

# Temperature Sensors

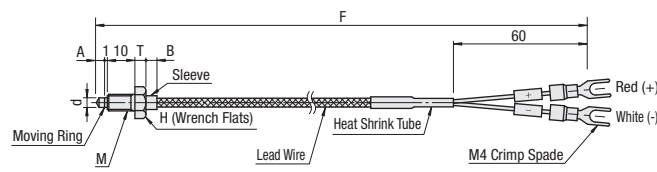
Screw Mount, Screw Mount for Moving Parts, Band

Be sure to refer to "Precautions for Use" in the Temperature Sensor Overview on P.1653.

## Screw Mount

### MSNDM (K Thermocouple)

Features: Easily attachable by cutting a tap on the heated object.



|                                       |   |
|---------------------------------------|---|
| <b>MSNDM</b>                          |   |
| Type of Thermocouple                  | K Thermocouple                                      |
| Precision                             | JIS Class 2   |
| Temperature Measurement Contact Point | Grounded Type                                       |
| Temperature Measurement Range         | 0 ~ 300°C   |
| Material                              | Tip Part (No.6, 8): SUS304 (Other Than Above) C3604 |
| Thread Part                           | SUS304  |
| Lead Wire (Operating Temp. Range)     | Glass Wool Coating + Outer Shield Winding (0-180°C) |

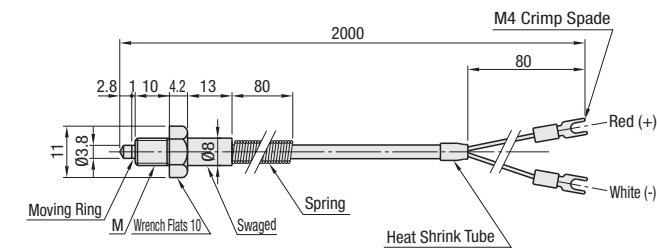
For No.6-1 and 8-1, enamel wire is wound at the end of sleeve.

| Part Number |     | Thread Size | F   | A   | B | d   | T   | H  | Unit Price |
|-------------|-----|-------------|-----|-----|---|-----|-----|----|------------|
| Type        | No. | M           | (m) |     |   |     |     |    |            |
| MSNDM       | 6-1 | M6x1.0      | 1   | 2.8 | 4 | 3.8 | 4   | 10 |            |
|             | 6   | M6x1.0      | 2   | 4.5 | 4 | 3.5 | 4   | 10 |            |
|             | 6-5 | M6x1.0      | 5   | 2.8 | 4 | 3.8 | 4   | 10 |            |
|             | 8-1 | M8x1.25     | 1   | 2.8 | 4 | 3.8 | 5.3 | 13 |            |
|             | 8   | M8x1.25     | 2   | 4.5 | 4 | 3.5 | 5.3 | 13 |            |

## Screw Mount for Moving Parts

### MFNC (K Thermocouple)

Features: Highly flexible silicon covered lead wire is usable in bending applications. (Avoid excessive bending.)



|                                       |                               |
|---------------------------------------|-------------------------------|
| <b>MFNC</b>                           |                               |
| Type of Thermocouple                  | K Thermocouple                |
| Precision                             | JIS Class 2                   |
| Temperature Measurement Contact Point | Grounded Type                 |
| Temperature Measurement Range         | 0 ~ 300°C                     |
| Material                              | Tip Part SUS304 Spring SUS304 |
| Lead Wire (Operating Temp. Range)     | Silicon Coating (0-150°C)     |
| Lead Wire Minimum Bending R           | 20                            |

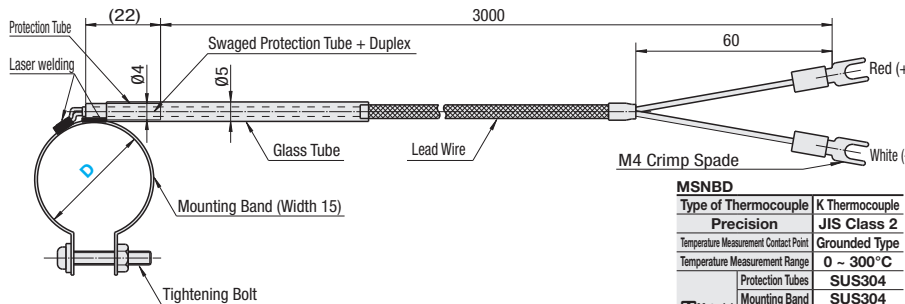
| Part Number |     | Thread Size | Unit Price |
|-------------|-----|-------------|------------|
| Type        | No. | M           |            |
| MFNC        | 6   | M6x1.0      |            |



## Band Type

### MSNBD (K Thermocouple)

Features: Effective in measuring cylindrical heated objects.

