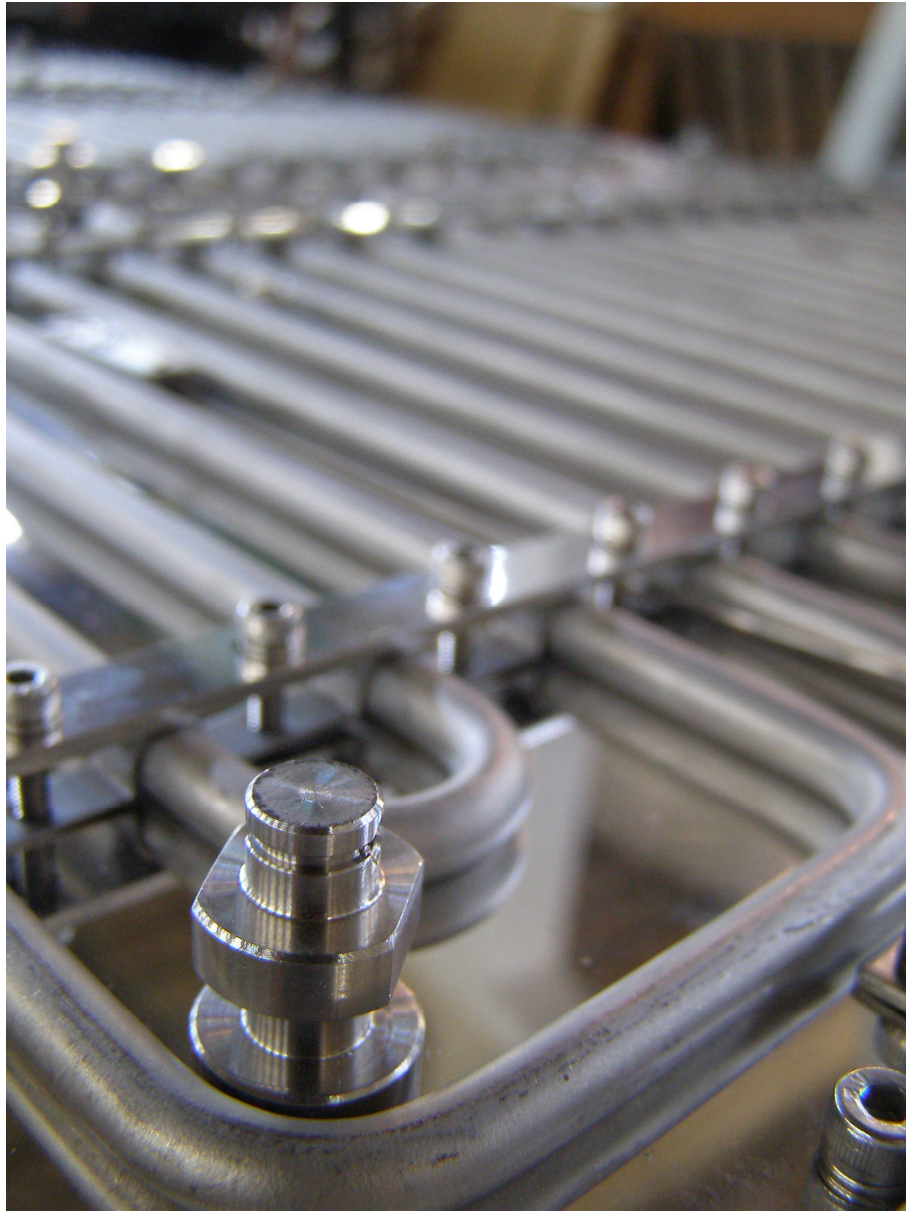


High Quality Heating Elements & Sensor for
PHOTOVOLTIC, FLAT PANEL DISPLAY and SEMICONDUCTOR INDUSTRIES



 **正泰電熱**
CT HEATERS

since 1971

© 2020 CHENG TAY HEATER & INSTRUMENT CO., LTD., TAIWAN (rev. 4)

more than heaters!



TABLE OF CONTENTS

COMPANY PROFILE.....	2
AREA HEATERS.....	3
SUGGESTION SIZE FOR AREA HEATER	4
TUBULAR HEATERS	4
BENDING PRECAUTION FOR TUBULAR HEATER.....	5
HOT PLATES	6
SUGGESTION SIZE FOR HOT PLATE.....	7
TUBULAR HEATERS (CROSS SECTION: SQUARE)	7
INSTALLATION	8
SMALL AREA OF ALUMINUM HOT PLATE	9
2" CHUCK HEATER.....	10
CONNECTING LEAD WIRE.....	11
HIGH TEMPERATURE WIRES.....	11
ULTRA-HIGH-TEMPERATURE RING TERMINALS.....	12
PRECAUTIONS	13
INFRARED HEAT LAMP	14
SHORT WAVE QUARTZ INFRARED HEAT LAMP	15
TWIN TUBE INFRARED HEAT LAMP	16
MEDIUM WAVE TWIN TUBE LAMP	17
SHORT WAVE TWIN TUBE LAMP	17
FLEXIBLE HEATERS	18
PIPE HEATING.....	19
AIR HEATERS.....	20
GAS HEATER.....	22
SCRUBBER SYSTEM	23
THERMOCOUPLES.....	24
JUNCTION STYLES	25
MINERAL INSULATED SHEATH TYPE	25
TC WAFER	26
SPECIAL MADE THERMOCOUPLE FOR PV, LED, SEMICONDUCTOR AND FPD INDUSTRIES	27
PAPERLESS RECORDER.....	28
PAPERLESS RECORDER OPTIONAL BOX.....	29
TERMS AND CONDITIONS	30
CONTACT INFORMATION	31

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.

