Heating Elements & Temperature Sensors in General

MICRO HEATERS

THERMO-COUPLES

CARTRIDGE HEATERS

CT HEATERS

正泰電熱股份有限公司

SINCE 1971

DUN & BRADSTREET 鄧白氏註冊 D-U-N-S® REGISTERED

afaq ISO 9001 Qualité AFNOR CERTIFICATION

CE

semi MEMBER

TABLE OF CONTENTS

COMPANY PROFILE

Established in 1971, CHENG TAY HEATER & INSTRUMENT CO., LTD. as known as “CT HEATERS” has been in the business of developing and introducing the latest machinery while pioneering new electrical heating techniques and comprehensive thermocouple design. We have the engineering and manufacturing capabilities to be or define world-class quality. Therefore, made us the only specialists in Taiwan that can supply tailor-made or prototype heating elements for the entire scientific and industrial spectrum. Our years of experience have enabled us to even help our clients to solve their own machinery problems or improving its performance.

For over 49 years, CT HEATERS has stood for quality, flexibility and innovation. Our clients come to us with the knowledge that whatever their heating needs are, we have the solution for them.

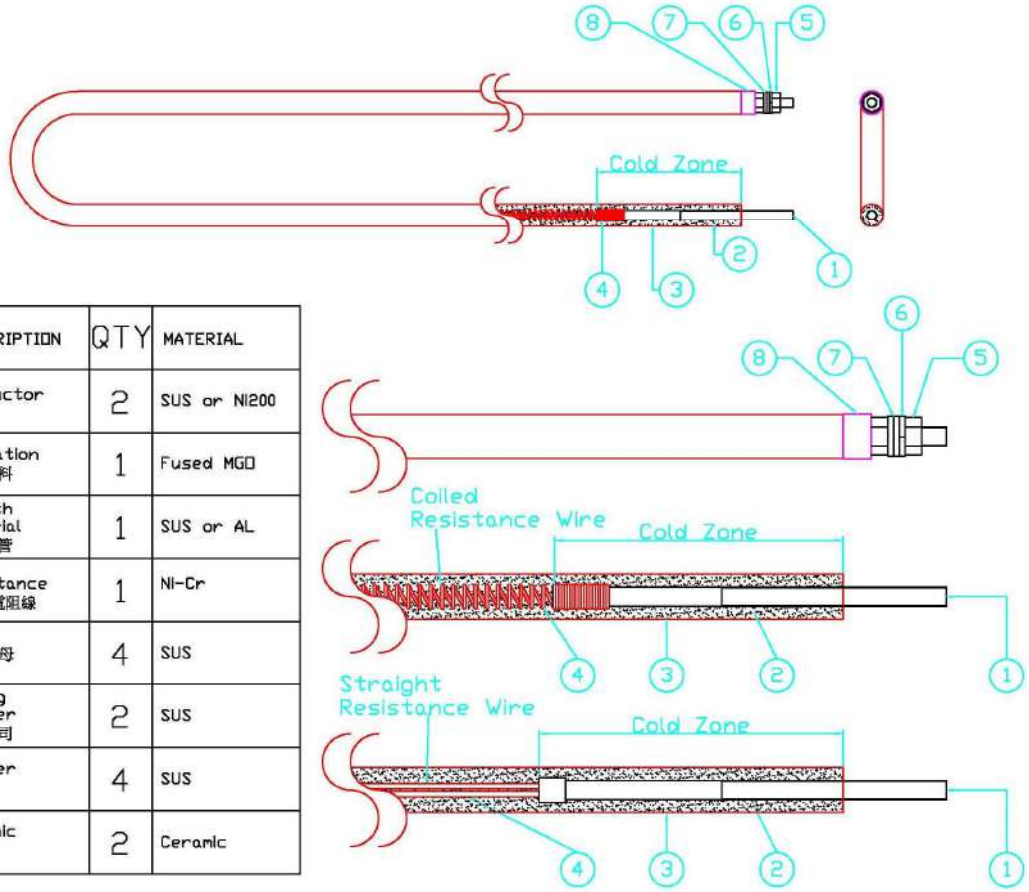
We are committed to continually building our reputation, knowledge and respond quickly to the world’s changing needs. Our business approach is to meet our client’s needs and to offer a competitive price.

From a single item to a large scale project, we can supply all your heater and thermocouple needs. All inquiries are welcome.

 We manufacture products according to drawings which serve as contractual documents. We are not responsible for damage resulting from inappropriate installation or use of our product.

UBULAR HEATER & ASSEMBLIES

BASIC CONSTRUCTION OF TUBULAR HEATER



NO	DESCRIPTION	QTY	MATERIAL
1	Conductor 電極	2	SUS or NI200
2	Insulation 絕緣材料	1	Fused MGO
3	Sheath Material 金屬外管	1	SUS or AL
4	Resistance Wire電阻線	1	NI-Cr
5	Nut螺母	4	SUS
6	Spring Wahser 彈簧華司	2	SUS
7	Wahser 華司	4	SUS
8	Ceramic 磚子	2	Ceramic

Tubular heater is one of the most versatile electric heating sources available on the market.

Distributed Wattage available, please contact CT HEATERS representative for more information!

DIMENSION OF SHEATH SELECTIONS

Sheath Diameter (mm)	Maximum Voltage*
Φ1	24
Φ1.5	120
Φ1.6	120
Φ2.4	120
Φ3.2	240
Φ4	240
Φ4.8	240
Φ5.4	380

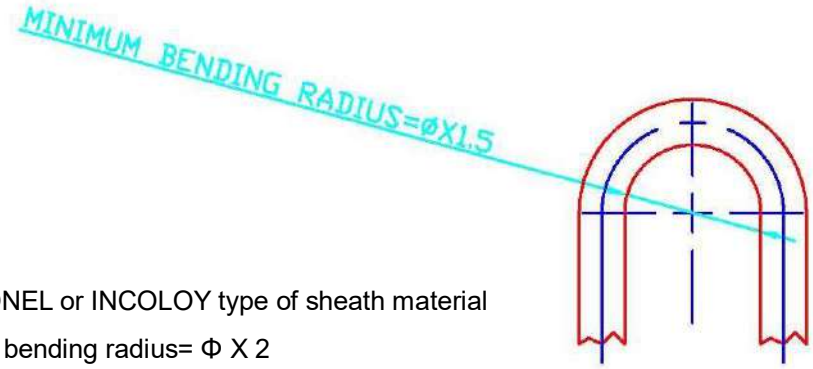
Φ6.7	380
Φ8	440
Φ10.8	440
Φ13.5	440
Standard Resistance/Wattage Tolerance ±10% Tubular can run on both AC and DC, 50 or 60Hz	*In some applications higher values may be possible

MATERIAL OF SHEATH SELECTIONS

SUS304, SUS304L, SUS316, SUS316L, SUS321, INCONEL600, INCONEL601, INCOLOY800, INCOLOY825, BRASS, COPPER, TITANIUM, ALUMINUM

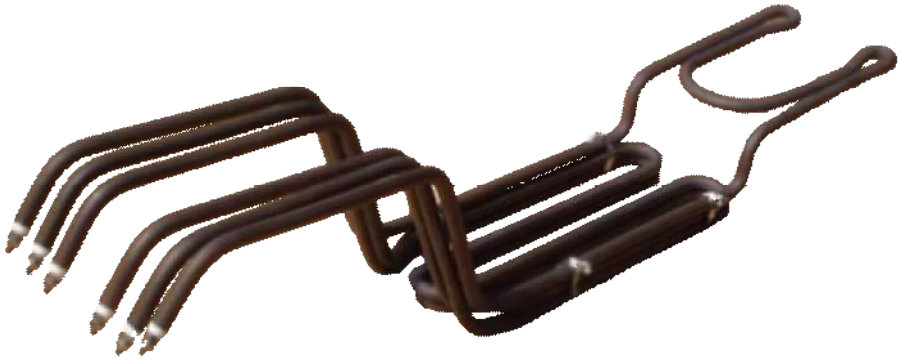
Power: 100V and up, selection of wattage from 50W to 10kW.

BENDING FORMATIONS



For INCONEL or INCOLOY type of sheath material
Minimum bending radius= Φ X 2

For other geometrical formations, please consult your CT HEATERS representative.



The picture above is an example of our bending ability

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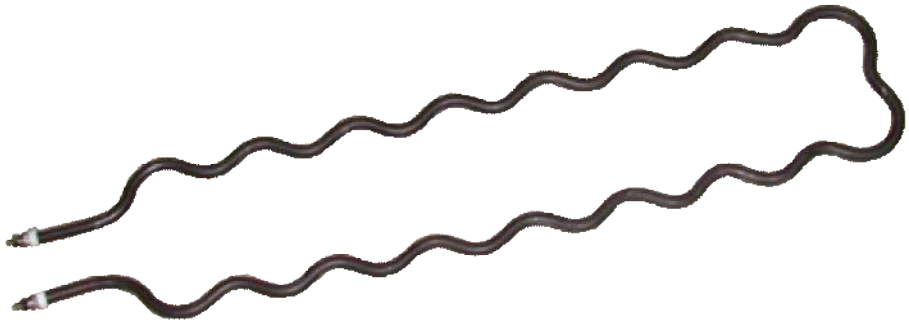

The pictures above is an example of our bending ability

APPLICATIONS

- **Gases**
- **Liquids**
- **Air**
- **Radiant surface heating**
- **Contact surface heating**
- **Molten materials**
- **And more…..**

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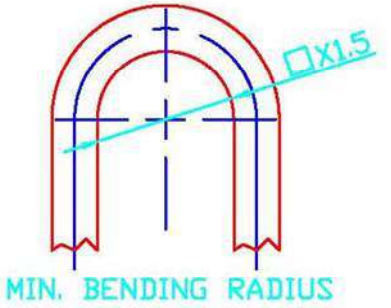
PRECAUTIONS

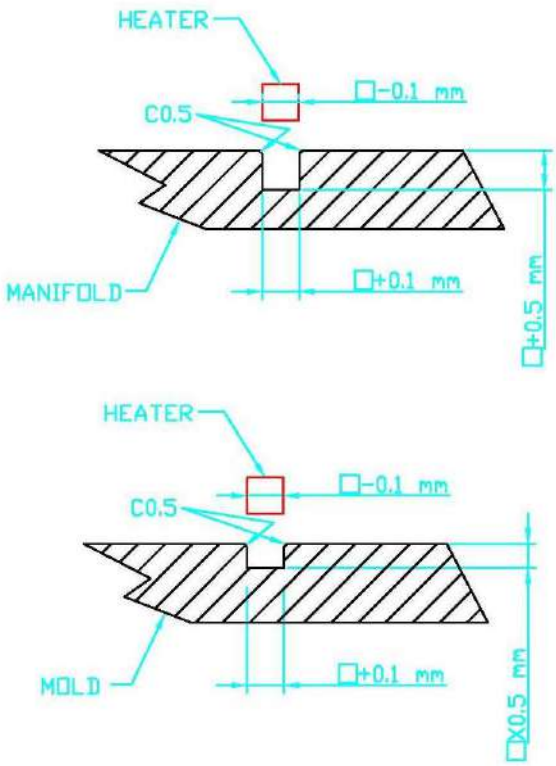
- Tubular heating elements are hygroscopic in nature due to Mgo contents. If kept unused for longer period, there is moisture deposition on the terminals. Therefore CT HEATERS recommend you to de-moisture the heaters prior to installation by heating them at 90~120℃ in an oven for at least 2 hours or use controllers with soft start function. This will help evaporate any moisture present inside.
- When you are using tubular heating elements, please have at least one or more thermocouple ready and please connect them correctly. Each tubular heater should have thermocouple contact with heater, and do not let temperature of heater surface exceed 650℃.
- Adapter area (cold zone) should be kept under 260℃
- Stabilized voltage supply increases the life of the heater as well as increases the wattage output. Grounding connection is must at all the time (green color coded wire).
- Unheated zone once bent should not be re-bent or de-coiled. This will lead to breakage. Sharp edges along the lead wire path areas should be protected from combustible gases & liquid to avoid short-circuits.

HEATER FOR MANIFOLD SYSTEMS
TUBULAR HEATER

Tubular Heater Q6X6, Q7X7, and Q9.5X9.5, Φ8, Φ10.8,

INSTALLATION- for our bending service, please provide the manifold(s) or mold plate(s). The detail of groove as the following





For INCONEL or INCOLOY type of sheath material
Minimum bending radius= □ X 2

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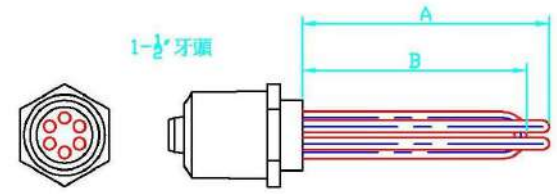
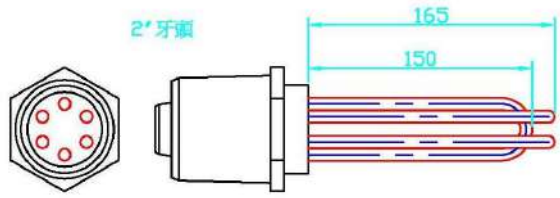
Immersion Heaters

Screw Plug type

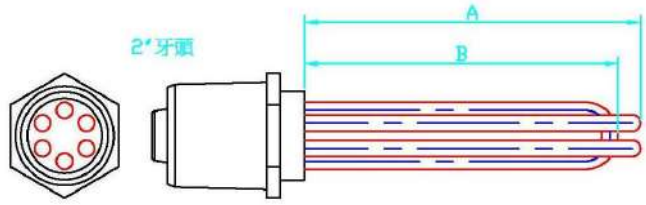
Screw plug immersion heaters are ideal for direct immersion heating of liquids, therefore, all types of oils and heat transfer solutions.



	A	B
3.0kW	165 mm	150 mm
3.0kW	235X2	
4.0kW	268X2	



3 kW



	A	B
4.5kW	225 mm	210 mm
6.0kW	275 mm	255 mm
7.5kW	310 mm	290 mm
9.0kW	370 mm	345 mm
12kW	480 mm	460 mm
15kW	588 mm	573 mm

以上長度數據僅供參考, 正確長度請以實際成品爲主

Screw Plug Orientation: horizontal mounting

APPLICATIONS

- **Paraffin**
- **Caustic solutions**
- **Hydraulic oil, crude, asphalt**
- **Chemical baths**
- **Lubricating oils at API specified watt densities**
- **Anti-freeze (glycol) solutions**
- **Air and gas flow**
- **Industrial water rinse tanks**
- **Water:**
  Clean, De-ionized, Potable, De-mineralized, Process
- **Vapor degreasers**
- **And more…..**

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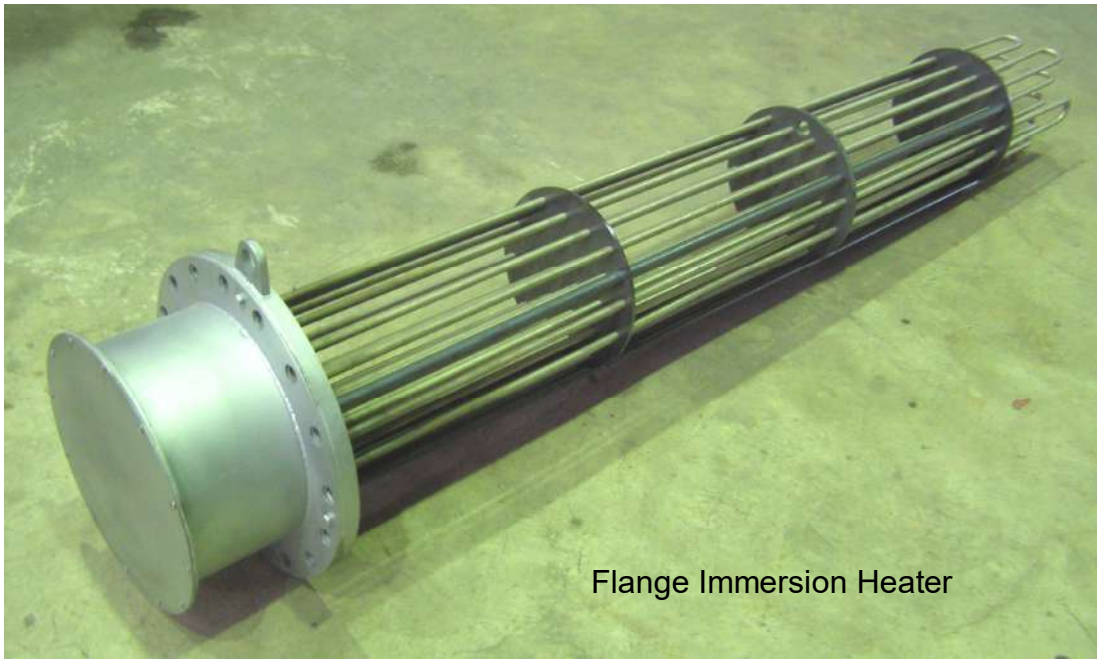
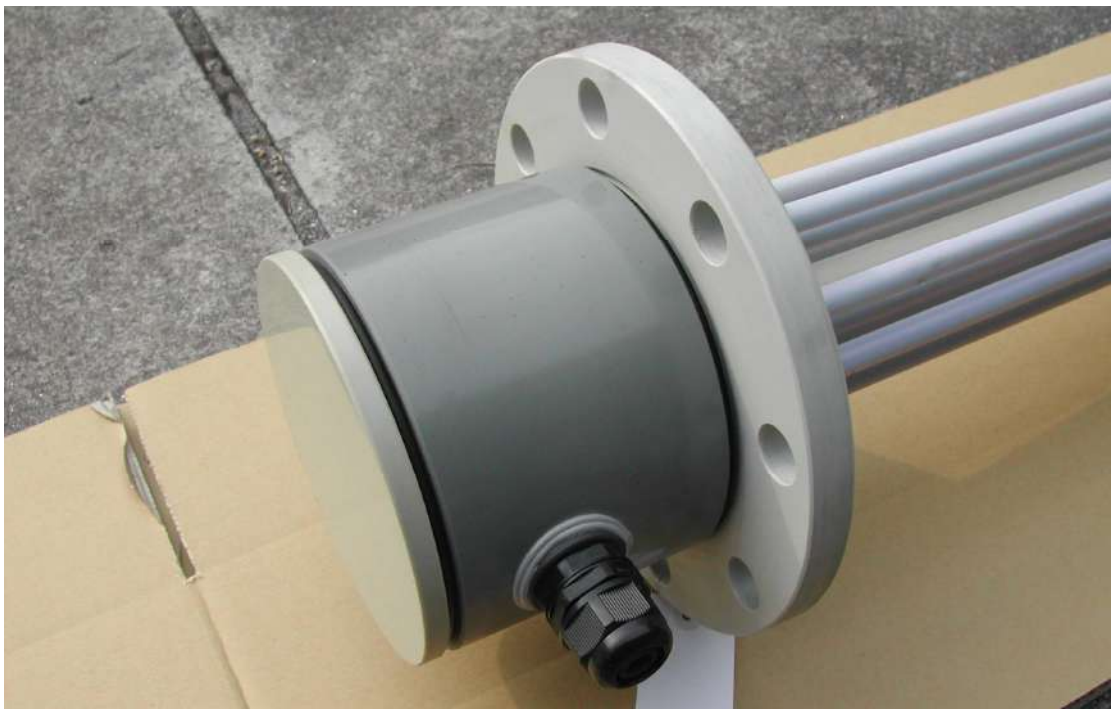
Flange Type

CT HEATERS flange heaters are easy to install and maintain. Designed for heating liquids and gases in tanks and pressure vessels, flange immersion heaters are ideal for applications requiring higher kilowatts



Flange Immersion Heater



PP Flange Immersion Heater (for chemical tank or bath)

Flange Immersion Heater Orientation: horizontal mounting

ANSI flanges from 3”, 4”, 5”, 6”, 8”, 10”, 12”, 14”

 We manufacture products according to drawings which serve as contractual documents. We are not responsible for damage resulting from inappropriate installation or use of our product.

