

Instantaneous Heating

Halogen Ring Heater

HRH series



Heat-tech

Instantaneous Heating Halogen Ring Heater HRH series

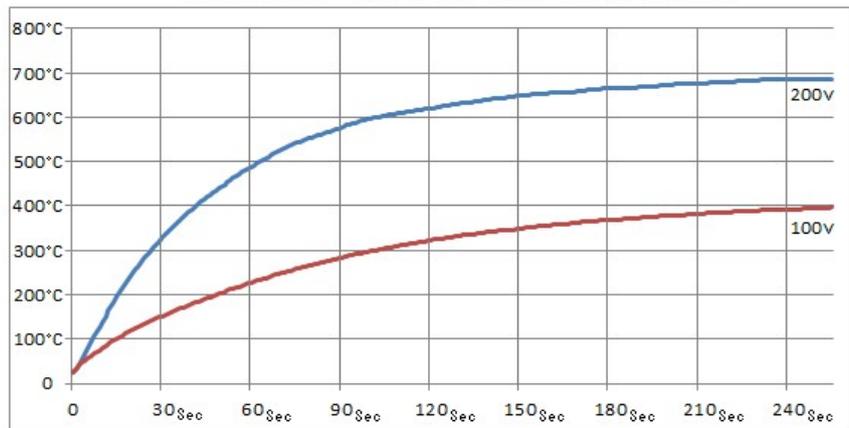
1. Simple heating, high temperature in the hood!

High conversion efficiency from electrical to radiant energy,

In the hood of the halogen lamp, high temperature reaches 650 °C will appear.



HRH-C98/H10/D20 **Heat-tech**
The rise time of the ring hood



* To used the ring hood on AC200v , need a cooling of the base section.



So ring hood, easily and safely be observed.

**In addition,
Since the powerful halogen light to shield,
Photography is beautiful.**

2. Instantaneous heating, the heating time can be shortened.

HRH is to put large amounts of heat at high speed, miniaturization of equipment, the heating time can be shortened.

Until now, that was over 30 minutes of idling, idle time can be zero.

Since there is no lag temperature, eliminating the waste of waiting time.

Temperature rise so fast, turn OFF the power at idle. save money on electricity conservation.

Electricity rates can be used, per day, costs down $2\text{kw} \times 0.5\text{h} \times 12.16 = 12,16$ yen.

Year (250 days operation), the cost down is 3040 yen.

In addition, **the annual emissions reduction of 100kg CO2 cut off !**

※ unit power rate was calculated as the 12.16 yen / kWh.

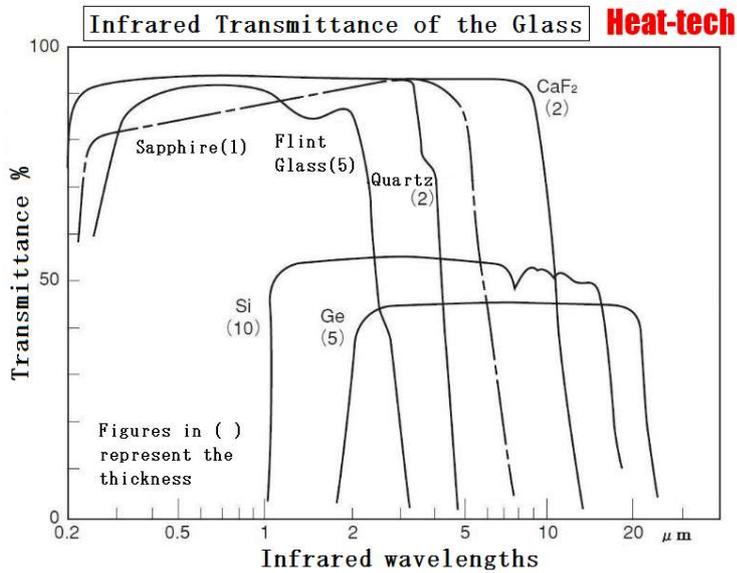
※ CO2 emission factors were calculated as 0.4kg-CO2/kwh.

3. Heating through the glass.

Quartz glass hardly absorbs visible light and the near-infrared radiation.

Transmittance is 93%. There are only 7% reflection.

Through the glass, the heating can also work in an atmosphere of inert gas in the vacuum.



4. Temperature can be controlled with high precision.

Control any temperature from ambient to maximum temperature with supply voltage.

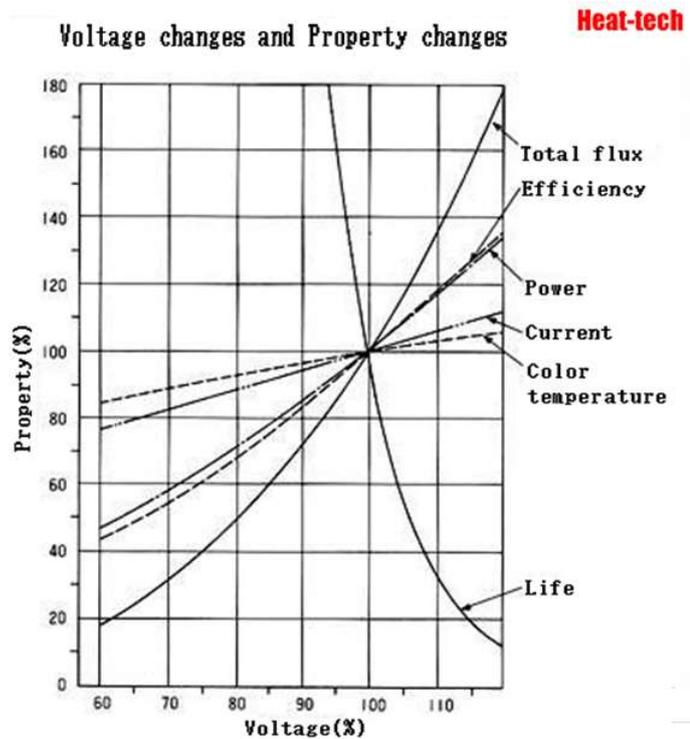
Supply voltage of the lamp output is capable of any design, the maximum output is around 2.5kw.

5. Clean.

The optical non-contact heating can be the complete heating in the vacuum chamber.

6. Possible long life.

The lamp longevity can be arbitrarily controlled from usually longevity to long life by the supply voltage.



7. Excellent in safety.

This heater is relatively safe for humans.

