# Digital temperature controller for heaters
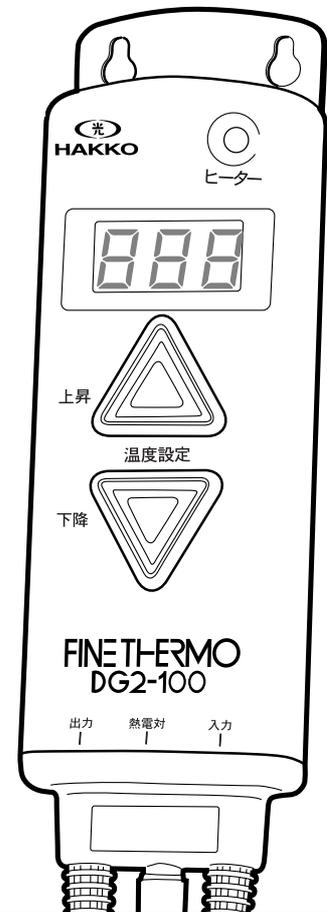
## DIGITAL FINE THERMO

# DG2 (100V / 200V)

## INSTRUCTIONS MANUAL

Thank you for your choosing our product.

Read the instructions before use and remember to keep in the convenient place for future reference.

光 HAKKO

ヒーター

上昇

温度設定

下降

FINE THERMO
DG2-100

出力　熱電対　入力

# CAUTIONS FOR SAFE USE

- This controller is designed only for heaters. Do not use for lamps or motors.

- Overtemperature protection, overcurrent protection, or circuit breakers are not built in this controller. For safe use, apply our POWER BOX 15B or other power equipment with protection of overtemperature and overcurrent.

- As this controller use contact relays, highly frequent ON/OFF cycle may shorten the lifetime of relays. (The lifetime of the relay is more than two hundred thousands times according to manufacturer's catalogue.) If you prefer static relays, use our DIGITAL FINE THERMO DG2P. For frequent use, remember to apply overtemperature protectors.

- The heater connects directly with power output of the controller. Lower voltage or longer cable may cause voltage drop and unstable behavior of the controller. Confirm the power voltage after all devices are loaded.

- This controller has no vibration proof. Use in the condition without vibration.

- Load of heaters is 15 amperes or less to connect. If it is more than 15 amperes, apply the controllers, THERMO series of HAKKO.

- Strong noise may cause malfunctions. Set the controller away from the source of noise or replace power source when the noise arises.

- Pay fully attention to the protection from fire and electric shock when you use this controller and heaters.

- If you use DG2-100V built in the equipment or successively, detach the plug of cable connect on the terminal block. Periodic inspections (by one or two years) are needed to check heat and deformation on the plug. Otherwise it may cause fire.

光 HAKKO ELECTRIC MACHINE WORKS CO., LTD.

B3-1005-01

# 1. For safe use of this product ■■■▋▋▋

We use the following symbols for safety.

⚠WARNING    **Improper use may cause the danger of death or injury.**

⚠CAUTION    **Improper use may cause the danger of light injury or property damage.**

## ⚠WARNING

● **Do not alter or deform the controller.**
It may cause fire, electric shock and failure.

● **Do not use other than designated sensors.**
Otherwise, it may cause fire, electric shock or failure.

● **Do not use in the flammable atmosphere.**
It may cause explosion or fire.

● **Do not operate the controller with wet hands.**
It may cause electric shock.

● **Do not put foreign substances inside of the controller.**
Liquids or metals inside may cause fire, electric shock and failures.

● **Connect power cables with the controller by crimping terminals.**
Otherwise it may cause fire or electric shock.

## ⚠CAUTION

● **Do not use the heater in the following condition. It may cause fire, electric shock or failures.**
· Use in the explosive or flammable atmosphere.
· Use in the corrosive atmosphere.
· Use in the atmosphere at temperatures of 5 degrees Celsius below zero or less.
· Use in the atmosphere at temperatures of 40 degrees Celsius or more.
· Use in the atmosphere of high humidity, such as bath.
· Use in the vaporific or water dropping place.

● **Do not sink the sensor sleeve or compensation lead wires into water.**
It may cause failure.

● **Do not use the controller outdoors.**
This product is only for indoor use.

● **Do not use other power voltage than the indicated.**
It may cause fire and electric shock.

● **Do not pour water at the controller.**
Wet controller may cause electric shock or leakage.

● **Turn off the power before wiring and connection.**
Power off and connect sensors or wire cables. It may cause electric shock.

