (300°C) 4 : ϕ 1.6mm : 40mm (300°C) 5 : ϕ 1.6mm : 50mm (300°C) 6 : ϕ 1.6mm : 60mm (300°C) 7 : ϕ 1.6mm : 70mm (300°C) 8 : ϕ 5.0mm : 75mm (500°C)
2 Cut type	1 : Cut 2 : Sharp
3 Thermocouple type	K : Chromel-Alumel E : Chromel-Constantan

Model SF series

Fine Flexible Probes

Model SF series probes are flexible internal temperature sensors featuring extra-fine thermocouple wires covered with a Teflon-coated sheath.

Specific components may be combined to customize products for the needs of a customer's specific application.

SF模式系列

SF模式系列产品是将极细热电偶线用特氟隆覆盖，柔软性很强的内部温度感应器。通过组合各个规格的组件，可以按照客户的用途进行个性选配。

モデルSFシリーズは、極細熱電対線をテフロンで被覆した、柔軟性のある内部用温度センサです。

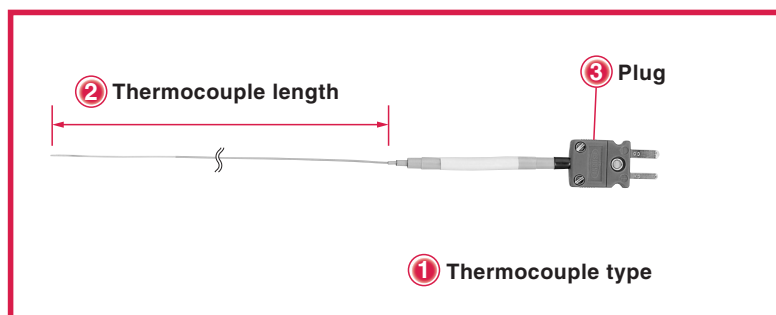
各パーツの仕様を組み合わせる事により、お客様の用途に合わせてカスタマイズする事が出来ます。

Typical probes of SF series

Type K Model SF-K-100-ANP			
Type E Model SF-E-100-ANP			
mm			
Temp. range	Tolerance	Response time	Durability
-50~200°C	±2.5°C (at 100°C)	2.0 s	S

Type K Model SF-K-200-ANP			
Type E Model SF-E-200-ANP			
mm			
Temp. range	Tolerance	Response time	Durability
-50~200°C	±2.5°C (at 100°C)	2.0 s	S

How to order of SF series



② Thermocouple length



※ This probe does not incorporate compensating lead wires.

SF-K-100-ANP



① Thermocouple type	K : Chromel-Alumel E : Chromel-Constantan
② Thermocouple length	050 : 500mm 100 : 1000mm 150 : 1500mm 200 : 2000mm
③ Plug (See page 4)	ANP ASP W

Specifications

Tolerance	±2.5°C (at 100°C)
Response time	2.0 s
Durability rank	S
Max. temp.	200°C

Model AT series

Air Temperature Probes

Model AT series probes are Air temperature sensors designed to measure the temperature of Air.

Specific components may be combined to customize products for the needs of a customer's specific applications.