Neither dust nor the gases are generated, workers work comfortably.

Moreover, when trouble has come, this rapid cool heater can reduce the risk of ignition of the heated object.

Our Halogen Point Heater concentrates light of a halogen lamp by a concave mirror and heats it hotly.

The small size in the spot is decided depending on the lamp, the size of the mirror, and the focal length, and the special distribution light design of widening the flash coverage, and giving arbitrary distribution and worth is also possible.

【 Comparison of optical heating methods 】

Item	Halogen	Infrared	Laser	Xenon
Radiation efficiency	◎	○	△	○~△
Highest temperature	1400°C	700°C	~∞	1800°C
High power	◎	◎	◎	△
Wide Area	◎	◎	△	△
Start-up time	◎	○	◎	◎
Costs	◎	◎	△	△
Size	○	○	△	△
Distance	○	◎	◎	◎
Metal heating	○	×	◎	○
Non-metal heating	◎~△	◎	◎	◎~△
Glass through heating	◎	×	◎	◎
Clean	◎	◎	◎	◎
Permeation heating of translucent	○	×	◎	○
Safety	○	○	△	△

***The wavelength band of the light of the halogen lamp is 0.4-2.5μm region, (from visible optical to near-infrared radiation region),**

where about 1μm is assumed to be a peak.

***The semitransparent body (skin, paints, and adhesive, etc.) comparatively enters the inside, and is heated from the inside.**

*** The rate of absorption to metal better than the far-infrared light, to get a large difference between non-metallic materials also good.**

【 Specifications 】

(Unit mm)

D/#	HRH-C98/H10	HRH-C98/H10/M	HRH-C98/H10/MG
Mirror Type	-	Flat	Flat
Open Diameter	-	Φ130	Φ130
Lamp shape	C-Type		
Outer diameter lamp	Φ98		
Lamp tube diameter	H10		
Volt-Power	100v-250w ~ 240v-1000w		
Guard Cover	-	-	○
L x H x t	98 x 132 x 15	130 x 148 x 29	160 x 163 x 34
Mass	250g	400g	650g

【 Specifications 】

(Unit mm)

D/#	HRH-C98/H10/RH22	HRH-C98/H10/RH40
Mirror Type	Ring Hood	Ring Hood
Open Diameter	Φ22	Φ40
Lamp shape	C-Type	
Outer diameter lamp	Φ98	
Lamp tube diameter	H10	
Volt-Power	100v-250w ~ 240v-1000w	
Thermo-couple	○	
Base Temp.	Max. 300°C	
Guard Cover	Option	Option
L x H x t	130 x 148 x 58	130 x 148 x 58
Mass	650g	650g



* 1 To used the ring hood on AC200v or more, need a cooling of the base section.

* 2 The opening diameter of the ring hood can special order.

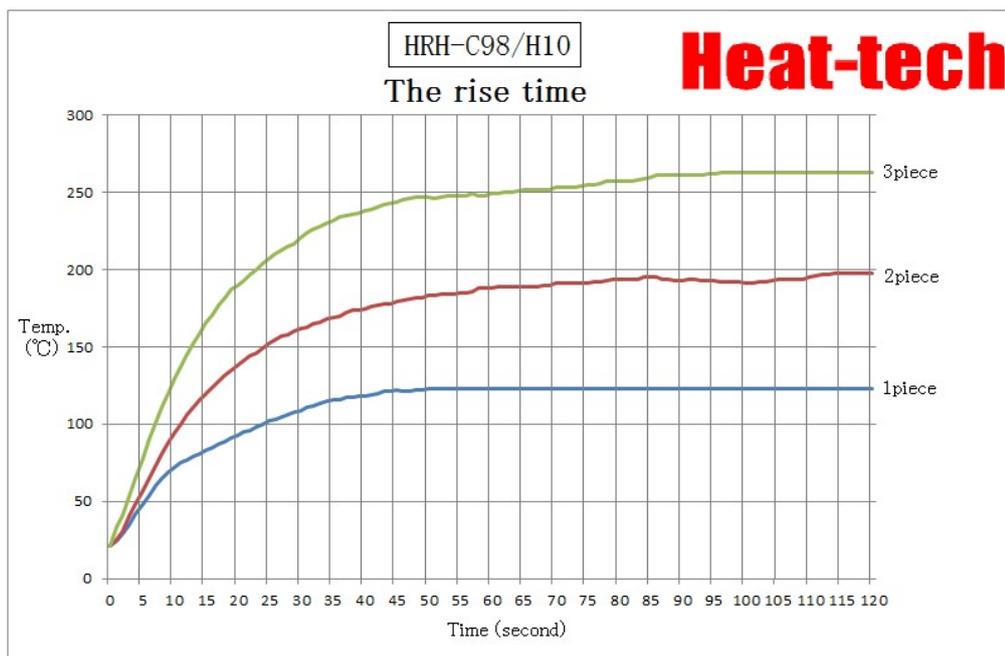
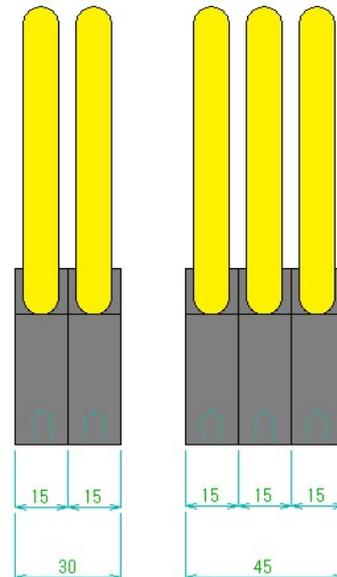
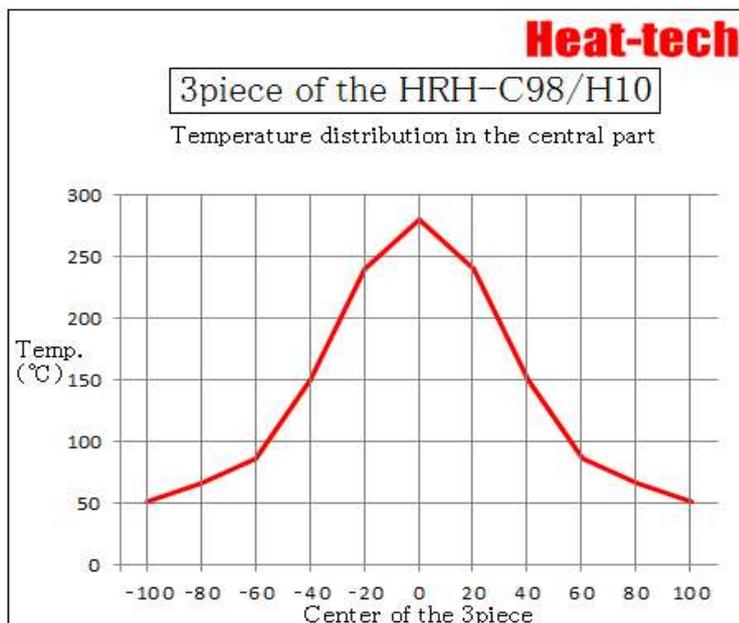
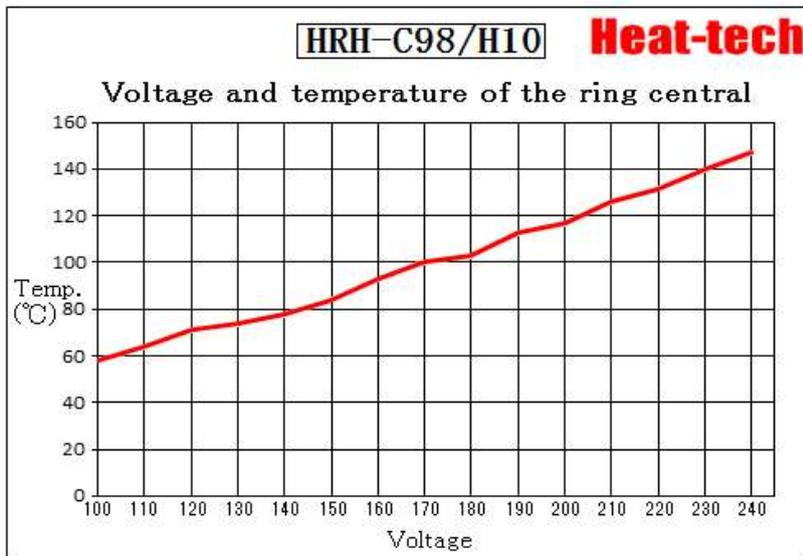
【 Specifications 】