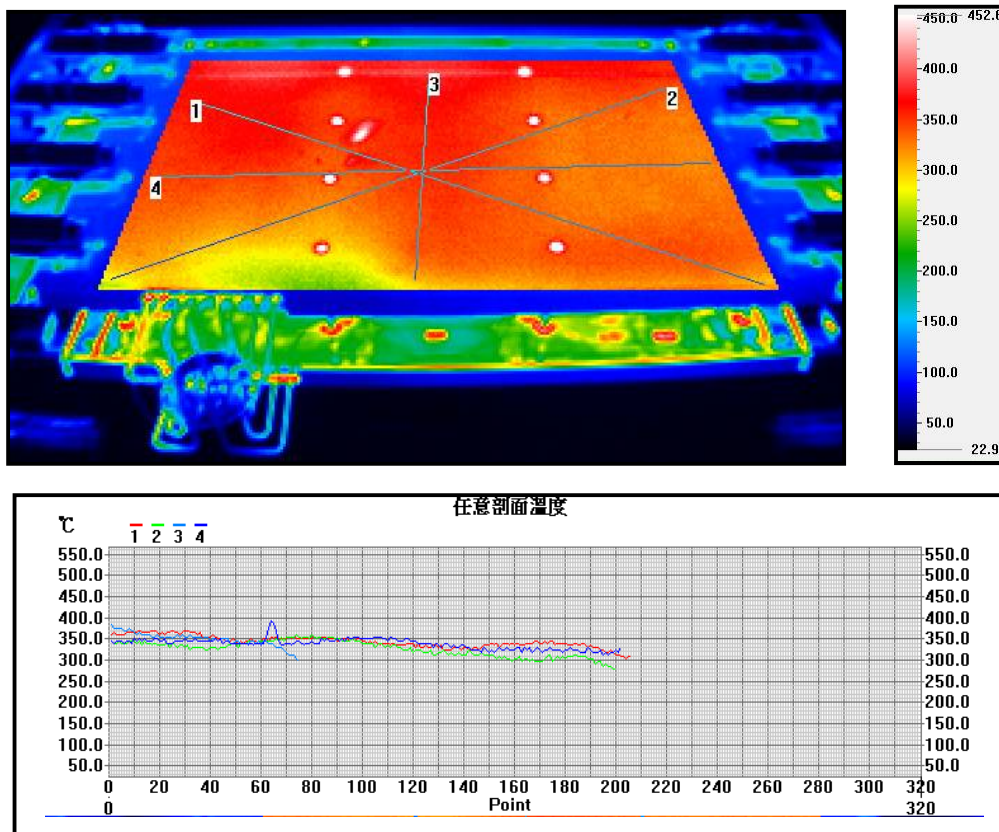
From a single item to a large-scale project, we can supply all your heater and thermocouple needs. All inquiries are welcome.

AREA HEATERS

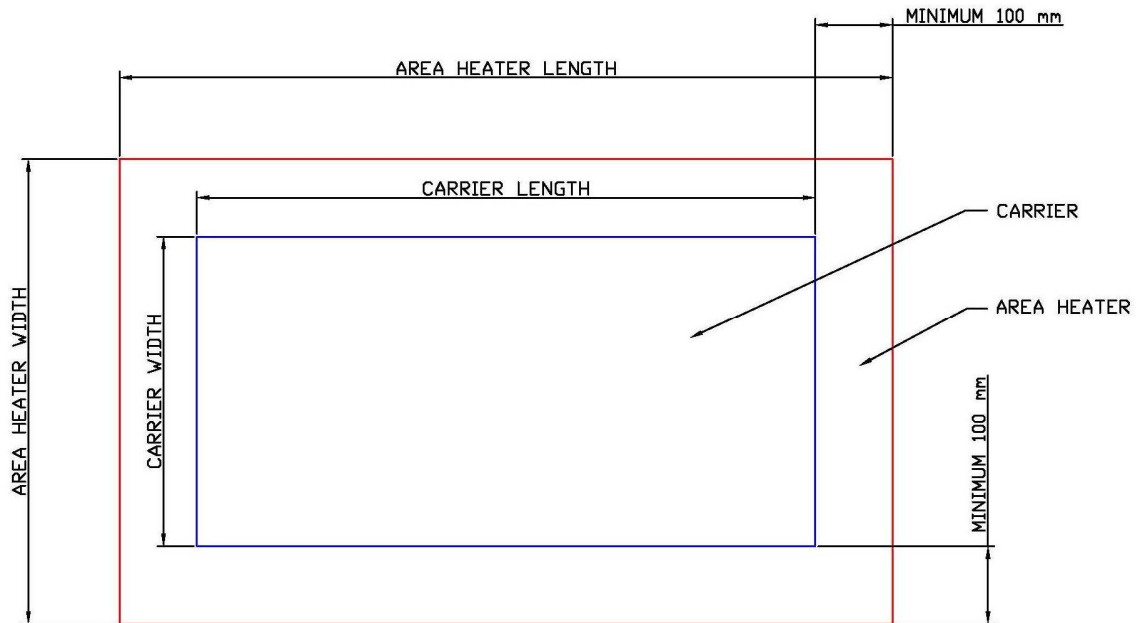


Example of Area Heater

ACTUAL THERMO IMAGING OF AREA HEATER IN ATM



SUGGESTION SIZE FOR AREA HEATER



TUBULAR HEATERS

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 $\pm 10\%$ Tubular can run on both AC and DC, 50 or 60Hz	*In some applications higher values may be possible

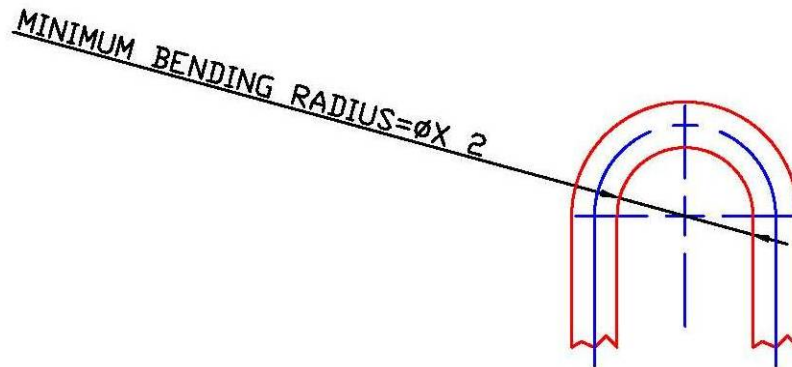
Materials of Sheath

SUS304, SUS304L, SUS316, SUS316L, SUS321, INCONEL 600, INCONEL 601,
INCOLOY800, INCOLOY825

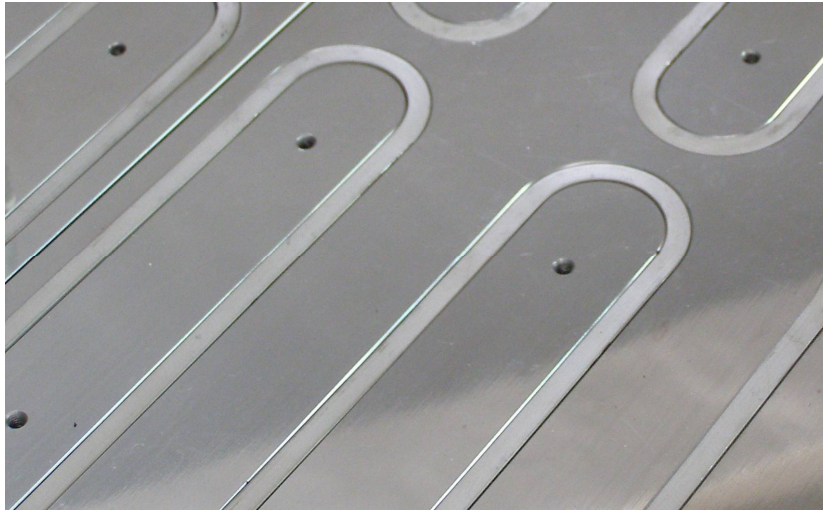
PLEASE NOTE, for some of the materials above may not have in-stock; please contact CT
HEATERS representative for more information!

