Please ensure this instruction manual is delivered to the end user.

For your records

SH81-10

Instruction Manual

● Be sure to read this before use.

- Thank you for purchasing the SH81-10 hot air generator heater.
- Verify that the model number, part number, and voltage on the unit's nameplate match the ordered product.

Kansai Electric Heat Corp.

1. Precautions for Use ※ Be sure to check before use.

To ensure trouble-free operation of the SH81-10

◆This section lists important precautions that have caused failures in the past.

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●	If the SH81-10 is used without airflow, the heater will break. Also, when performing trial operation (powering on), ensure the safety circuit is secured before proceeding.
●	The SH81-10 uses a [K] thermocouple as its overheat prevention sensor. Ensure this is verified when establishing the safety circuit.
●	Operating or conducting test runs without completing the safety circuit wiring may lead to serious accidents.
●	Always install a filter on the inlet side of the blower for the SH81-10. Also, clogging of the filter may cause abnormal overheating inside the heater, potentially preventing operation. Therefore, always keep the filter clean.
●	If the installation environment of the SH81-10 heater contains conductive airborne particles such as dust, powder, carbon fibers, oil, oil smoke, oil mist, moisture, or water vapor in the atmosphere around the SH81-10 heater installation location. adhere to or enter the heater, leading to malfunction.
●	Use with caution in environments containing combustible gases, flammable gases, plating, or corrosive atmospheres. Consult us beforehand.
●	As the SH81-10 is a high-temperature hot air generator heater, ensure adequate insulation is applied to all piping connected to the outlet or inlet. Failure to provide sufficient insulation will cause significant reduction in hot air temperature due to heat loss through the piping. Exercise extreme caution when connecting piping to the outlet or inlet.
●	Do not run sensor or input signal wiring adjacent to or bundle it with AC power lines, power lines, or harmonic lines. Noise can cause malfunctions or damage to internal electronic components.
●	During initial operation of the SH81-10, smoke and unpleasant odors may be emitted from the insulation material binder. However, this does not affect normal operation.

2. Installation

① Secure it firmly on a level surface.
Ensure sufficient maintenance space is provided during installation.
Refer to the delivery outline drawing for details.

② Operate within an ambient temperature range of -10° C to +60° C and an ambient humidity of 85% R.H. or less (non-condensing).

③ Install and use the unit in a location not exposed to direct sunlight, rain, or wind, indoors, in a well-ventilated area that is easy to maintain.

④ Do not place combustible materials nearby. If installing in locations with high levels of oil mist, dust, debris, or lint, install a filter and clean it regularly.
A clogged filter not only reduces efficiency but can also cause the SH81-10 to malfunction.
Operating without a filter under the above conditions allows dust and debris to accumulate inside the SH81-10 heater, causing overheating. This can result in flames escaping from the hot air outlet, posing a significant hazard.
※ Be aware that conductive materials like carbon fiber adhering inside the SH81-10 can cause electrical leakage.

⑤ Take measures to prevent external vibrations from directly transmitting to the SH81-10.

⑥ Grounding work must be performed. To prevent electric shock and equipment failure, do not supply power until wiring work is complete.

⑦ If power is supplied to the heater without airflow, the heater will burn out due to dry heating. Therefore, be sure to incorporate an interlock circuit with the air supply device.

⑧ Ensure that the pressure applied to the SH81-10 does not exceed the pressure indicated on the nameplate (0.2 MPa).

⑨ Places where installation is not possible

- Locations subject to vibration
- Outdoor locations exposed to wind and rain
- Near combustible materials
- Above heat-generating objects
- Sealed rooms and enclosures
- Locations with low atmospheric pressure
- Locations at altitudes of 1000 meters or higher
- Locations with high levels of dust or particulate matter
- Locations with ambient humidity of 85% R.H. or higher
- Locations outside the ambient temperature range of -10° C to +60° C
- Locations where metal fragments or similar objects may fall
- Locations with floating acidic gases, corrosive gases, etc.
- Locations with conductive floating particles (e.g., carbon fibers)

3. Power Supply

① Have a licensed electrician perform power connection and grounding work.

② Install a dedicated circuit.
When installing a residual current device (RCD), determine the sensitivity current rating according to the table below.

③ Connect the power terminals of SH81-10 to the control panel using appropriate wiring.
Never use a power source with harmonic distortion or distorted waveforms for the control panel power supply. Also, take sufficient measures to prevent surge voltages and noise from entering the power supply.

④ Be aware that excessively long wiring can cause voltage drop. If using a power outlet for connection, ensure it has sufficient capacity. Avoid using power outlets whenever possible, as they may overheat or fail due to aging, poor contact, or phase loss.

⑤ To prevent electric shock accidents, perform grounding work. (300V or less: Type D grounding)

Caution Always disconnect the power supply during wiring and inspection. Working with the power on may cause electric shock.

Model	Earth Leakage Circuit Breaker (ELB) Sensitivity Current Guidelines
SH81-10	Approximately 100 mA

* The sensitivity current of an RCD is typically about 10 times the initial leakage current.