(Unit mm)

D/#	HRH-C98/H10/D22	HRH-C98/H10/D40
Mirror Type	Dome	Dome
Open Diameter	Φ22	Φ40
Lamp shape	C-Type	
Outer diameter lamp	Φ98	
Lamp tube diameter	H10	
Volt-Power	100v-250w ~ 240v-1000w	
Thermo-couple	○	
Base Temp.	Max. 300°C	
Guard Cover	Option	Option
L x H x t	130 x 148 x 58	130 x 148 x 58
Mass	650g	650g

* 1 To used the ring hood on AC200v or more, need a cooling of the base section.

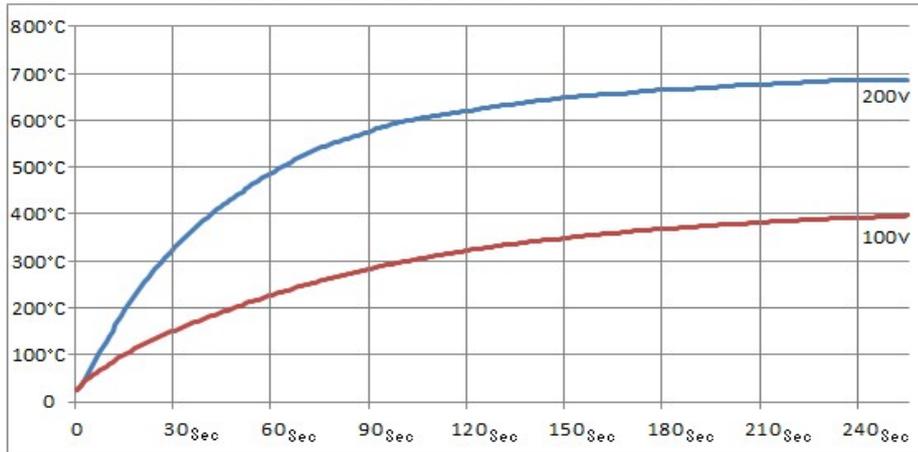
* 2 The opening diameter of the ring hood can special order.



HRH-C98/H10/D20

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The rise time of the ring hood