Wattage: Up to $3.4\text{w}/\text{cm}^2$ for tubular heater design

BENDING PRECAUTION FOR TUBULAR HEATER

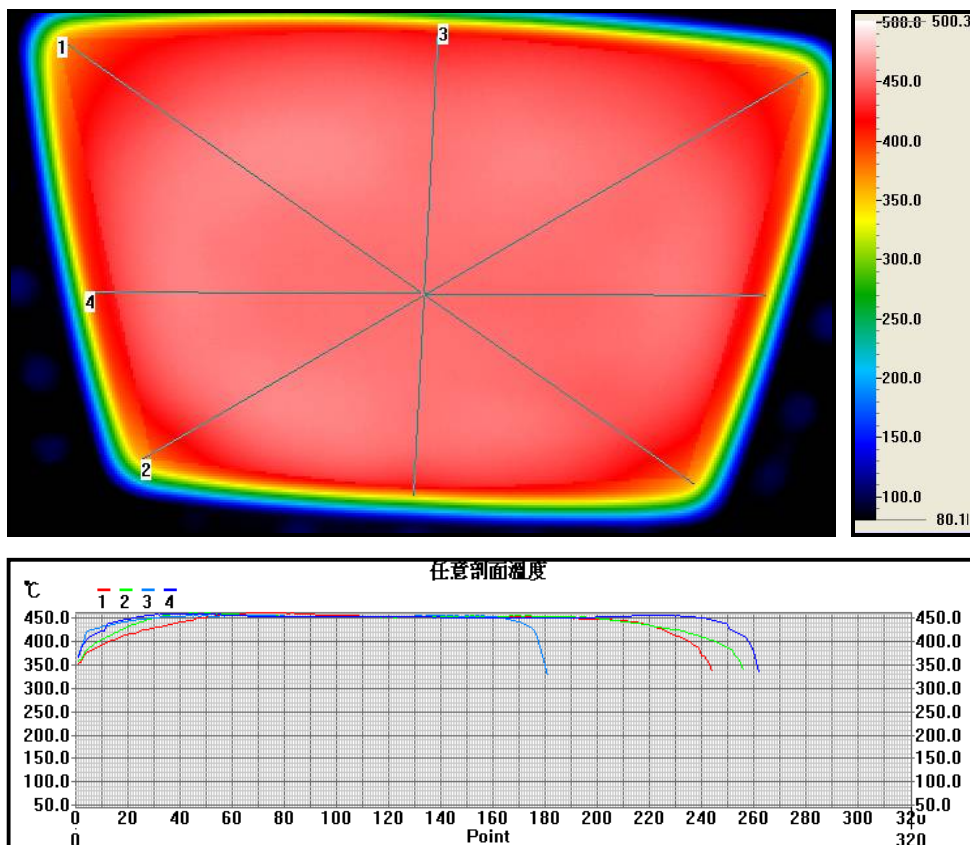


HOT PLATES

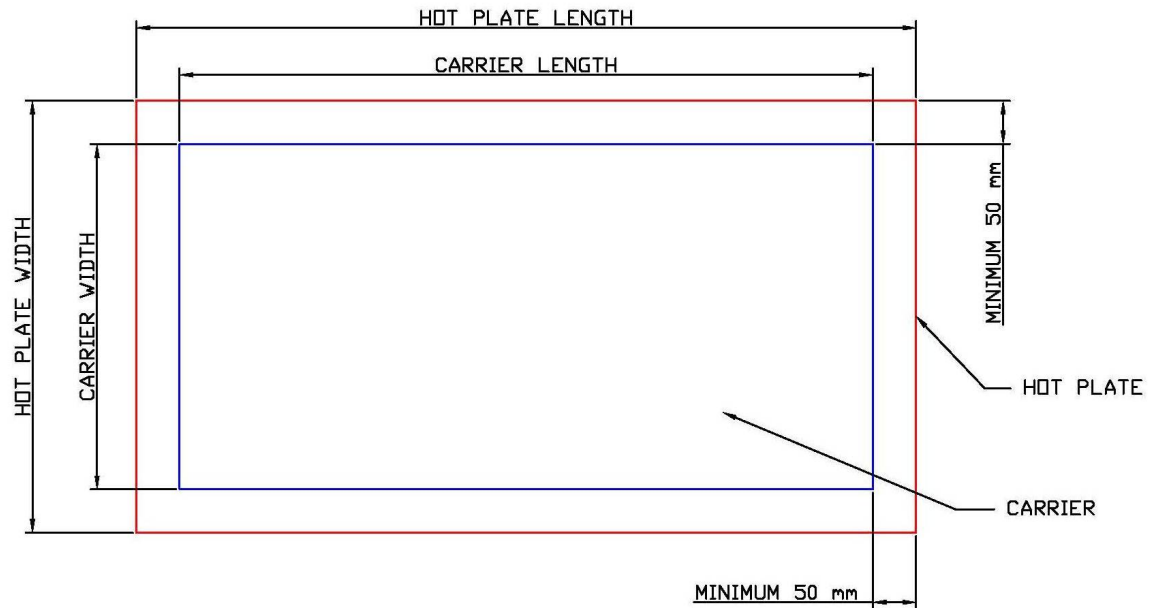


Example of Hot Plate

ACTUAL THERMO IMAGING OF HOT PLATE IN ATM



SUGGESTION SIZE FOR HOT PLATE



TUBULAR HEATERS (Cross Section: Square)

Sheath Diameter (cross section: square)	Maximum Voltage*
Q3X3	240
Q3.2X3.2	240
Q3.7X3.7	240
Q3.8X3.8	240
Q4.8X4.8	380
Q6X6	440
Q7X7	440
Q9.5X9.5	440
Standard Resistance/Wattage Tolerance $\pm 10\%$ Tubular can run on both AC and DC, 50 or 60Hz	*In some applications higher values may be possible

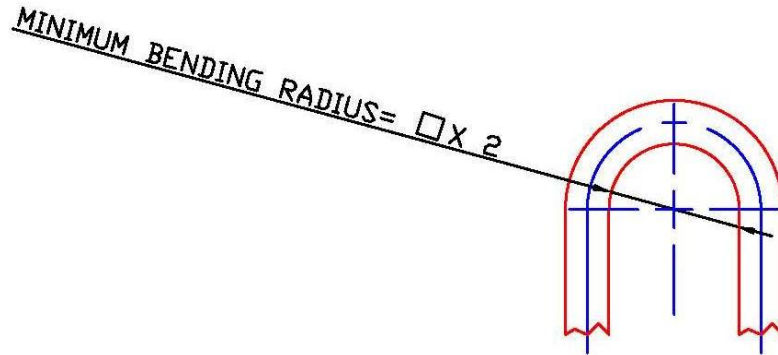
Materials of Sheath

SUS304, SUS304L, SUS316, SUS316L, SUS321, INCONEL 600, INCONEL 601, INCOLOY800, INCOLOY825

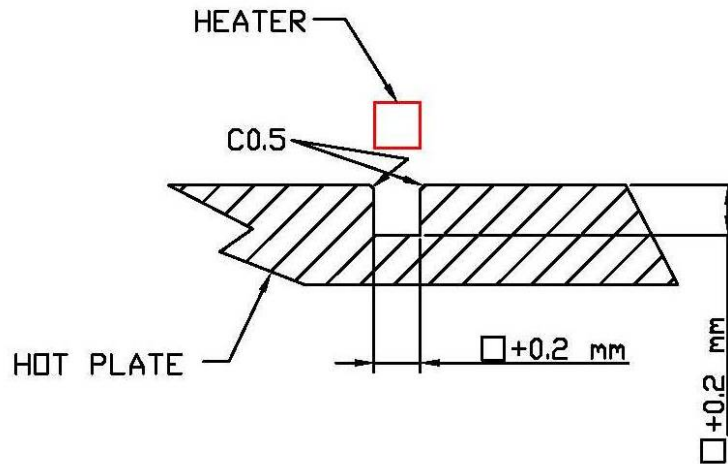
PLEASE NOTE, for some of the materials above may not have in-stock; please contact CT HEATERS representative for more information!