- Terminal enclosures and stand-off enclosures are optional.
- Thermosatats and thermocouples are optional.
- Also available for square flange immersion heaters

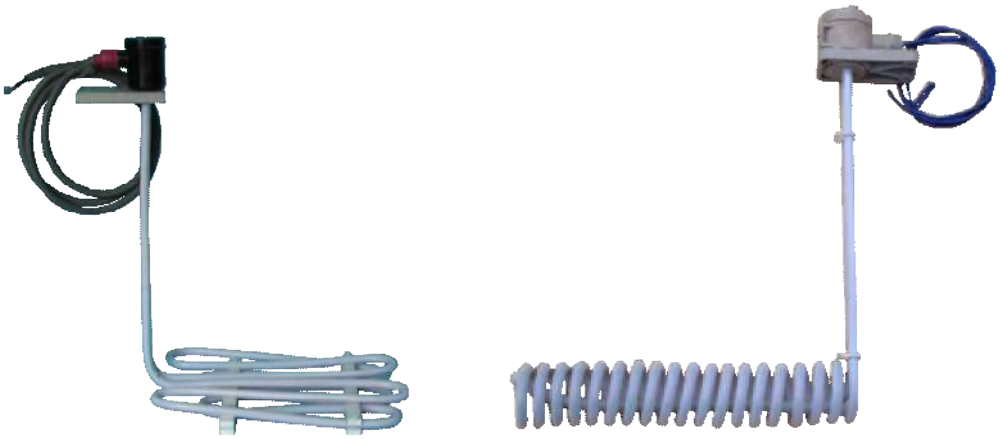
APPLICATIONS

- **Paraffin**
- **Caustic solutions**
- **Hydraulic oil, crude, asphalt**
- **Chemical baths**
- **Lubricating oils at API specified watt densities**
- **Anti-freeze (glycol) solutions**
- **Air and gas flow**
- **Industrial water rinse tanks**
- **Water: Clean, De-ionized, Potable, De-mineralized, Process**
- **Vapor degreasers**
- **Boiler equipment**
- **Process air equipment**
- **And more…..**

CE

Over the Side Type

To provide portability, easy installation and quick removal. Thus, “Inserted from the top” heater slide easily into tanks, with the heated portion immersed along the side or at the bottom.



For insert from the top of chemical tank application

APPLICATIONS

- **Paraffin**
- **Salts**
- **Storage tanks**
- **Water heating**
- **Caustic solutions**
- **Freeze protection**
- **Viscous oils**
- **Solvents**
- **Degreasing tanks**
- **And more…..**

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Custom Made of Circulation Heaters

CT HEATERS can meet just about all of your circulation heater assembly needs with Custom-Made units. Custom-Made units can be made from a wide range of heating element sheath materials, wattages, vessel sizes and materials, pressure ratings, terminal enclosures and controllers.

ANSI flanges from 3”, 4”, 5”, 6”, 8”, 10”, 12”, 14”

APPLICATIONS

- **Earth moving equipment**
- **Lightweight oils**
- **Stand by generators**
- **Peek power trimming generators**
- **Water heaters**
- **And more…..**

CE

Custom Made of Duct Heaters

Duct heaters are easily adapted to many of non-pressurized, air-heating system. CT HEATERS can meet just about all of your duct heater assembly needs with Custom-Made units. Custom-Made units can be made from a wide range of heating element sheath materials, wattages and materials, terminal enclosures and controllers. Duct heaters are easily installed in applications requiring a wide ranged of temperature vs. air flow combination.

APPLICATIONS

- **Paint Drying**
- **Furnaces**
- **Drying ovens**
- **Reheating**
- **Autoclaves**
- **Load banks**
- **HVAC**
- **Heat treating**
- **And more…..**

CE

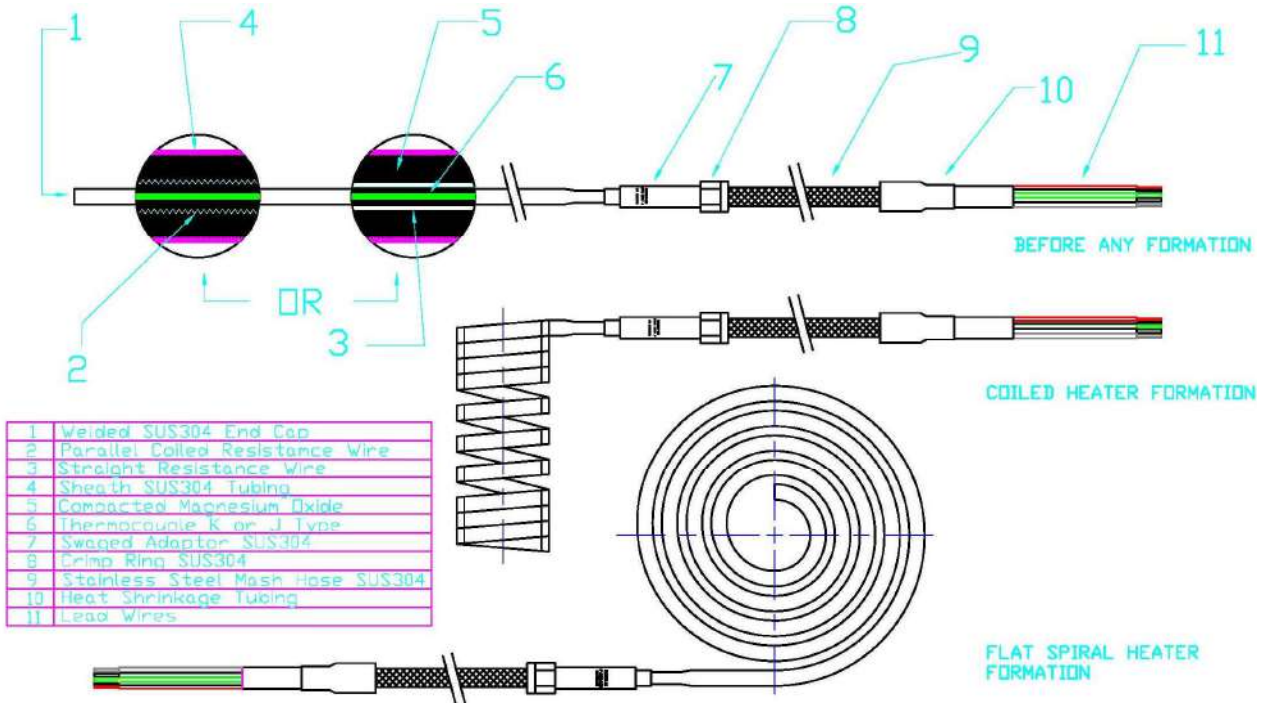
PRECAUTIONS

- Tubular heating element products are hygroscopic in nature due to Mgo contents. If kept unused for longer period, there is moisture deposition on the terminals. Therefore CT HEATERS recommend you to de-moisture the heaters prior to installation by heating them at 90~120℃ in an oven for at least 2 hours or use controllers with soft start function. This will help evaporate any moisture present inside.
- When you are using tubular heating element products, please have at least one or more thermocouple ready and please connect them correctly. Each tubular heater should have thermocouple contact with heater, and do not let temperature of heater surface exceed 650℃.
- Adapter area (cold zone) should be kept under 260℃
- Stabilized voltage supply increases the life of the heater as well as increases the wattage output. Grounding connection is must at all the time (green color coded wire).
- Unheated zone once bent should not be re-bent or de-coiled. This will lead to breakage. Sharp edges along the lead wire path areas should be protected from combustible gases & liquid to avoid short-circuits.


迷你型電熱管
MICRO HEATERS
PHOTOGRAPH BY KEVIN HUANG

MICRO HEATERS

BASIC CONSTRUCTION OF MICRO HEATER



The most versatile CT HEATERS micro heater can be formed to a variety of shape as dictated by its many applications. Micro heaters are small in diameter, excellent performance units, fully annealed and most readily bent to your desired configuration. No matter what the application it is, the CT HEATERS micro heater can be shaped to fit your ideas.

APPLICATIONS

- **Heating in a vacuum environment**
- **Restaurant and food processing**
- **Hot metal forming dies and punches**
- **Air heating**
- **Textile manufacturing**
- **Semiconductor manufacturing and wafer processing**
- **Sealing and cutting bars**
- **Plastic injection molding nozzles**
- **Medical, analytical and scientific instruments**
- **And more…..**

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SHEATH SELECTION

SQUARE TUBING	FLAT TUBING	TUBULAR TUBING
Sheath Diameter (mm)	Sheath Diameter (mm)	Sheath Diameter (mm)
Q3X3	F1.8X1.4	Φ1.0
Q3.2X3.2	F2.3X1.3	Φ1.4
Q3.7X3.7	F2.2X4	Φ1.6
Q3.8X3.8	F2.2X4.2	Φ1.8
Q4.8X4.8	F2.5X5	Φ2.4
Q6X6	F3X7.5	Φ2.8
Q7X7	F3.5X6.5	Φ3.2
Q9.5X9.5	F4.5X7.8	Φ4
	F4X8.8	Φ4.8
	F5.5X9	Φ5.4
	F5X9.8	
	F6X15	
	F7X13	

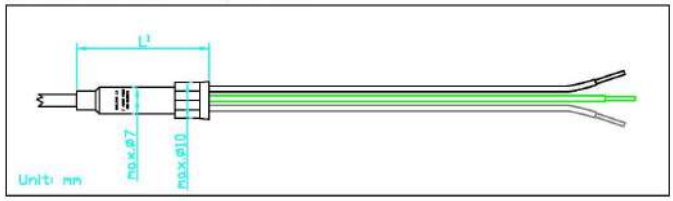
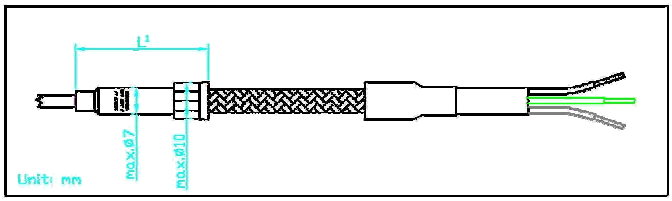
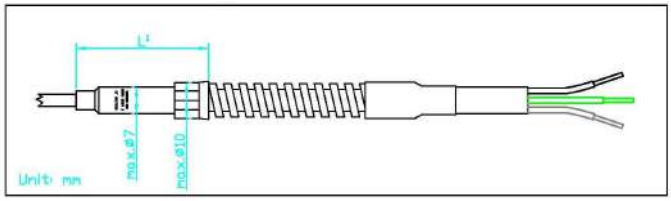
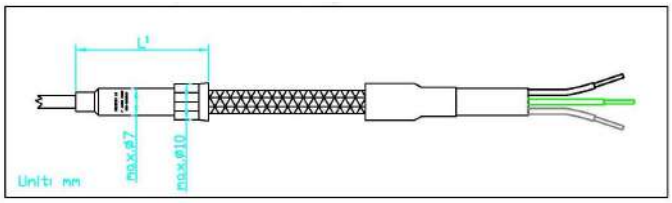
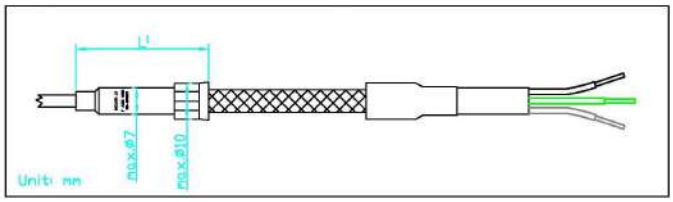
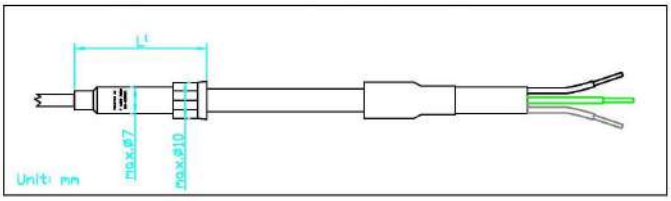
Power: 60V and up, selection of wattage from 195W to 2kW.

OPTIONAL THERMOCOUPLE TYPES

ANSI	CONDUCTOR CHARACTERISTICS		TEMPERATURE RANGE	
CODE	POSITIVE +	NEGATIVE -	℃	℉
J	IRON MAGNETIC WHITE	CONSTANTAN NON-MAGNETIC RED	-20 TO 760	0 TO 1400
K	CHROMEL® NON-MAGNETIC YELLOW	ALUMEL® MAGNETIC RED	-20 TO 1260	0 TO 2300

ALUMEL® and CHROMEL® are registered trademarks of the Hoskins Manufacturing Company

CONNECTION TYPE FOR MICRO HEATER

• PFA[2] insulated nickel leads, stranded (standard)[3] • with grounding wire[4] • If the wattage of heater is ≧1000W, then the size of bushing will be Φ8.5±0.2mm or larger (applied to all)	
• PFA[2] insulated nickel leads, stranded (standard)[3] with SUS braided metal sleeving[5] • with grounding wire[4]	
• PFA[2] insulated nickel leads, stranded (standard)[3] with SUS flexible metal sleeving • with grounding wire[4]	
• PFA[2] insulated nickel leads, stranded (standard)[3] with glass silk insulated protective sleeving[6] • with grounding wire[4]	
• PFA[2] insulated nickel leads, stranded (standard)[3] with fiberglass insulated protective sleeving[7] • with grounding wire[4]	
• PFA[2] insulated nickel leads, stranded (standard) [3] with silicon coating glass silk insulated protective sleeving[8] • with grounding wire[4]	

1 Length of bushing L=35±2 mm (Standard) or 45±2 mm	5 SUS304, braided metal sleeving ≧94% coverage
2 Maximum temperature at connection sector: 260℃	6 Continuously at maximum temperature 600℃ (protective sleeving only)
3 Other types upon request (higher temp. available)	7 Continuously at maximum temperature 400℃ (protective sleeving only)
4 Green Color TFE insulated Cu-tin plated lead	8 Optional color: red, black, and white, maximum temperature 260℃

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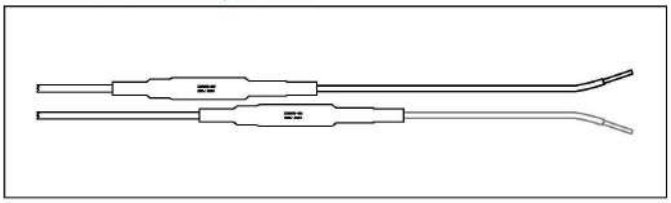
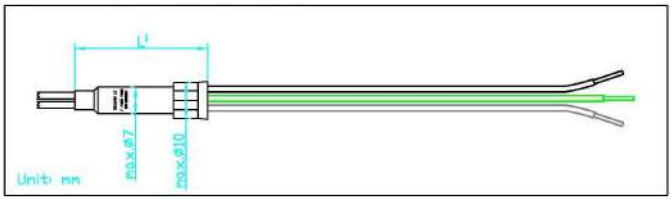
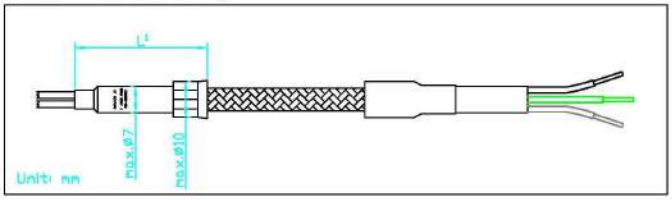
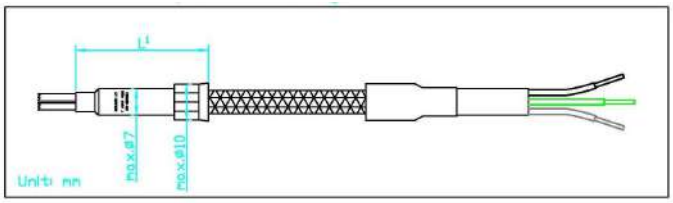
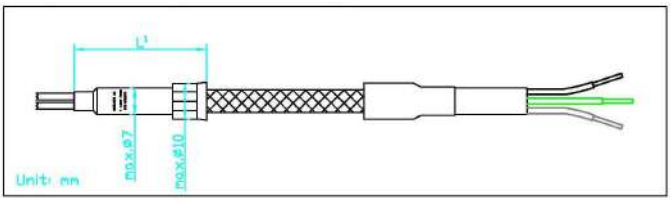
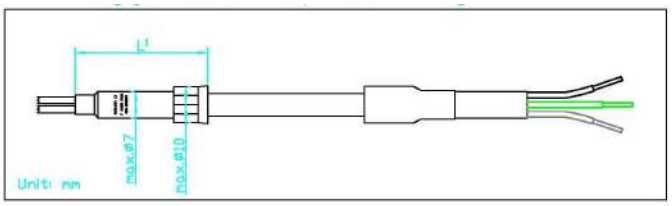
more than heaters !

CONNECTION TYPE FOR MINITURE MICRO HEATER

• PFA[2] insulated nickel leads, stranded (standard)[3]	
• PFA[2] insulated nickel leads, stranded (standard)[3] • with grounding wire[4]	
• PFA[2] insulated nickel leads, stranded (standard)[3] with SUS braided metal sleeving[5] • with grounding wire[4]	
• PFA[2] insulated nickel leads, stranded (standard)[3] with glass silk insulated protective sleeving[6] • with grounding wire[4]	
• PFA[2] insulated nickel leads, stranded (standard)[3] with fiberglass insulated protective sleeving[7] • with grounding wire[4]	
• PFA[2] insulated nickel leads, stranded (standard) [3] with silicon coating glass silk insulated protective sleeving[8] • with grounding wire[4]	

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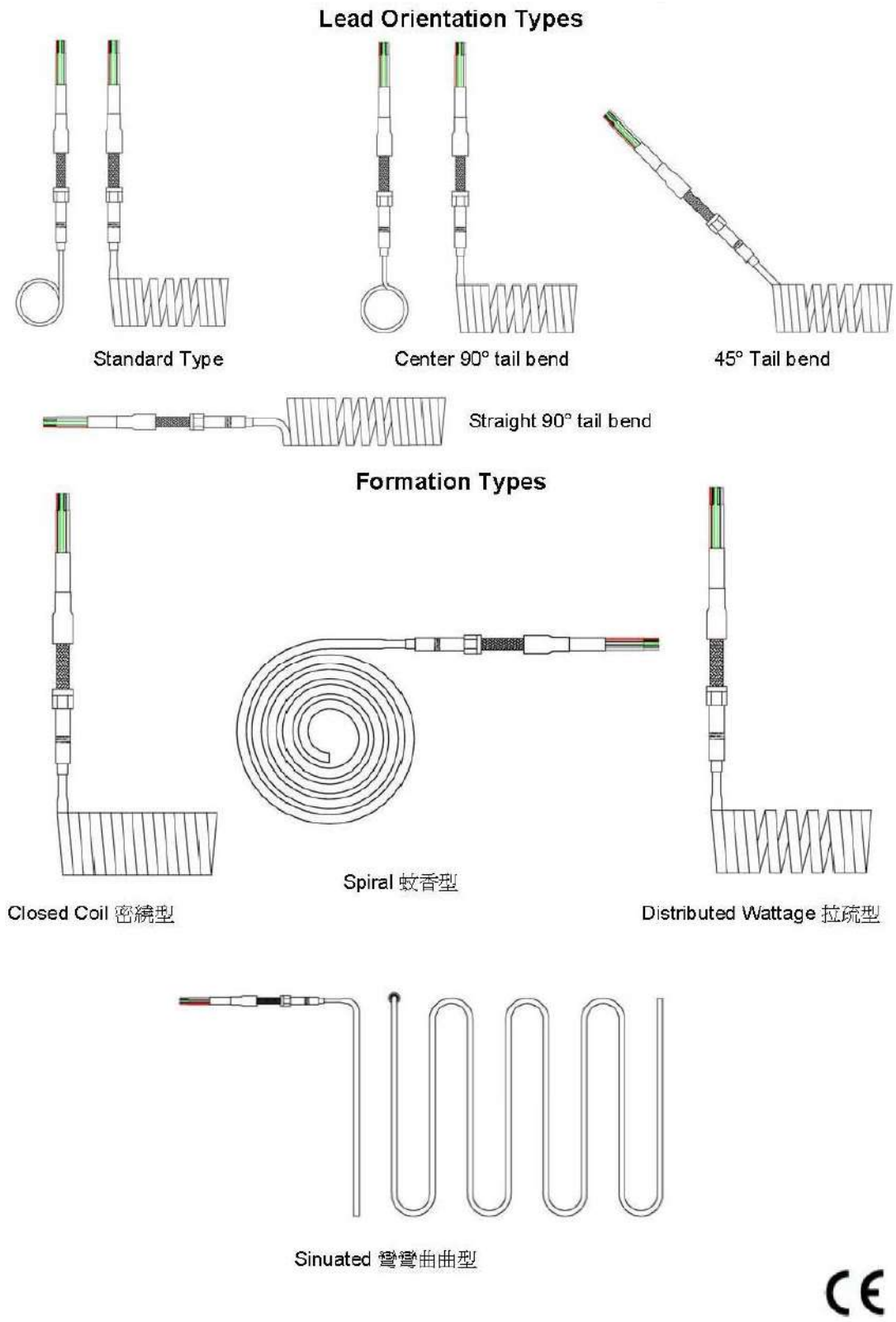
LEAD ORIENTATION



For other geometrical formations, please consult your CT HEATERS representative.