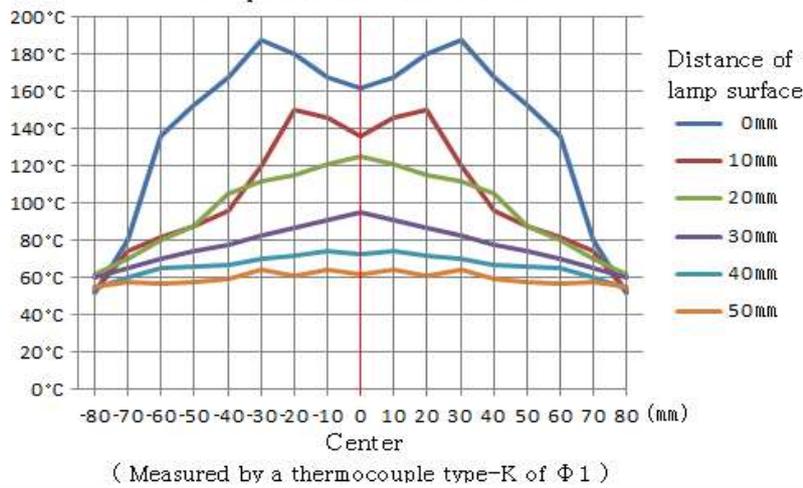


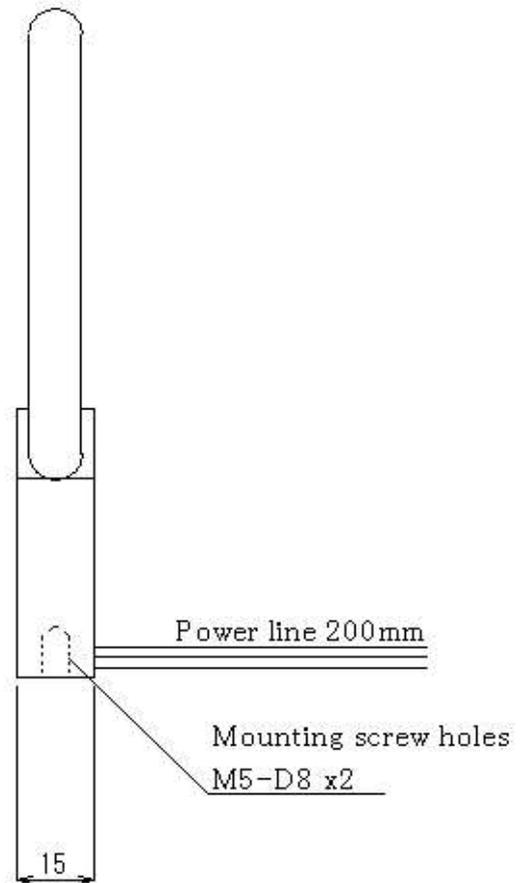
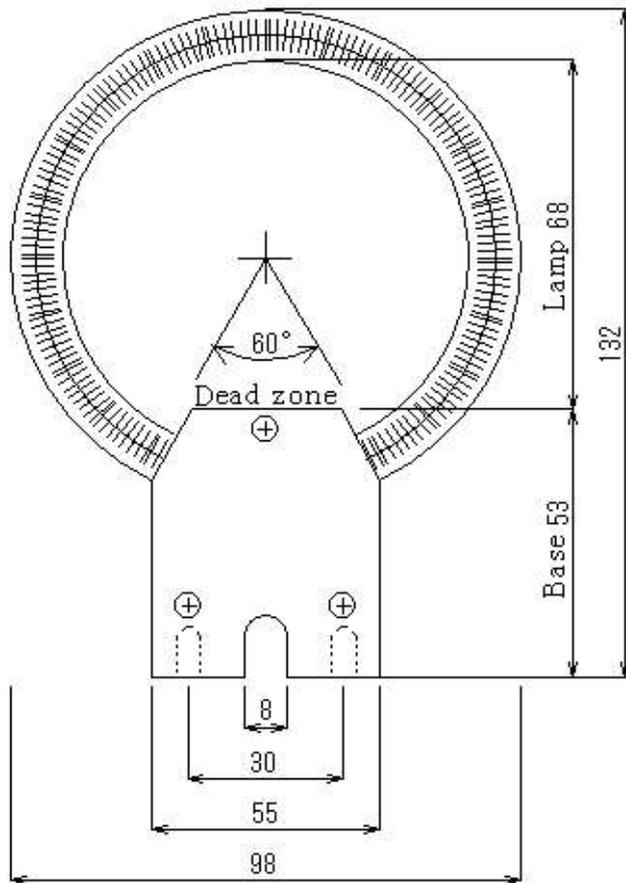
* To use the ring hood on AC200V, need a cooling of the base section.

HRH-C98/H10/M

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Temperature distribution



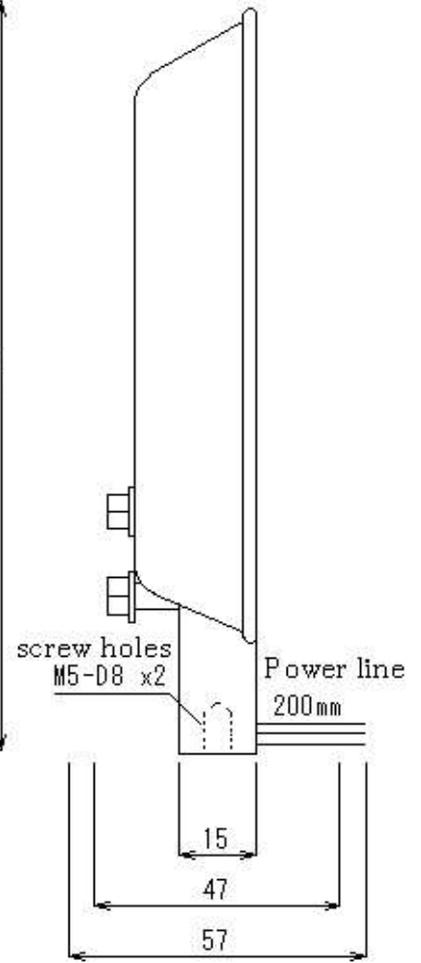
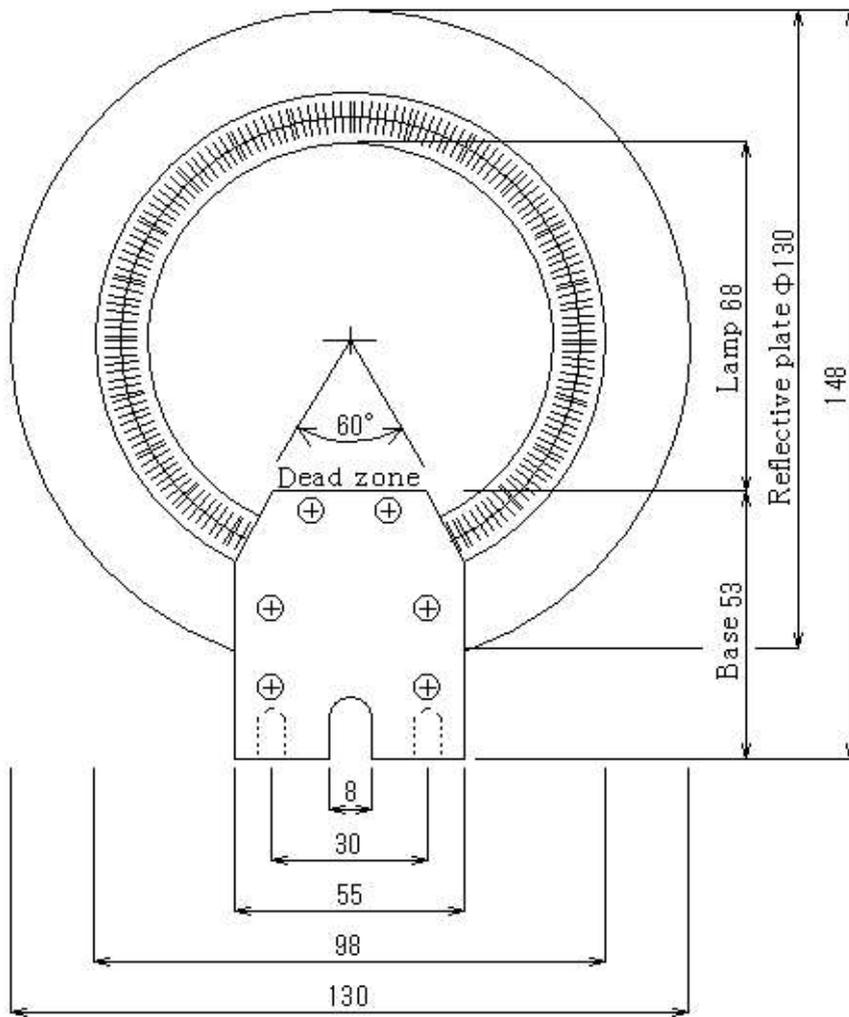


