



SOLID HEATING



**ELECTRICAL HEATING AND COOLING
SOLUTIONS
FOR THE INDUSTRY**



VULCANIC

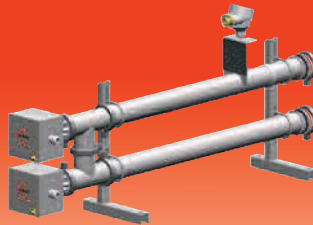
The Vulcanic group has been designing and manufacturing electrical process heating and temperature control solutions since 1973. Employing 550 people across 8 manufacturing locations, Vulcanic currently services 30 000 customers in 100 different countries across the globe and is an ISO 9001 v 2008 accredited company.



**You have an issue... let us solve it !
Vulcanic your worldwide local partner !**



Advice

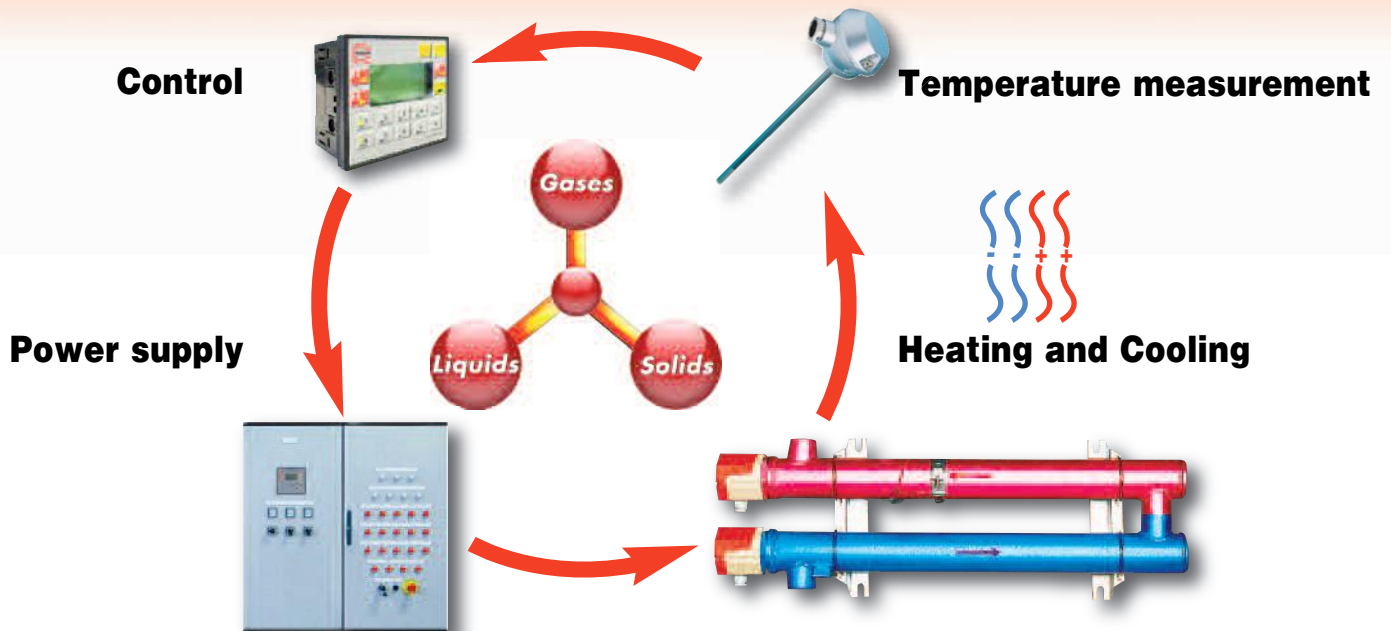


Design



Manufacturing

All in One Solutions





SERVED MARKETS



DESIGN EXPERTISE AND CODES

Vulcanic design teams support our partners from conceptual design and feasibility study throughout the life of the equipment. Our design capabilities include:

- Electrical design
- Mechanical design
- Thermal design
- Electronic design (hardware and software)
- Hydraulic design
- Automation
- Communication protocols
- Hazardous area certification



- AD 2000
- ASME
- CODAP
- EN 286

- PD 5500
- RCC-M / RCC-E
- STOOMWEZEN
- GOST



MANUFACTURING

Vulcanic offers the benefits of integrated "in house" manufacturing processes, using "state of the art" equipment to manufacture almost all components utilised within our product ranges. With only minimal dependance upon subcontractors, we remain in full control of Quality and Production schedules while maintaining a high level of know how in house.