4. Piping

① Securely fasten the piping to the outlet and inlet.
Use piping such as gas pipes or flexible tubes that can withstand the air pressure and have sufficient heat resistance at the hot air outlet. Ensure all pipe connections are secure to prevent air leaks.

② Install piping as thick as possible, as short as possible, with gentle bends, and ensure sufficient insulation is ap
If piping is long, pressure loss occurs due to factors like the friction coefficient inside the pipe, pipe diameter, and pipe bends. This reduces the airflow volume, causing the heater to overheat abnormally. Therefore, select an air supply source that sufficiently accounts for piping pressure loss.

③ Piping to the outlet and inlet must be installed to accommodate thermal expansion of both the main unit and connecting pipes.
If the outlet and inlet flange piping is fixed, excessive force due to thermal expansion can cause hot air

④ Residual cutting debris from piping installation entering the hot air outlet or air supply port can cause internal short circuits in the heater, posing a significant hazard. During piping installation, take great care to ensure no debris remains inside the pipes.

⑤ Pipe connections to the outlet and inlet should be made to prevent excessive loads.

⑥ The load capacity W [kgf] of the outlet and inlet flanges must be 1/8 or less of the main unit mass.
Example: For a unit mass of 400 kg, the load capacity should be approximately 50 kgf or less.

⑦ The bending moment M [kgf·m] on the outlet and inlet flanges should be 1/8 or less of the unit's mass.
Example: For a unit mass of 400 kg, the load capacity should be approximately 50 kgf or less.

⑧ Piping to the outlet and inlet flanges must be connected using fittings capable of absorbing thermal expansion of both the main unit and the connecting pipes.
If the outlet and inlet piping is fixed, excessive force due to thermal expansion may cause hot air leakage or damage.

5. Terminal Description

SH81-10 (1200-10)

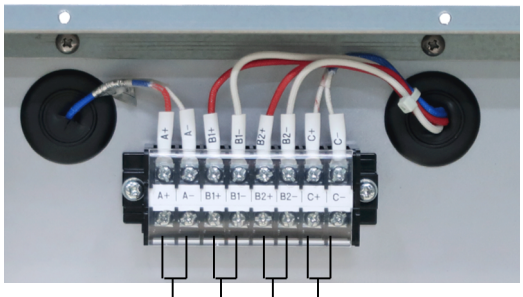
Heater current value (at 200V)　Three-phase 10kW　50A

Heater terminal block(terminal size M 6)

Ground

Heater power supply

Sensor terminal block(terminal size M 3.5)



K-Type Thermocouple for Inlet Temperature Abnormality

Set temperature 500° C or below

K-type thermocouple for outlet temperature control

Set temperature 1000° C or below

Overheat Prevention K-Type Thermocouple

Set temperature 800° C or below

Overheat Prevention K-Type Thermocouple

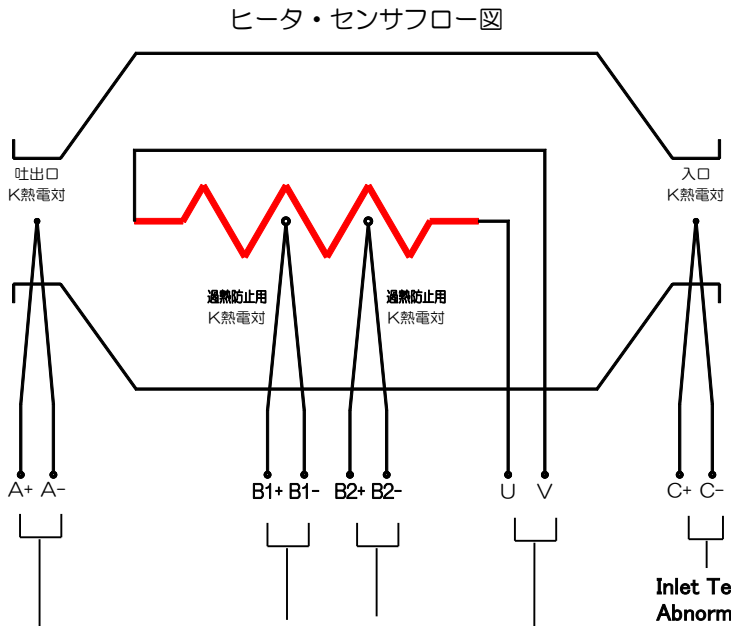
Setpoint temperature: 900° C or below

6. Sensor Descriptions

① The SH81-10incorporates four K-type thermocouples internally:**Sensor A**for hot air detection,**Sensors B1 and B2**for overheat prevention temperature detection and hot start,and Sensor**C**forinlet temperature detection.Temperature control using these sensors constantly monitors the surface temperature of the heating element (heater), achieving high thermal efficiency and a long service life.,**be sure to configure the circuit for temperature control using all four sensors**

Using the dedicated automatic temperature controller TCU20KH1000 enables operation of the SH81-10 at its maximum hot air temperature (1000° C) and allows hot start operation. It also enables perfect temperature management via each sensor, allowing control that fully utilizes the SH81-10's performance.