Material : SUS304

Power	200v — 240v
Volt	750w — 1000w
Model	HRH-C98/H10
Name	Halogen Ring Heater

Date	2014-06-26	Approval	Y.Shimoda	Drawing	Y.Shimoda
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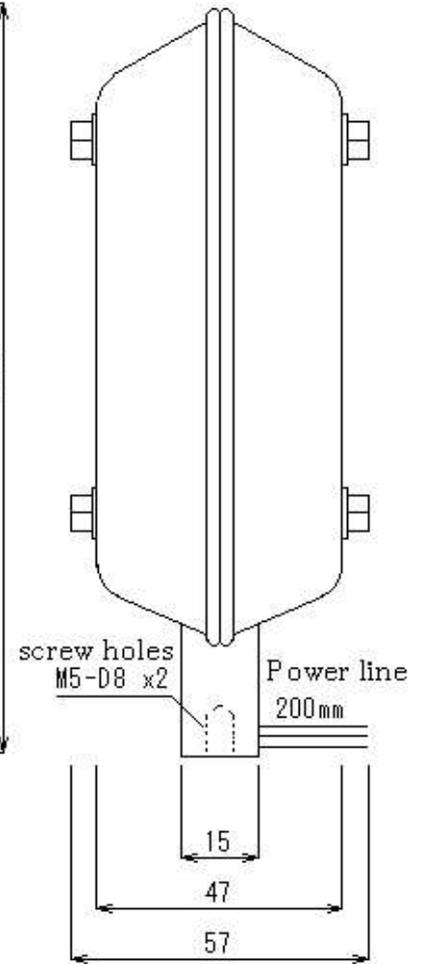
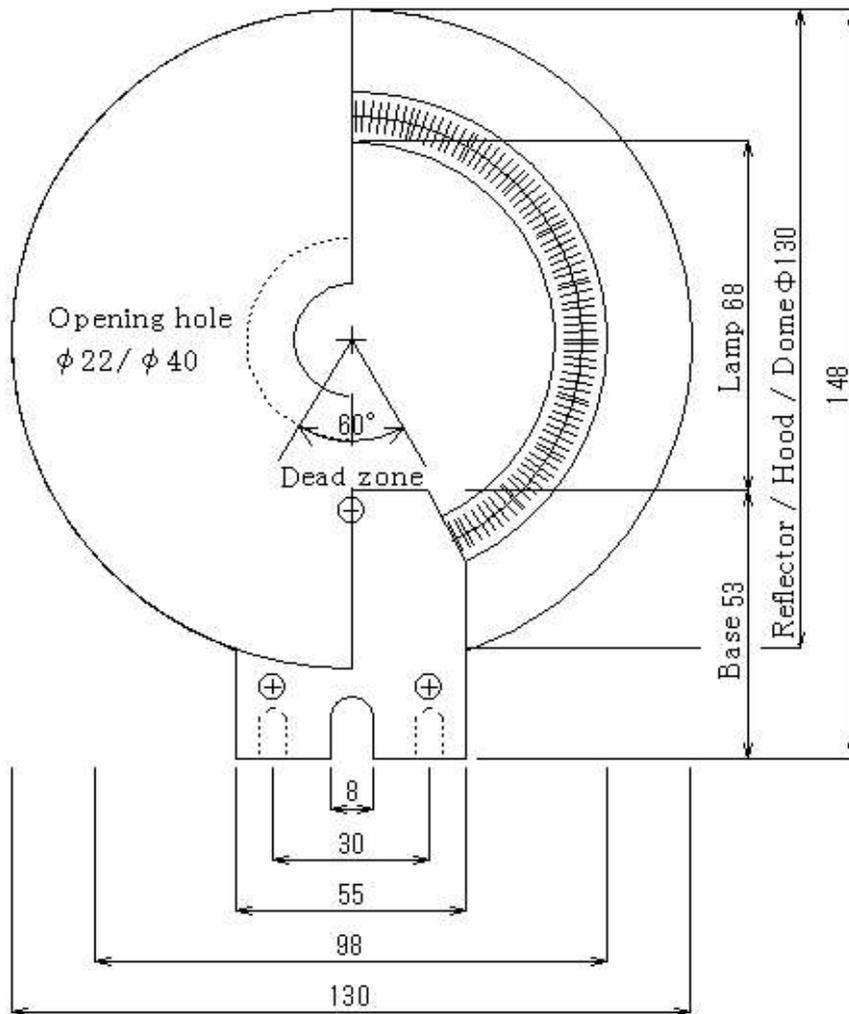


Material : SUS304

Power	200v — 240v
Volt	750w — 1000w
Model	HRH-C98/H10/M
Name	Halogen Ring Heater

Date	2014-06-26	Approval	Y.Shimoda	Drawing	Y.Shimoda
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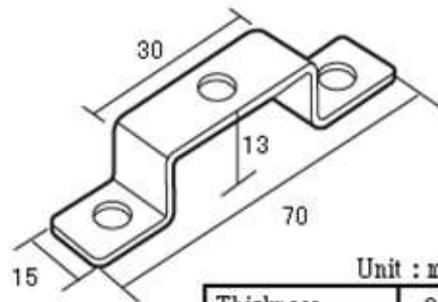
※ The hole can be specially made in the appointed size by order.