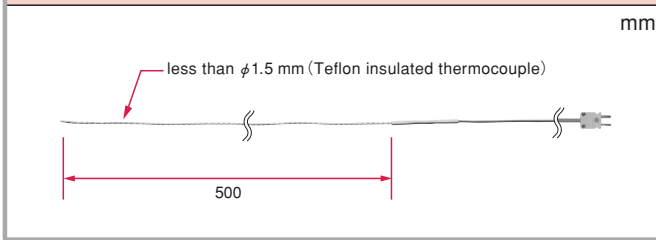
AT模式系列

AT模式系列产品是适用于空气温度测试的感应器。通过组合各个规格的组件，可以按照客户的用途进行个性选配。

モデルATシリーズは、空気温度計測に適した温度センサです。各パーツの仕様を組み合わせる事により、お客様の用途に合わせてカスタマイズする事が出来ます。

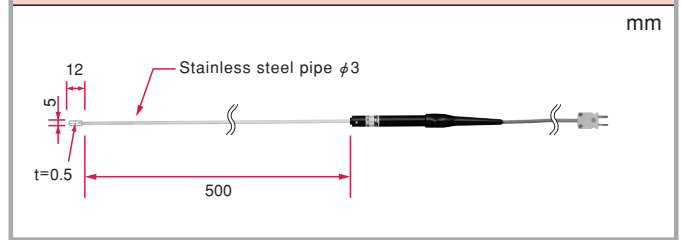
Typical probes of AT series

Type K Model **AT-10K-050-0-TS1-ANP**
Type E Model **AT-10E-050-0-TS1-ANP**



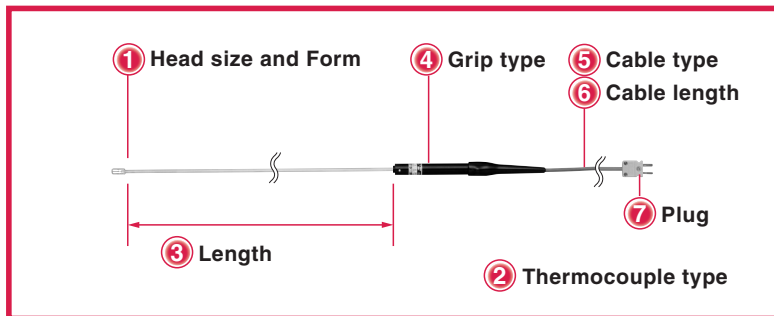
Temp. range	Tolerance	Response time	Durability
-50~200°C	±2.5°C (at 100°C)	0.3 s	S

Type K Model **AT-30K-050-1-TC1-ANP**
Type E Model **AT-30E-050-1-TC1-ANP**



Temp. range	Tolerance	Response time	Durability
-50~500°C	±2.5°C (at 100°C)	0.3 s	S

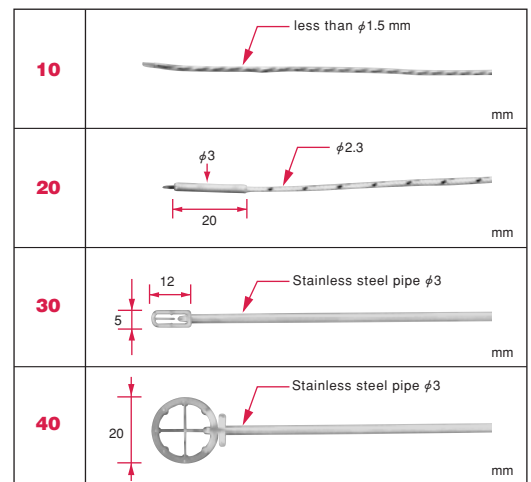
How to order of AT series



AT-30K-050-1-TC1-ANP

① ② ③ ④ ⑤ ⑥ ⑦

① Head size and Form



③ Length

	AT-10	AT-20	AT-30	AT-40
030	●	●	●	●
050	●	●	●	●
100		●	●	●
200		●		

Specifications

Tolerance	±2.5°C (at 100°C)
Response time	0.3 s
Durability rank	S

① Head size and Form (Max. temp.)	10 : φ1.5mm Teflon insulated thermocouple (200°C) 20 : φ3mm Glass fiber insulated thermocouple (300°C) 30 : □5×12mm Head (500°C) 40 : φ20mm Head (500°C)
② Thermocouple type	K : Chromel-Alumel E : Chromel-Constantan
③ Length	030 : 300mm 050 : 500mm 100 : 1000mm 200 : 2000mm
④ Grip type	0 : No grip 1 : Grip AT-30, AT-40 only
⑤ Cable type (See page 5)	TS : For no grip type TC : For standard grip type
⑥ Cable length	1 : 1m 1.5 : 1.5m 2 : 2m 2.5 : 2.5m
⑦ Plug (See page 4)	ANP ASP W

Model SHEATH series

Bendable Wiry Probes

Model SHEATH series probes are internal temperature sensors designed to measure the temperature of liquids, air, and gases.

The sheathed section can be bent to a radius five times the outer diameter of the sheath. Specific components may be combined to customize products for the needs of a customer's specific application.