Wattage: Up to $15\text{w}/\text{cm}^2$ for square tubular heater design

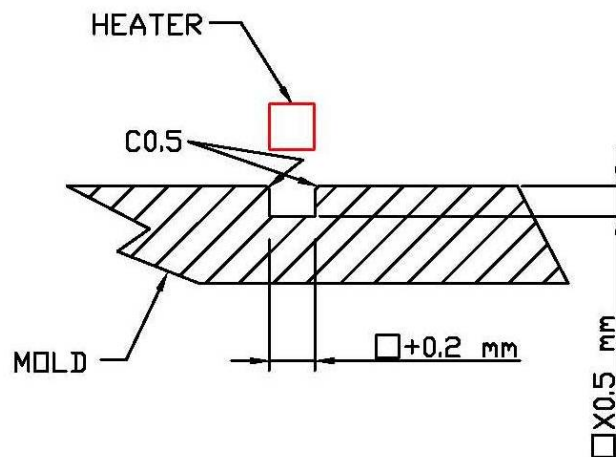
INSTALLATION- for our bending service, please provide the hot plate(s) or mold plate(s). The detail of groove as the following



Hot Plate Groove



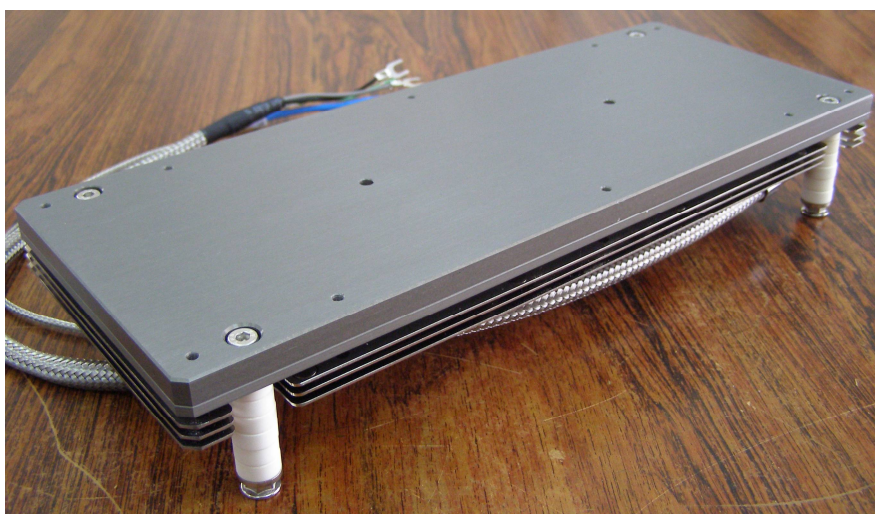
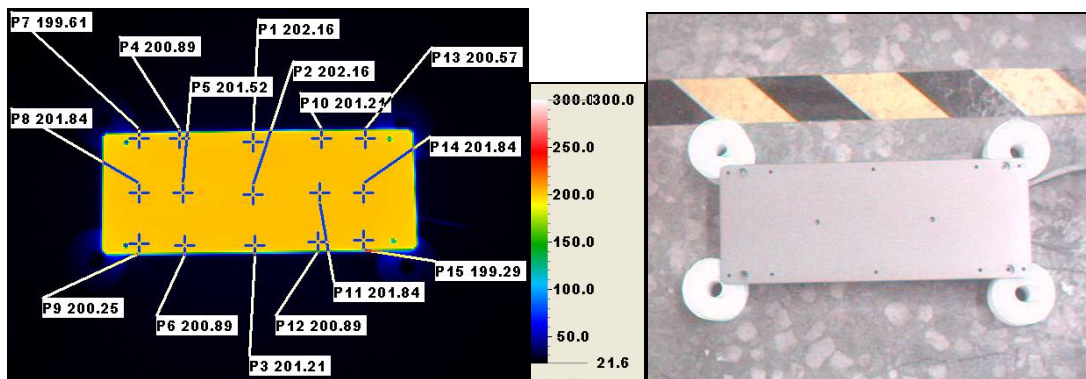
Mold Plate Groove



Small Area of Aluminum Hot plate

SPECIFICATION

1. Maximum Temperature	380°C
2. Temperature Stability	<±2%
3. Temperature Uniformity	<±2%°C
4. Maximum Voltage	220V
5. Maximum Current	3.7A
6. Heater Resistance	60.5Ω
7. Power Supply	AC/DC
8. Ramp Time to 150°C (in ATM)	<3 minutes
9. Ramp Time to 200°C (in ATM)	<5 minutes
10. Ramp Time to 380°C (in ATM)	<10 minutes
11. Cool-Down Time (380°C to room temp., 1 ATM pressure)	Available
12. UHV Compatibility	

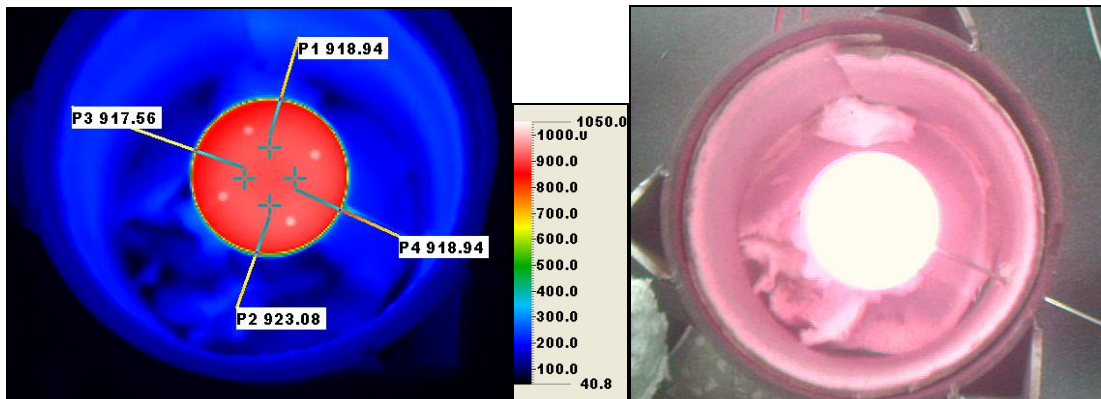


EXAMPLE OF 220V800W w/ K-type sheath thermocouple
Hard anodized aluminum, dim: 270X105X10T mm

2" Chuck Heater

SPECIFICATION

13. Maximum Temperature	950°C
14. Temperature Stability	±1.5%
15. Temperature Uniformity (center circle diameter)	±5°C
16. Maximum Voltage	60V
17. Maximum Current	12A
18. Heater Resistance	5Ω
19. Power Supply	AC/DC
20. Ramp Time to 750°C (in ATM)	<4 minutes
21. Ramp Time to 950°C (in ATM)	<13 minutes
22. Cool-Down Time (950°C to room temp., 1 ATM pressure)	<40 minutes
23. UHV Compatibility	YES
24. Electrical Biasing	YES



Hot selling item!!