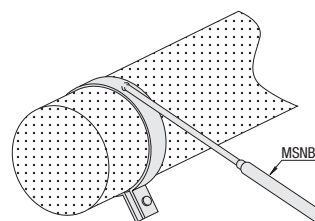


|                                       |  |
|---------------------------------------|--|
| <b>MSNBD</b>                          |  |
| Type of Thermocouple                  | K Thermocouple   |
| Precision                             | JIS Class 2  |
| Temperature Measurement Contact Point | Grounded Type  |
| Temperature Measurement Range         | 0 ~ 300°C  |
| Material                              | Protection Tubes SUS304 Mounting Band SUS304 Tightening Bolt SUS304 Nut SUS304 |
| Lead Wire (Operating Temp. Range)     | Glass Wool Coating + Outer Shield Winding (0-250°C)                            |

| Part Number |    | Unit Price |
|-------------|----|------------|
| Type        | D  |            |
| MSNBD       | 30 |            |
|             | 35 |            |
|             | 40 |            |



Used to heat the cylindrical heated object.



|                  |                            |
|------------------|----------------------------|
| Ordering Example | Part Number                |
|                  | MSNDM6<br>MFNC6<br>MSNBD30 |

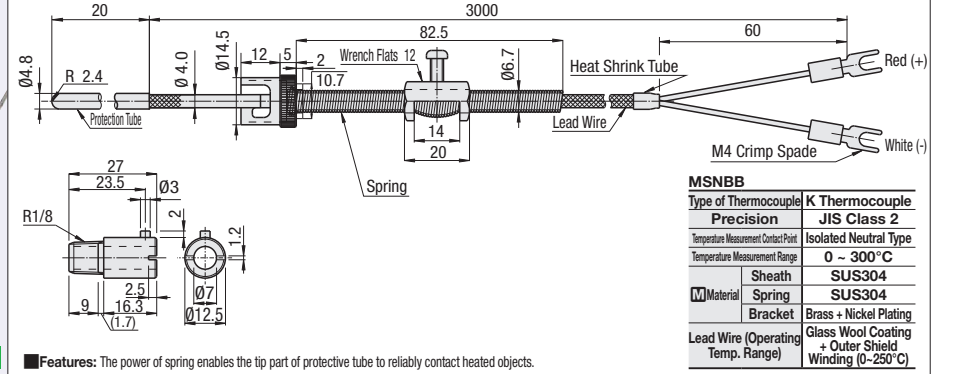
# Temperature Sensors

Spring Contact, Surface Temperature Measurement, Surface Temperature Measurement Magnet

Be sure to refer to "Precautions for Use" in the Temperature Sensor Overview on P.1653.

## Spring Contact Type

### MSNBB (K Thermocouple)



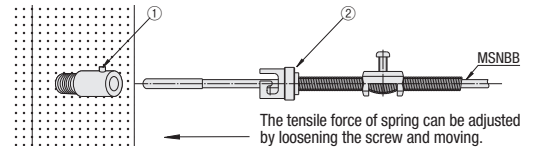
|                                       |  |
|---------------------------------------|--|
| <b>MSNBB</b>                          |  |
| Type of Thermocouple                  | K Thermocouple   |
| Precision                             | JIS Class 2  |
| Temperature Measurement Contact Point | Isolated Neutral Type                                      |
| Temperature Measurement Range         | 0 ~ 300°C  |
| Material                              | Sheath SUS304 Spring SUS304 Bracket Brass + Nickel Plating |
| Lead Wire (Operating Temp. Range)     | Glass Wool Coating + Outer Shield Winding (0-250°C)        |

Features: The power of spring enables the tip part of protective tube to reliably contact heated objects.

| Part Number |     | Unit Price |
|-------------|-----|------------|
| Type        | No. |            |
| MSNBB       | 4.8 |            |