Material : SUS304

Power	200v — 240v
Volt	750w — 1000w
Model	HRH-C98/H10/RH(D)
Name	Halogen Ring Heater

Date	2014-06-26	Approval	Y.Shimoda	Drawing	Y.Shimoda
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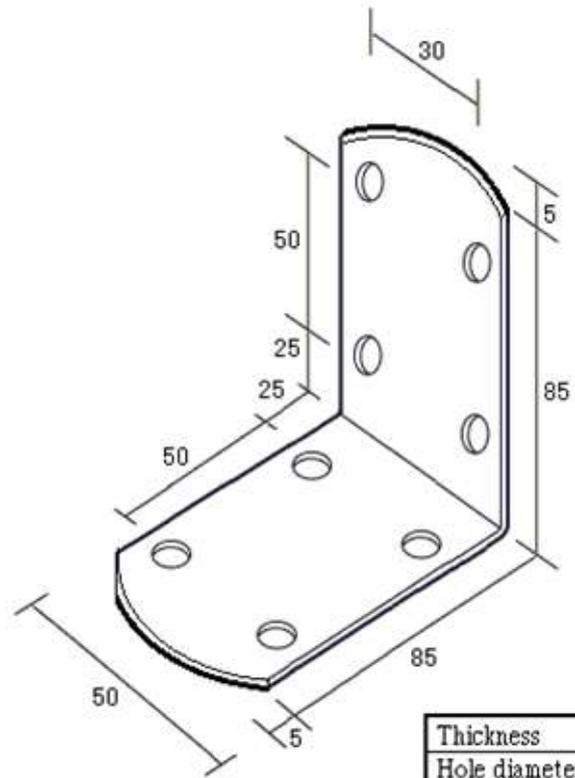


Unit : mm

Thickness	2
Hole diameter	6.5
Number of holes	3

There are the dimensions of some tolerance.

Mounting bracket U type



Unit : mm

Thickness	3
Hole diameter	5.2
Number of holes	8

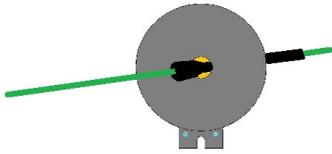
There are the dimensions of some tolerance.

Mounting bracket L type

						Name	Mounting bracket
Date	2014-06-26	Approval	Y.Shimoda	Drawing	Y.Shimoda	Heat-tech	

Applications of Halogen Ring Heater

■ No.1 Heat shrinking of wire harness



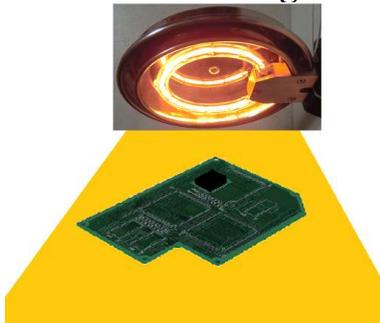
《 Problem Point 》

There is no good method of heating from all direction.
and We were in trouble.

《 ⇒Kaizen Point 》

Shrinking heating carried out with the halogen ring heater.
Since it heated from all the direction, it has shrunk finely.
The yield improved and amendment decreased.

■ No.2 Preheating of the printed circuit board



《 Problem Point 》

There is no good method of heat the small PCB
and We were in trouble.

《 ⇒Kaizen Point 》

The ring heater can uniform heating of the wide area.
The efficiency of preheating increased.

■ No.3 Heating of the test piece



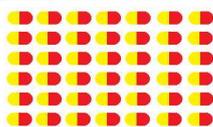
《 Problem Point 》

It is no good method of observing the process of heating.
and We were in trouble.

《 ⇒Kaizen Point 》

The halogen ring heater with a ring hood was used.
Since the test piece inserted from the feed port was observed
from the side opposite to, research speed raised it.

■ No.4 Dryness of capsule printing



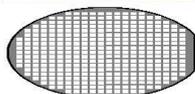
《 Problem Point 》

There is no good way to small and uniform heating
and We were in trouble.

《 ⇒Kaizen Point 》

The ring heater which can carry out homogeneous heating
of the wide area was introduced.
The efficiency of dryness increased.

■ No.5 Dryness of the silicon wafer



《 Problem Point 》

There is no good way to small and wide heating
and We were in trouble.

《 ⇒Kaizen Point 》

The ring heater which can carry out wide heating of the
wide area was introduced.
The efficiency of dryness increased.

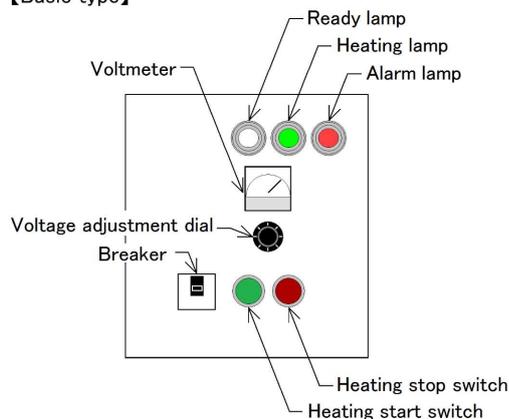
High-performance Heater Controller HHC2 series



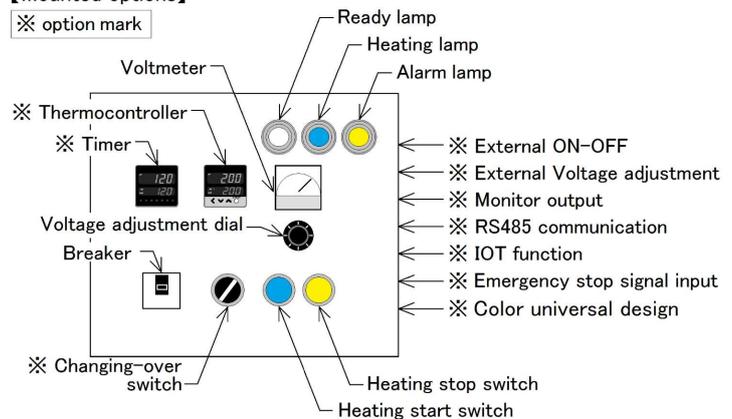
【Feature】

- HHC 2 is a heater controller that combines options with basic functions and is customized for use.
- Color universal design type can be specified CUD as an option.
White, blue and yellow indicator lights, Blue and Yellow operation buttons.
The color scheme is easy for anyone to see.
- “HHC2” has the ability to manually control the ON-OFF of the power, voltage.
Current limit, slow-up, over-current breaker of voltage and so on,
It incorporates enough safety equipment necessary to the halogen heater.
- Thermocontroller on-board of the option selected, there is a thermocouple specification c
- In option selected, user can control of ON-OFF and the voltage is possible with the outside signal.
- The IOT-function of the option selected, user can confirm data such as, the set temperature, heating temperature, operation time, operation number of times, heater exchange number of times.
- Using a duplication sensor of the optional selected, a over temperature alarm management is possible.
- Using a one-shot timer of the optional selected, an precision heating examination is possible.