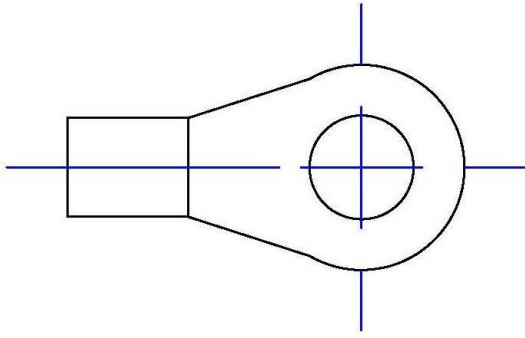
CONNECTING LEAD WIRE

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 (°C)	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°C temperature rating, 100% Nickel)

			
Wire mm ²	Size of hole	Wire mm ²	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!

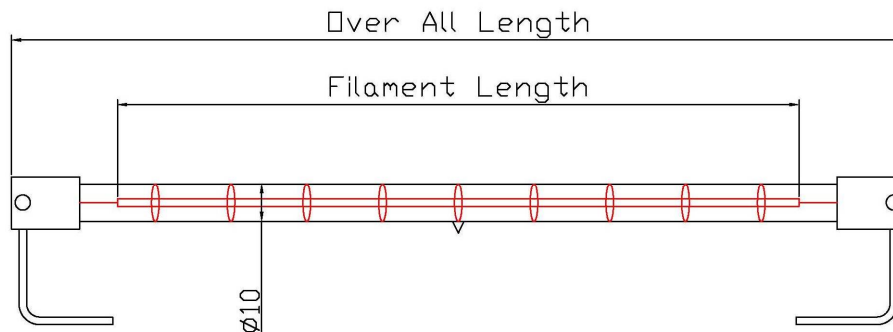
PRECAUTIONS

1. Area Heater and Hot Plate 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°C in an oven for at least 2 hours or use controllers with soft start function. This will help evaporate any moisture present inside.
2. On the Area Heater, at least two or more thermocouples are supplied, please connect them correctly. Each tubular heater should have thermocouple contact with heater, and do not let temperature of heater surface exceed 650°C.
3. Adapter area (cold zone) should be kept under 260°C
4. 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).
5. 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.

INFRARED HEAT LAMP



SHORT WAVE QUARTZ INFRARED HEATING ELEMENT



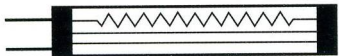

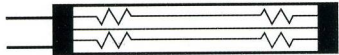
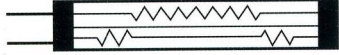

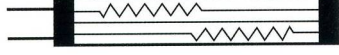
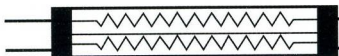
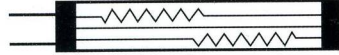
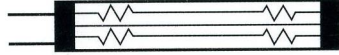
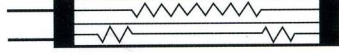

Features:

- 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

One sided connection	Two sided connection
 A  B  E  G  K  L	 C  D  F  H  J <p style="text-align: center;">More types upon your request!</p>
<p>Twin Tube</p> <p>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.</p>	
<p>Gold Reflector</p> <p>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.</p>	
<p>Features:</p> <ul style="list-style-type: none"> ● 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 	
<p>Applications:</p> <p>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</p>	

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

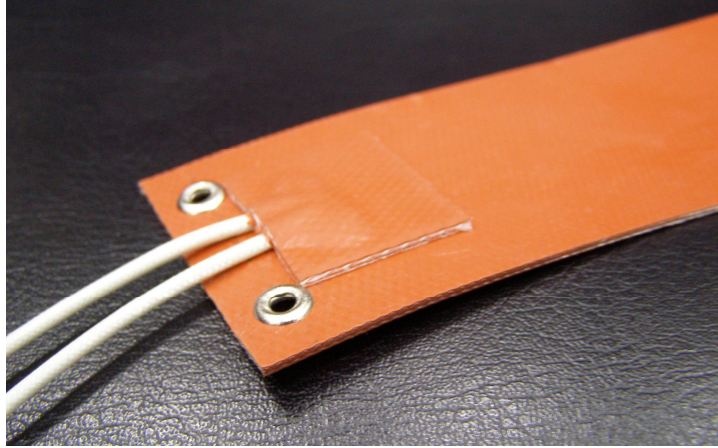
Wattage (W)	Voltage (V)	Heated length (mm)	Total length (mm)	Emitter type	Diameter (mm)*
600	115	80	145	B	23x11
1200	230	340	405	B	23x11
1500	230	200	300	B	23x11
3000	230	500	650	C	23x11
3000	400	500	600	B	23x11
3000	400	500	600	B	23x11
3000	400	1000	1100	A	23x11
4200	230	700	850	C	23x11
6000	400	1000	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/cm²

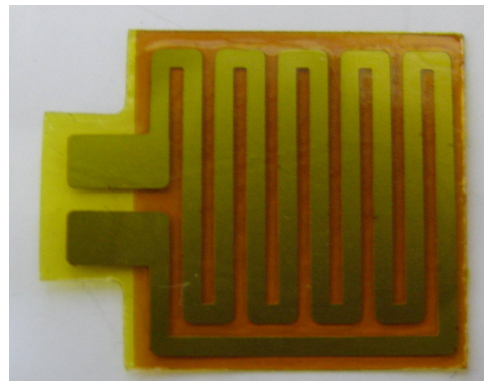
Etched foil element

Maximum area size: 290X900 mm

Maximum wattage for etched foil resistance element: up to 6w/cm²

Kapton®

A thin, lightweight transparent material from du Pont, Kapton® is designed for extremely precise heating requirement ranging from -195° to 200°C. 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 30w/cm²

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!

