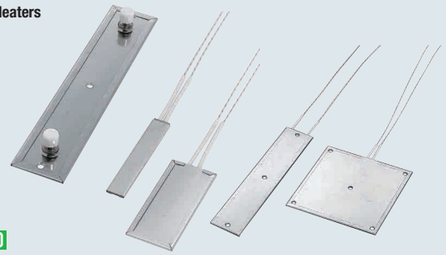
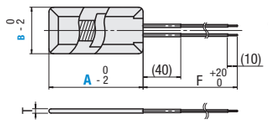
Plate Heaters

Plate Heaters

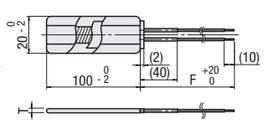


RoHS 10

MPHK Lead Wire
100V, 200V / Single-Phase

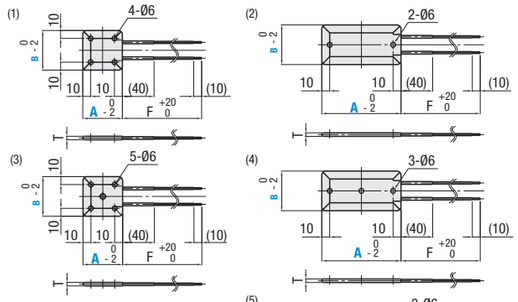


MPHK-100-20 only



Maximum Operating Temperature: 300°C

MPHKH Through Hole – 100V, 200V/Single-Phase



MPHKT
Terminal Attached
100V, 200V / Single-Phase

Plate Heaters with Lead Wire

Part Number / Type	A	B	V (Voltage)	W (Electrical Power)	F (Lead Wire Length) mm	T	Electrical Power Density (W/cm²)
MPHK	50	50	100	80	1000	4.5±1	3.0
			200				
	60	60	100	100			
			200				
	100	20	100	80			
			200				
		50	100	150			
			200				
		100	100	250			
			200				
	150	150	100	500		4.0±1	
			200				

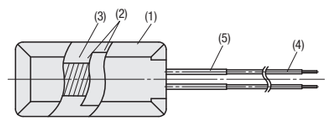
Plate Heaters with Through Holes

Part Number / Type	A	B	V (Voltage)	W (Electrical Power)	F (Lead Wire Length) mm	T	Electrical Power Density (W/cm²)	Shape
MPHKH	100	100	100	250	1000	4.0±1	2.5	(1)
			200					
	150	150	100	500			2.2	(3)
			200					
	200	50	100	200			2.0	(2)
			200					
		100	100	400				(3)
			200					
	250	50	100	250				(4)
			200					
	300	50	100	350			2.3	(4)
			200					

Features of the Plate Heater

This plate type heater uses heat-resistant metal plate (430 Stainless Steel) which covers a resistance ribbon wire which is insulated with mica.

Basic Structure of the Plate Heater



No.	Name	Material
(1)	Cover of the Heater	430 Stainless Steel
(2)	Mica for Insulation	Synthetic Mica
(3)	Nickel-Chrome Wire	Nickel-Chrome Ribbon Wire
(4)	Lead Wire	Nickel Copper Glass Fiber Coated Wire
(5)	Tube	Glass Fiber

Plate Heaters with Attached Terminal

Part Number / Type	A	B	V (Voltage) Selection	W (Electric Power)	T	Electrical Power Density (W/cm²)	Shapes
MPHKT	250	50	100	200	4.0±1	1.6	(5)
			200				
	300		100	300		2.0	
			200				

Part Number Example

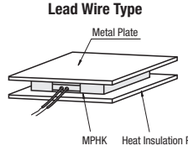
Part Number	-	A	-	B	-	V	-	W
MPHK	-	100	-	20	-	V200	-	W80

Precautions for Use

- Never operate the heater when it is empty. Doing so may result in damage to the unit.
- Apply electric power under the condition in which an object such as metal to be heated is attached to the heater.
- Attach the object so that the heater comes into close contact with the surface to be heated. A gap will cause premature breakage of wire.
- Make sure that the lead wire is not touching the metal plates when the heater i s sandwiched between them.
- The heater is not waterproof. Never expose the heater to water or any other liquids.
- Do not use over the rated voltage (V).
- Use the temperature controller for safety.

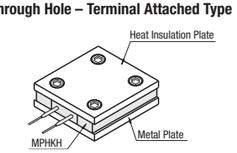
How to Mount

Lead Wire Type



Sandwich it with metal plate and insulation plate.

Through Hole – Terminal Attached Type



Fix the heater with screws.

MiSUMi

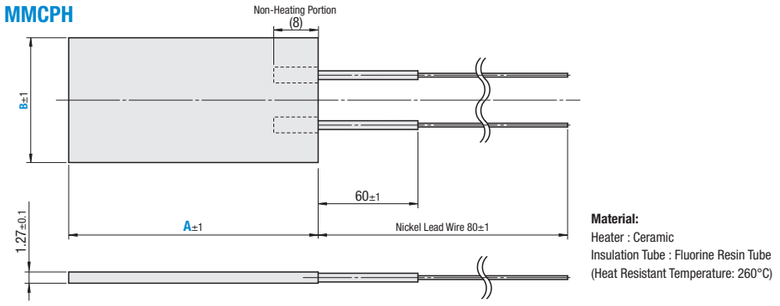
Ceramic Plate Heaters

Compact

Ceramic Plate Heaters – Small-Size

RoHS 10

MMCPH



Material:
Heater : Ceramic
Insulation Tube : Fluorine Resin Tube
(Heat Resistant Temperature: 260°C)

Part Number / Type	A	B	V (Voltage)	W (Electric Power)	Maximum Operating Temperature (°C)
MMCPH	15	10	15–45	6–21	200
		15	10–40	5–19	
	20	10	15–80	4–26	
		15	10–60	3–25	

- The heaters can be used within the range of the above operating voltage (V) and operating electric power (W), but please note that rapid application or temperature rise could cause damage to the heaters.
- Do not use the heater at a temperature exceeding the maximum operating temperature.
- Temperature Controllers **(P.3777)** and Temperature Regulators **(P.3772)** cannot be used. See "How to Use" below.