● **Do not modify, bent or pull the power cables.**
It may cause fire or electric shock. Ask your distributor when the power cable has damage.

● **Hold by hand and pull out the plug.**
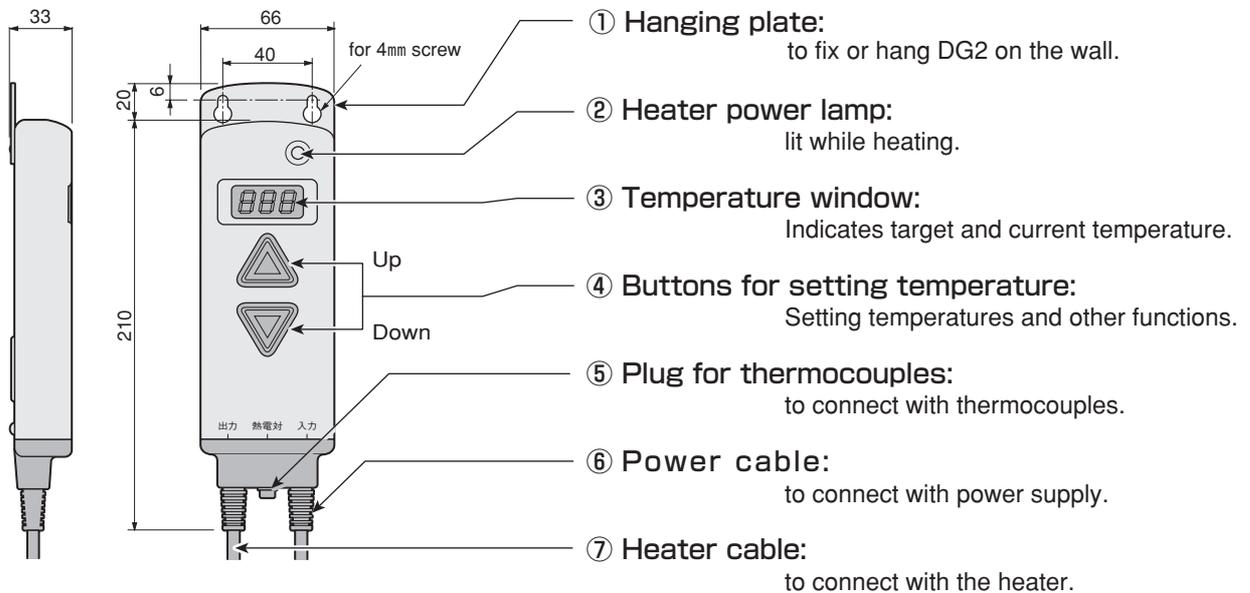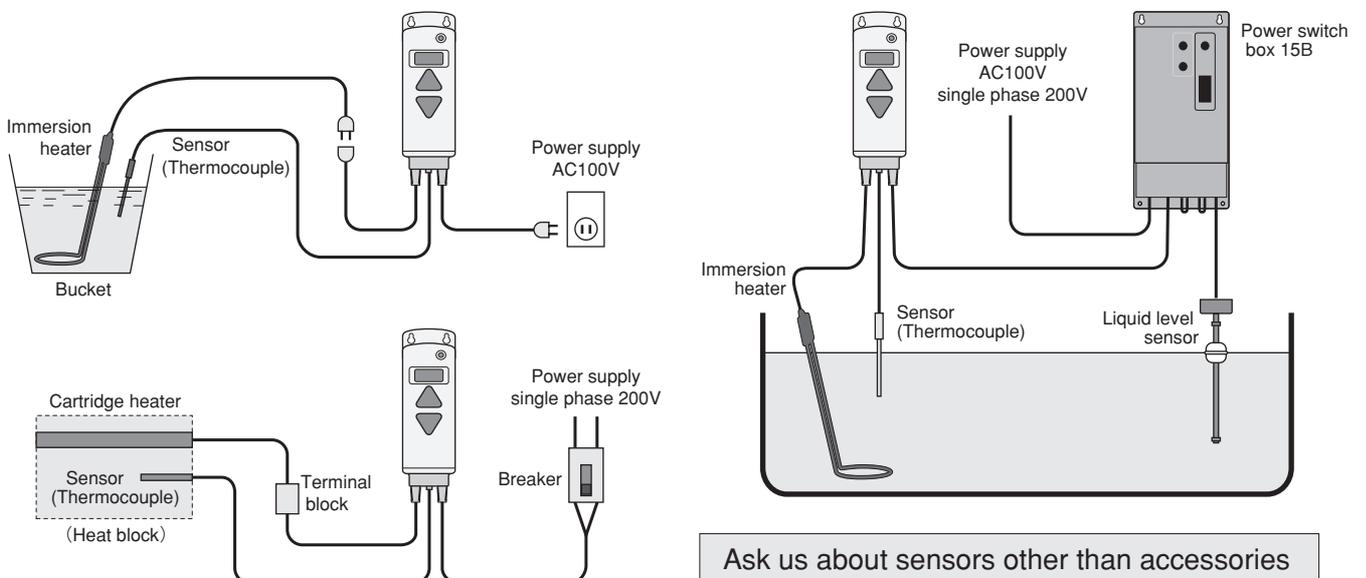Damage on cables may cause fire and electric shock.