Heating element manufacturing



CNC machining



Sensor manufacturing



Welding



Wiring

CERTIFICATION



- ISO 9001: 2008
- PED 97/23/EC cat I-IV
- ATEX 94/9/EC
- IECEx
- TR CU
- CCOE
- VDE
- UL
- DNV
- INMETRO





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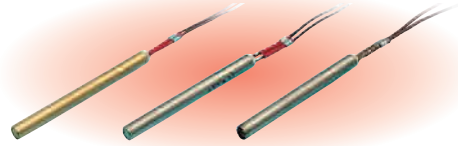


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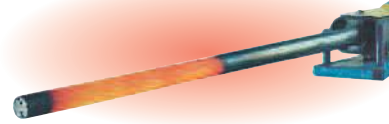


SOLIDS HEATING

Vulstar® cartridges



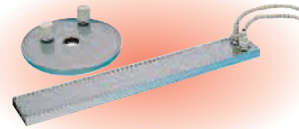
High-power heating rods



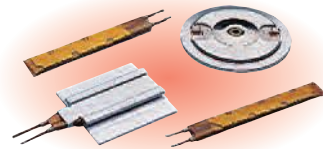
Ceramic core elements



Strip heaters



PTC resistors



Band heaters



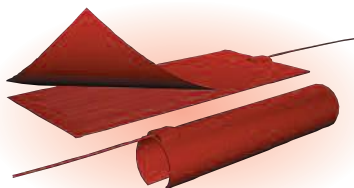
Heat tracing



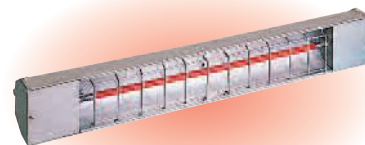
Accessories for heat tracing



Silicone heating panels



Infrared generators



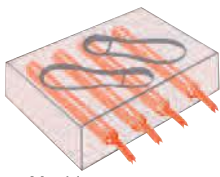
APPLICATIONS

Vulstar® cartridges are used to heat metal like moulds, dies, plates and bolts or liquid. They can be provided with a thermocouple.

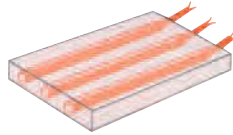


VULSTAR® cartridge with thermocouple

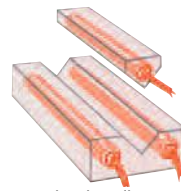
VULSTAR® must be inserted in a drilling with an H7 allowance, pre-lubricated with an anti-corrosion product to facilitate installation and removal. Where possible, this drilling must be extended by a hole through the other side for insertion of an extractor. Length L must be fully in contact with the medium to be heated. The high heat flow of VULSTAR® cartridges requires efficient temperature control with a probe (usually a J- or K-type thermocouple) installed close to the heating section.



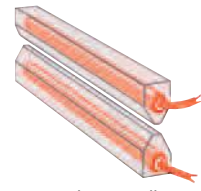
Mould



hotplates



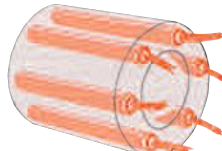
shaping dies



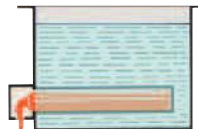
heat sealing



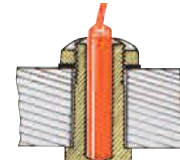
Marking appliances



band heaters

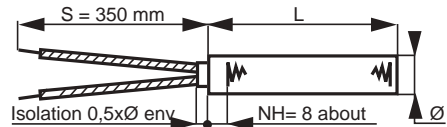


liquid heating



bolt heaters

Supply voltage up to 450 V 1P or 3P.
Load up to 40 W/cm².
Length from 25 mm to 2500 mm depending on diameter.
Diameter from 6,35 mm (1/4") up to 31,8 mm (2" 1/4).
Different types of connection to fit with the ambient temperature.