Part Number Example

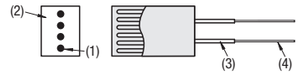
Part Number	-	A	-	B
MMCPH	-	15	-	10

Features of the Small-Size Ceramic Heater

Misumi's small-size ceramic plate heaters are made of ceramic, which has excellent heat resistance and insulation characteristics. The heater is made of a ceramic sheet incorporating tungsten resistors.
– This small, thin plate-shaped heater can be operated in a small space.
– As the ceramic plate heater is plate-shaped, it can provide uniform heating.
– The speed at which the heater temperature changes is quite fast. Maximum operating temperature: 500°C (Never exceed the maximum operating temperature.)
– Available for both direct current and alternate current.

Basic Structure

The ceramic plate heater is composed of highly heat-resistant tungsten resistors attached to a ceramic sheet.



(1) Tungsten Resistors
(2) Ceramic
(3) Insulation Tube
(4) Nickel Lead Wire

Selection Method

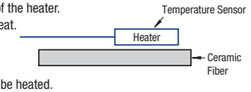
(1) Calculate the amount of heat (W) required to heat the object. **P.3705** Refer to "Selection method to determine the amount of heat required for the heater".
(2) Select the size of heater depending on the required amount of heat (W) and the size of the object, and determine the operating voltage (V) using the Table of Temperature Characteristics as a reference.

How to use

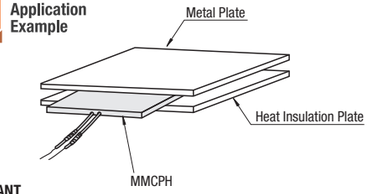
Maintain the operating voltage of the selected heater by using the following method.
(1) Operate the heater at a constant voltage by using a step-down transformer.
(2) Control the temperature by using a variable voltage transformer.
(3) Conduct precise temperature control by using a phase controller.

Measurement Conditions

(Environmental temperature of measurement: Atmospheric temperature at 16°C in natural atmosphere)
– Surface temperature should be measured at the center of the heater.
– One side of the ceramic fiber should be insulated from heat.
Small ceramic heater is bonded on a 30 x 30 x t10 ceramic fiber strip by Aron Ceramic adhesive.
*Please note that the temperature-rise characteristic differs significantly depending on the size of the object to be heated.



Application Example

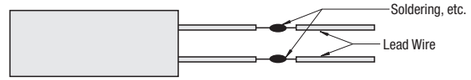


IMPORTANT

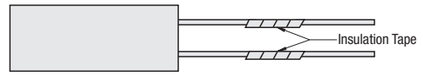
When sandwiching the heater, be sure that the non-heating portion is protruded, by 5 mm, through the surface.

Connection Method

(1) Attach the lead wire to the two terminals and firmly connect them by soldering, etc.



(2) After connection of the leads, protect them by firmly wrapping them with insulation tape.



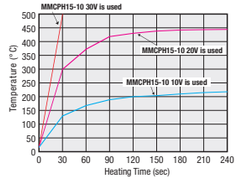
Mounting Method

Use the heater in a position sandwiched between the metal block to be heated and the insulation board.
The clearance between the block and the insulation board should be as small as possible.
* The degree of contact between the heater and the object to be heated will affect the life of the heater.
A large clearance will delay the temperature rise time and create a delayed response to temperature adjustments.

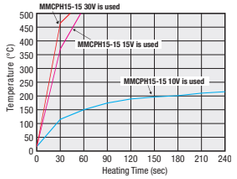
Precautions for Use

- Do not use the heater at a temperature exceeding the maximum operating temperature of 500°C.
- Never operate the heater without heating object. Doing so may result in damage to the unit.
- Apply electric power under the condition in which an object such as metal to be heated is attached to the heater.
- Attach the object so that the heater comes into close contact with the surface to be heated. A gap will cause premature breakage of wire.
- Make sure that the lead wire is not touching the metal plates when the heater is sandwiched between them.
- Do not forcibly insert the heater between the metal plates. Doing so will cause the heater to crack.
- The heater is not waterproof. Never expose the heater to water or any other liquids.
- Use the temperature-rise data as a reference and do not heat too rapidly. Doing so will definitely result in breakage of wire.
- Do not exceed the operating voltage (V) shown below. Doing so will cause breakage of the wire in the heater.
- Do not bend fluorine resin tubes.

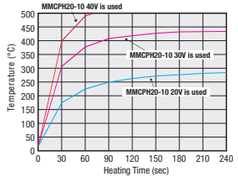
Temperature rise properties of small-size ceramic plate heater (MMCPH15-10) (Reference)



Temperature rise properties of small-size ceramic plate heater (MMCPH15-15) (Reference)



Temperature rise properties of small-size ceramic plate heater (MMCPH20-10) (Reference)



Temperature rise properties of small-size ceramic plate heater (MMCPH20-15) (Reference)