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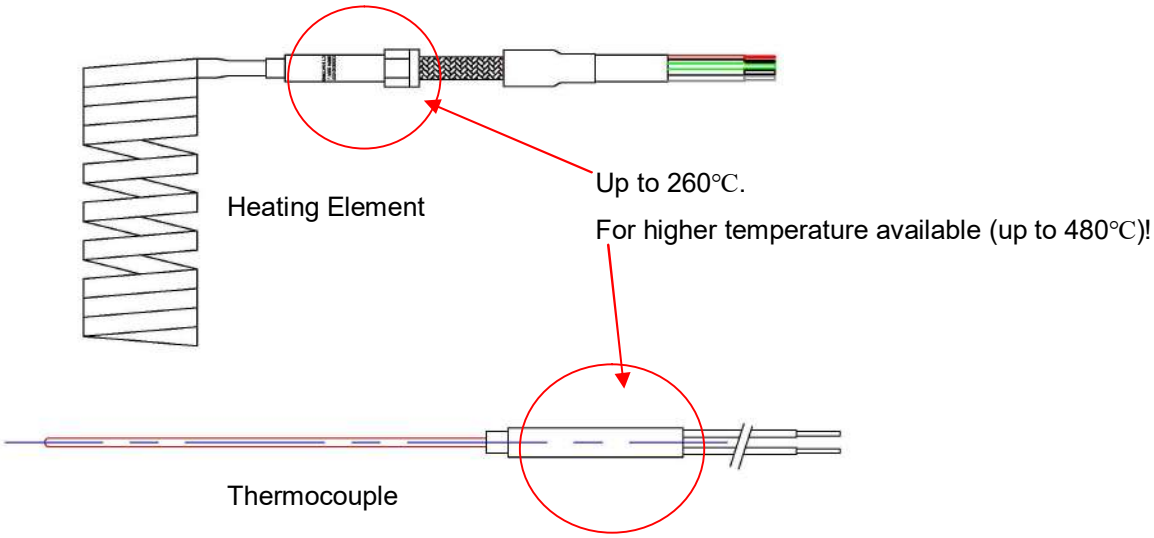
How to order

To order your Micro Heater, please specify:

- Volts, Watts
- Straight length or coiled (if coiled please specify inside diameter, coil width and lead orientation.)
- Lead wire length (Standard lengths 1000 mm will be supplied if not otherwise specified.)
- Lead **CONNECTION TYPE FOR MICRO HEATER or MINITURE MICRO HEATER** (Standard length PFA insulated nickel leads will be furnished if not otherwise specified.)

PRECAUTIONS

1. Micro Heaters are hygroscopic in nature due to MgO contents. If kept unused for longer period, there is moisture deposition on the terminals. Therefore CT HEATERS recommend you to de-moisture the heaters prior to installation by heating them at 90~120℃ in an oven for at least 2 hours or use controllers with soft start function. This will help evaporate any moisture present inside.
2. Adapter area should be kept under 260℃



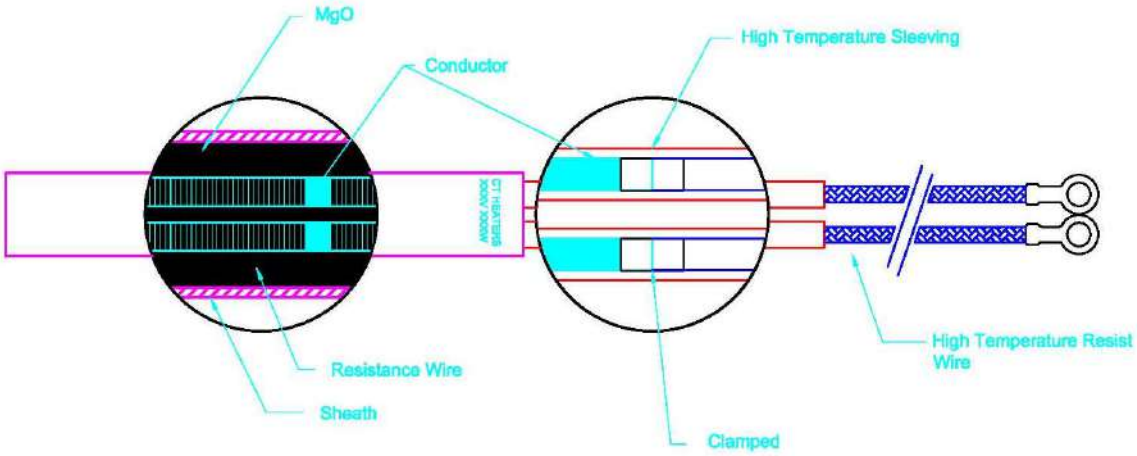
3. Stabilized voltage supply increases the life of the heater as well as increases the wattage output. Grounding connection is must at all the time (green color coded wire).
4. Unheated zone once bent should not be re-bent or de-coiled. This will lead to breakage. Sharp edges along the lead wire path areas should be protected from combustible gases & liquid to avoid short-circuits.

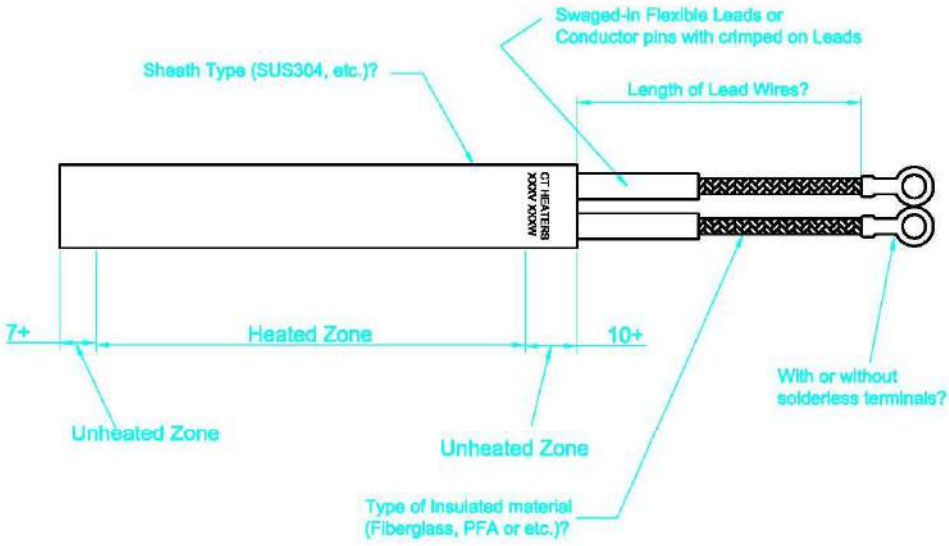
INSTALLATION

1. Due to high watt densities per cm/sq, COIL & CAST-IN HEATERS are requiring precise temperature controllers. CT HEATERS strongly recommends to using good quality soft start Hot Runner controllers.
2. While installing Micro Heaters on to the nozzle, they should be tight fit for even heat transfer. There should not be air gaps between the heater and the nozzle. Never open the ID of the heater by twisting as it will not fit tight which leads to premature heater failure.

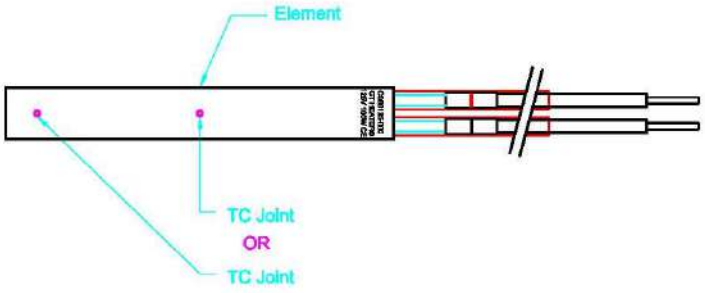
CARTRIDEG HEATERS

BASIC CONSTRUCTION OF CARTRIDGE HEATER





Optional Internal Thermocouple available



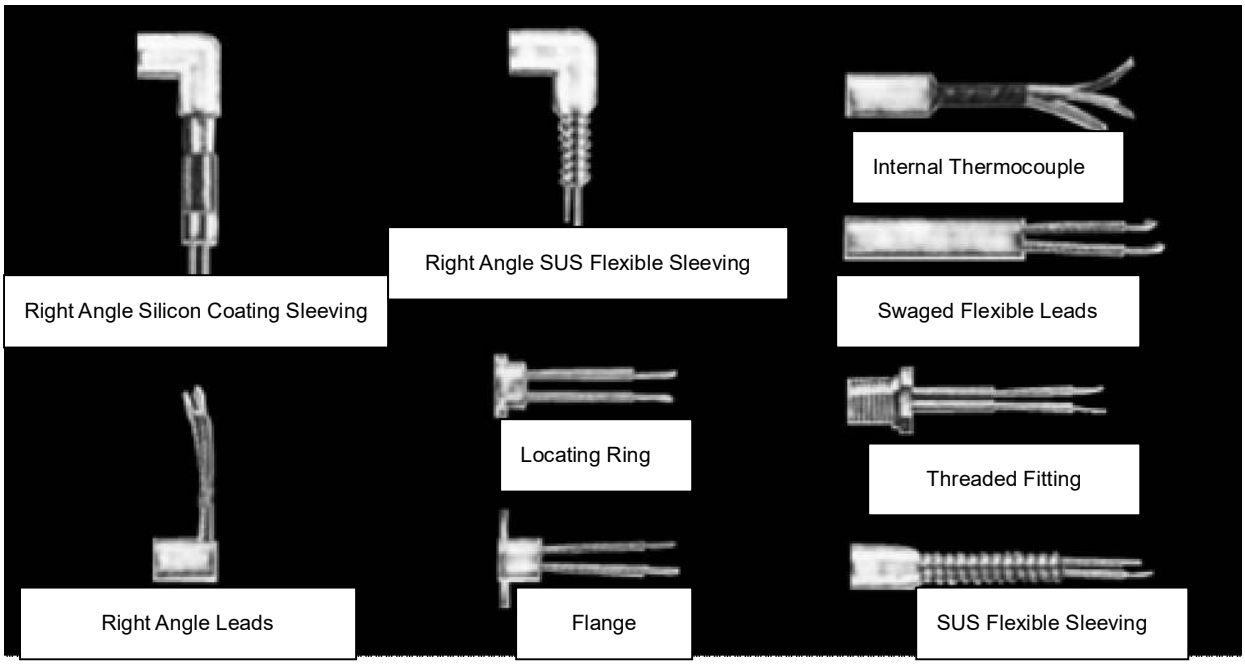
 We manufacture products according to drawings which serve as contractual documents. We are not responsible for damage resulting from inappropriate installation or use of our product.

Internal Thermocouple

Thermocouple Type			
ANSI Code	Positive +	Negative -	Temp. Range ℃
J	Iron (magnetic)	Constantan (Silver color)	-60 to 370
K	Chromel ® (non-magnetic)	Alumel ® (magnetic)	-20 to 1260
ALUMEL® and CHROMEL® are registered trademarks of the Hoskins Manufacturing Company			

For other thermocouple types, please consult your CT HEATERS representative.

Optional leads available



Centerless Grinding

Centerless grinding can be used to finish precision diameters, therefore, permitting closer heater-to-part fit and higher watt densities. CT HEATERS's rule of thumb is if length of heater is ≦ 100 mm, then the tolerance will be +0, -0.03 ~ -0.04 mm, if the length of heater is ＞ 100 mm, then the tolerance will be +0, -0.05 ~ -0.10 mm.

Distributed Wattage available

Distributed wattage varies the watt density along the length of the heater. This construction technique is used to compensate for heat losses along the edges of heated parts. To order, please specify distributed wattage and give the length and wattage for each section.

How to order

To order your Cartridge Heater, please specify:

- Volts, Watts, ODΦ of your actual insertion holes (tolerance of insertion holes: if the overall length of element is ≦100, then the ODΦ of element will be +0, -0.03~0.04mm. if the overall length of element is >100, then the ODΦ of element will be +0, -0.05~0.1mm
- Overall length of element (excluded the lead wires), length of heated zone
- Lead wire length (Standard lengths 300 mm will be supplied if not otherwise specified.) and lead orientation
- Internal thermocouple available upon request

APPLICATIONS

- **Fluid heating**
- **Molds**
- **Dies**
- **Sealings**
- **Platens**
- **Hot Plates**
- **And more…..**

CE

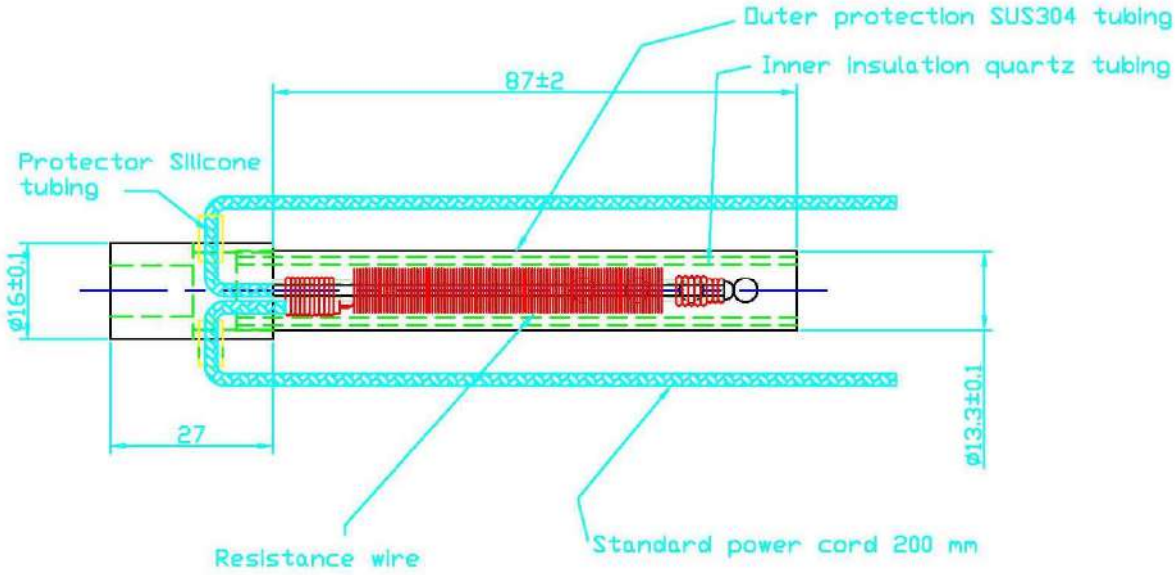
Our latest version of 90 deg. lead w/ braided SUS304 cartridge heater.

PRECAUTIONS

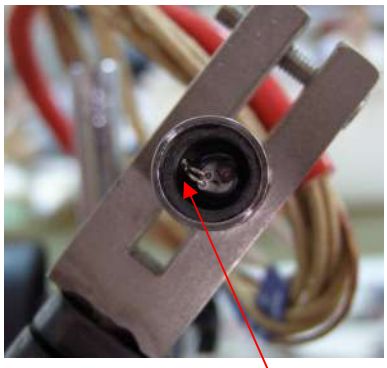
- Cartridge heaters are hygroscopic in nature due to Mgo contents. If kept unused for longer period, there is moisture deposition on the terminals. Therefore CT HEATERS recommend you to de-moisture the heaters prior to installation by heating them at 90~120℃ in an oven for at least 2 hours or use controllers with soft start function. This will help evaporate any moisture present inside.
- When you are using cartridge heating elements, please have at least one or more thermocouple ready and please connect them correctly. Each cartridge heater should have thermocouple contact with heater, and do not let temperature of heater surface exceed 650℃.
- Adapter area (cold zone) should be kept under 260℃
- Stabilized voltage supply increases the life of the heater as well as increases the wattage output. Grounding connection is must at all the time (green color coded wire).
- Unheated zone once bent should not be re-bent or de-coiled. This will lead to breakage. Sharp edges along the lead wire path areas should be protected from combustible gases & liquid to avoid short-circuits.

AIR HEATERS

BASIC CONSTRUCTION OF AIR HEATER



The resistance wire inside the air heater is star wound formation. This formation is used to moving air. The offset coils increase/induce turbulent flow. This allows the flowing air to have better contact with the heater surface, resulting in a more efficient heat transfer.



Thermocouple Junction

Optional adaptor available!

 We manufacture products according to drawings which serve as contractual documents. We are not responsible for damage resulting from inappropriate installation or use of our product.

