



## Electric Contact Bimetallic Thermometer

► **BT-P**

General purpose electric-contact  
bi-metal thermometer



Contact principle: Magnetic (MK)

Explosion-proof inductive electric contact  
bi-metal thermometer



Contact principle: Inductive (EK)

All stainless steel electric-contact  
bi-metal thermometer



Contact principle: Solid model (SK)

All stainless steel electric-contact  
back mounting bi-metal thermometer



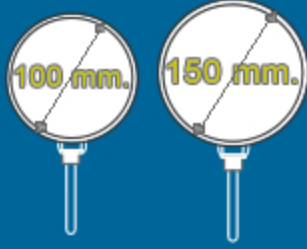
Contact principle: Solid model (SK)

### How to Order

Please specify the following properties when the thermometer ordering.

- Model number,
- Dial size,
- Dry or Liquid filled (GD=Glycerin, SD=Silicone filled)
- Range and temperature unit (C or F)
- Enclosure (B=Bajonet C=Crimped)
- Connection thread,
- Immersion length (mm.),
- Accuracy,
- If any; contact principle (MK,SK,EK)
- Contact type

For example: **BT-P-100-(0/160 C)-B-Angle-R1/2-1.6-EK-831-1**



# Snap Action Contact /Bimetallic Thermometer

## ► BT-S/P

### Specifications

Diameter	Φ 100mm ,Φ150mm
Accuracy	1.5%; 2.5% Full scale
Range	0~300°C
Enclosure	bayonet bezel, steel screwed
Wetted Parts	Copper alloy
Connection	R1/2", 1/2" NPT, M20X1.5
Stem	Φ6mm , 10mm



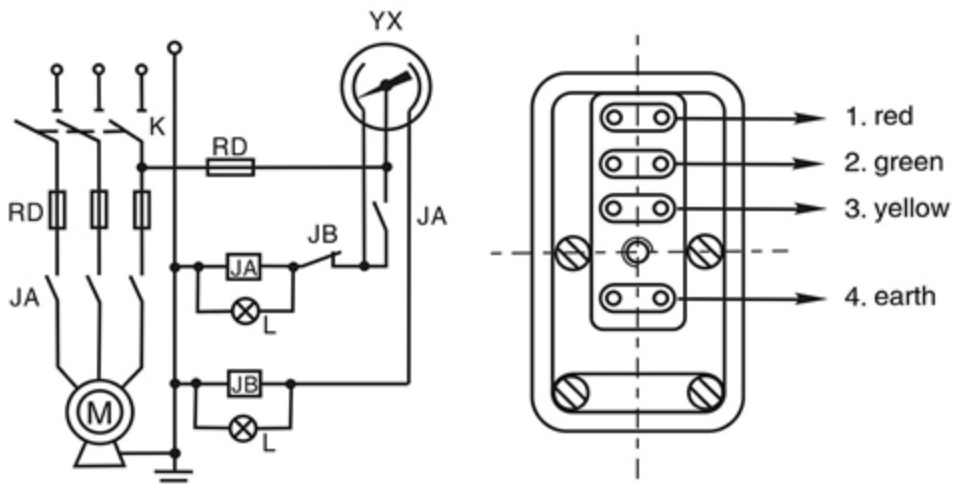
### Electrical Specifications

Contact Arrangement	
Function	Type Number
N.O	01
N.C.	02
N.O., N.O.	11
N.O., N.C.	12
N.C., N.O	21
N.C., N.C.	22

Maximum voltage	AC 380V or DC 220V	
Maximum current	0.7A	1A
Contact power	10VA	30VA

Control mode: Upper lower limits contacts (unless two upper or lower limits specified)

### Wiring Scheme



YX	Electric Contact Thermometer
M	Power Generator
JA	Contactor & Its Contacts
JB	Medium relay & Its Contacts
K	Combination switch
L	Indicating Lamp
RD	Fuse



# Solid Model Contact /Bimetallic Thermometer

## ► BT-P

### Technical

Model	BT-P, BT-S
Diameter	Φ 100mm
Accuracy	± 1.5% Full scale
Range	All stainless steel: -60~500°C; General: 0~300°C
Enclosure	Inside bayonet bezel, AISI304;
Wetted Parts	Optional: AISI304; AISI 316; AISI316L
Connection	R1/2", 1/2" NPT, M20X1.5
Stem	Φ 6mm; Φ 6.35mm; Φ 8mm; Φ 10mm; Φ 12mm
Remark	220V 140mA ≈ 30.8W single upper limit, double upper limit, upper-lower limit, double lower limit,



