

6 Outputs

50kVA Stock Reference: 10027/06/11/000

70kVA Stock Reference: 10026/06/11/000



The new Cooperheat 50kVA and 70kVA, 6 Output, Heat Treatment Power Sources have been developed to meet the real needs of the heat treatment engineering industry. Our design is based on almost 50 years experience as the worldwide market leader in the field of heat treatment.

The designs were driven by the need to meet five key criteria:

Value for money

When you compare the functionality and versatility of the new Cooperheat Heat Treatment Power Sources with other, similar, products in the market you will find that they significantly outperform our competitors, delivering a rapid return on investment.

Versatility

- Instant access to output channels that can be used to power either 30V or 60V heating elements without the need to change any tappings on the transformer or connect a wasted additional heating element in series
- Digital temperature controllers operate in degrees Centigrade or degrees Fahrenheit
- Temperature controllers display both set point temperature and actual work piece temperature
- Transformer secondary tappings can be changed to allow for supplying power to 40V and 80V heating elements Utilizing the integral heating and cooling ramp features allows the operator to carry out up to six separate pre-heats or full heat treatment cycles simultaneously with a single power source as indicated in the application table overleaf.



Ease of operation and maintenance

- Clear, illuminated digital displays showing actual and set point temperatures
- LED indicator light indicating 'power on' for each output channel
- Input/output sockets and instruments located on front panel allowing the back of the unit to be located against a wall when working space is limited
- Simple access to transformer tapping board and for maintenance to input/output sockets and instruments by means of a swing hinged front panel
- Connectors provided for simple connection of primary supply cable

Fitness for purpose

- Constructed from high-grade stainless steel giving excellent protection against corrosion including marine offshore applications
- Large castor wheels to facilitate mobility in normal site conditions

Safety

- CE marked in compliance with European Safety Directives
- Safe voltages employed. Voltage to earth from any single output socket is 32.5V AC.
- Automatic protection against transformer coil becoming over heated by inclusion of thermostats in the core windings
- Primary over-current protection provided by a three-phase circuit breaker

Cooperheat equipment is manufactured incorporating ISO 9001:2000 quality controlled designs. These designs are based upon the results of third party testing for compliance with European Safety Directives and Cooperheat's extensive experience in the field of heat treatment engineering.

Are you losing money and wasting time using more heat treatment sets than you actually need?

Do you have to run heat treatment sets two or three times to get the job done?

If so, Cooperheat's new Heat Treatment Power Sources provide the cost-effective solution you need!



Coopermatic 2010 Six channel Temperature Programmer/Controller

Cooperheat Introduces New Coopermatic 2010

Continuing our policy of continuous development of our range of heat treatment equipment, Cooperheat have recently introduced the Coopermatic 2010 compact, six-channel temperature programmer/controller. The use of advanced technology makes the Coopermatic 2010 the most cost effective six-channel programmer/controller available in the industry today.



The Coopermatic 2010 is a compact, automatic heat treatment control unit that incorporates a microprocessor, heat treatment process, temperature profile, programmer with set point generator and six temperature controller channels. These combine to accurately control the rate of temperature rise, hold temperature, hold time and rate of temperature fall of up to six independent control zones to follow a single programmed temperature control cycle to an accuracy of $\leq 0.25\%$ of full scale.



Standard features

- Numeric LED display of program set point temperature, hold time and actual process temperature of each control zone
- Proportional and integral temperature control
- Controls up to six control zones
- Electrically isolated inputs
- Compact and lightweight
- Ramp hold feature to ensure control zones do not fall behind the set point and to control temperature differential between control zones
- Can be programmed for ramp rates up to 999°C per hour, maximum temperature 1200°C and a maximum hold (soak) period of 99.99 hours

New features

- Lightweight and less than half the size of the Coopermatic 10.
- The use of digital rather than analogue control improves calibration stability and accuracy
- Calibration is simple. Individual channel calibration is not required
- Simple to operate with only one bank of four data entry push switches to enter rate, temperature and time program values
- Proportional band and holdback values are adjustable, internally, from a bank of four micro switches.
- In the event of mains failure the program is stored indefinitely until the mains supply is restored.
- The Coopermatic 2010 is available as a portable module in its own case for use with Cooperheat 6-output channel 50kVA or 70kVA power source units. Alternatively, the panel-mounted version can be incorporated into a self-contained heat treatment unit.