Controller for Air Heater

Controller casing: W300XH200XD180 mm

Testing Data

Air Heater Testing on 110V 350W

Air Flow (l/min)	Air Pressure (kg/c㎡)				
	0.1	0.2	0.3	0.4	0.5
10	660±10℃	550±15℃	560±15℃	580±10℃	590±10℃
15	630±10℃	515±15℃	515±15℃	540±10℃	540±10℃
20	N/A	415±15℃	435±15℃	435±15℃	460±10℃
25	N/A	470±10℃	370±10℃	370±10℃	440±10℃
30	N/A	N/A	390±10℃	310±10℃	405±10℃
35	N/A	N/A	N/A	250±10℃	335±10℃
40	N/A	N/A	N/A	N/A	300±10℃

Air inlet tube used : Φ6 mm

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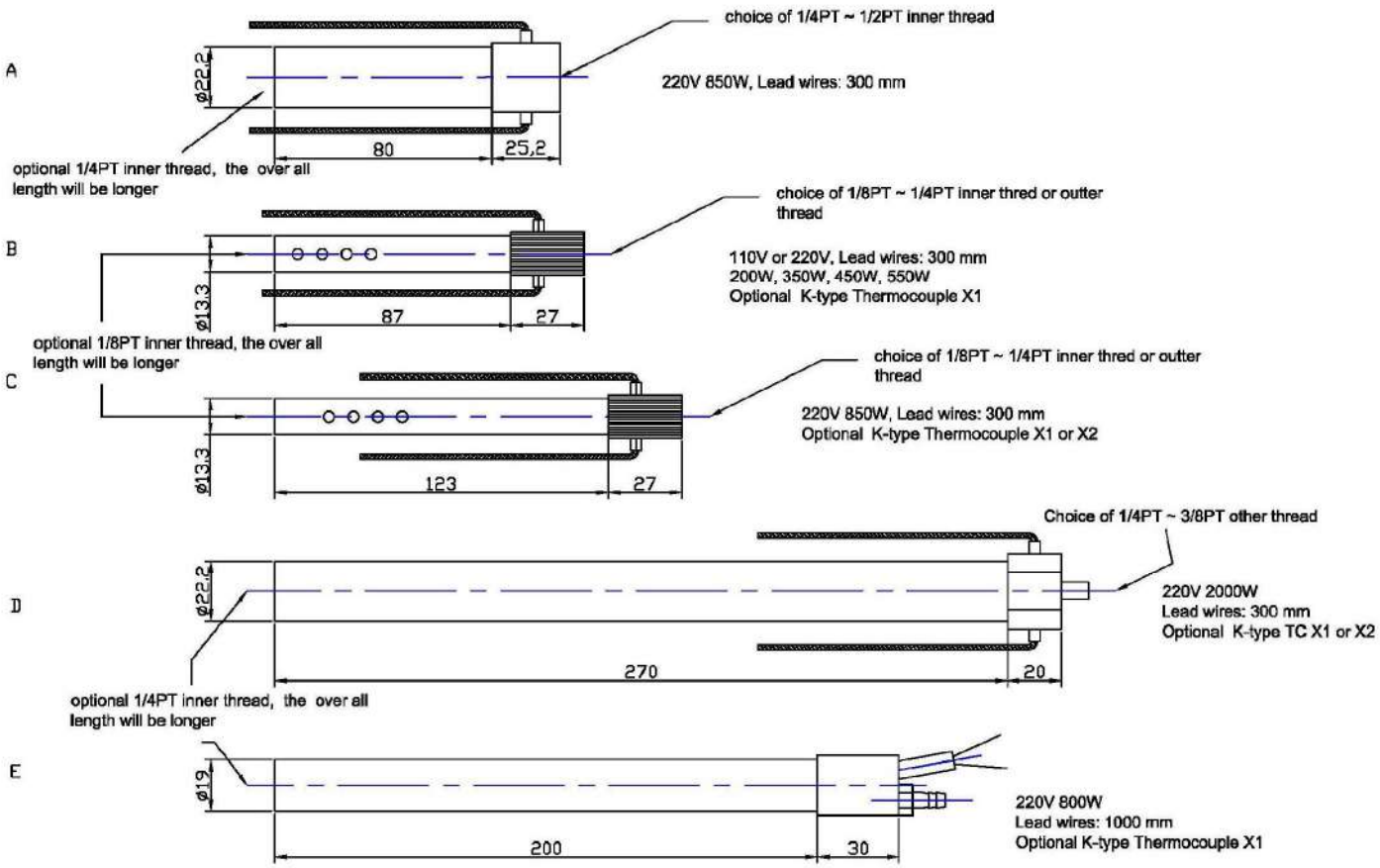
Other Air Heater Dimensions



SPECIAL CAUTIONS

- The air flow **MUST** be given **PRIOR** to activation of the heater, and **MUST** be stopped **AFTER** cutting electricity (**minimum 20 minutes of cooling time**). This should be strictly monitored.
- Due to consideration shall be paid to keep the temperature at the heater tail under 200℃.
- **Use an oil and water separator.** The air/gas **MUST** be clean all the time.

No warranty shall attach to all consumable parts (including the heater element), therefore, you are requested to observe the above condition

A. 220V 850W, lead wires: 300 mm
B. 110V or 220V, lead wires: 300 mm, 200, 350, 450 and 550W, optional built-in thermocouple
C. 220V 850W, lead wires: 300 mm, optional built-in thermocouple
D. 220V 2000W, lead wires: 300 mm, optional built-in thermocouple
E. 220V 800W, lead wires: 1000 mm, optional built-in thermocouple

GAS HEATER

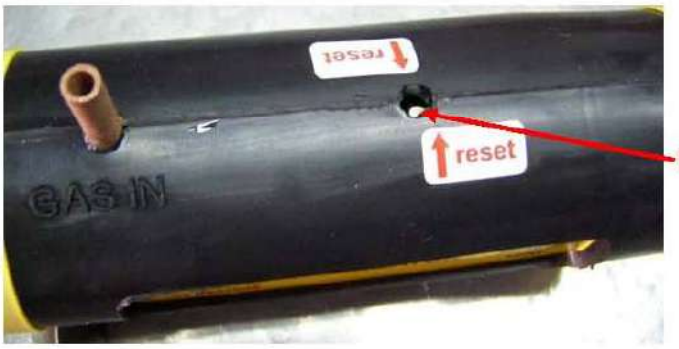
GAS HEATER-dual protection

DIM:

DIA. 56X160 mm, gas in & out tubing DIA. 6.35 mm, electric outlet 2M

Choice of:

210~230V 120W (blue color code ends and blue label) or 90~120V 120W (yellow color code ends and yellow label) usage.



85℃ thermostat(primary), 100℃ thermostat (secondary-manual reset)

Flows 0.3 kg/c㎡, 20L/min

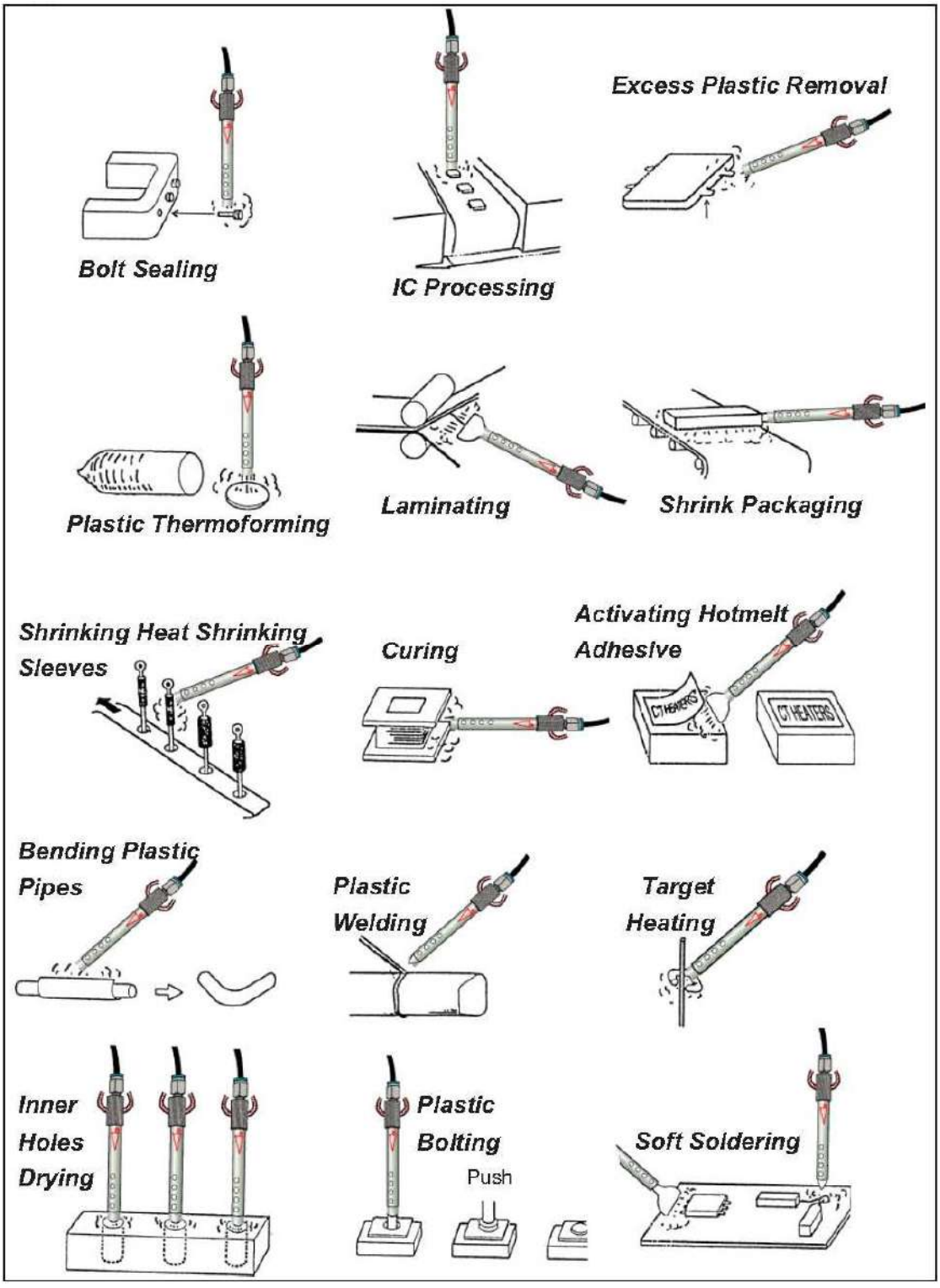
AVG.	High ℃	Low ℃	ΔT ℃
	129.2	74.8	54.4

Flows 0.4 kg/c㎡, 30L/min

AVG.	High ℃	Low ℃	ΔT ℃
	120.4	71.2	49.2

The GAS HEATER has built-in thermostat either 65℃ or 85℃ (primary-auto reset) and 100℃ (secondary-manual reset) thermostat button type. Therefore, the reaction time (sensitivity) of this thermostat is bluntness. Thus, adjust the gas flow accordingly depend on the application you are using.

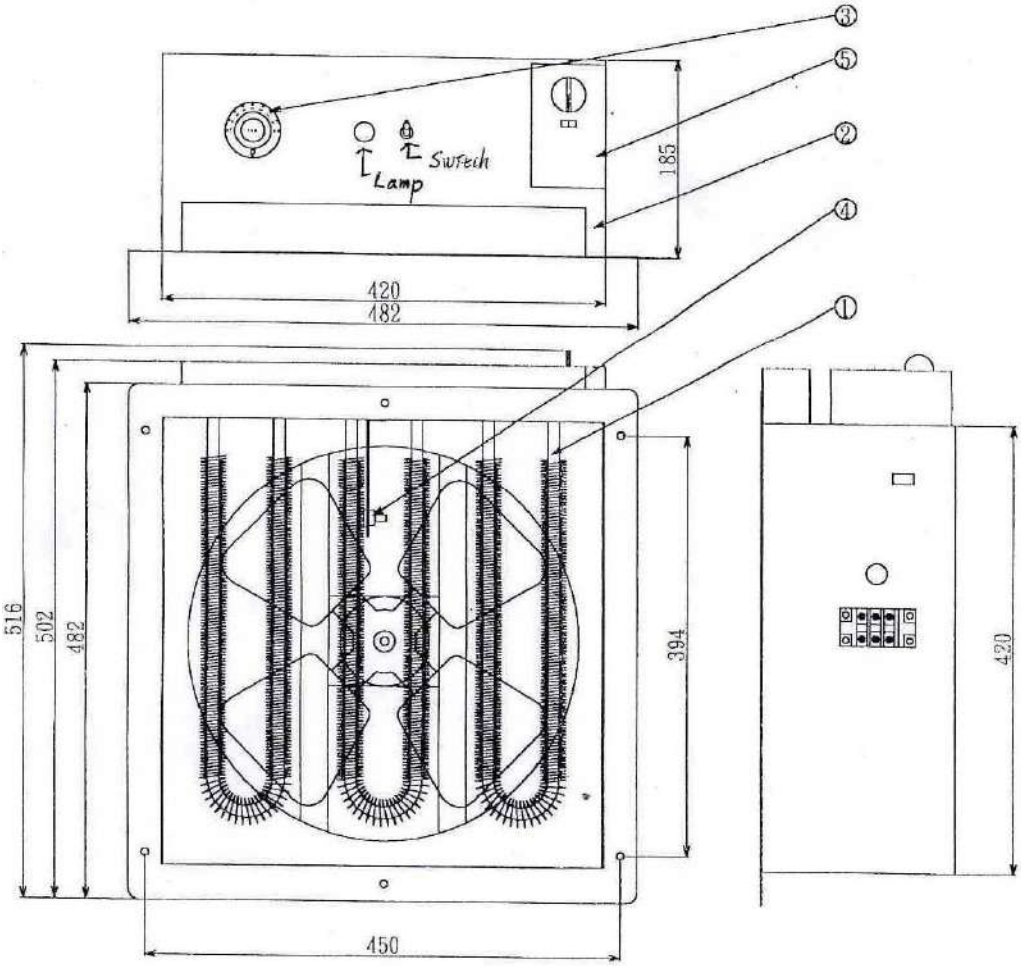
APPLICATIONS

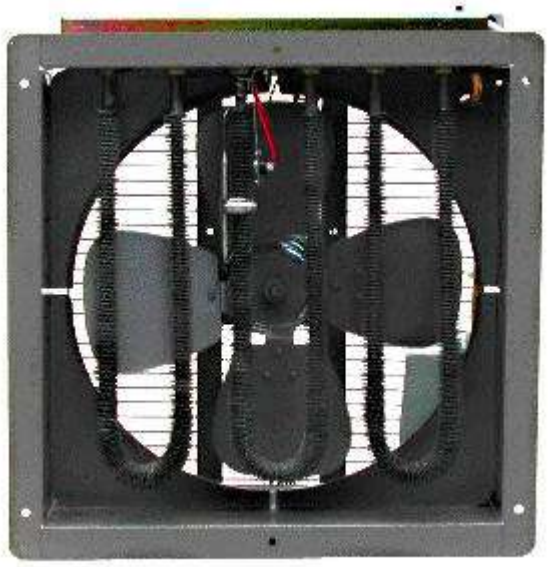


CE

HOT AIR GENERATOR

Window type





1.	220V 3Φ 5kW
2.	Window mounting type
3.	EGO controller 30~110℃
4.	Over heated thermostat protection
5.	Volume switch
	Installation on to ceiling, wall or window

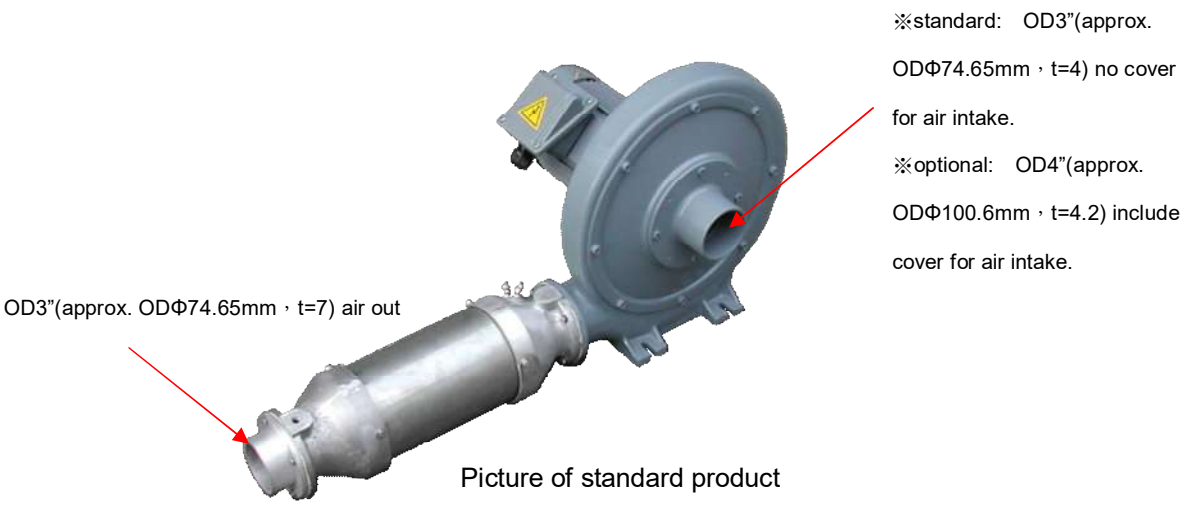
 We manufacture products according to drawings which serve as contractual documents. We are not responsible for damage resulting from inappropriate installation or use of our product.

Stand alone type

PRODUCT: Muffler 6 kW

Specification

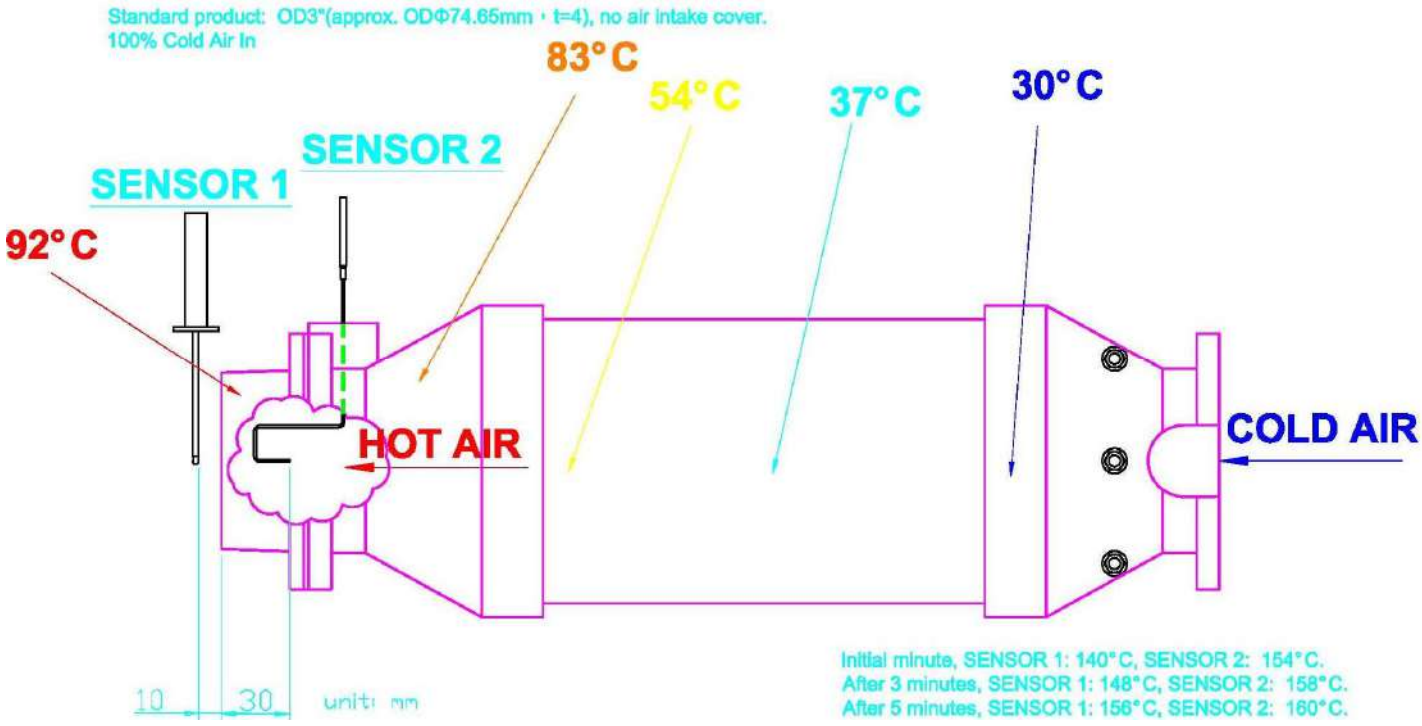
1. Source: Turbo Blowers
   - Type: CX-75SH
   - Frequency: 50/60 Hz
   - Power: 0.4 Kw
   - Voltage: 200~230/380~400 V
   - Current: 1.8/1.0 A
   - Pressure(max): 130/150 mm H_2O
   - Air Flow(max): 6/8 m^3/min
   - Out: 3”
   - Noise Level: 56/70 dB
   - Weight: 14 Kg
2. Heater: 6 Kw
3. Size: Approx. L 822 X W 318 X H 370 mm (include turbo blower)