### Switch control method of electric contacts

Code of contacts	Code title	Quantity	Switch function of deasil rotating pointer	Sketchmap
One upper limits	821.1	1	Over the setpoint,circuit is turned on (N.O.)	
One lower limits	821.2		Over the set point,circuit is cut off (N.C.)	
Two upper limits	821.11	2	Over the setpoint,circuit is turned by contact 1 and 2	
Two lower limits	821.22		Over the setpoint,circuit is cut by contact 1 and 2	
N.O.upper and lower limits	821.21		Over the setpoint,circuit is cut by contact 2,turned on by contact 1	
N.C.upper and lower limits	821.12		Over the setpoint,circuit is cut by contact 1,turned on by contact 2	

#### Notes

1. When ordering, please specify the name or No. of contacts referring to the table.
2. Leads of single or double contacts: lower limits is contact 2, upper limits setpoint is contact 1, contact 3 is public port.
3. Turn on and cut function details: The table shows the turn on and cut situations as pointer moves deasil, and the function is opposite while the pointer moves widdershins



## Ex-Proof Inductive Contact

# ▶ BT-P

### Summary

The switch of BT-Ex series explosion-proof inductive bi-metal thermometer is inductive approach form, because of non-direct contact type, it has no spoilage to the power supply system. Without electric spark, long using life, little impact on the measurement accuracy, it is not only applicable to certain dangerous places, but also suitable for frequent turn on/off occasions. It has the testing function, automatic control, and automatic warning to the liquid medium. BT-Ex series bimetallic thermometers are designed to directly measure low and medium temperature of fluid steam.

The sensing element "Bimetallic Coil" is composed of 2 indivisible metal sheets. Since the 2 metals have different rates of thermal expansion, the bimetal deforms varying with temperature. This expansion is almost in proportion to temperature. The one end of bimetal is fixed, the other is connected to mechanism to drive pointer. It is used for measuring medium temperature from  $-60$  to  $+500^{\circ}\text{C}$  of liquid, steam and gas in the auto-controlling & auto-alarm warning system.

BT-Ex series explosion-proof inductive bi-metal thermometer is based on IEC 60079-0 the request of the electric equipment used in explosive gas environment > " IEC 60079-11 < safe explosive gas environment electrical equipment intrinsically safety-type I ">, and qualified the relevant departments for the national explosion test.

BT-Ex series explosion-proof inductive bi-metal thermometer should match with safety bar P+F to be a system of intrinsically safe explosion-proof. This system is applied to 1 area and 2 area with explosive gas.

### Specifications

1. Diameter:  $\Phi 100\text{mm}$
2. Structure: bottom & cent back
3. Controlling: inductive approach switch,
4. Accuracy:  $\pm 1.5\%$
5. Range:  $-60^{\circ}\text{C} \sim 500^{\circ}\text{C}$
6. Inductive approach switch electrical parameter:
  - ① Working voltage: 8VDC
  - ② Working current: Opening  $\geq 3\text{mA}$ , Closed  $\leq 1\text{mA}$
  - ③ On/off frequency  $\leq 5000\text{Hz}$
  - ④ Inductance:  $100 \mu\text{H}$
  - ⑤ Electric capacitance: 30nF
  - ⑥ Safe working current:  $I_i < 52\text{mA}$
  - ⑦ Safe working voltage:  $U_i < 16\text{VDC}$
  - ⑧ Maximum working power:  $P_{\text{max}} < 169\text{mW}$
7. Ambient temperature :  $-20^{\circ}\text{C} \sim +80^{\circ}\text{C}$
8. Protection class: Exib II CT69
9. Type of gauge: Ip65, oil-filling vibration-proof
10. Number of conducts: 1 or 2
11. Wetted parts: AISI 316, AISI 316L, AISI 304
12. Case material: AISI 304(AISI 316 optional)
13. Window: tempered glass
14. IP: general type: IP54 sealed & vibration-proof type: IP65
15. Connection: thread, flanged, clamped
16. Filling oil: instrument's oil





# Ex-Proof Inductive Contact

## ► BT-P

### Switch control method and wiring diagram of electric inductive approach switch

Code of contacts	Model code	Contact ea.	Contact function (principle)	Wiring scheme
1 x min	831.2	1	Contact breaks by rising pressure (NC normally closed)	
1 x max	831.1		Contact makes by rising pressure (NO normally open)	
2 x min	831.22	2	Contact breaks by rising pressure (NC normally closed)	
2 x max	831.11		Contact makes by rising pressure (NO normally open)	
min - max	831.12		Contact breaks by falling and rising (1NO-1 NC)	
max - min	831.21		Contact makes by falling and rising (1NC-1 NO)	

#### Notice:

1. When ordering, please specify the name or No. of contacts referring to the table.
2. Turn on and cut function details: The table shows the turn on and cut situations as pointer moves deasil, and the function is opposite while the pointer moves widdershins.