Automatic Thermocouple Attachment Unit

Eliminate expensive temperature control and recording errors as well as thermocouple failures!

Cooperheat's powerful Automatic Thermocouple Attachment Unit (TAU) helps eliminate the risk of expensive rework by enabling accurate temperature control and recording and reducing the risk of thermocouples breaking off during the heat treatment process. The TAU can also be used to attach thermocouples for many other temperature monitoring applications that require reliable temperature measurement.

One hand is better than two!

It can be difficult to attach thermocouples with manual attachment units, which require both hands to operate. Cooperheat's Automatic Thermocouple Attachment Units require only one hand to operate which can be an important safety feature when working at elevated levels or inaccessible locations.

Cooperheat's Automatic Thermocouple Attachment Unit (41756 /57)

Direct attachment of thermocouples to the work-piece by the 'capacitive discharge method' has long been established as the preferred industry standard method of attaining accurate temperature measurement of the work piece being heat-treated or monitored. Cooperheat's Automatic Thermocouple Attachment Unit utilises this method to attach various gauges of thermocouple wire to the work piece. By means of thermocouple contact sensory circuitry, Cooperheat's Thermocouple Attachment Unit will automatically discharge through the wire a few seconds after the wire comes into contact with the work piece.



Temperature Chart Recorder

Are failures in old investments costing you money?

Cooperheat temperature chart recorders are renowned for accuracy and reliability. This can often eliminate expensive re-work, caused by the failure of older, unreliable, mechanical recorders. The reduced mechanical parts, input open-circuit alarms, date/time printing, and the clarity of the latest six colour microjet printing system ensure that all interested parties have full confidence in the accuracy and authenticity of the recorded results of any heat treatment process. Reliability and accuracy are of critical importance in the heat treatment industry as they provide the only tangible evidence of the heat treatment process.

The temperature chart recorder (40007) which Cooperheat offer can record a maximum of 12 input channels from any thermocouple type. The unit can be set to meet your precise requirements prior to dispatch and, if required, the operator is also able to change any parameter. The recorder incorporates ink jet technology, which provides twelve continuous traces on a 180 mm chart. This allows the measured data to be recorded in analogue trace mode or digital data mode enabling data logs to be printed at operator-selected intervals at high speed. Information and data is also constantly available in an LED alphanumeric display.



COOPERHEAT

Cooperheat FCP Heating Elements Save You Money.

Cooperheat use the highest quality materials available in the construction of our Flexible Ceramic Pad (FCP) heating elements. These materials make Cooperheat heating elements highly durable, which extends the usable life of Cooperheat heating elements, far beyond that of our competitors. This extended life, high durability and reliability combine to save you money by:

- Reducing rework and lost time due to heating element failures.
- Reducing your annual costs for replacing or repairing failed or damaged heating elements.

Cooperheat ceramic heating elements are constructed from high grade sintered alumina ceramic beads, 80/20 Nickel-Chrome core wire and Nickel cold tail wire. The construction allows the heating element to be flexible and provide high heat transfer efficiency.