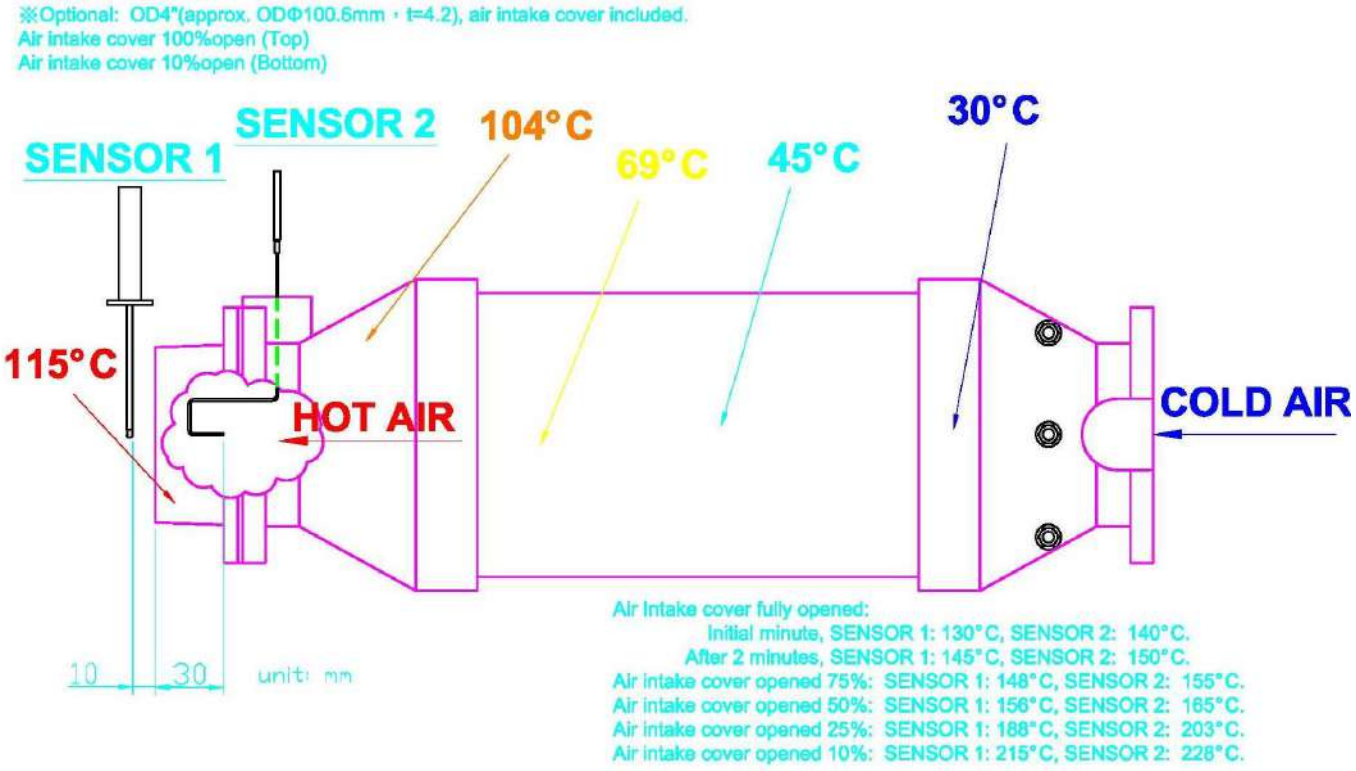
Picture of standard product

PRODUCT: Muffler 6 kW

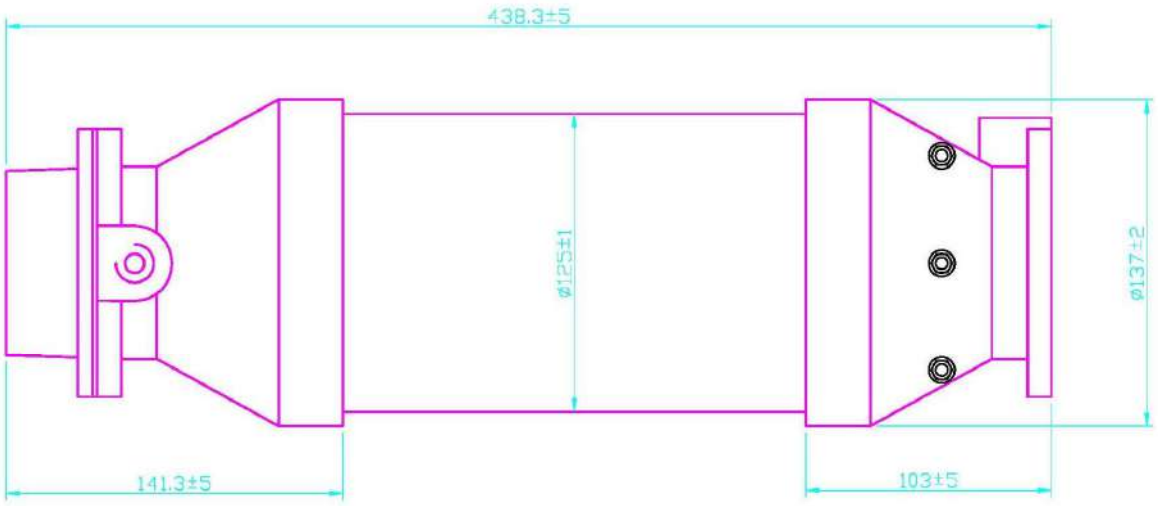
A. Testing Standard product (Appendix I)



B. Testing optional 4" product (Appendix II)



C. Dimension of Hot Air Generator, Muffler 6kW heater part only (Appendix III).



Attached CX-75SH Turbo Blower (NOT SHOWN)
Blower Dim. 383L X 318W X 370H mm

HOT AIR GENERATOR 6kW HEATER ONLY

Muffler type 7.5kW and 12kW available upon request! Please consult your CT HEATERS representative.

Stand alone type

PRODUCT: FIRE SNAIL 9 kW

Specification

1. Source: Turbo Blowers
   - Type: CX-75S
   - Frequency: 50/60 Hz
   - Power: 0.4 Kw
   - Voltage: 220 V (380V available)
   - Current: 2.5/1.8 A
   - Pressure(max): 130/150 mm H2O
   - Air Flow(max): 6/8 m^3/min
   - Out: 3”
   - Noise Level: 56/70 dB
   - Weight: 17+ Kg

   ※Optional hot air recycle, air intake cover included※

2. Heater: 6 kW+3 kW
3. Controller panel and heating unit are separately
4. Turbo blower “ON”, then heater “ON”
5. Temperature control and over heated protection
6. Temperature control: button type setting (0~599℃);
   Over heated control: dial type setting (0~600℃)
7. Dimension: approx. L 1178 X W 318 X H 531 mm (included turbo blower)

Stand alone type

PRODUCT: FIRE SNAIL 12 kW

Specification

1. Source: Turbo Blowers
   - Type: CX-75
   - Frequency: 50/60 Hz
   - Power: 0.75 Kw
   - Voltage: 220 V (380V available)
   - Current: 7.5/3 A
   - Pressure(max): 190/270 mm H2O
   - Air Flow(max): 16/18 m^3/min
   - Out: 4”
   - Noise Level: 64/80 dB
   - Weight: 28+ Kg

   ※Optional hot air recycle※

2. Controller panel and heating unit are separately

4. Turbo blower “ON”, then heater “ON”

5. Temperature control and over heated protection

6. Temperature control: button type setting (0~599℃);
   Over heated control: dial type setting (0~600℃)

7. Dimension: approx. L 1273 X W 379 X H 617 mm (included turbo blower)

Stand alone type

PRODUCT: FIRE SNAIL 22.5 kW

Specification

1. Source: Turbo Blowers
   - Type: CX-75
   - Frequency: 50/60 Hz
   - Power: 0.75 kW
   - Voltage: 220 V (380V available)
   - Current: 7.5/3 A
   - Pressure(max): 190/270 mm H2O
   - Air Flow(max): 16/18 m^3/min
   - Out: 4”
   - Noise Level: 64/80 dB
   - Weight: 28 Kg
2. Heating Elements: 13.5 kW + 9 kW
3. Current: 65 A (heaters & blower)
4. Controller panel and heating unit are separately
5. Turbo blower “ON”, then heater “ON”
6. Temperature control and over heated protection
7. Temperature control: button type setting (0~599℃);
   Over heated control: dial type setting (0~600℃)
8. Dimension: L 1500 X W 550 X H 380 mm (included turbo blower)

Duct type

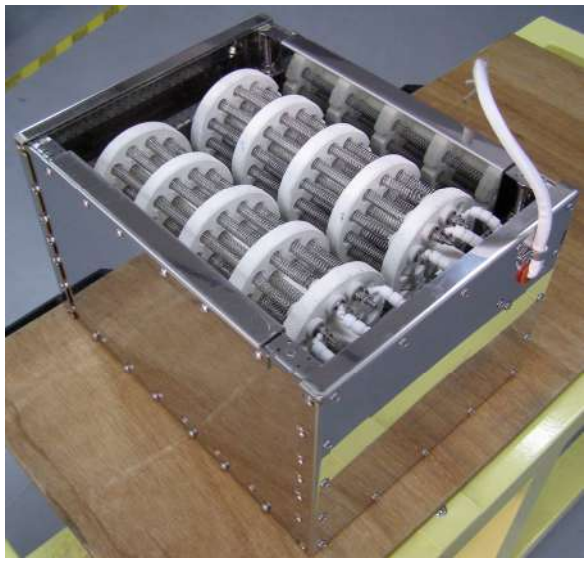
Hot Box

Power: Standard model 380V 3Φ (other voltage upon request!)

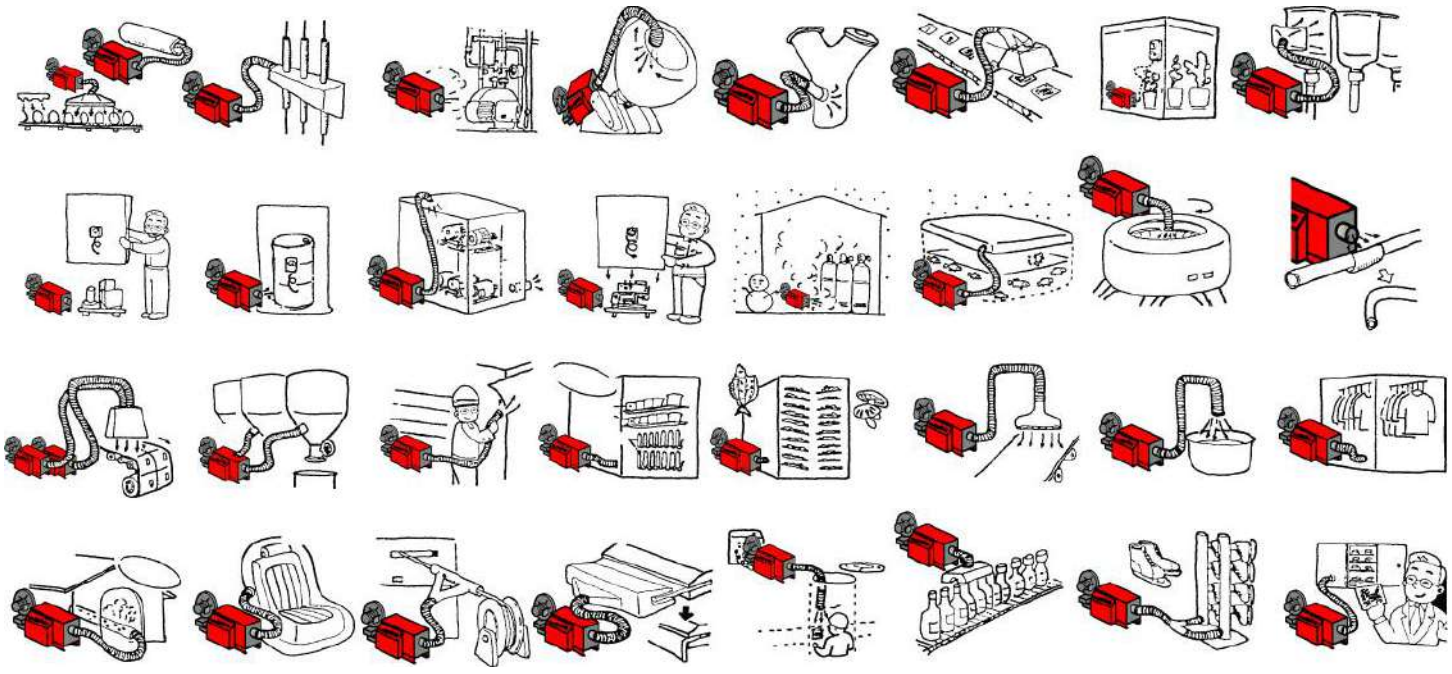
Kilowatt: STD. 10kW, 15kW, 20kW and 25kW (other kW upon request!)

Dimension: W310 X H250 X L410 mm

Outer shell finished: SUS304, BA



ILLUSTRATED APPLICATIONS



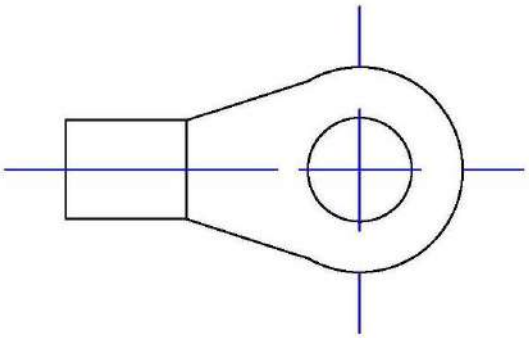
CONNECTING LEAD WIRE

High-temperature wire is recommended for connections to heater terminals and for runs in heated zone. We do carry variety of high-temperature heater hook up wire. Please do not use nickel-plated copper or tin-plated copper ring terminal for the connection due to the oxidization of copper. Copper will oxidize and loosen connection. **For any heater connection, use of 100% nickel ring terminals are most recommended.** Please contact CT HEATERS representative for more information!

HIGH TEMPERATURE WIRES

Temperature Rating (℃)	Volt (V)	Stranded	Wire mm^2	A.W.G
250	300	19/0.233	0.75	18
		26/0.254	1.30	16
		41/0.254	2.00	14
		65/0.254	3.30	12
300	300	20/0.18	0.50	20
		30/0.18	0.75	18
		50/0.18	1.25	16
		37/0.26	2.00	14
		45/0.32	3.50	12
		35/0.45	5.50	10
450	300	7/0.203	0.20	24
		7/0.254	0.32	22
		10/0.254	0.50	20
		16/0.254	0.75	18
		41/0.254	2.00	14
		65/0.254	3.30	12
		105/0.254	5.20	10
600	300	20/0.18	0.50	20
		30/0.18	0.75	18
		50/0.18	1.25	16
		37/0.26	2.00	14
		45/0.32	3.50	12
		35/0.45	5.50	10
All of high temperature wires above are nickel stranded and double glass fiber insulated sleeves				

ULTRA-HIGH-TEMPERATURE RING TERMINALS
(650℃ temperature rating, 100% Nickel)



Wire mm²	Size of hole	Wire mm²	Size of hole
1.25	M3	5.5	M5
	M4		M6
2	M4	8	M6
	M5		M8

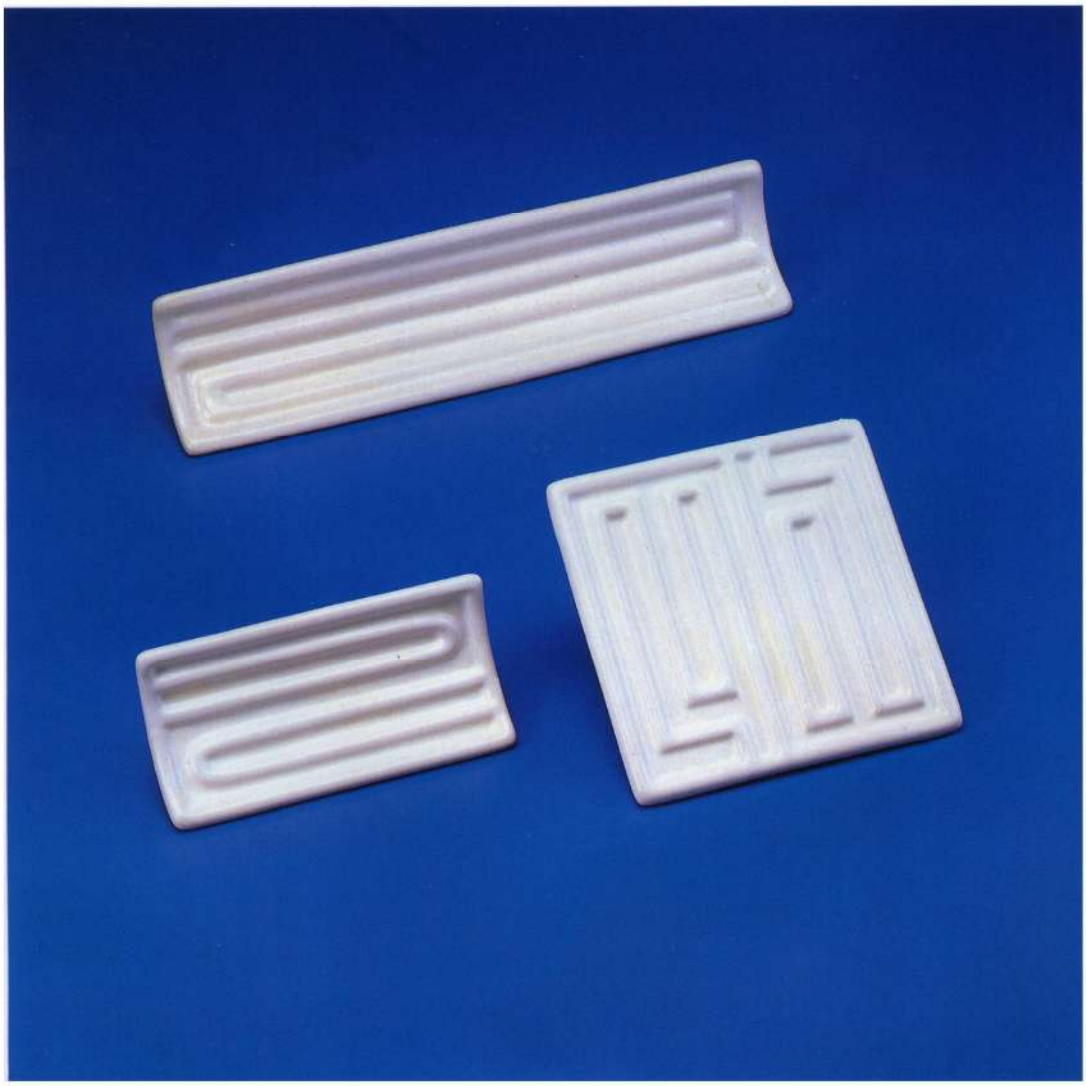
For other size of ultra-high-temperature ring terminals or different temperature rating ring terminals, please contact CT HEATERS representative for more information!