【Basic type】



【Mounted options】



D/#	Supply voltage	Heater voltage	Control current
HHC2-12v-300w	AC100-240v	DC12v	25A
HHC2-24v-330w	AC100-240v	DC24v	13A
HHC2-36v-600w	AC100-240v	DC36v	15A
HHC2-36v-1kw	AC100-240v	DC36v	28A
HHC2-120V-3kw	AC200-240v	AC120v	25A
HHC2-100v-240v-15A	AC100-240v	AC100-240v	15A
HHC2-100v-240v-30A	AC100-240v	AC100-240v	30A
HHC2-100v-240v-60A	AC100-240v	AC100-240v	60A

【Standard Function】

Power-supply voltage	AC100V~240V 50/60Hz
DC Control current	12v-300w / 24v-300w / 36v-500w / 36v-1kw
AC Control current	15A / 30A / 60A
Analog voltmeter	The output voltage of Halogen Heater is indicated by the analog meter.
Manual ON-OFF	Output ON-OFF by switch of the panel.
Manual adjustment	Adjustable voltage from 0 to 98% by 4-20mA signal from Remote.
AC power soft-start	At start-up, the inrush current is controlled by increasing the voltage slowly.
Overcurrent protect	The power semiconductor device is protected from the excessive current.
Burnout detect	With heater burnout detection and display. AC output type limited installed.
Usage environment	Temperature 0 ~ 45 °C Humidity 10% to 95% (non-condensing)
External dimensions	Width 300 x height 300 x depth 300 mm

【Options】

Abbreviation	Contents
CUD	Color universal design type white-blue-yellow indicator light and operation switch.
TC	Thermo controller : Thermo couple input
TP	Thermo controller : Pyrometer input
PM	The Pyrometer and mounted surface.
SV	Supervisor function for Over-heat protect or Target-heating
HL	High-Low Control for rapid-heating or preheating
TMR1	Mounting surface.-For one-shot heating
TMR2	Mounting surface.-For thermal holding time
TMR3	Mounting surface.-Heating time for the predictive maintenance
RC1	Heating start or stop in the signal from outside
RC2	Specified output voltage in 4-20mA from outside
RSP	Specified thermocontroller temp. in 4-20mA
MON	Output in 4-20mA present temp. to the outside
RS485	RS-485 Communication
IOT	IOT function
AirV	Air opening and closing valve
OFDT	Air closing valve, heating stop after the cooling timer 5 minutes
WP	Cooling water pressure shortage alarm
AP	Air Blow Heater and terminal cooling air pressure shortage alarm
DC24	DC24V power supply cooling fan
CFS	Cooling fan stop detection signal processing
FPR	Front Protection Rail
RPR	Rear Protection Rail
Pyrometer	Pyrometer to choice of applications, and then fitted adjusted to the heater controller.
Power Cable	Manufacture the specification of the power cable.

※ If user need a function other than the above, please contact us.

[Note] When the to add a function, there is that the external dimensions changes.



【 Options Front Protection Rail 】



【 Options Rear Protection Rail 】

【 Infrared Absorption Rate 】

Please confirm the index of absorption of infrared rays in this table.

The material absorbed by about 0.5 = 50% or more is suitable for the infrared heating.

Wavelength	Infrared absorption rate(=Emissivity)				
	1	1.6	2.4	3~5	8~14
Material	μm	μm	μm	μm	μm
Human skin					0.98
Natural wood				0.9-0.95	0.9-0.95
Charcoal					0.96
Carbon soot	0.95	0.95		0.95	0.95~0.97
Carbon graphite	0.85	0.85	0.85	0.85	0.8
Silicon carbide				0.9	0.9
Paper black					0.9
Paper black matted					0.94
Paper green					0.85
Paper red					0.76
Paper white					0.7~0.9
Paper yellow					0.72
Cloth black					0.98
Cloth high gauge knit	0.75	0.8	0.85	0.85	0.95
Plastic				0.60~0.95	0.95
Asphalt	0.85	0.85		0.9	0.85
Tar					0.79~0.84
Tar paper					0.91~0.93
General Paint				0.87-0.96	
Lacquer bakelite					0.93
Lacquer black matted					0.96~0.98
Lacquer glossy black spray iron					0.87
Lacquer white luster					0.8~0.95
Shellac black matted					0.91
Shellac black luster					0.82
Aluminum paint				0.69	
Rubber Hard				0.9	0.95
Rubber Gray Soft				0.86	0.86

【 Infrared Absorption Rate 】

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Wavelength	Infrared absorption rate(=Emissivity)				
	1	1.6	2.4	3~5	8~14
Material	μm	μm	μm	μm	μm
Granular silica powder					0.48
Silica powder					0.3
Polished glass surfaces				0.91-0.96	
Pottery				0.86	0.92
Porcelain pottery					0.70~0.75
Ceramic	0.4	0.5	0.85-0.95	0.95	0.9
Alumina Al ₂ O ₃	0.3	0.3	0.3	0.4	0.6
Brick Red	0.8	0.8	0.8	0.93	0.9
Brick White Fireproof	0.3	0.35			0.8
Brick Silica	0.55	0.6			0.8
Brick Sillimanite	0.6	0.6			0.6
Asbestos	0.9	0.9		0.9	0.85
Mud					0.9-0.98
Unglazed clay					0.91
Raw clay				0.85-0.95	0.95
Concrete	0.65	0.7	0.9	0.9	0.9
Cement					0.54-0.96
Gravel				0.95	0.95
Sand				0.6-0.9	0.6-0.9
Coarse emery					0.85
Basalt				0.7	0.95
Polished gray marble					0.93
Mica					0.72
Limestone				0.4-0.98	0.98
Plaster				0.4-0.97	0.8-0.95
Stucco					0.91
Snow					0.8-0.9
Water thickness least 0.1mm				0.96	0.95~0.98
Ice				0.96	0.98