Cooperheat avoid the use of low quality ceramic beads used by many other suppliers. We insist on using high quality, ceramic beads, with a high resistance to thermal and physical shock, in the construction of Cooperheat's FCP ceramic heating elements. The important physical properties, which make these beads superior to the beads used by other suppliers, are:

- Alumina content : 95%
- Bulk density fired : 3.7 Mg/m³
- Grain size : 6µm
- Vickers hardness : 12.5 (Gpa@Hv 0.5kg)
- Rockwell; hardness : 78 (R45N)
- Compressive strength : 2000 MPa
- Flexural strength : 320MPa (ASTM C1161, 3 point)
- Young's modulus : 325 Gpa
- Thermal conductivity : 21W/m3



Specifications (All dimensions are nominal.)							
Stock Reference	Type Reference	Width (tail to tail)		Length (of heater body)		Volts V	Power kW
		mm	inch	mm	inch		
20090	CP3	75	3.00	670	26.50	60	2.70
20031	CP4	100	4.00	500	19.50	60	2.70
20032	CP6	150	6.00	335	13.00	60	2.70
20033	CP8	205	8.00	250	9.75	60	2.70
20034	CP10	255	10.00	205	8.00	60	2.70
20035	CP12	305	12.00	165	6.50	60	2.70
20036	CP15	380	15.00	145	5.75	60	2.70
20037	CP16	410	16.25	125	5.00	60	2.70
20038	CP21	535	20.50	105	4.00	60	2.70
20039	CP24	600	23.50	85	3.25	60	2.70
20040	CP10L	250	10.00	85	3.25	30	1.35
20041	CP48	1200	47.25	45	1.75	60	2.70
20042	CP20L	500	19.50	45	1.75	30	1.35
20050	CP4MG60	100	4.00	670	26.50	60	2.40
26260	CT78	25	1.00	1950	77.00	60	2.70
26261	CT36L	25	1.00	915	36.00	30	1.35
21090	CP3H	75	3.00	925	35.50	80	3.60
21091	CP4H	100	4.00	690	27.00	80	3.60
21092	CP6H	150	6.00	465	18.25	80	3.60
21093	CP8H	205	8.00	360	14.25	80	3.60
21094	CP10H	255	10.00	295	11.25	80	3.60
21095	CP12H	305	12.00	230	9.00	80	3.60
21096	CP15H	380	15.00	190	7.50	80	3.60
21097	CP17H	420	16.50	165	6.50	80	3.60
21098	CP21H	535	21.00	145	5.75	80	3.60
21099	CP33H	840	33.00	85	3.25	80	3.60
21040	CP15L	380	15.00	85	3.25	40	3.25
21041	CP66H	1680	66.00	40	1.50	80	3.60
21042	CP30L	760	30.00	40	1.50	40	1.80
21050	CP4MG80	100	4.00	800	31.5	80	3.60
22005	CP24H	610	24.00	335	13.00	220	9.90
22006	CP26H	660	26.00	335	13.00	240	10.80
22007	CP28H	710	28.00	335	13.00	255	11.50

The cold tails of Cooperheat ceramic heating elements are butt welded to the heater core wire which eliminates the cold tail/core wire junction failures often seen with low quality heaters which use steel ferrules.

Any pipe size or pipe configuration can be covered from the extensive range of Cooperheat FCP heating elements, so that the correct amount of heating power can be applied to successfully heat treat the pipe weld or other fabrication. Cooperheat FCP heating elements are manufactured with a range of power ratings for use with a selection of standard voltages.

If you require any special heating element configuration, voltage or power rating, Cooperheat will use their heat treatment engineering expertise to provide you with a heating element custom built to meet your exact needs.

If handled correctly, Cooperheat FCP heating elements can be used approximately fifty times at temperatures up to 1050°C (1922°F). Cooperheat can provide higher temperature heating elements if required which can be used repeatedly at temperatures up to 1200°C (2192°F).

If you require any special heating element configuration voltage or power rating, Cooperheat will use their heat treatment engineering expertise to provide you with a heating element custom built to meet your exact needs.