PIPE HEATING

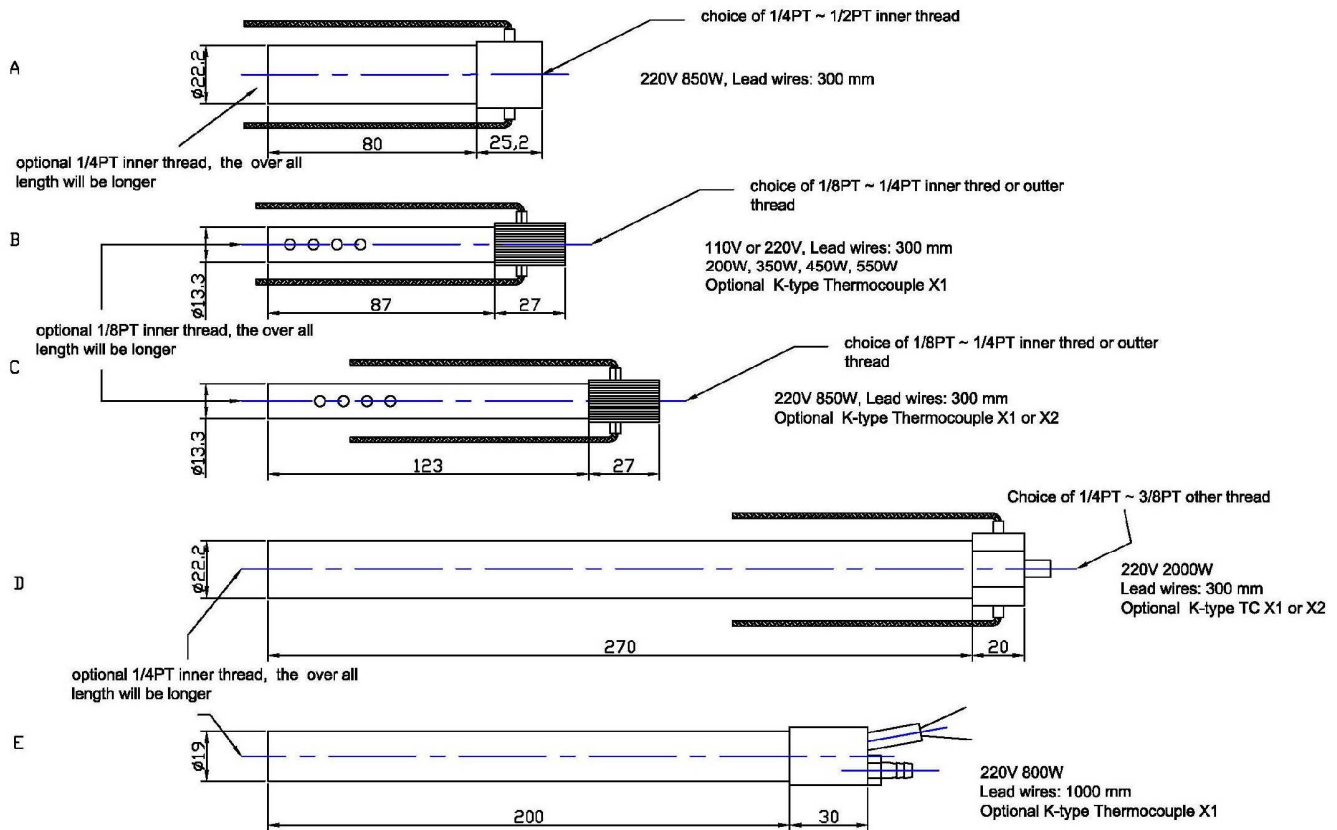


For this section, please
consult to your CT
HEATERS representative
for more detail!



AIR HEATERS

Other Air Heater Dimensions



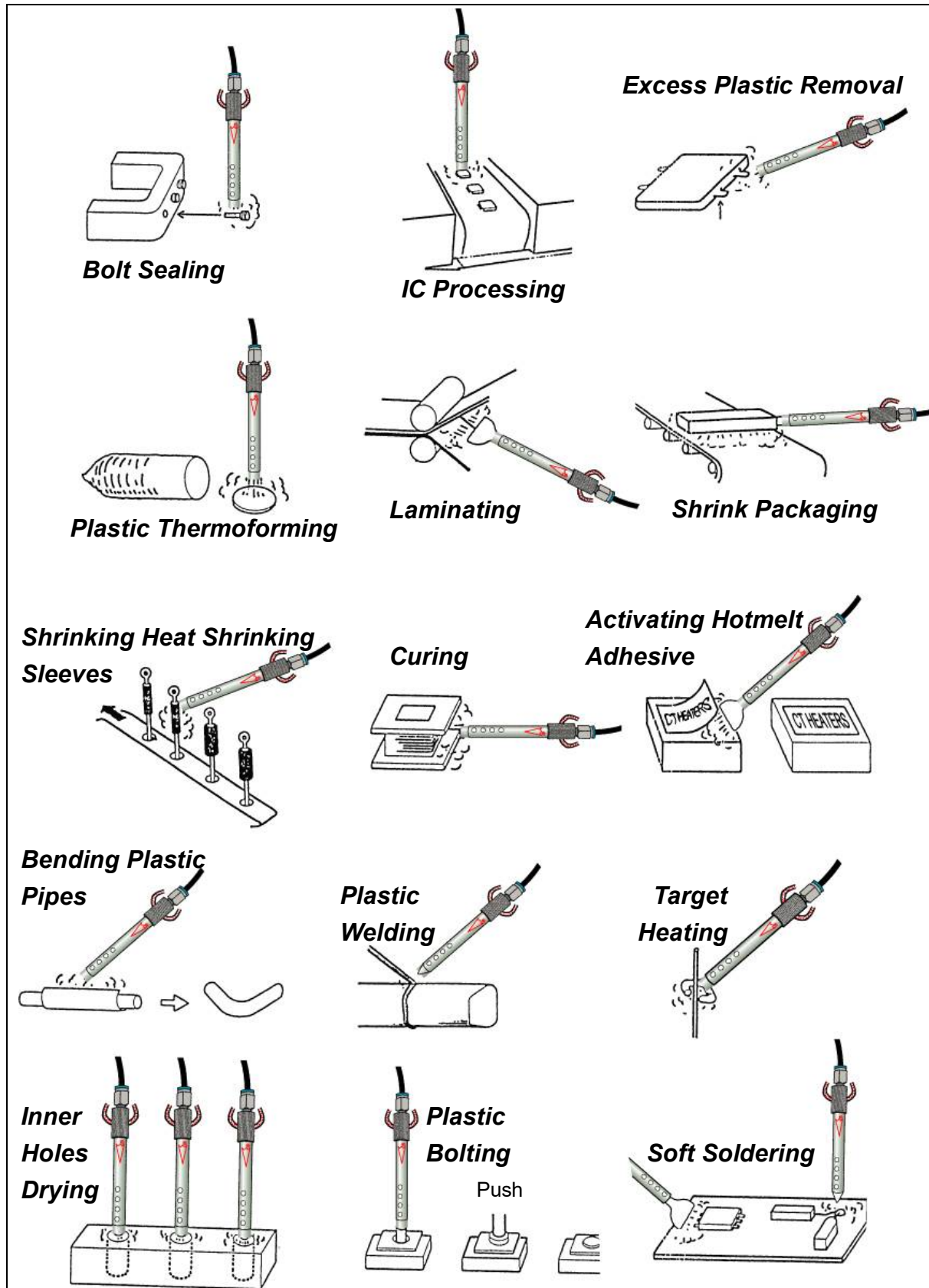
SPECIAL CAUTIONS

- ❖ 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°C.
- ❖ **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

Applications



For this section please consult with CT HEATERS representative for more information!