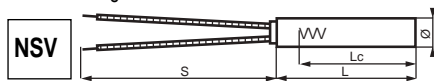


NH=Non Heating length

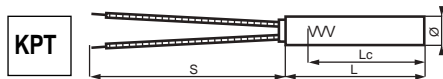
Compliance with VDE standards.

Connecting leads

Standard length S = 350mm.



2 flexible braided nickel leads, silicone-coated glass fibre insulation (max. temperature 350°C).

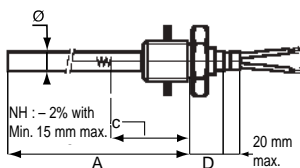


2 flexible braided nickel leads, kapton insulation (max. temperature 400°C).

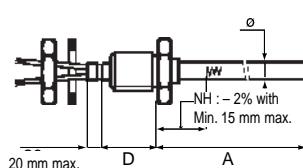
Lc = Heating length

Fitting devices

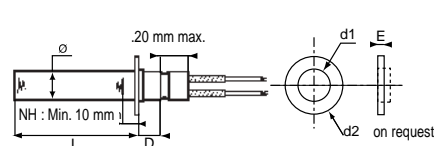
Reversed plug



Plug



Fixed stop



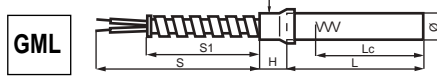
Different types of seals

WP+ (WaterProof Plus): For connection temperature up to 160°C.

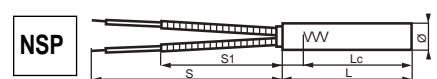
MT (Medium Temperature): Sealed for connection temperature up to 220°C in low pollution environments with low humidity and no sudden temperature changes.

HT (High Temperature): Most frequently used. Non-waterproof seal for connection temperature up to 350°C, in a humidity-free atmosphere

Protection of connecting leads

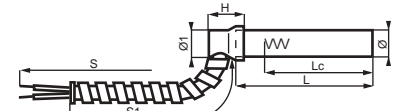


2 flexible NSV or KPT leads, mechanically protected by a flexible metal sheath attached axially.



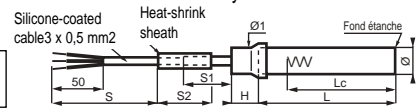
2 flexible braided nickel leads, thermally protected by ceramic beads (max. temperature 450°C).

GMAL



2 flexible NSV or KPT leads, mechanically protected by a flexible metal sheath attached radially.

SEALED



One 3-core cable, encased in resin to ensure a watertight connection.

HIGH LOAD VULSTAR® CARTRIDGES

High load VULSTAR® cartridges are especially suitable where space is at a minimum.

Cartridges in AISI 321/Din 1.4541 stainless steel. Filled with high-temperature (HT), non-watertight thermal cement.

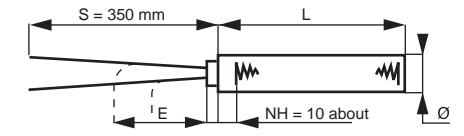
Supply voltage 230V 1 P.

2 flexible braided nickel leads with silicone-coated fiber glass insulation (max. connection temperature 350°C).

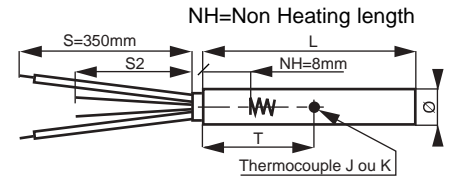
Tolerance on length : 2,5 mm min.