RADIANT HEATERS

INFRARED CERAMIC HEATERS

HEATING ELEMENT IN SEALED TYPE

HIGH EFFICIENCY + LONG SERVICE LIFE=ECONOMY



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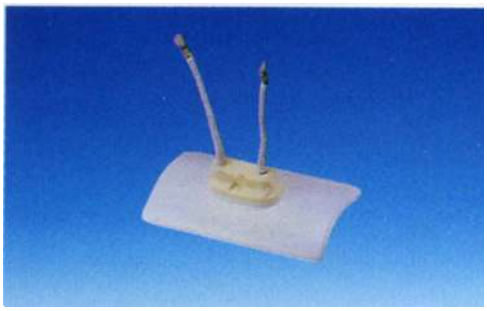
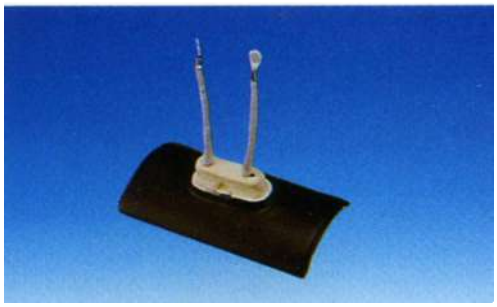
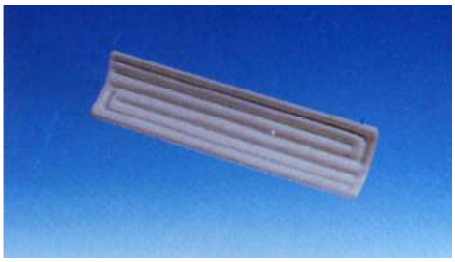
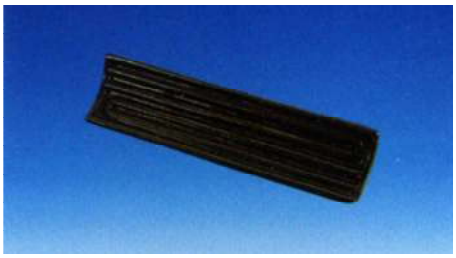
Half Arc Element (Type MH 120 mm L X 60 mm W)

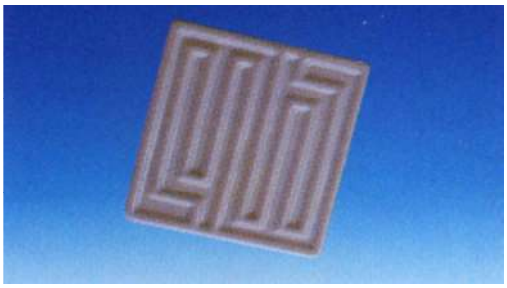
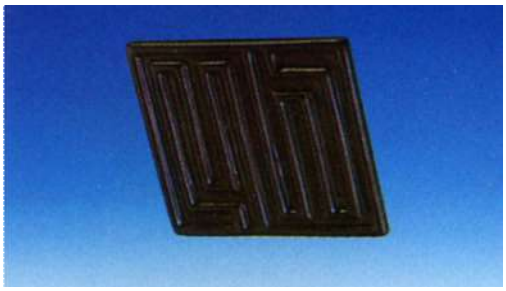
Model No.	Wattage	Voltage	Availability
MHB125/MHW125	125	220V/240V	Made to order
MHB150/MHW150	150	220V/240V	Stock
MHB200/MHW200	200	220V/240V	Made to order
MHB250/MHW250	250	220V/240V	Stock
MHB325/MHW325	325	220V/240V	Stock
MHB375/MHW375	400	220V/240V	Made to order
MHB500/MHW500	500	220V/240V	Stock

Full Arc Elements (Type MF 240 mm L X 60 mm W)

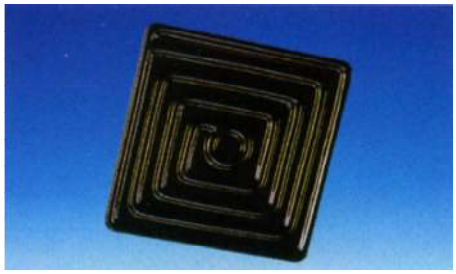
Model No.	Wattage	Voltage	Availability
MFB150/MFW150	150	220V/240V	Made to order
MFB250/MFW250	250	220V/240V	Made to order
MFB300/MFW300	300	220V/240V	Made to order
MFB325/MFW325	325	220V/240V	Made to order
MFB400/MFW400	400	220V/240V	Stock
MFB500/MFW500	500	220V/240V	Stock
MFB650/MFW650	650	220V/240V	Stock
MFB750/MFW750	750	220V/240V	Made to order
MFB1000/MFW1000	1000	220V/240V	Stock

Plane and Square Elements (Type MP 120 mm L X 120 mm W)

Model No.	Wattage	Voltage	Availability
MPB250/MPW250	250	220V/240V	Made to order
MPB400/MPW400	400	220V/240V	Made to order
MPB650/MPW650	650	220V/240V	Made to order
MPB800/MPW800	800	220V/240V	Made to order

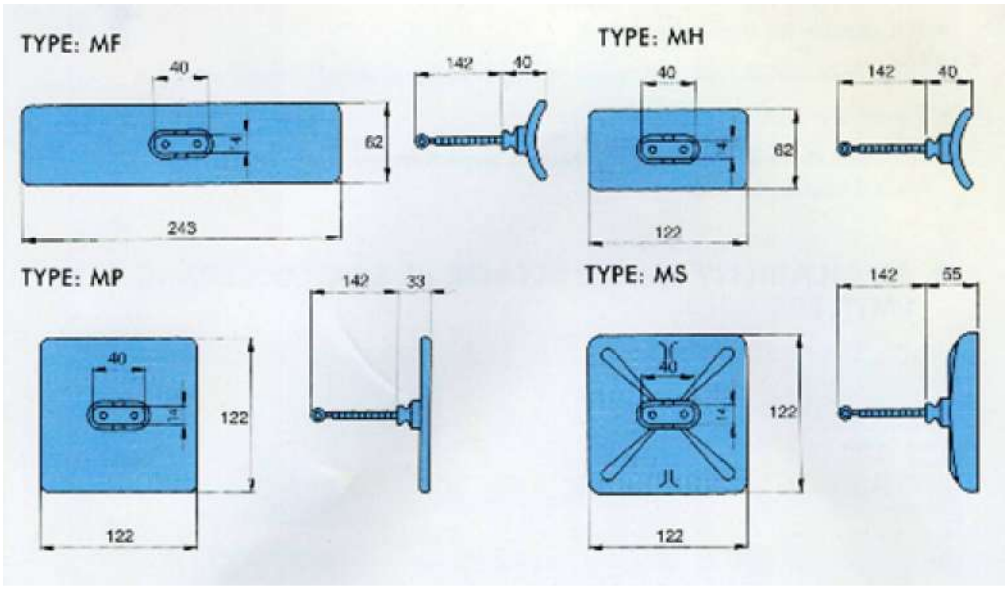
Square Elements (Type MS 120 mm L X 120 mm W)

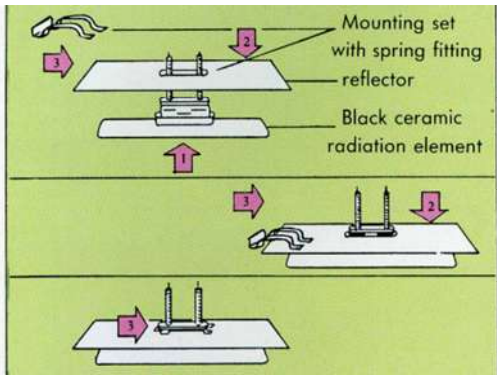
Model No.	Wattage	Voltage	Availability
MSB250/MSW250	250	220V/240V	Stock
MSB400/MSW400	400	220V/240V	Stock
MSB650/MSW650	650	220V/240V	Stock
MSB800/MSW800	800	220V/240V	Stock
MSB1000/MSW1000	1000	220V/240V	Made to order

- B=Black Color, W=White Color
- 380V are available for all types
- Accuracy: Length ±2%, Wattage ±5%
- “Made to order”= minimum 30 pieces per kind per order

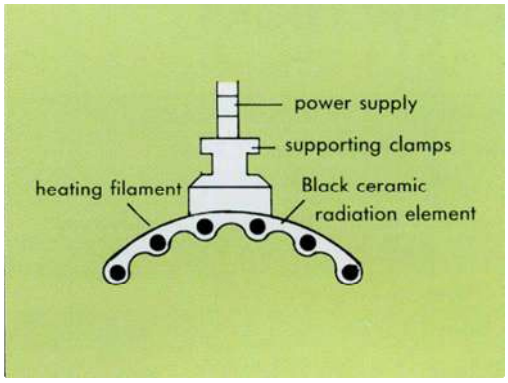
Dimension (mm):



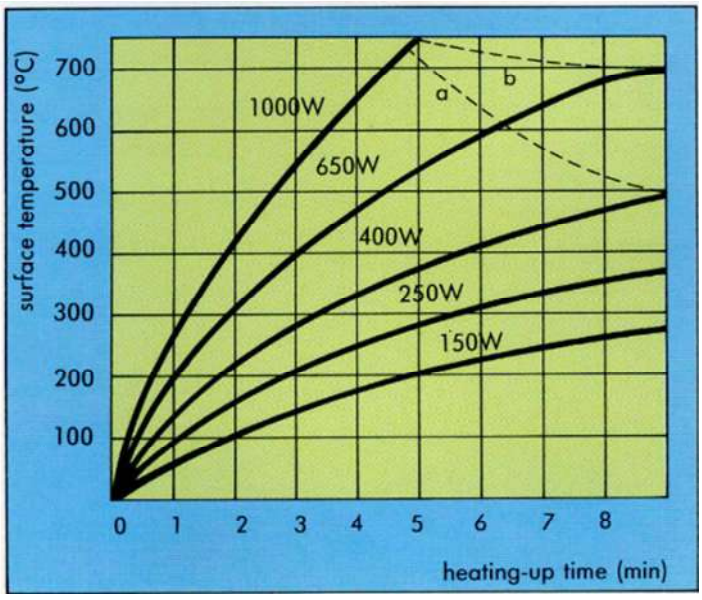
Structure Cross



Section of Heater



Stable Surface Temperature



FEATURES

- It is durable for high temperature
- It has long wavelength and equal strong intensity of radial thermal energy
- Resistant to oxidation and corrosion
- Temperature raised rapidly, to emit heating element energy on the front and to insulate heat on the back

AVAILABILITY AND WATTAGE OF SEALED CERAMIC IR EMITTERS

Wattage	150	250	400	500	650	750	1000	Type MF
		125	200	250	325		500	Type MH
		250	400	500	650	750	1000	Type MF w/ TC
		125	200	250	325		500	Type MH w/ TC
Mean Surface Temp. (℃)	310	418	515	560	630	750	755	Applicable to both
Max. Permitted Temperature	800℃ for all types of emitters							MF and MH Type
kW/㎡		Loadings of up to 60kW/㎡ are possible						
Emission Peak	5.00	4.20	3.70	3.40	3.20	3.10	2.90	
Wavelength From	2.70	2.20	2.00	1.90	1.75	1.70	1.60	
In Microns Tp	11.00	9.00	7.80	7.40	6.80	6.60	6.20	

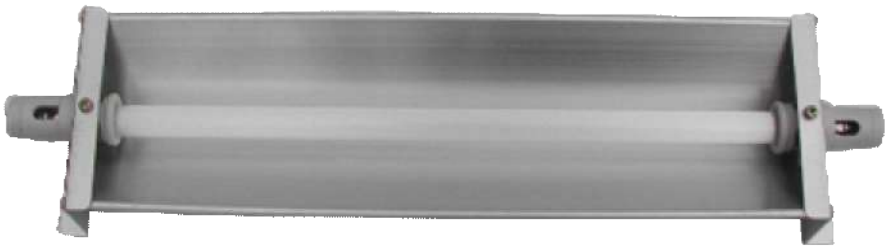
APPLICATIONS

	150W	250W	400W	650W	1000W
Pre-heating of foil for vacuum forming			■	■	
Manufacture of bubble sealed packs			■	■	
Setting of PVC paste on fabrics			■		
Pre-heating of GFK parts during	■	■	■		
Heating of paper pulp prior to pressure				■	■
Quick drying of lacquered paper	■	■			
Quick drying of gummed and sized paper			■		
Activating of twp part adhesives			■		
Drying of plastic and latex coatings			■		
Drying of washed, dyed and finished textiles				■	■
Fixing of nylon and perlon thread	■	■	■		
Pre-heating and drying of glued wooden			■		
Drying of skins and sprayed leather	■	■			
Heating and drying of adhesives in shoe				■	■
Drying of glazed tiles			■		
Drying and setting of protective coatings in			■	■	
Drying and setting of lacquered sheet metals	■	■	■	■	
And much more!!					

Quartz

CT HEATERS quartz tube radiant heaters provide medium wave infrared energy and fast heat up and cool down. The majority of the energy is transmitted through the translucent quartz tube without being absorbed.

Outer diameter of translucent quartz tubes are Φ14, Φ16, and Φ20 mm.
Maximum length is 3000 mm



Example of translucent quartz tube radiant heater with reflector

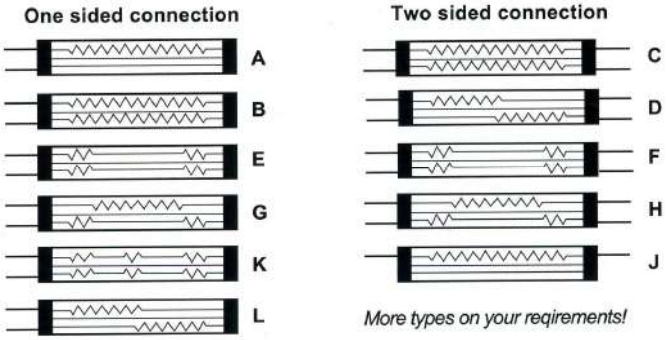
Twin Tubing Quartz

A reliable sign of competence and quality in infrared heating (medium wave): the gold-plated quartz twin tube is the basis of all our twin tube infrared heaters and is the starting point for new solutions in heating processes. CT HEATERS Gold-Plated infrared heaters are made with high-quality quartz tubes and gold reflectors for higher efficiency.

Outer dimension of gold-plated twin tubing quartzes are:
23X11 mm with maximum length 2000 mm
33X14 mm with maximum length 3000 mm

Example of gold-plated quartz twin tube infrared heater

Twin tubing quartz heater outlet configuration



 We manufacture products according to drawings which serve as contractual documents. We are not responsible for damage resulting from inappropriate installation or use of our product.

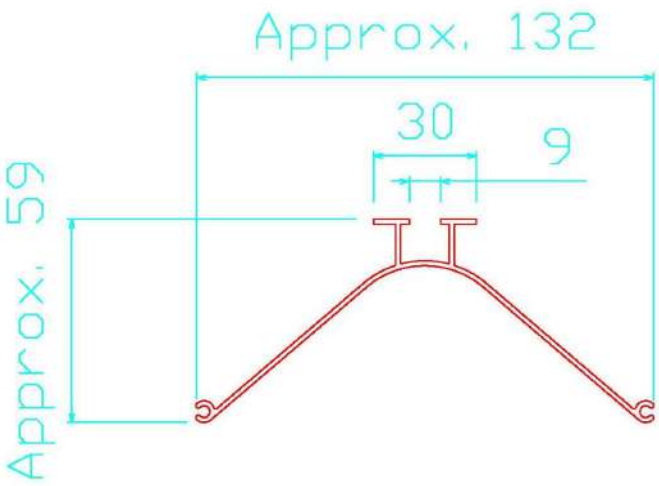
Black Body

CT HEATERS black body tubes are made by special formula of high emissivity ceramic mixed. Thus, black body radiant heaters provide long wave infrared energy and fast heat up and fast response to control.

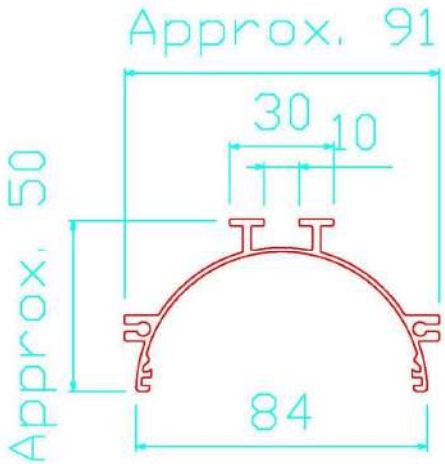
Outer diameter of black body tubes are Φ14, Φ17, and Φ20 mm. Maximum length is 2000 mm

Example of black body tube radiant heater with reflector

Standard Aluminum Reflectors:



Extruded & Anodized Aluminum
Triangular Reflector



Extruded & Anodized Aluminum
Semicircle Reflector

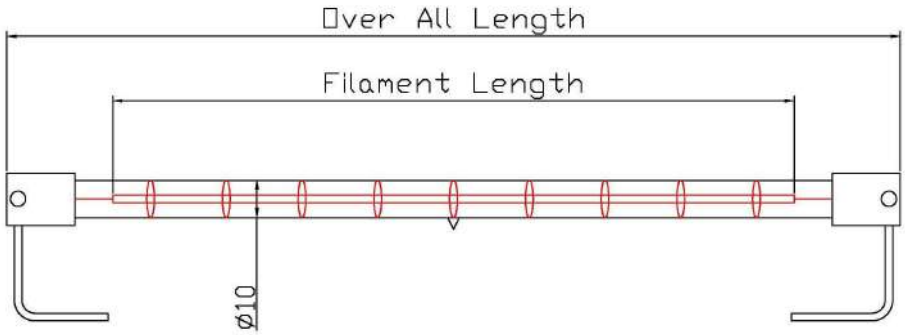
Example of Triangular reflector with end covers.
Custom made reflector and end cover available.
Please consult your CT HEATERS representative for more information.

APPLICATIONS

- Electrostatic copy equipment
- Vulcanizing and curing rubber
- Shrink packaging
- Sterilizing
- Fusing processes
- Heat treating
- Curing process coatings on circuit boards
- Sealing
- Drying processes: sand core casting, photos, coatings, photos and textiles
- Laminating
- Thermoforming
- Food warming
- Epoxy curing
- And much more!