鞘状模式系列

鞘状模式系列产品是适用于液体或空气温度测试的内部温度感应器。鞘状部分的鞘状外形可弯曲至其半径的5倍。

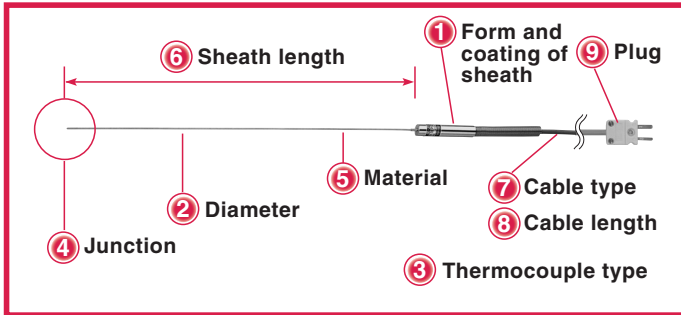
通过组合各个规格的组件，可以按照客户的用途进行个性选配。

シース形センサは、液体や空気温度測定に適した内部用温度センサです。

シース部分は、シース外形の5倍の半径まで曲げる事が可能です。

各パーツの仕様を組み合わせる事により、お客様の用途に合わせてカスタマイズする事が出来ます。

How to order of SHEATH series



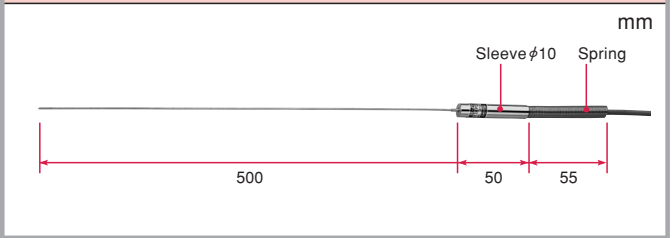
B3.2-K-J1-M1-L500-TC1-ANP



Typical probes of SHEATH series

Type K Model **B3.2-K-J1-M1-L500-TC1-ANP**

Type E Model **B3.2-E-J1-M1-L500-TC1-ANP**

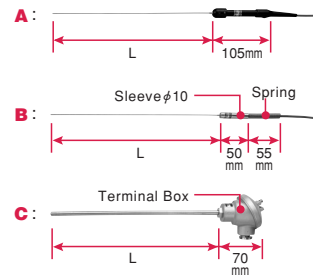


Temp. range	Tolerance	Response time	Durability
-40~750°C	±2.5°C (at 100°C)	5.0 s	S

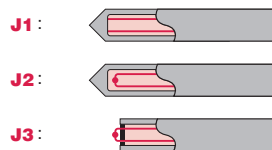
① Form and coating of sheath	A : Grip type B : Sleeve type C : Terminal box type AH : Grip type / Teflon coating BH : Sleeve type / Teflon coating CH : Terminal box type / Teflon coating
② Diameter	0.25 : φ 0.25mm 0.5 : φ 0.5mm 1.0 : φ 1.0mm 1.6 : φ 1.6mm 3.2 : φ 3.2mm 4.8 : φ 4.8mm 6.4 : φ 6.4mm 8.0 : φ 8.0mm
③ Thermocouple type	K : Chromel-Alumel E : Chromel-Constantan
④ Junction	J1 : Grounded junction J2 : Ungrounded junction J3 : Exposed junction
⑤ Material	M1 : SUS 316 M2 : SUS 310S (Only Type K) M3 : Inconel (Only Type K)
⑥ Sheath length	L100 : 100mm L200 : 200mm
⑦ Cable type (See page 5)	TC
⑧ Cable length	1 : 1m 1.5 : 1.5m 2 : 2m
⑨ Plug (See page 4)	ANP ASP W

① Form

You can choose form as below.



④ Junction



【Supplementary information】

The sheath tube can be coated with teflon.

Teflon coating will improve resistance against chemicals and enable the use of the probe for measuring the temperatures of acids, alkalis, food, etc.

Applicable sheath diameter : φ1.0, φ1.6, φ3.2

Maximum length : 1m

Operating temperature limit : 200°C

Minimum bending radius : Approx. 10mm

Specifications

Outside diameter (mm)		0.25	0.5	1.0	1.6	3.2	4.8	6.4	8.0
Type : K (Max.temp.)	SUS 316 (M1)	—	—	650°C	650°C	750°C	800°C	800°C	900°C
	SUS 310S (M2)	—	—	650°C	650°C	750°C	800°C	800°C	900°C
	Inconel (M3)	500°C	500°C	650°C	650°C	750°C	900°C	1000°C	1050°C
Type : E (Max.temp.)	SUS 316 (M1)	—	—	650°C	650°C	750°C	800°C	800°C	800°C
Response time		0.4s	0.9s	2s	3s	5s	10s	15s	20s
Standard resistance (Ω/m)	Type K	570	124	32	13	4	2.2	1.0	0.7
	Type E	—	—	38	15	5	2.6	1.2	0.9
Max. length (m)	J1, J3	5	10	50	50	50	50	30	20
	J2	2	2	2	5	15	30	30	20
Tolerance	Type K	-40~333°C : ±2.5°C, 333~1200°C : ± (measuring × 0.75%) °C							
	Type E	-40~333°C : ±2.5°C, 333~ 900°C : ± (measuring × 0.75%) °C							

※ Avoid immersing these probes in molten metal. Doing so may result in corrosion of the sheathed sensor.