### How to Use

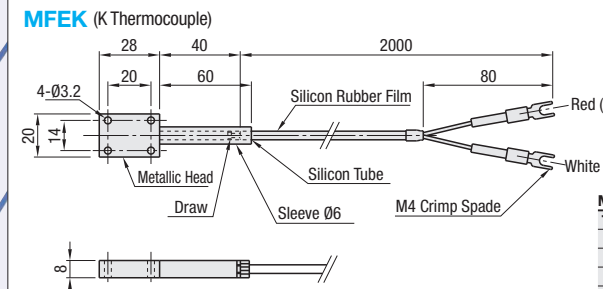
Cut a Rc(PT)1/8 tap in the heated object, and fix the ①. Insert the sensor and hook ② catch on the protuberance of ①. The temperature can be measured stably by adhering the tip of sensor to the measuring position of the heated object.



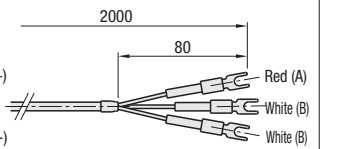
The tensile force of spring can be adjusted by loosening the screw and moving.

## Surface Temperature Measurement Type

### MFEK (K Thermocouple)



### MFEP (Temperature Measuring Resistor Pt1000)

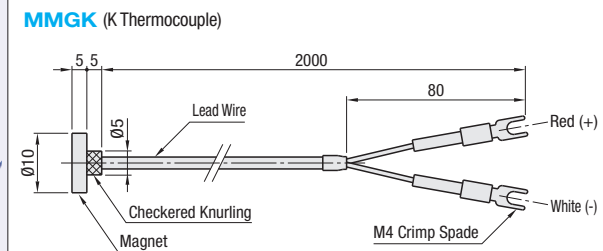
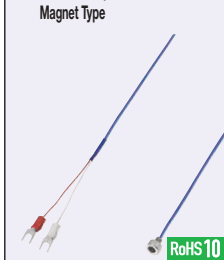


|   |                |                                 |             |
|---|----------------|---------------------------------|-------------|
| <b>MFEK, MFEP</b>                           |                | <b>MFEK</b>                     | <b>MFEP</b> |
| Type of Thermocouple                        | K Thermocouple | -                               | Pt1000      |
| Type of Device                              | -              | JIS Class 2                     | JIS Class B |
| Precision                                   | -              | Isolated Neutral Type           | -           |
| Temperature Measurement Contact Point       | -              | -                               | -           |
| Lead Type                                   | -              | -                               | 3-lead Type |
| Temperature Measurement Range               | 0 ~ 150°C      | -50 ~ 150°C                     | -           |
| Material                                    | Metallic Head  | Brass + Nickel Plating          | -           |
| Heat Resistance Temperature of Silicon Tube | -              | 150°C                           | -           |
| Lead Wire (Operating Temp. Range)           | -              | Silicon Rubber Film (-50-150°C) | -           |

| Part Number |  | Unit Price |
|-------------|--|------------|
| Type        |  |            |
| MFEK        |  |            |
| MFEP        |  |            |

## Surface Temperature Measurement Magnet Type

### MMGK (K Thermocouple)



|   |  |
|---|--|
| <b>MMGK</b>                             |  |
| Type of Thermocouple                    | K Thermocouple                           |
| Precision                               | JIS Class 2                              |
| Temperature Measurement Contact Point   | Grounded Type                            |
| Temperature Measurement Range           | 0 ~ 150°C                                |
| Material                                | Tube SUS304                              |
| Lead Wire (Operating Temp. Range)       | Teflon Coating (0-150°C)                 |
| Material                                | Magnet Neodymium Magnet + Nickel Plating |
| Pull Force N(kgf)                       | Room Temp. 17.7(1.8)                     |
|   | 120°C 15.7(1.6)                          |
| Surface Magnetic Flux Density Gauss (G) | Room Temp. 3600                          |
|   | 120°C 3200                               |

Pull Force and Surface Flux Density are for magnet alone (reference values).

| Part Number |  | Unit Price |
|-------------|--|------------|
| Type        |  |            |
| MMGK        |  |            |

|                  |                          |
|------------------|--------------------------|
| Ordering Example | Part Number              |
|                  | MSNBB4.8<br>MFEK<br>MMGK |