### Safe bar option

Function	Code	Quantity	Safe bar code (power supply voltage 24V)	Safe bar code (power supply voltage 220V)
One up limit	2	1	KFD2-SR2-Ex1.W	KFA6-SR2-Ex 1.W
One down limit	1			
Two up limit	22	2	KFD2-SR2-Ex2.W	KFA6-SR2-Ex 2.W
Two down limit	11			
N.O. up & down limit	12			
N.C. up & down limit	21			

### Safe bar option Specifications

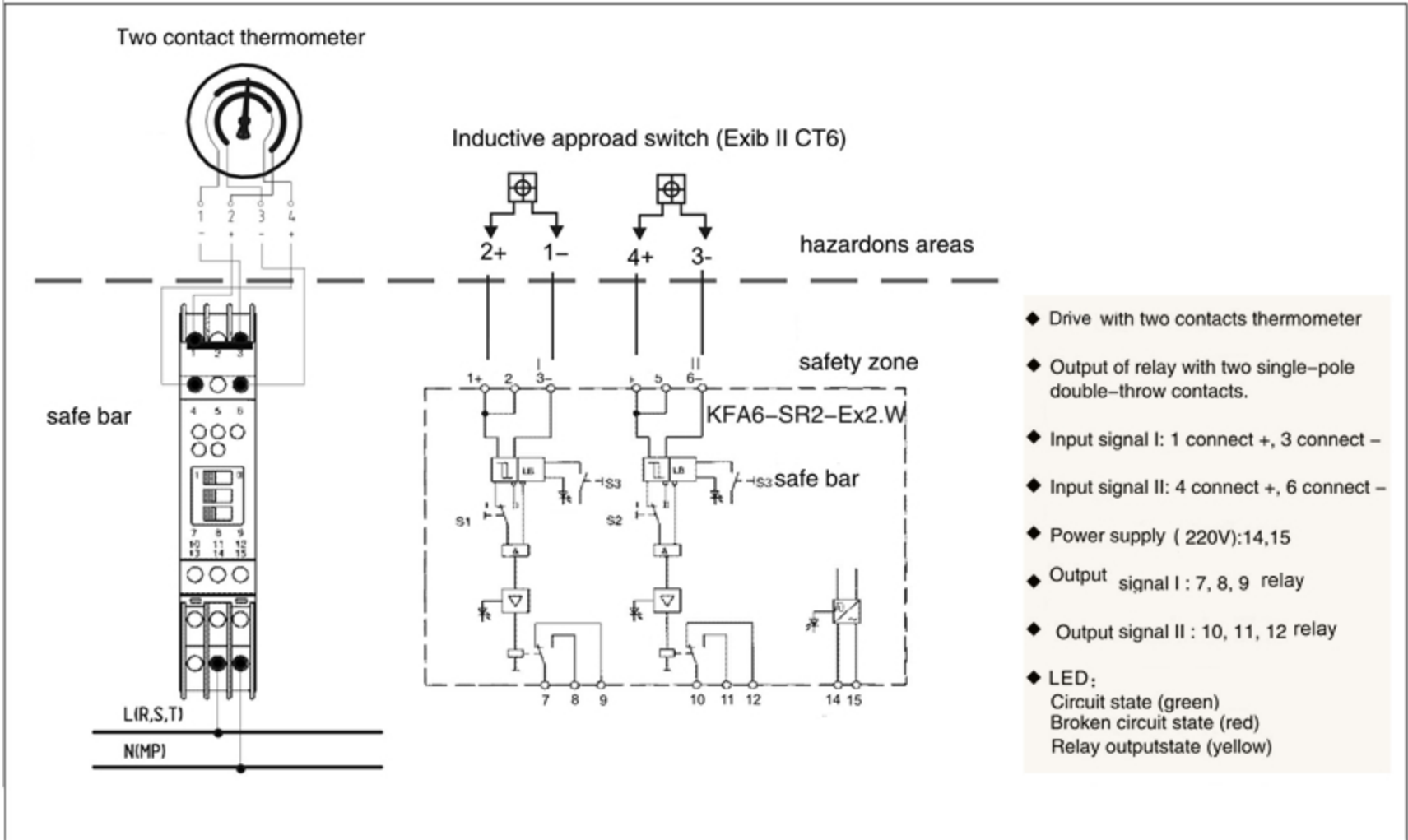
Type	KFD2-SR2-Ex1.W	KFD2-SR2-Ex2.W	KFA6-SR2-Ex1.W	KFA6-SR2-Ex2.W
Specification	1. Power supply: 24VDC 2. No-coad voltage: 8VDC 3. Max current : 8mA 4. Intrinsic safety circuit:Ex(ia) II C $U_o \leq 10.5VDC$ $I_o \leq 13mA$ $P_o \leq 34mW$ $C_o=2.41 \mu F$ $L_o=210mH$		1. Power supply: 220VAC 2. No-coad voltage: 8VDC 3. Max current : 8mA 4. Intrinsic safety circuit:Ex(ia) II C $U_o \leq 10.5VDC$ $I_o \leq 19mA$ $P_o \leq 51mW$ $C_o=2.9 \mu F$ $L_o=100mH$	



