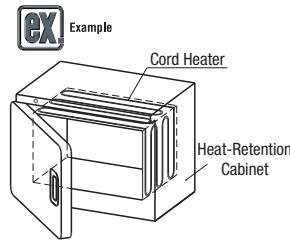


Code Heaters / Heat Resistance Tapes

Cord Heaters RoHS **MCDH** (100V, 200V / Single-phase)

Maximum Operating Temperature: 180°C
 Material: Element: Silicon Rubber, Sleeve: Silicon Rubber
 Lead Wire: Copper (Cu), Lead Wire Film: Silicon Rubber

Part Number	L	W	V	Electrical Power Density	Unit Price
Type	(Heat-generating Part)	(Electric Power)	(Voltage)	(W/cm ²)	
MCDH	1	1000	10	0.13	
	2	2000	20		
	3	3000	30		
	4	4000	40		
	5	5000	50		



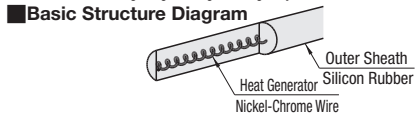
Ordering Example: Part Number MCDH2

Days to Ship: Configure Online

Price: Configure Online

Feature
 - Excel in heat resistance as the sheathing of the heater is silicon rubber.
 - As the heater is flexible, it can be fitted in any type of shape.

Basic Structure
 - This is a heater integrating a heat generating body with the silicon rubber.



How to Mount
 - Install directly onto piping.
 - As an example to secure the heater, heat resistant aluminum tape can be used. (Fig. 1)



Precautions for Use
 - Do not let heater run idle in the atmosphere. It may cause fires and broken wire. Ensure the heater is closely contacted with a heated object when using.
 - Do not install by overlapping the heater.
 - Do not use over the rated voltage (V).
 - When removing the heater from the heated object, make sure the power is turned off. Do not touch the heater immediately after the power is turned off.

How to Determine the Number of Winding
 P.1530

Selecting Method (Cord Heaters and Silicon Belt Heaters)
 Calculate with the following formula by using the heat insulating thickness, size of piping, temperature of piping and temperature difference with the external atmospheric temperature. (Refer to Fig. 2, Table 1 and 2)

Heat Quantity Required for The Heater(W) = Number of Watt per 1m of Pipe (W/m) x Length of Pipe (m)
 Ex.) For piping size 15A (1/4B) and length 1m to be 30°C
 (Heat-insulation thickness is 25mm and external atmospheric temperature is 20°C)
 From Table 1, when the insulation thickness is 25mm, piping size is 15A (1/4B) and the temperature difference between pipe temperature (30°C) and external atmospheric temperature (20°C) is 10°C, the wattage is 4.0 (W/m).
 Heat Quantity Required for The Heater (W)=4.0 (W/m)x1 (m)=4.0W

Table 1. When heat-retention thickness is 25mm Unit: W/m (Number of Watt per 1m of Pipe)

Pipe Size	Temperature Difference between Pipe Temperature and External Atmospheric Temperature							
	10°C	20°C	30°C	40°C	50°C	60°C	70°C	80°C
15	1/4	4.0	8.1	12.1	16.1	20.4	24.4	28.5
20	1/2	4.6	9.2	13.9	18.5	23.6	28.9	34.2
25	1	5.4	10.6	16.0	21.4	27.6	34.2	41.8
32	1 1/4	6.3	12.5	18.8	24.9	32.5	41.1	50.1
40	1 1/2	6.9	13.7	20.5	27.5	35.3	44.3	54.9
50	2	8.1	16.1	24.2	32.2	40.8	50.1	64.5
65	2 1/2	9.5	19.1	28.6	38.3	48.2	58.9	76.4
80	3	10.9	21.6	32.5	43.4	55.0	67.6	86.6
100	4	13.2	26.6	39.9	53.3	68.6	84.6	106.5
150	6	18.2	36.5	54.8	73.1	94.6	118.5	148.5
200	8	23.3	46.5	69.6	92.9	119.1	148.5	185.5
250	10	28.1	56.3	84.4	112.5	148.5	185.5	225.0

Table 2. When heat-retention thickness is 50mm Unit: W/m (Number of Watt per 1m of Pipe)

Pipe Size	Temperature Difference between Pipe Temperature and External Atmospheric Temperature							
	10°C	20°C	30°C	40°C	50°C	60°C	70°C	80°C
15	1/4	2.7	5.6	8.4	11.3	16.9	22.5	28.5
20	1/2	3.1	6.2	9.4	12.5	18.8	25.5	32.5
25	1	3.5	7.0	10.6	14.1	21.1	28.1	36.1
32	1 1/4	4.0	8.0	12.0	16.0	24.1	32.1	41.1
40	1 1/2	4.4	8.6	13.0	17.3	26.0	34.7	44.7
50	2	5.0	9.9	14.9	19.7	29.9	39.8	51.8
65	2 1/2	5.7	11.5	17.3	23.1	34.5	46.0	60.0
80	3	6.4	12.9	19.2	25.6	38.5	51.2	66.2
100	4	7.6	15.4	23.0	30.8	46.0	61.4	78.4
150	6	10.2	20.4	30.6	40.9	61.1	81.5	106.5
200	8	12.8	25.4	38.1	50.9	76.1	101.5	131.5
250	10	15.1	30.4	45.5	60.8	91.0	121.4	156.4