# 2. Specifications ■■■▌│││

DIGITAL FINE THERMO DG2 makes temperature control easier to connect with immersion heaters or plug heaters.

| Model name | DG2-100 | DG2-200 |
|---|---|---|
| Reference number | DGC1150 | DGC2150 |
| Input voltage | 100V (50/60Hz) | Single phase 200/220V (50/60Hz) |
| Maximum load | 1.5kW (resistance load) | 3 kW (resistance load) |
| The range of controlled temperature | 0 ℃（room temperature）to 600 ℃ | |
| Precision of temperature | ±(1％F.S.+2.5)℃ | |
| Room temperature compensation | ±3℃ | |
| Control method | ON/OFF control | |
| Sensor | K type sheathed thermocouple (accessory) | |
| Use environment | 5～40℃（humidity 85% or less）No dew condensation | |
| Lifetime of the output relay | 200,000 times or more (manufacture's catalogue) | |

# 3. Name of parts ■■■▌│││



① Hanging plate:
to fix or hang DG2 on the wall.

② Heater power lamp:
lit while heating.

③ Temperature window:
Indicates target and current temperature.

④ Buttons for setting temperature:
Setting temperatures and other functions.

⑤ Plug for thermocouples:
to connect with thermocouples.

⑥ Power cable:
to connect with power supply.

⑦ Heater cable:
to connect with the heater.

# 4. Connection example ■■■▌│││
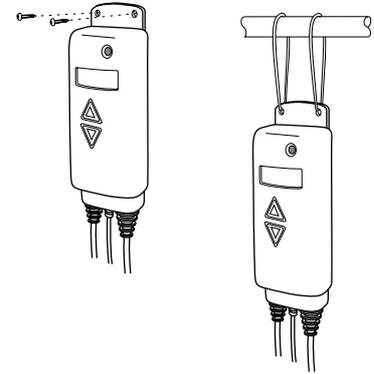


Ask us about sensors other than accessories

# 5. Application ▮▮▮▯▯▯

## To fix the controller on the wall

① There are 2 holes of 4mm diameter 40mm away.
Fix on the wall by wood screws, bolt or tapping screw.

② On hollow walls, fix by special screws.

## In case to hang

① Do not let the controller shake.

② Fix tightly on 2 holes.

# 6. Operation method ▮▮▮▯▯▯

## POWER ON/OFF

The controller has no power switch.
After power on, indicator shows current temperature. Turn off the power switch immediately after use.

## Temperature setting

① Normally indicates current temperature.

② After pressing buttons once (0.3 second), the window shows set temperature for 1 second. After two or three seconds, it returned to show current temperature.

③ To raise the target temperature, press the upper button. To turn down, press the lower button. One press (0.3second) can change one degree. Keeping pressing can make continuous change.

④ Keep pressing to approach the target temperature, and press several times to adjust to it (the range of setting temperature: 0 to 600 degree Celsius). 2 or 3 seconds after hands off, the indicator shows current temperature.

## Reconfirmation of set temperature

If you need to see set temperature while working, press either the upper or the bottom button once (0.3 second) and the indicator shows set temperature. If you press again within 3 seconds, the set temperature moves. Press once after 5 seconds if you need to confirm again.

# 7. Trouble shooting ▮▮▮▯▯▯

| Trouble | Cause | Action |
|---|---|---|
| $FFF$ is indicated. | The sensor is unplugged. | Connect exactly the sensor cable. |
| | The sensor cable has disconnection. | Replace the sensor. |

# After sales service

## ○ For Inquiry

If you have any questions about our products, contact with your distributors, or the Sales Head Office of HAKKO CO., LTD. The addresses and phone numbers are as follows.

### HAKKO CO., LTD.  THERMAL DEVICES SALES DIVISION

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