- Notes:
- 1; Stock References: 22005, 22006 and 22007 are for use up to a maximum temperature of 600°C
 - 2; Stock References: 20050 and 21050 are replacement heating elements for Flexible, Insulated Pad (FIP) heating elements (Stock Reference: 22062 and 22063 respectively) with integral magnets
 - 3; For heating elements for use at temperatures up to 1200°C add the prefix 'K' to the stock refer

Heating Element Selection Guide (For heat treatment cycles up to 800°C)							
To be used as a guide only. Reference should always be made to specific code or specification heated band width requirements.							
Nominal Bore Inches	mm	Pipe wall thickness inches / (mm)					
		0.0-0.9/(0-20)	0.9-0.9/(20-23)	0.9-1.1/(23-28)	1.1-1.4/(28-38)	1.4-1.8/(38-46)	1.8-2.4/(46-61)
1	25.4	1 x CP48	n/a	n/a	n/a	n/a	n/a
2	50.8	1 x CP8	n/a	n/a	n/a	n/a	n/a
3	76.2	1 x CP12	n/a	n/a	n/a	n/a	n/a
4	101.6	1 x CP15	n/a	n/a	n/a	n/a	n/a
6	152.4	2 x CP12	2 x CP12	n/a	n/a	n/a	n/a
8	205.2	2 x CP15	2 x CP10	2 x CP10	n/a	n/a	n/a
10	254.0	3 x CP12	4 x CP8	4 x CP8	n/a	n/a	n/a
12	304.8	4 x CP10	4 x CP10	4 x CP10	2 x 4 x CP10	n/a	n/a
14	355.6	3 x CP15	4 x CP12	6 x CP8	6 x CP8	2 x 4 x CP12	n/a
16	406.4	2 x 4 x CP12	2 x 4 x CP12	2 x 4 x CP12	2 x 5 x CP10	2 x 5 x CP10	n/a
18	457.2	2 x 4 x CP15	2 x 4 x CP15	2 x 4 x CP15	2 x 5 x CP12	2 x 5 x CP12	n/a
20	508.0	2 x 5 x CP12	2 x 5 x CP12	2 x 5 x CP12	2 x 5 x CP12	2 x 6 x CP10	2 x 6 x CP10
22	558.8	7 x CP10	7 x CP10	8 x CP10	n/a	n/a	n/a
24	609.6	2 x 5 x CP15	2 x 5 x CP15	2 x 6 x CP12	2 x 5 x CP12	2 x 6 x CP12	2 x 7 x CP10
47	1193.8	2 x 12 x CP12	2 x 12 x CP12	2 x 12 x CP12	3 x 12 x CP12	3 x 12 x CP12	3 x 12 x CP12
63	1600.2	2 x 15 x CP12	2 x 15 x CP12	2 x 15 x CP12	2 x 15 x CP12	2 x 15 x CP12	3 x 15 x CP12

Example: 2 x 12 x CP12 = Two rows of twelve CP12 FCP heating elements.





Triple cable sets

For use with heat treatment units controlling 30V, 40V, 60V and 80V heating elements. Includes two double insulated cables for power feed and return, fitted with 300A male and female connectors and one compensating cable fitted with type K thermocouple plug and socket.



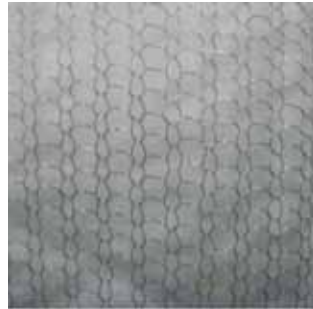
Cooperknit 500 insulation

Cooperknit 500 insulation is a cost effective silica fibre with many user benefits including, reusability, long life and low risk to user health and safety and minimal skin irritation compared with most other high temperature insulating fibers. Independent tests on Cooperknit 500 have shown that no reparable fibers were found in any samples after exposure to 1000°C for 24 hours



Splitter cables

For use with triple cable sets. Splitters are used where the operator needs to connect multiple heating elements, in parallel, to triple cable sets to enable the control of multiple heating elements. This enables the heating elements to be grouped to a single control output from a heat treatment unit to allow accurate zonal temperature control.