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°C thermostat(primary), 100°C thermostat (secondary-manual reset)

Flows 0.3 kg/c m³, 20L/min

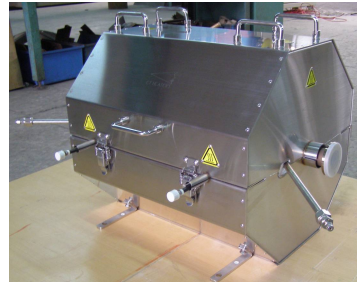
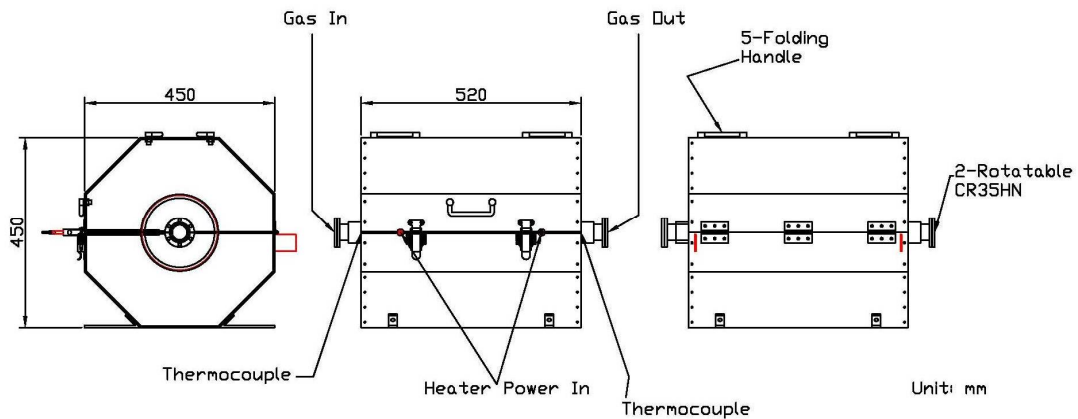
AVG.	High °C	Low °C	ΔT °C
	129.2	74.8	54.4

Flows 0.4 kg/c m³, 30L/min

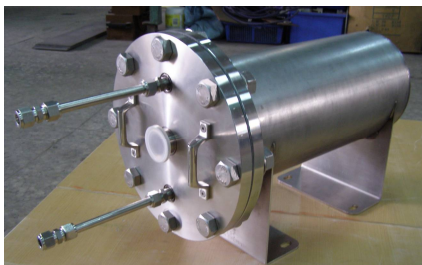
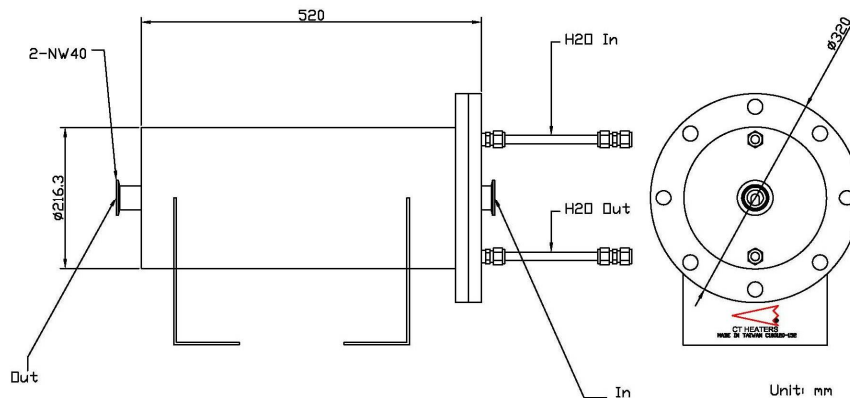
AVG.	High °C	Low °C	ΔT °C
	120.4	71.2	49.2

The GAS HEATER has built-in thermostat either 65°C or 85°C (primary-auto reset) and 100°C (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.

SCRUBBER SYSTEM: Customized small scrubber system available!



BURNING CHAMBER (maximum temperature 900°C)



COOLING CHAMBER

For this section, please contact CT HEATERS representative for more information!

THERMOCOUPLES

MOST COMMON THERMOCOUPLE TYPES

ANSI CODE	CONDUCTOR CHARACTERISTICS		TEMPERATURE RANGE		CONDUCTOR CHARACTERISTICS		IEC CODE
	POSITIVE +	NEGATIVE -	°C	°F	POSITIVE +	NEGATIVE -	
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	

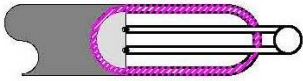
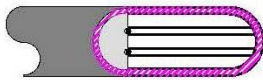
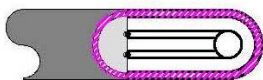
ALUMEL® and CHROMEL® are registered trademarks of the Hoskins Manufacturing Company

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

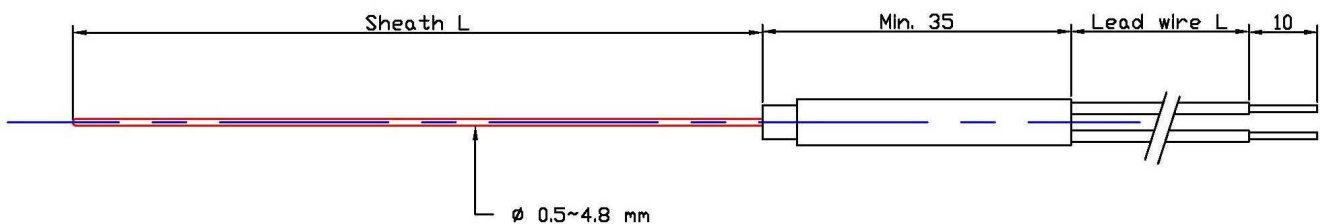
ANSI code	J	K	T	E	N	R	S	U	B
IEC code	J	K	T	E	N	R	S	U	B

JUNCTION STYLES

 <p>Exposed Junction</p>	<p>An exposed junction is recommended for the measurement of static or flowing non-corrosive gas temperatures where fast response time is required</p>
 <p>Grounded Junction</p>	<p>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.</p>
 <p>Ungrounded Junction</p>	<p>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.</p>

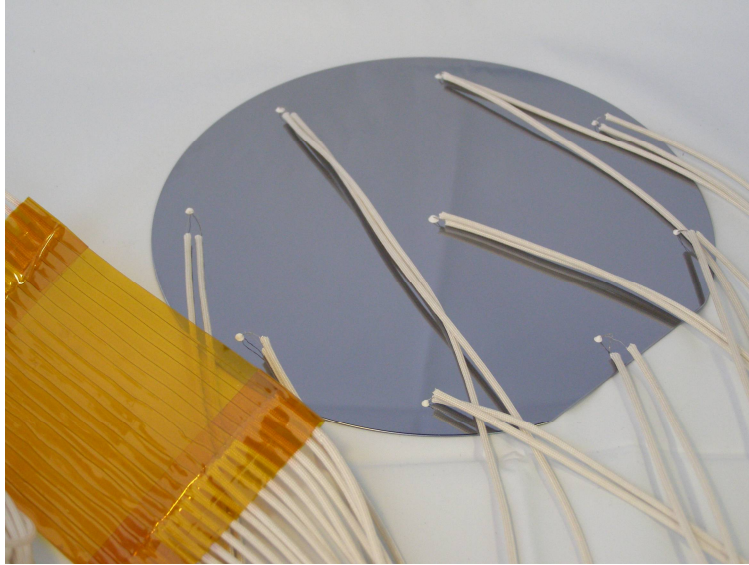
MINERAL INSULATED SHEATH TYPE

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!