Halogen type

SHORT WAVE QUARTZ INFRARED HEATING ELEMENT



Features:

- Halogen type, which avoids blackening of tube and consequently infrared depreciation during life time
- Ideal high-power heat source for a wide range of industrial heating applications
- Economic heat source, 90% of energy is transmitted as infrared heat
- Short wave infrared radiates
- Clean, safe, green heat source
- Compact infrared heat source
- Fast response within 3 seconds to reach 100% power output after be electrified and reduce the temperature fast

SHORT WAVE INFRARED HEAT LAMP

Voltage	Wattage	Over Lamp Length (mm)	Filament Length (mm)	Diameter (mm)*
120	850	198	119	10
120	1150	355	280	10
240	500	227	159	10
240	850	198	113	10
240	1000	355	280	10
240	1000	531	440	10
240	1100	531	440	10
240	1500	355	280	10
240	1500	787	700	10
240	1750	787	700	10
240	2000	355	280	10
240	3000	787	700	10

Different voltage and wattage available upon request

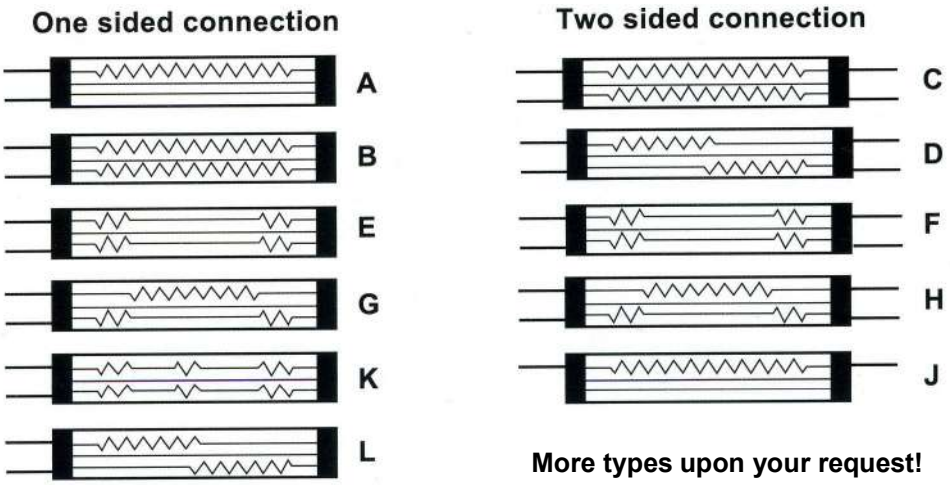
Gold reflector infrared lamp available upon request

*Other diameter available upon request

Applications

Plastics Thermoforming, blowing of plastic bottles, softening and melting of plastics, paint drying in tunnels and body shops, paper drying in paper mills, powder coating, drying of lacquers and printing inks, heat sterilization, PV, FPD, semiconductors

TWIN TUBE INFRARED HEAT LAMP



Twin Tube

The unique twin tube design offers high radiation power and very good mechanical stability. It is allowing emitters of lengths up to 3.5 meters. Emitters are available in **short wave**, **medium wave**, or **long wave** versions. CT HEATERS gives you the possibility to select the optimum wavelength for the material to be heated. Dimensions and filaments are matched up requirements.

Gold Reflector

CT HEATERS twin tube infrared heat lamp is made by virtue of a gold reflector which can emit heat directly to the product. A gold coating on the infrared emitters reflects the infrared radiation. Consequently the infrared radiation impinging on the product is virtually double.

Features:

- Infrared heaters can be matched up to material characteristics. It is allowing higher process speeds and less energy consumption
- Directed heat only where needed
- Infrared ovens need less space
- No contact or medium needed
- Short response times of infrared heaters for switch on/off

Applications:

Plastics Thermoforming, blowing of plastic bottles, softening and melting of plastics, paint drying in tunnels and body shops, paper drying in paper mills, powder coating, drying of lacquers and printing inks, heat sterilization, PV, FPD, semiconductors

MEDIUM WAVE TWIN TUBE LAMP

Wattage (W)	Voltage (V)	Heated length (mm)	Total length (mm)	Emitter type	Diameter (mm)*
500	230	300	400	B	23x11
1000	230	500	600	B	23x11
2000	230	800	900	B	23x11
2500	230	1000	1100	B	23x11
2500	230	1200	1300	C	23x11
3250	230	1300	1420	B	23x11
3750	230	1500	1600	B	23x11
4100	400	1700	1800	B	23x11
4500	400	1800	1920	B	23x11
5750	400	2300	2400	B	23x11
6250	400	2500	2600	B	23x11
Different voltage and wattage available upon request Gold reflector infrared lamp available upon request *Other diameter available upon request					

SHORT WAVE TWIN TUBE LAMP

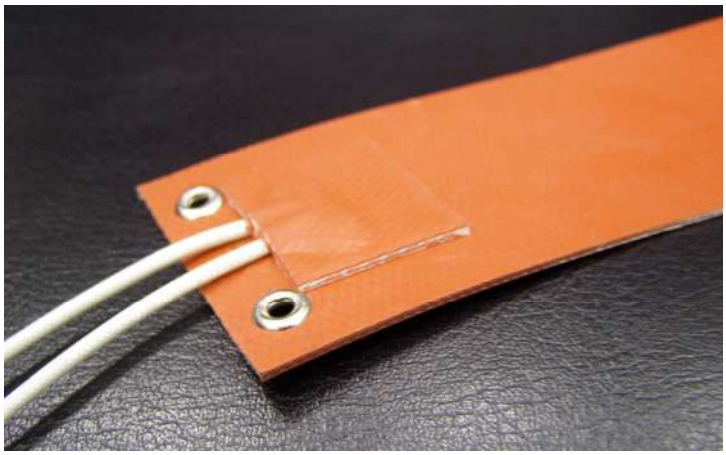
Wattage (W)	Voltage (V)	Heated length (mm)	Total length (mm)	Emitter type	Diameter (mm)*
600	115	80	145	B	23x11
1200	230	340	405	B	23x11
1500	230	200	300	B	23x11
3000	230	500	650	C	23x11
3000	400	500	600	B	23x11
3000	400	500	600	B	23x11
3000	400	1000	1100	A	23x11
4200	230	700	850	C	23x11
6000	400	1000	1150	C	23x11
7000	400	1300	1450	C	23x11
Different voltage and wattage available upon request Gold reflector infrared lamp available upon request *Other diameter available upon request					

FLEXIBLE HEATERS

CT HEATERS offers both wire-wound and etched foil resistance elements.

Silicone rubber heater

Fiberglass reinforced silicone rubber gives your heater dimensional stability without sacrificing flexibility.



Wire-wound element

Maximum area size: 600X600 mm

Maximum wattage for wire-wound resistance element: up to 1w/cm^2

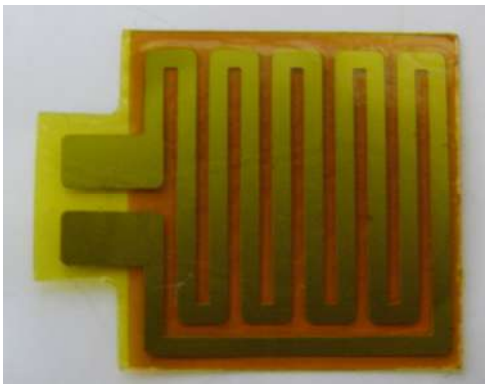
Etched foil element

Maximum area size: 290X900 mm

Maximum wattage for etched foil resistance element: up to 6**w/cm^2**

Kapton®

A thin, lightweight transparent material from du Pont, Kapton® is designed for extremely precise heating requirement ranging from -195° to 200℃. It's ideal for applications requiring low out gassing in a vacuum, or resistance to radiation, fungus and chemicals



Etched foil element

Maximum area size: 240X300 mm

Maximum wattage for etched foil resistance element: up to 30**w/cm^2**

Applications:

Photo processing equipment, curing of plastic laminates, computer peripheral, medical equipment, freeze protection for aircraft instrumentation, ultra-sonic cleaning tanks, wet processing, battery heating, satellite and communication equipment, and much more!

Drum Heaters

For standard drum sizes:

- 5 gal. (20 L),
- 30 gal. (115L),
- 55 gal. (210L)

Other diameter available upon request!

APPLICATIONS

- Freeze protection
- Viscosity

PIPE HEATING

For this section, please consult to your CT HEATERS representative for more detail!

THERMOCOUPLES

MOST COMMON THERMOCOUPLE TYPES

ANSI CODE	CONDUCTOR CHARACTERISTICS POSITIVE +	CONDUCTOR CHARACTERISTICS NEGATIVE -	TEMPERATURE RANGE ℃	TEMPERATURE RANGE ℉	CONDUCTOR CHARACTERISTICS POSITIVE +	CONDUCTOR CHARACTERISTICS NEGATIVE -	IEC CODE
J	IRON	CONSTANTAN	0 TO 760	32 TO 1400	IRON	CONSTANTAN	J
	MAGNETIC	NON-MAGNETIC			MAGNETIC	NON-MAGNETIC	
	WHITE	RED			BLACK	WHITE	
K	CHROMEL®	ALUMEL®	0 TO 1260	32 TO 2300	CHROMEL®	ALUMEL®	K
	NON-MAGNETIC	MAGNETIC			NON-MAGNETIC	MAGNETIC	
	YELLOW	RED			GREEN	WHITE	
N	NICROSIL	NISIL	0 TO 1260	32 TO 2300	NICROSIL	NISIL	N
	ORANGE	RED			PINK	WHITE	

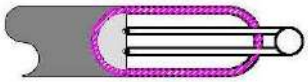
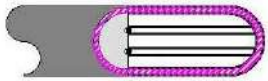
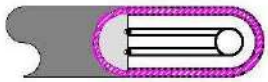
ALUMEL® and CHROMEL® are registered tr`ademarks of the Hoskins Manufacturing Company

THERMOCOUPLE TYPE	COMMENTS ENVIRONMENT BARE WIRE
J	Reducing, vacuum, inert. Limited use in oxidizing at high temperatures. Not recommended for low temperatures.
K	Clean oxidizing and inert. Limited use vacuum or reducing. Wide temperature range, most popular calibration. Not recommended where sulfur is present.
N	Alternative to K-type. More stable at high temperatures. It provides better resistance to oxidation at high temperatures and longer life in applications where sulfur is present.

CT HEATERS offers full range of thermocouples and RTD on the market

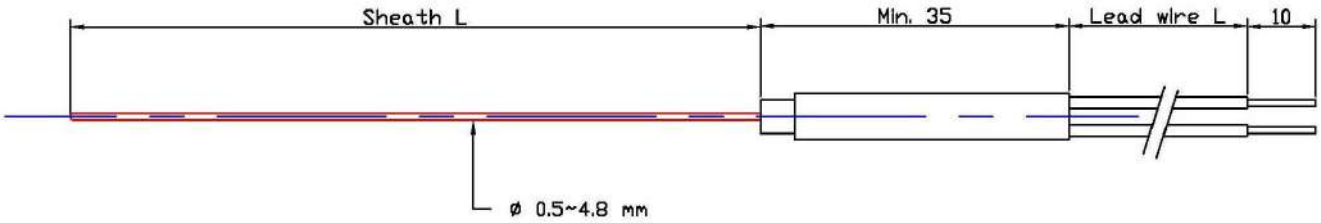
ANSI code	**J**	**K**	**T**	**E**	**N**	**R**	**S**	**U**	**B**
IEC code	**J**	**K**	**T**	**E**	**N**	**R**	**S**	**U**	**B**

JUNCTION STYLES

	An **exposed junction** is recommended for the measurement of static or flowing non-corrosive gas temperatures where fast response time is required
	A **grounded junction** is recommended for the measurement of static or flowing corrosive gas and liquid temperatures and for high-pressure applications. The junction of a grounded thermocouple is welded to the protective sheath giving faster response than the ungrounded junction type.
	An **ungrounded junction** is recommended for measurements in corrosive environments it is desirable to have the thermocouple electronically isolated from and shielded by the sheath. The welded wire thermocouple is physically insulated from the thermocouple sheath by MgO.

MINERAL INSULATED SHEATH TYPE

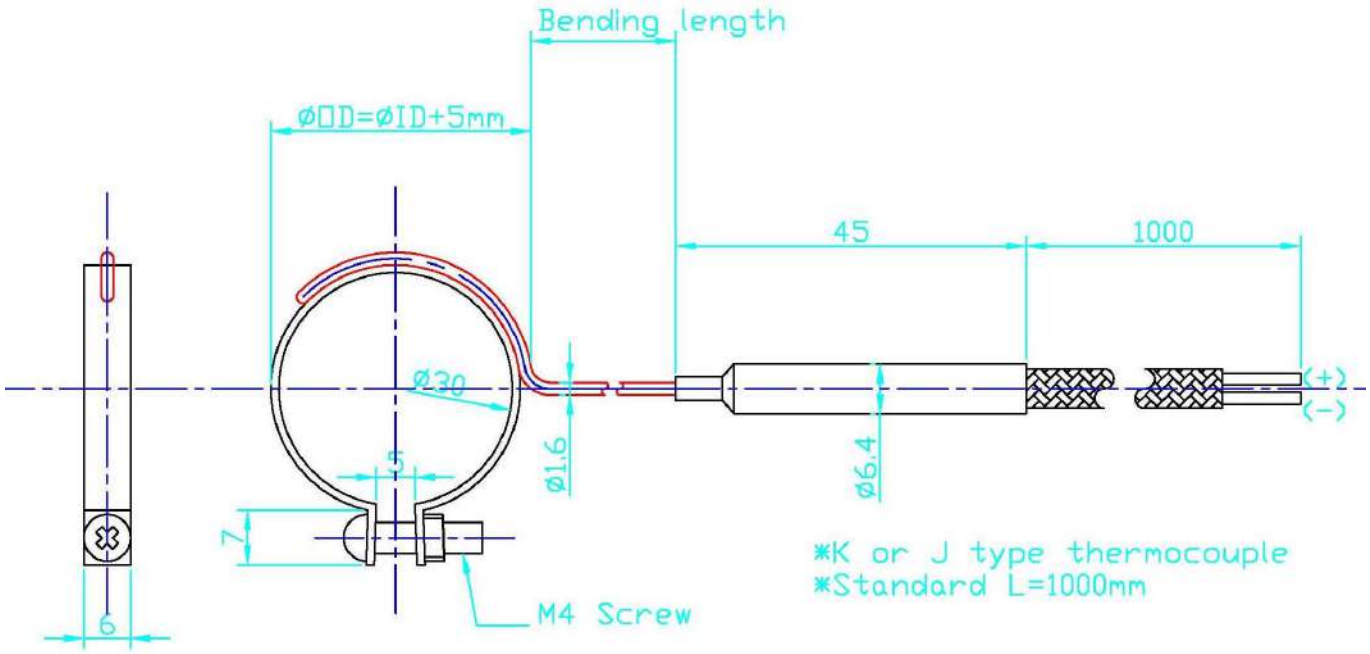
Basic Sheath Thermocouple
(Grounded or Ungrounded Junction)



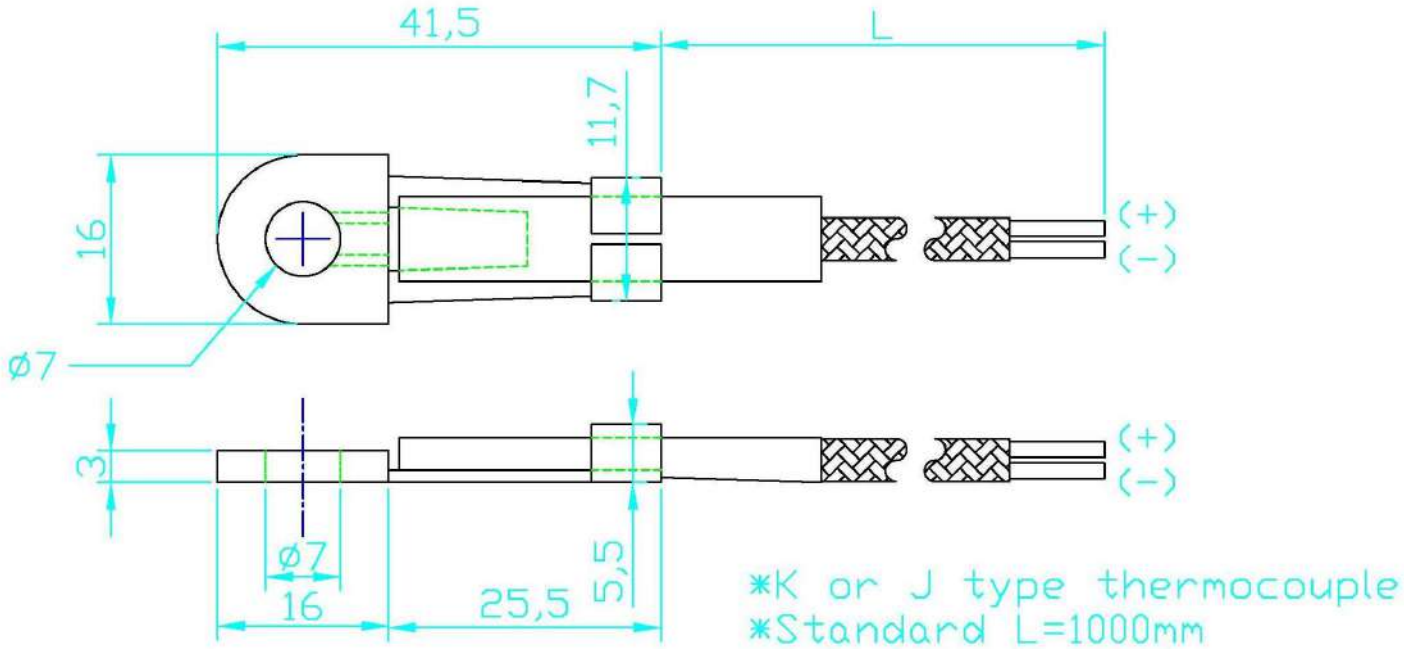
We do also carry spade lugs, standard/miniature size connectors, ceramic ultra high temperature standard/miniature connectors and more for the same thermo element for almost every type of thermocouple. Please contact CT HEATERS representative for more information!

There are many different types and bending shapes of thermocouples for PV, FPD and Semiconductor system. Please e-mail us at ct.heaters@msa.hinet.net for more information!