Superwool insulation

Superwool is a high temperature insulating fibre blanket manufactured from Calcium Magnesium Silicate. This material has a thermal performance equivalent to refractory ceramic fiber up to 1200°C. However, unlike ceramic fiber, Superwool is body soluble and has a larger needle particle size. These qualities mean that Superwool represents a lower respiratory hazard than ceramic fiber, although, as with all high temperature insulating fibre, normal respiratory protection in the form of an appropriate dust mask should be worn during handling. Superwool is available in a range of mat sizes, protected by a stainless steel mesh to extend the working life of the insulation. Alternatively Superwool can be supplied in unmeshed rolls.



Thermocouple compensating cable

Suitable for use with type K thermocouple where thermocouples in addition to the control thermocouples are required for required for temperature monitoring purposes. Available in 30m lengths complete with type K thermocouple plug and socket or in 100m rolls without plug and socket (plugs and sockets can be supplied separately as required)



High Temperature Cement

A small portion of the soft cement is fixed over the hot junction of the thermocouple, which is attached to the item being heat-treated. Once the putty dries, after 20 minutes, it hardens to protect the hot junction and helps avoid possible short circuit of the thermocouple wires which would result in temperature control and recording errors



Inter-connection cables

Used for interconnection between separate instruments and equipment when using with Cooperheat modular heat treatment equipment system.

Applications:

Ref:34013: To connect thermocouple input on controller/programmer to the recorder.

Ref:33009: To connect controller/programmer output to power source control input.



Thermocouple Connectors

Type K plugs and socket thermocouple connectors. We offer two types of thermocouple plugs, type 516-111 being the standard type normally used with compensating cable. Whereas type 516-125 'quick connection' plugs are ideally suited for use with thermocouple wire where regular connections are required. The 'quick connect' plug can be attached to thermocouple wire in seconds and reduces waste caused by the loss of terminal covers.



Thermocouple Wire

Type K nickel chrome/nickel aluminum thermocouple wire, insulated with high temperature glass braid. Recommended maximum temperature 800°C. A consumable item, which is used to convert the thermal energy at the hot junction of the thermocouple to an electrical mV signal which can then used by temperature control and recording instruments to accurately record and control the temperature of the item being heat treated.





60A In-Line Connectors
Spare connectors for repair of splitters and heating elements.



300A In-Line Connectors
Spare connectors for repair of triple cable sets and splitters.



Tie Wire
For heating element bands of less than four heating elements, soft iron wire is sufficient fixing the heating elements and insulation around the work piece



Heating Element Wire
Heating element core wire and cold tail wire for repair and manufacture of ceramic pad heating elements.



300A Panel Mounted Connectors
Spare panel mounted connector sockets for repair of heat treatment modules and heat treatment units. Supplied complete with fibre washer and lock nut.



TAU Spares
Replacement parts for Stork Cooperheat's Thermocouple Attachment Units (TAUs).



Banding machines
For tightening, cutting off and clipping mild and stainless steel banding.



Banding clips
Mild and stainless steel clips for fastening mild and stainless steel banding.



Banding tape
For bands of more than four heating elements, Stork Cooperheat recommend that mild steel banding and banding clips are used to ensure the heaters remain in full contact with the pipe. For temperatures in excess of 650°C we recommend using stainless steel banding and clips.

(Note: That mild steel banding should not be used on Chrome Moly post weld heat treatments).



Heater Repair Kits
Heater repair kits provide a cost effective method of repairing burnt out 80/20 Ni Cr heating elements by recycling heating element beads and connectors.

The repair kits include the necessary core wire with welded tails and the beads required to replace the few beads that need to be broken to break down a damaged heating element prior to repair.

The heating element 'core wire with welded cold tail kits' only include the replacement core wire with welded cold tails.