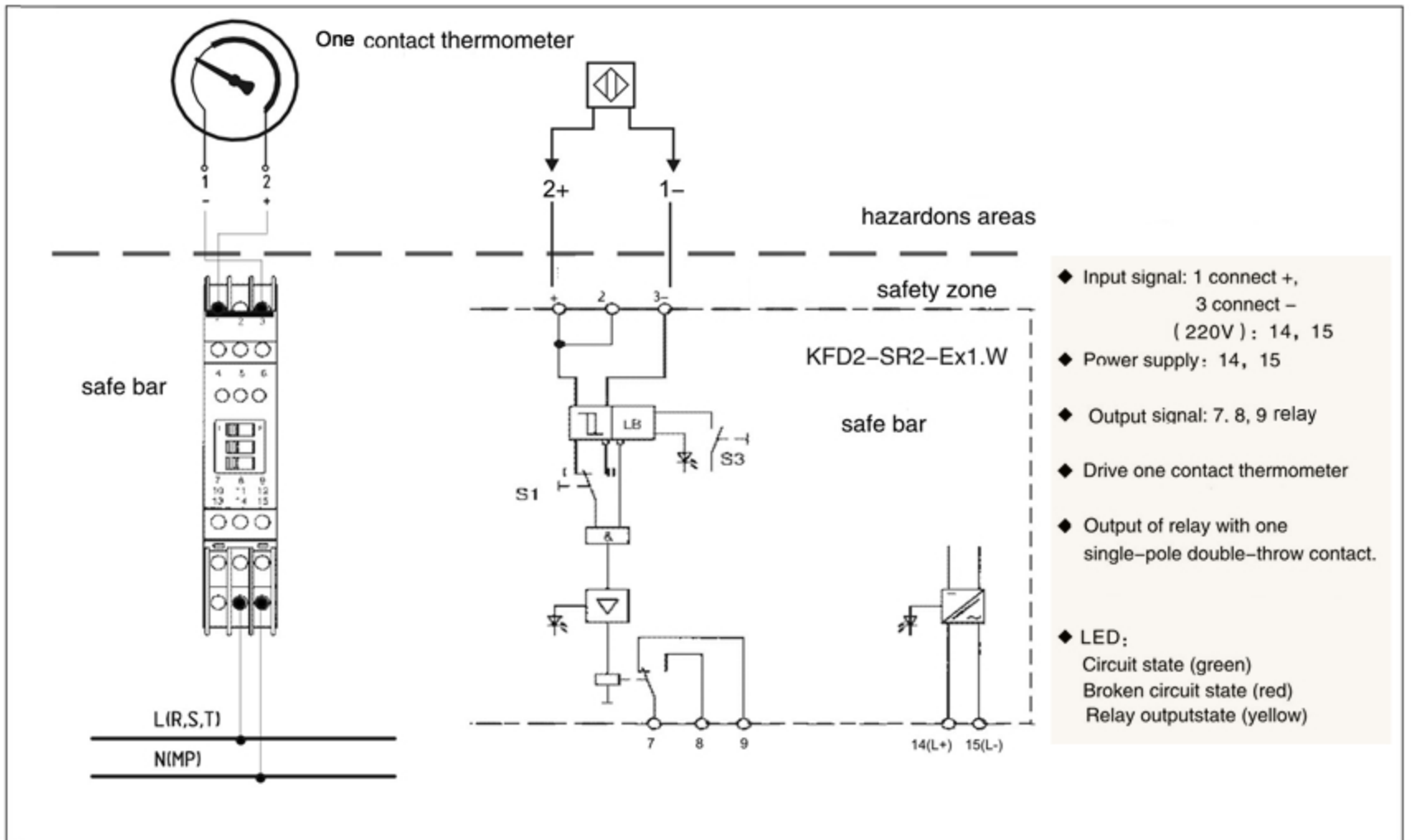
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### Power supply 220 VAC



### Power supply 24 V





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### Dimensions (mm.)