〈Sensor Locations〉



Outlet Thermocouple

This thermocouple controls the hot air temperature at the outlet. Please wire it to the terminal block on the control panel.

Safety Circuit Detection Sensor

If the heater interior reaches abnormally high temperatures, it will automatically initiate control based on operating conditions. It also performs hot start temperature control during hot start operation. Please wire it to the terminal block on the control panel.

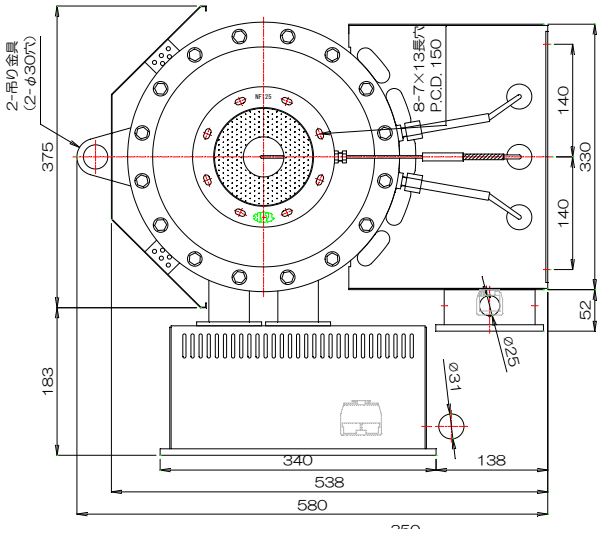
Heater Power Cable

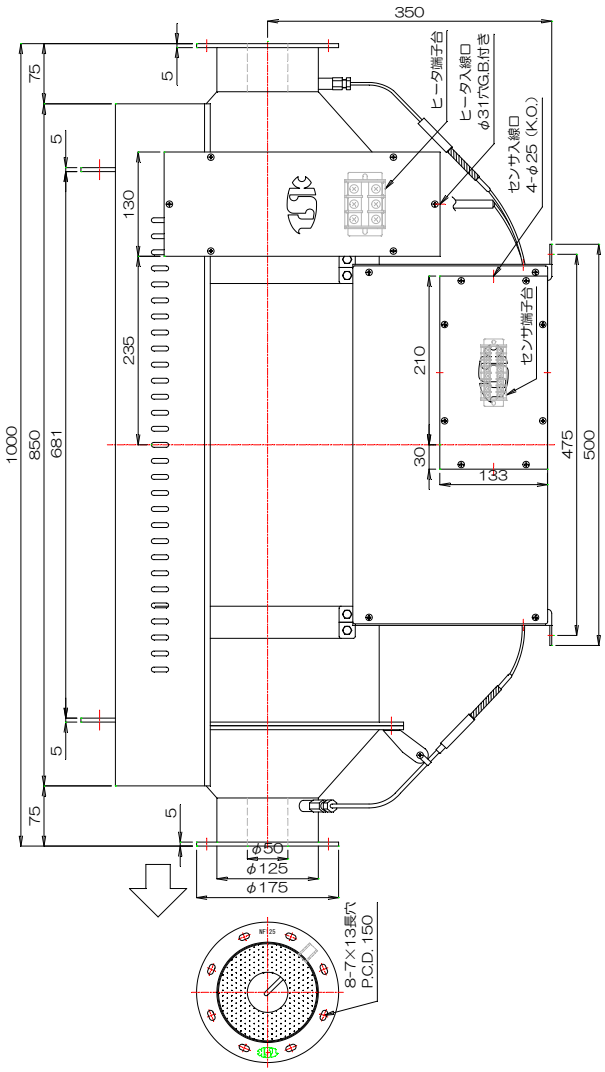
Please connect the heater power supply (single-phase 200V, 10kW). Determine the power cable thickness considering voltage drop and wire it to the terminal block on the control panel.

Inlet Temperature Abnormality

If the gas temperature at the heater inlet becomes excessively high and the sensor temperature reaches 500° C, the unit will switch to forced-air operation. Please wire to the terminal block on the control panel.

7. Outline Drawing





8. Maintenance Inspection

①Periodically inspect the tightness of screws on terminals and other parts.
②Always inspect and clean the mesh and filter at the blower inlet to prevent clogging.
Operating with clogged wire mesh or filters can cause the heater to overheat abnormally, posing a significant risk.
③When performingmaintenance and inspections, always disconnect the power supply to prevent electric.
④ To ensure safer operation of this unit,voluntary inspections when the usage period exceeds 10 years.

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【Self-Inspection Items】

- ・Measurement of insulation resistance values
- ・Measurement of heater current values
- ・Tightening inspection of all terminal blocks
- ・Check for foreign objects and clean the heater terminal block and inside the control panel
- ・Check for foreign objects inside the unit and at the inlet; clean if necessary
- ・Check operation and heat generation of electrical components
- ・Other Visual Inspections

For self-inspection, please contact your nearest licensed electrician.

※Caution: Do not perform insulation withstand voltage tests on this unit (already performed at the factory). Doing so may cause malfunction.

Hot Air Generator

Manufactu
rer
Distributor

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