

# Plate Heaters

# Small-Size Ceramic Plate Heaters

**MPHKH (Through Hole) (100V, 200V/Single-phase)**

**MPHKT (Terminal Attached) (100V, 200V/Single-phase)**

Maximum Operating Temperature: 300°C

Part Number Type	A	B	V (Voltage) Selection	W (Electric Power)	F (Lead Wire Length) mm	T	Electrical Power Density (W/cm <sup>2</sup> )	Unit Price
MPHK	50	50	100	80	1000	4.5±1	3.0	
			200	100				
	60	60	100	80				
			200	100				
	100	20	100	150				
			200	250				
	100	50	100	80				
			200	100				
	150	150	100	500				
			200	350				

Part Number Type	A	B	V (Voltage) Selection	W (Electric Power)	F (Lead Wire Length) mm	T	Electrical Power Density (W/cm <sup>2</sup> )	Shape	Unit Price
MPHKH	100	100	100	250	1000	4.0±1	2.5	①	
			200	500					
	150	150	100	200					
			200	400					
	200	50	100	250					
			200	350					
	250	50	100	250					
			200	350					
	300	50	100	350					
			200	350					

**Ordering Example** Part Number - A - B - V - W

MPHK - 100 - 20 - V200 - W80

- Features of the Plate Heater**
- This plate type heater uses heat-resistant metal plate (SUS430) which covers a resistance ribbon wire which is insulated with mica.
- Basic Structure of the Plate Heater**
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- 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. Leaving a gap will cause the wire to break earlier than its service life.
  - Make sure that the lead wire is not touching the metal plates when the heater is 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.

**How to Mount [Through Hole, Terminal Attached]**

⇒ Fix the heater with screws.

No.	Name	Material
①	Cover of the Heater	SUS430
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

Temperature Controllers (P1674) and Temperature Adjusters (P1669) cannot be used. See "How to Use" below.

**MMCCH**

**MMCCHP**

Maximum Operating Temperature: 200°C

Part Number Type	A	B	V (Voltage)	W (Electric Power)	Maximum Operating Temperature (°C)	Unit Price
MMCCHP	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.

**Ordering Example** Part Number - A - B

MMCCHP - 15 - 10

**Example**

When sandwiching the heater, be sure that the non-heating portion is protruded by 8 mm through the surface.

- 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.
  - 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.

- Selecting Method**
- Calculate the amount of heat (W) required to heat the object. Refer to "Selecting Method ① Determine the calories (W) required for the heater" on P1606.
  - 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.
- Operate the heater at a constant voltage by using a step-down transformer.
  - Control the temperature by using a variable voltage transformer.
  - Conduct precise temperature control by using a phase controller.

**Measurement Conditions** (Environmental temperature of measurement: 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.
- The Aron Ceramic Adhesive is used to bond the small-size ceramic plate heaters onto the ceramic fiber (30x30x1.0).
- Please note that the temperature-rise characteristic differs significantly depending on the size of the object to be heated.