【 Infrared Absorption Rate 】

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Wavelength	Infrared absorption rate(=Emissivity)				
	1	1.6	2.4	3~5	8~14
Material	μm	μm	μm	μm	μm
Granular silica powder					0.48
Silica powder					0.3
Polished glass surfaces				0.91-0.96	
Pottery				0.86	0.92
Porcelain pottery					0.70~0.75
Ceramic	0.4	0.5	0.85-0.95	0.95	0.9
Alumina Al ₂ O ₃	0.3	0.3	0.3	0.4	0.6
Brick Red	0.8	0.8	0.8	0.93	0.9
Brick White Fireproof	0.3	0.35			0.8
Brick Silica	0.55	0.6			0.8
Brick Sillimanite	0.6	0.6			0.6
Asbestos	0.9	0.9		0.9	0.85
Mud					0.9-0.98
Unglazed clay					0.91
Raw clay				0.85-0.95	0.95
Concrete	0.65	0.7	0.9	0.9	0.9
Cement					0.54-0.96
Gravel				0.95	0.95
Sand				0.6-0.9	0.6-0.9
Coarse emery					0.85
Basalt				0.7	0.95
Polished gray marble					0.93
Mica					0.72
Limestone				0.4-0.98	0.98
Plaster				0.4-0.97	0.8-0.95
Stucco					0.91
Snow					0.8-0.9
Water thickness least 0.1mm				0.96	0.95~0.98
Ice				0.96	0.98

【 Infrared Absorption Rate 】

Please confirm the index of absorption of infrared rays in this table.

The material absorbed by about 0.5 = 50% or more is suitable for the infrared heating.

【 Magnetic metal 】	Infrared absorption rate(=Emissivity)				
Wavelength	1	1.6	2.4	3~5	8~14
Material	μm	μm	μm	μm	μm
Iron non-oxidation side	0.35	0.3		0.18	0.1
Iron oxidation side	0.85	0.85	0.85	0.85	0.8
Iron rust side		0.6-0.9			0.5-0.7
Iron melt	0.35	0.4-0.6			
Cast iron grinding side				0.21	
Cast iron oxidation side	0.85			0.58	0.6-0.95
Cast iron non-oxidation side	0.35	0.3			0.2
Cast iron melt	0.35	0.3-0.4			0.2-0.3
Steel cooling roll	0.8-0.9	0.8-0.9			0.7-0.9
Steel grinding seat	0.35	0.25		0.07	0.1
Steel melt	0.35	0.25-0.4			
Steel oxidation side	0.8-0.9	0.8-0.9			0.7-0.9
Stainless steel	0.35	0.2-0.9			0.1-0.8
Inconel non-oxidation side	0.3	0.3	0.3	0.28	0.1
Inconel oxidation side	0.85	0.85	0.85	0.85	0.85
Inconel Sand blast	0.3-0.4	0.3-0.6			0.3-0.6
Inconel grinding side	0.2-0.5	0.25			0.15

【 Infrared Absorption Rate 】

Please confirm the index of absorption of infrared rays in this table.

The material absorbed by about 0.5 = 50% or more is suitable for the infrared heating.

Wavelength	Infrared absorption rate(=Emissivity)				
	1	1.6	2.4	3~5	8~14
Material	μm	μm	μm	μm	μm
Platinum	0.27	0.22	0.18	0.1-0.04	0.07
Gold	0.05	0.02	0.02	0.02	0.02
Silvery grinding side				0.02	
Silver non-oxidation side	0.01	0.01	0.01		0.01
Silver oxidation side	0.05	0.04	0.04	0.03	0.02
Copper mirror side				0.02	
Copper non-oxidation side	0.06	0.05	0.04	0.04	0.03
Copper rough side		0.05-0.2		0.072-0.50	
Copper oxidation side	0.85	0.85	0.85	0.85	0.8
Brass specular				0.052	
Brass non-oxidation	0.2	0.18		0.1	0.03
Brass oxidation side	0.7	0.7	0.7	0.46-0.61	0.6
Lead non-oxidation side	0.35	0.28		0.16	0.13
Lead rough side	0.65	0.6			0.4
Lead oxidation side	0.65	0.65	0.65	0.63	0.65
Lead grinding side				0.05	
Tin non-oxidation side	0.25-0.4	0.1-0.28	0.12	0.09	0.06
Tin oxidation side	0.6	0.6	0.6		0.6
Tin luster side				0.05	
Zinc non-oxidation side	0.5	0.32	0.1	0.05	0.04
Zinc oxidation side	0.6	0.55		0.11	0.3
Zinc galvanization steel board				0.23	
Aluminum specular				0.02	
Aluminum usual grinding side				0.04	
Aluminum non-oxidation side	0.13	0.09	0.08	0.05	0.025
Aluminum oxidation side	0.4	0.4	0.4	0.08-0.3	0.35
Aluminum alloy A3003 rough side	0.2-0.8	0.2-0.6			0.1-0.3
Aluminum alloy A3003 grinding side	0.1-0.2	0.02-0.1			
Aluminum alloy A3003 oxidation side		0.4			0.3

【 Handling notes 】

1) When the electric current flow or heating, please avoid touching the hand to the heater.
For high temperatures, user may get burned.



2) Strong light is harmful to the eyes.
There is a risk of blindness when looking straight at the halogen light.
Please protect eyes with thick sunglasses etc.
when you see the condensing part of the filament and the spot heater of the lamp under lighting.



3) The maximum working temperature of HRH series is 160 °C.
If user live more than 30 seconds may not exceed the specified temperature, please do the cooling.

4) HRH series are not explosion proof.
If experiencing explosive flammable gas when heated and dried, please do ventilation to safely.

5) Please do not touch the heating object to the HRH series while the electric current flow
There is a possibility of the leak and the ignition according to the short.

6) Please use the heat resistance wires such as the glass coating silicon rubber insulation electric wire ,
Siegel line or the Teflon coating electric wires for the in-furnace wiring.

7) The halogen light is not good at the check with eyes of generation of heat.
Please confirm the temperature of the heater and the heating object with the thermometer.

8) Halogen light is the straight like sunlight, only direct exposure has effect on the object to be dried or heated.
According to the shape of the work, while turning and rotation reversal, please halogen light shines so uniformly.

9) Deterioration on the mirror side causes a remarkable performance decrease.
Please soak solvents such as alcohol and benzene into a soft cloth and wipe the dust on the mirror side off lightly.

10) Please ground the furnace casing and the frame.

No-touch High Temperatures Hating

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