Clamp Type Sheath Thermocouple
(Grounded or Ungrounded Junction)



THERMOCOUPLE FOR MAINIFOLD
Ring Terminal Style (Grounded & Exposed Junction)



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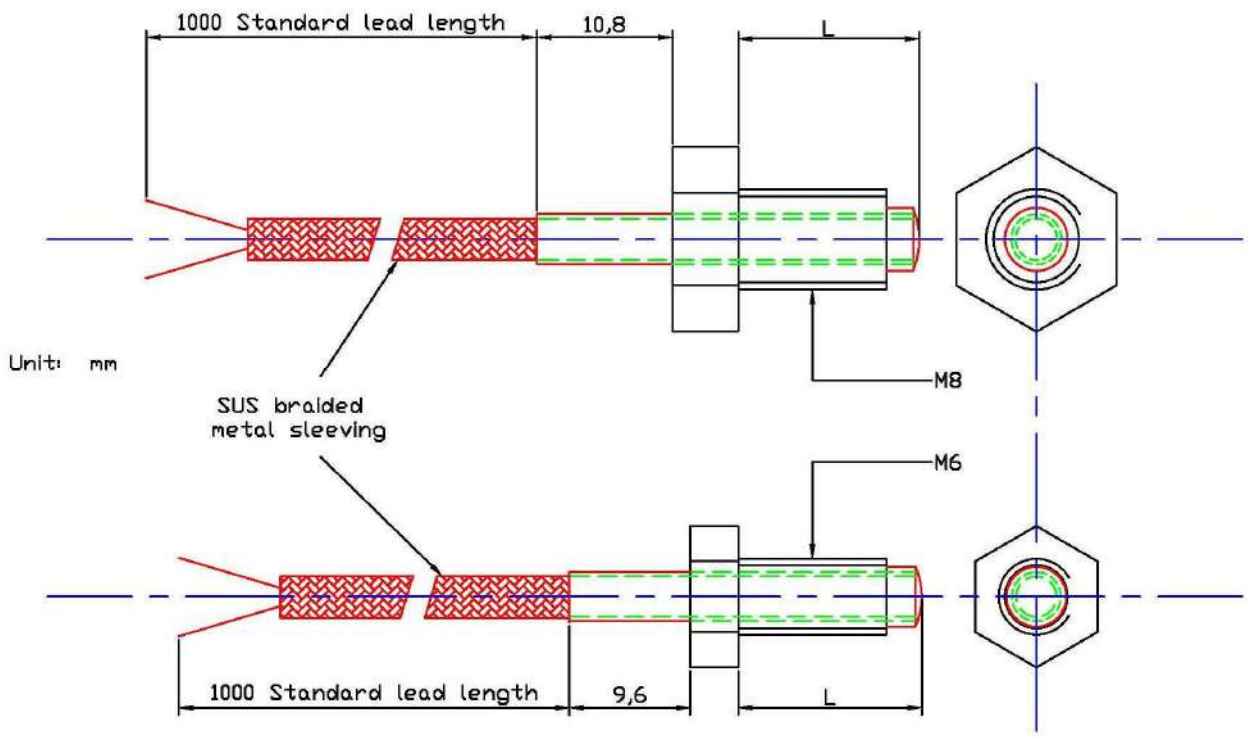
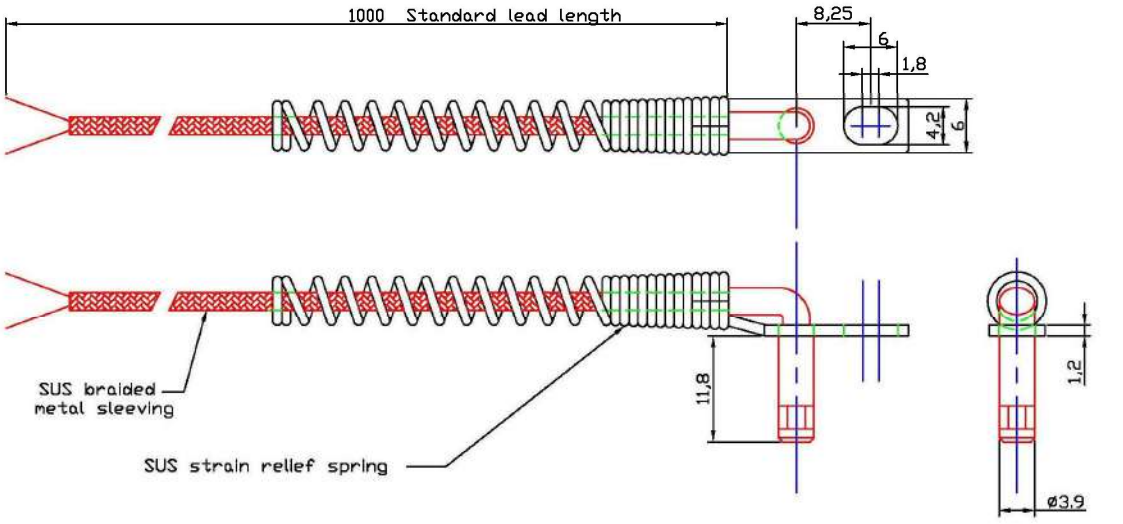
Nozzle Style (Grounded Junction)



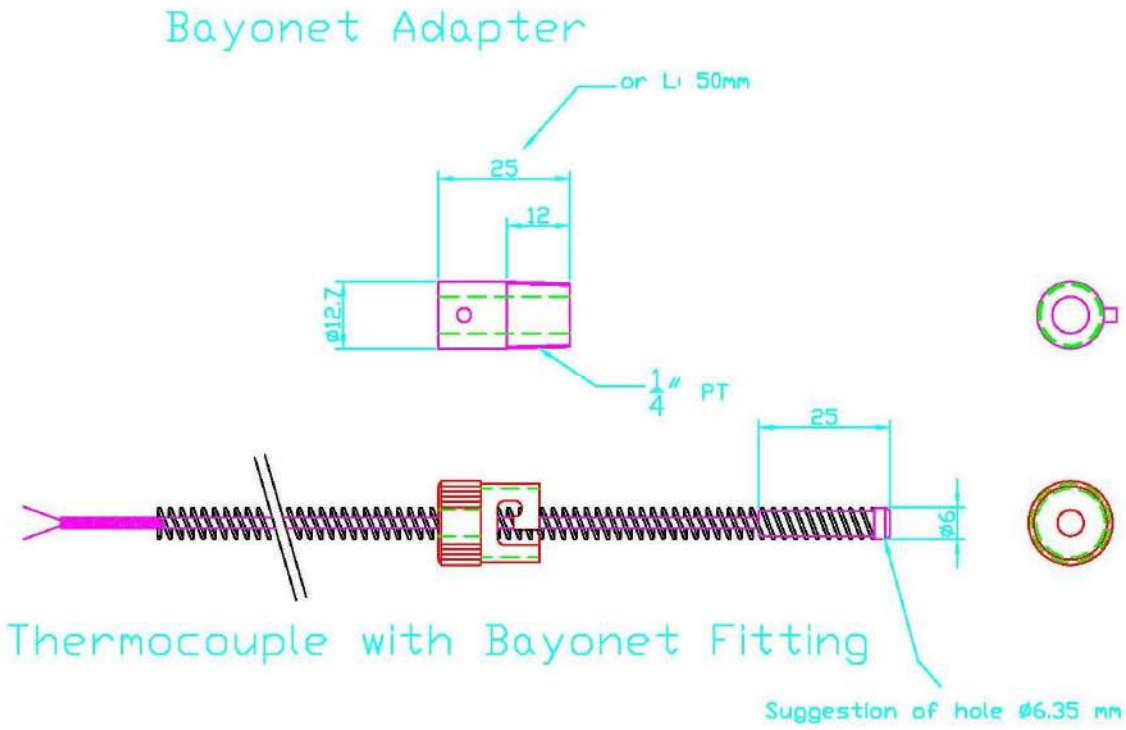
SST Plate type (Grounded Junction)

Suggestion for installation:

*Drilling a Ø4.1 X 11.5 mm deep hole
* Offset 8.25 mm, then drilling a hole for M4X10



Spring Variable Adjustable Thermocouple Style (Grounded Junction)



CT HEATERS also carries other spring variable adjustable components to choose from. Please consult with your CT HEATERS representative for more detail!

There are many different types and shapes of thermocouples for many applications. Please write us an e-mail to ct.heaters@msa.hinet.net for more information!

Parts for Thermocouple

CT HEATERS also carries fitting components for sheath thermocouple to choose from.

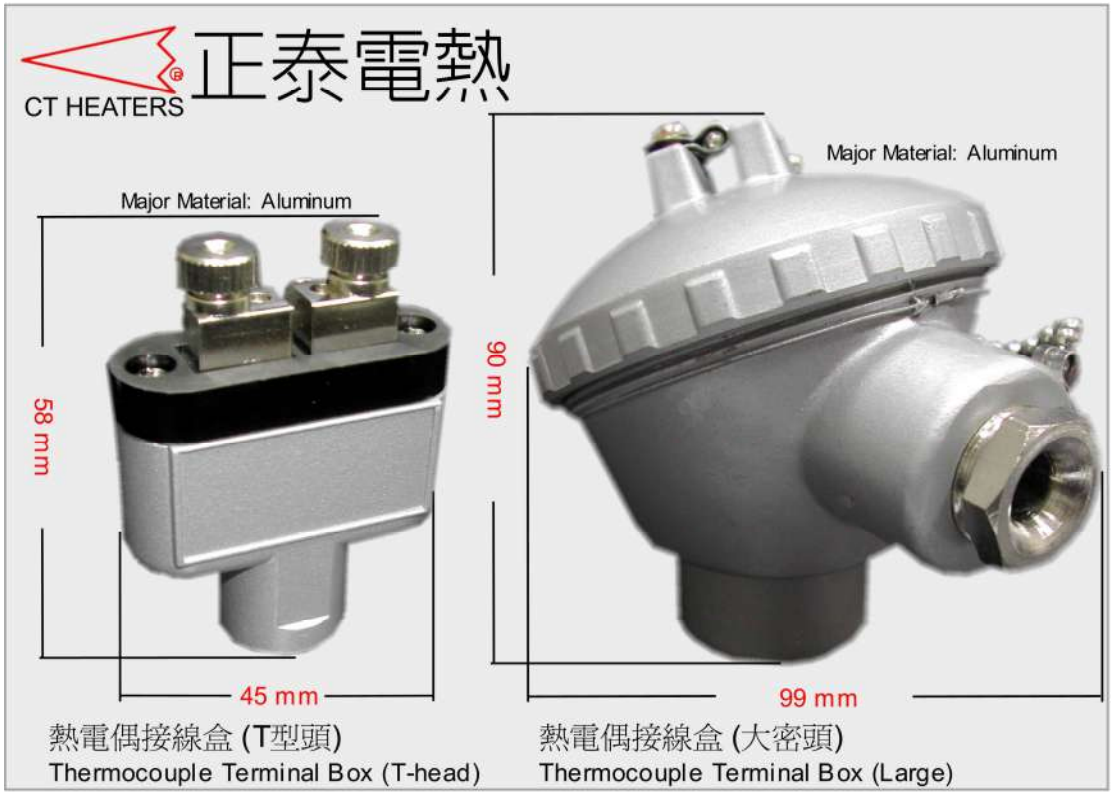
CT HEATERS has many different connectors, miniature connectors and ceramic connectors and miniature ceramic connectors for different types of thermocouple for easy and quick connecting in no time. Please consult with your CT HEATERS representative for more detail!

Connection Heads

The connection heads are designed for mating to a conduit, allowing permanent installation. A variety of head styles are available, including aluminum and Bakelite.

熱電偶接線盒 (小密頭)
Thermocouple Terminal Box (Small)

熱電偶接線盒 (大密頭)
Thermocouple Terminal Box (Large)



熱電偶接線盒 (T型頭)
Thermocouple Terminal Box (T-head)

熱電偶接線盒 (大密頭)
Thermocouple Terminal Box (Large)

 We manufacture products according to drawings which serve as contractual documents. We are not responsible for damage resulting from inappropriate installation or use of our product.

熱電偶電木接線盒 (小密頭)
Thermocouple Terminal Box (Small)

熱電偶電木接線盒 (大密頭)
Thermocouple Terminal Box (Large)

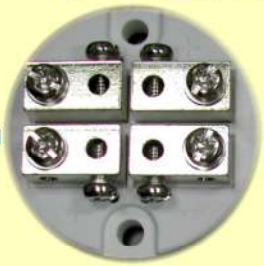
Terminal Plates for Connection Head

標準熱電偶接線盒所使用的電木接線片
BakeliteTerminal Blocks for Standard Thermocouple Terminal Box

CT HEATERS 正泰電熱

Material: Ceramic

4P大密頭用
4P for large Terminal Box



接線片(大) Dia. 49.6 Thickness 10

2P大密頭用
2P for large Terminal Box

接線片(大) Dia. 49.6 Thickness 10

2P小密頭用
2P for small Terminal Box

接線片(小) Dia. 39.4 Thickness 10

6P大密頭用
6P for large Terminal Box

接線片(大) Dia. 50 Thickness 10.5

標準熱電偶接線盒所使用的陶瓷接線片
Ceramic Terminal Blocks for Standard Thermocouple Terminal Box

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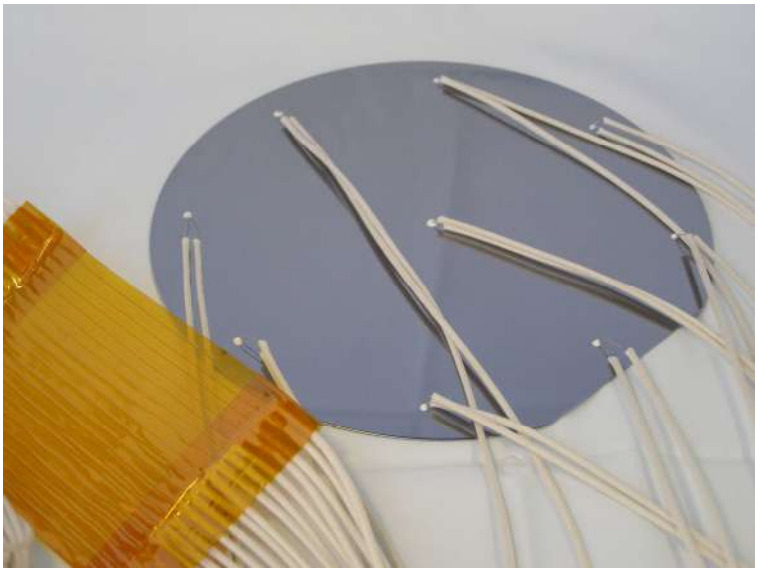
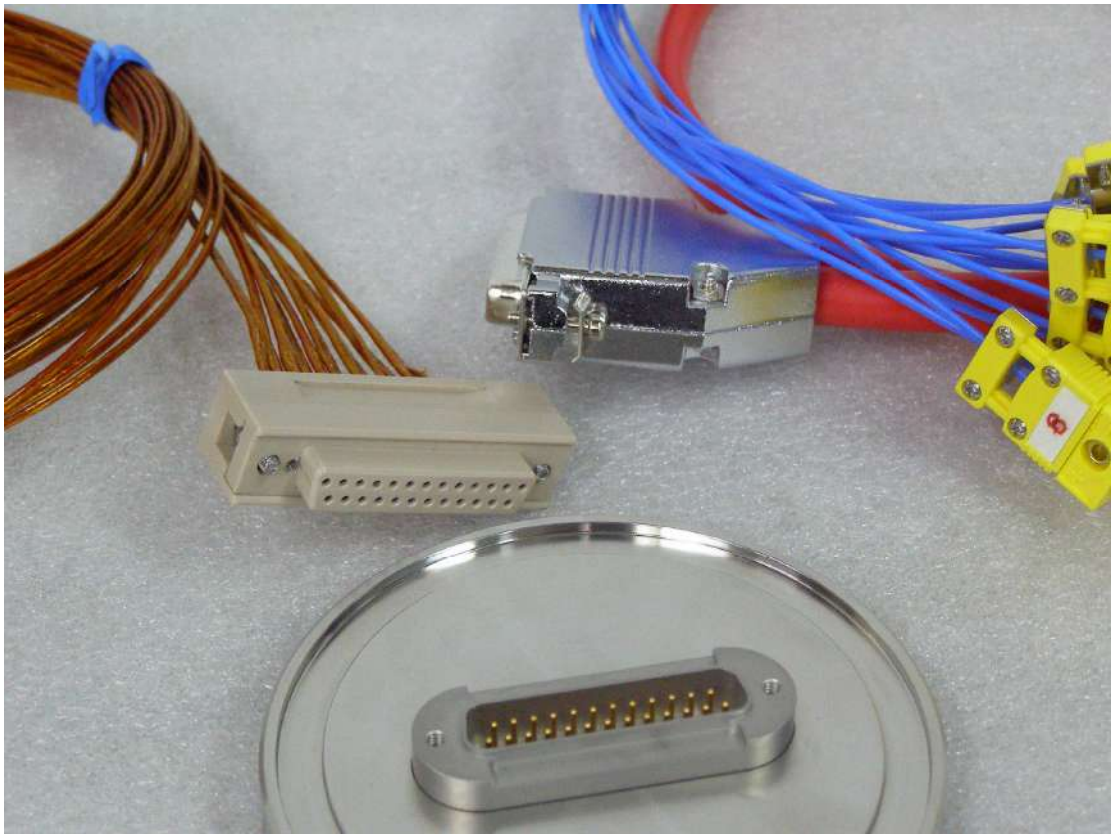
TC WAFER



You supplied at least 2 substrates (depends on the material of substrate) and we do the rest. The maximum 18 measurement points (K-type) on each substrate. The maximum total thermocouple wires length of each is 3000 mm (included feed-thru, the portion in the vacuum and the portion in ATM). Our wire protection sleeve (high grade of glass fiber), the portion in the vacuum, can withstand continuously at 600℃ (for higher temperature available). The material of feed-thru is DuPont™ Kapton® polyimide films, and the temperature can withstand up to 300℃. The portion of wire protection sleeve is PTFE tubing in ATM, and finish up with miniature male connector. **Paperless temperature recorder is available upon request!**

Special made thermocouple for PV, LED, Semiconductor and FPD industries



Vacuum side:

25 pins peek female D-sub with Kapton® **insulation 9 pairs of K-type thermocouples**

ISO100 flange welded male D-sub feedthrough for vacuum application

ATM side:

25 pins cast-iron female D-sub with PFA insulation 9 pairs of K-type thermocouples and miniature male plugs

Please contact Kevin Huang

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E-mail: ct.heaters@msa.hinet.net

more than heaters !

Please contact CT HEATERS representative for more information!

VR18 Paperless Recorder

6.1" Color TFT LCD with 640x480 pixels resolution

The Maximum Channels :
18 isolated analog input channels

Plug & Play Supported I/O Cards, 6 Slots

The High Flexibility :
User configurable I/O card
Expandable modular architecture
Flexible screen configuration

User-Friendly :
Soft keys coupled with interactive dialog simplify setup & operation procedures
Easy - to - access function keys

Infrared Detector :
Shut off LCD automatically to prolong LCD life and save power while nobody near by

Save Space :
Only 174 mm (6.9") depth behind panel

Various Display Formats :
Vertical trend, Horizontal trend, Bar Graph, Numerical or mixed

Save Data in Flash ROM, Compact Flash Card or PC

Communication :
Standard Ethernet and optional RS-232/422/485

The Highest Accuracy :
18-bit A-D analog input, 15-bit D-A analog output

Fast Sampling Rate :
Within 200 msec for all channels, Programmable Filter or Moving Average Sampling Method

Statistics with Instant, Average, Min./Max. Values

Progammable Alarms and Messages available

Portable / Bench Top Assembly Kit available

Paperless Recorder Optional Box

FRONT

REAR

- Picture above is for K-type sensor male plug
- Shell SUS304, DIM: W200XH300XD267 mm (excluded handle and rubber footing).
- Standard Paperless recorder comes 6 measurement points, maximum up to 18 measurement points (each module has 3 measurement points). Pricing may varies depending on the number of module
- Real time viewer available via Ethernet connection with your laptop or desk top.

TERMS AND CONDITIONS

1. CT HEATERS warrants its Products against defects in material and workmanship for three months from the date of delivery. Many of Heaters are hygroscopic in nature due to MgO contents. If kept unused for longer period, there is moisture deposition on the terminals. Therefore CT HEATERS recommend you to de-moisture the heaters prior to installation by heating them at 90~120℃ in an oven for at least 2 hours or use controllers with soft start function. This will help evaporate any moisture present inside. CT HEATERS dose not warrant any PRODUCT against damage from corrosion, contamination, misapplication, improper specification or wear and tear and operational conditions beyond CT HEATERS' control. In no event shall CT HEATERS be liable for special, indirect, incidental or consequential damages. CT HEATERS shall not be liable for, and buyer and any other person or entity to whom Products are transferred during the period of this warranty assumes responsibility for, all personal injury and property damage resulting from or related to the handling, possession or use of Products and Products manufactured and sold by CT HEATERS hereunder.

2. Deliveries may be suspended by either party in the event of: Act of God, war, riot, fire, explosion, accident, flood, sabotage; lack of adequate fuel, power, raw materials, labor, containers or transportation facilities; compliance with Governmental Requirements; breakage or failure of machinery or apparatus; national defense requirements or any other event, whether or not of the class or kind enumerated herein, beyond the reasonable control of such party; or in the event of labor trouble, strike, lockout or injunction which event makes impracticable the manufacture, transportation, sale, purchase, acceptance, use or resale of Products or a material upon which the manufacture of Products is dependent.

3. If Buyer orders and/or CT HEATERS delivers a Product designated as a "Prototype", no guarantees, warranties or representations as to fitness for a particular purpose or merchantability are made with respect to such Prototype. Buyer shall have the duty and sole responsibility to test a Prototype prior to acceptance and/or incorporation into end-use applications. Further, a production Product based on a Prototype design may differ in assembly methods and materials from the Prototype. Buyer, therefore, shall have the duty and sole responsibility for testing and acceptance of production Products which are based on Prototype designs.

MEMO

 We manufacture products according to drawings which serve as contractual documents. We are not responsible for damage resulting from inappropriate installation or use of our product.

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PLEASE NOTE:

No warranty provided on consumable parts (including the heater elements, thermocouples, etc.), therefore, please adhere to above conditions. CT HEATERS dose not warrant any PRODUCT against damage from corrosion, contamination, misapplication, improper specification, wear and tear, or operational conditions beyond CT HEATERS' control.