Heat Resistance Tapes RoHS

Type	Material	Surface	Heater	Adhesive Part	Heat Resistance Temperature
① MCAT	Aluminum	Glass Cloth	Acrylic Adhesive Material		150°C
② MCTF	Fluoro Resin (PTFE)	Silicon Adhesives			200°C
③ MCTFG	Fluoro Resin (PTFE)	Glass Cloth	Silicon Adhesives		200°C

Peel off backing paper to adhere it to an object. (MCAT only)
 Wipe off oil and dust on the mating surface before adhering.
 Can be cut with a utility knife.

Characteristic Values of Heat Resistance Tapes (Listed values are not guaranteed values but reference values.)

Item	MCAT	MCTF	MCTFG
Operating Temperature (°C)	150	200	200
Tensile Strength (N/cm)	24	108	330
Elongation (%)	12.5	20.0	4.7
Adhesive Strength (N/25mm Width)	16	10	12.9

* The adhesive strength means the 180 degree peeling strength. (When adhered to 304 Stainless Steel)

Part Number	W (mm)	L (m)	T (mm)	Unit Price
MCAT	20	20	0.25	
	50			
MCTF	25	10	0.23	
	50			
MCTFG	25	10	0.18	
	50			

L dimension is by the meter.

Ordering Example: Part Number MCAT20

Days to Ship: Configure Online

Price: Configure Online

Micro Heaters / Silicon Belt Heaters

Micro Heaters RoHS

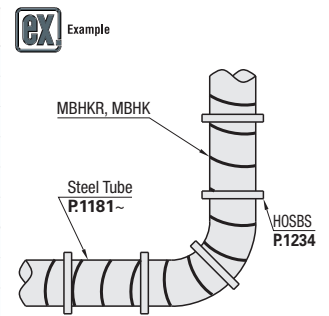
MBHKR (Both Terminal Type)

MBHK (One Terminal Type)

Maximum Operating Temperature: 600°C
 Heat Resistance Temperature of Sleeve: 200°C

Material: Sheath Body: 316 Stainless Steel, Heat Generator: Nickel Heat Generator, Lead: Nickel Lead

Part Number	V	W	L	L1	D1	D2	Electrical Power Density	Unit Price
Type	(Voltage)	(Electric Power)	(Heat-generating Part)				(W/cm ²)	
MBHKR	1.0	100	200	50	5.0	1.0	3.6	
		200	400		6.4			
	1.6	100	300	50	6.4	1.0	2	
		200	600		6.4			
MBHK	1.6	100	250	36	6.4	1.0	3.7	
		200	500		6.4			
	2.4	100	400	36	8.0	1.4	2.7	
		200	800		8.0			



Structure
 - Insulating powers and a heat generator are hermetic-sealed and enclosed within sheath in the same manner as sheath thermocouple.

Feature
 - The tube of the heater is extremely thin. This makes it usable for narrow and complicated places.
 - Enhanced flexibility enables you to change shapes as you want.
 - Minimum bending radius should be up to 3 times of D dimension.

Precautions for Use
 - Do not cross the sheath part or contact to the part.
 - Be sure to use Temperature Control Unit since heat tends to stay by covering with material of low thermal conductivity such as heat insulation material.
 - The tube of the heater is extremely thin. Excessive tension may cause breakage in the tube.

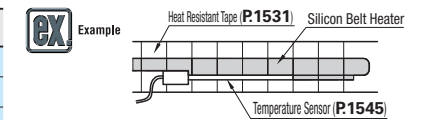
Silicon Belt Heaters RoHS **MBEH** (100V, 200V / Single-phase)

Operating Temp. Range: -50~180°C

Feature
 - Belt type heater with Nickel-chrome wire molded with silicon rubber.
 - The belt type structure enables to stick to the object closely and heat it.
 - For Selecting Method P.1531

Material: Heat Generator: Nickel-chrome Wire, Coating Material: Silicon Rubber, Lead Wire: Silicon Rubber Film, Tin Plated Annealed Copper Wire

Part Number	L	V	W	Electrical Power Density	Unit Price
Type	(Heat-generating Part)	(Voltage)	(Electric Power)	(W/cm ²)	
MBEH	1050	100	50	0.7	
	2050	200	50	0.35	
	3100	3000	200	100	0.5



Precautions for Use
 - Do not let heater run idle in the atmosphere. It may cause fires and broken wire.
 - Do not install by overlapping the heater.
 - Do not use over the rated voltage (V).
 - This product is not water-proof. Do not use in places where water splashes or humidity is high.
 - Wrap with heat resistant tape from the top to see.
 - When removing the heater from the heated object, make sure the power is turned off. Do not touch the heater immediately after the power is turned off.
 - Use Temperature Adjusters or Temperature Controllers for safety.

Ordering Example: Part Number - V - W - L
 MBHKR1.0 - V100 - W200 - L1750
 MBEH 1050

Days to Ship: Configure Online

Price: Configure Online