TC WAFER

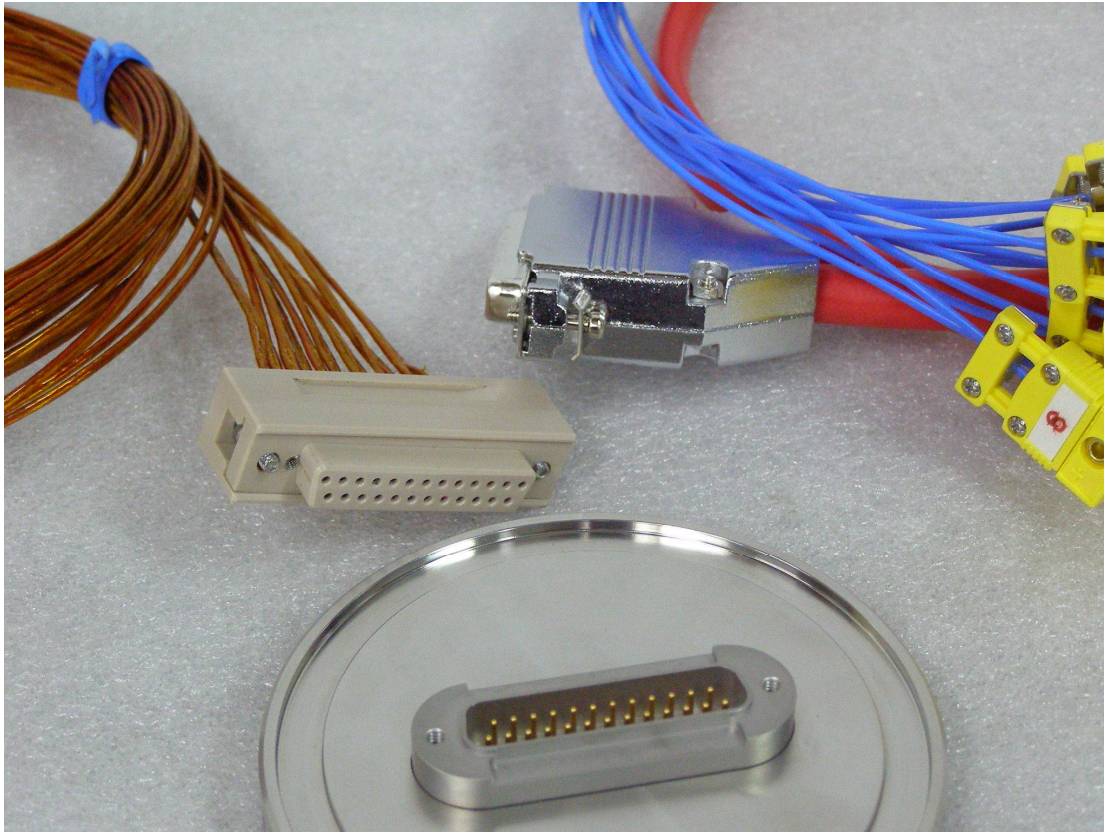


You supplied at least 2 substrates (depends on the material of substrate) and we do the rest.

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°C (for higher temperature available). The material of feed-thru is DuPont™ Kapton® polyimide films, and the temperature can withstand up to 300°C. 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!**

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!

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

TEL: +886-3-452-1328 ext 119

FAX: +886-3-452-9539

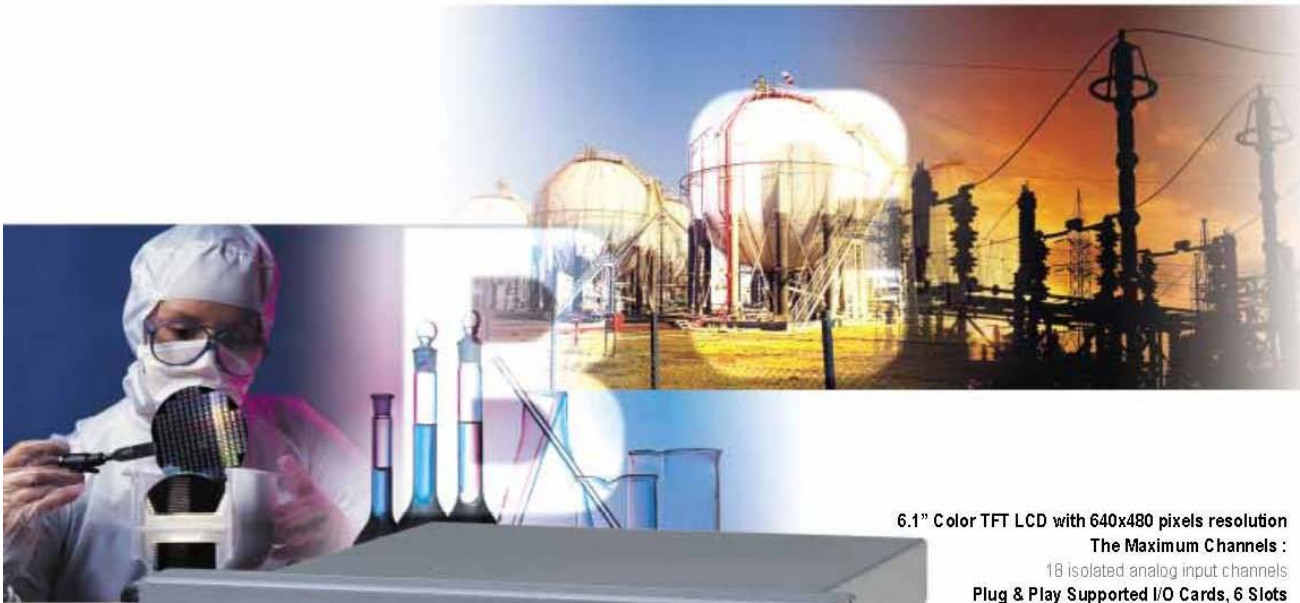
Cell: +886-988-134-016

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

Please contact CT HEATERS representative for more information!

more than heaters !

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

Programmable 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°C 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, wear and tear, or 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.

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FAX: +886-2-2596-8109

BUSINESS TAX #: 07105140

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.

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