Ø (mm)	P/N.		Power +5% -10%	Load (W/cm ²)	L (mm)	Weight (kg)	
	WITHOUT TC	WITH TC/J					
6,5	10163-12	20163-12	20263-12	125 W	21	40	0,010
	10163-14	20163-14	20263-14	200 W	33	40	0,010
	10163-21	20163-21	20263-21	100 W	13	50	0,010
	10163-23	20163-23	20263-23	150 W	19	50	0,010
	10163-25	20163-25	20263-25	250 W	31	50	0,010
	10163-36	20163-36	20263-36	300 W	30	60	0,010
	10163-54	20163-54	20263-54	200 W	11	100	0,015
	10163-56	20163-56	20263-56	300 W	17	100	0,015
	10164-11	20164-11	20264-11	100 W	13	40	0,010
	10164-13	20164-13	20264-13	150 W	20	40	0,010
8	10164-15	20164-15	20264-15	250 W	33	40	0,010
	10164-24	20164-24	20264-24	200 W	20	50	0,010
	10164-26	20164-26	20264-26	300 W	30	50	0,010
	10164-31	20164-31	20264-31	100 W	8	60	0,010
	10164-33	20164-33	20264-33	150 W	12	60	0,010
	10164-35	20164-35	20264-35	250 W	20	60	0,010
	10164-42	20164-42	20264-42	125 W	7	80	0,015
	10164-44	20164-44	20264-44	200 W	11	80	0,015
	10164-46	20164-46	20264-46	300 W	17	80	0,015
	10164-55	20164-55	20264-55	250 W	11	100	0,015
10	10164-57	20164-57	20264-57	400 W	18	100	0,015
	10164-66	20164-66	20264-66	300 W	10	130	0,030
	10164-68	20164-68	20264-68	450 W	15	130	0,030
	10165-13	20165-13	20265-13	200 W	21	40	0,020
	10165-15	20165-15	20265-15	300 W	32	40	0,020
	10165-21	20165-21	20265-21	100 W	8	50	0,025
	10165-26	20165-26	20265-26	400 W	32	50	0,025
	10165-31	20165-31	20265-31	125 W	8	60	0,030
	10165-33	20165-33	20265-33	200 W	13	60	0,030
	10165-36	20165-36	20265-36	450 W	29	60	0,030
12,5	10165-44	20165-44	20265-44	250 W	11	80	0,035
	10165-46	20165-46	20265-46	400 W	18	80	0,035
	10165-47	20165-47	20265-47	600 W	27	80	0,035
	10165-54	20165-54	20265-54	250 W	9	100	0,040
	10165-56	20165-56	20265-56	400 W	14	100	0,040
	10165-57	20165-57	20265-57	600 W	21	100	0,040
	10165-59	20165-59	20265-59	800 W	28	100	0,040
	10165-66	20165-66	20265-66	400 W	11	130	0,050
	10165-67	20165-67	20265-67	600 W	16	130	0,050
	10165-69	20165-69	20265-69	800 W	21	130	0,050
12,5	10165-76	20165-76	20265-76	450 W	10	160	0,060
	10165-78	20165-78	20265-78	700 W	16	160	0,060
	10165-70	20165-70	20265-70	1000 W	23	160	0,060
	10166-21	20166-21	20266-21	125 W	8	50	0,035
	10166-22	20166-22	20266-22	200 W	13	50	0,035
	10166-23	20166-23	20266-23	300 W	19	50	0,035
	10166-25	20166-25	20266-25	450 W	29	50	0,035
	10166-42	20166-42	20266-42	250 W	9	80	0,050
	10166-44	20166-44	20266-44	400 W	15	80	0,050
	10166-46	20166-46	20266-46	600 W	22	80	0,050
12,5	10166-48	20166-48	20266-48	800 W	29	80	0,050
	10166-76	20166-76	20266-76	600 W	10	160	0,085
	10166-55	20166-55	20266-55	450 W	13	100	0,060
	10166-59	20166-59	20266-59	1000 W	28	100	0,060
	10166-65	20166-65	20266-65	450 W	10	130	0,075
	10166-67	20166-67	20266-67	700 W	15	130	0,075
	10166-69	20166-69	20266-69	1000 W	21	130	0,075

Model without Thermocouple (TC K/J)

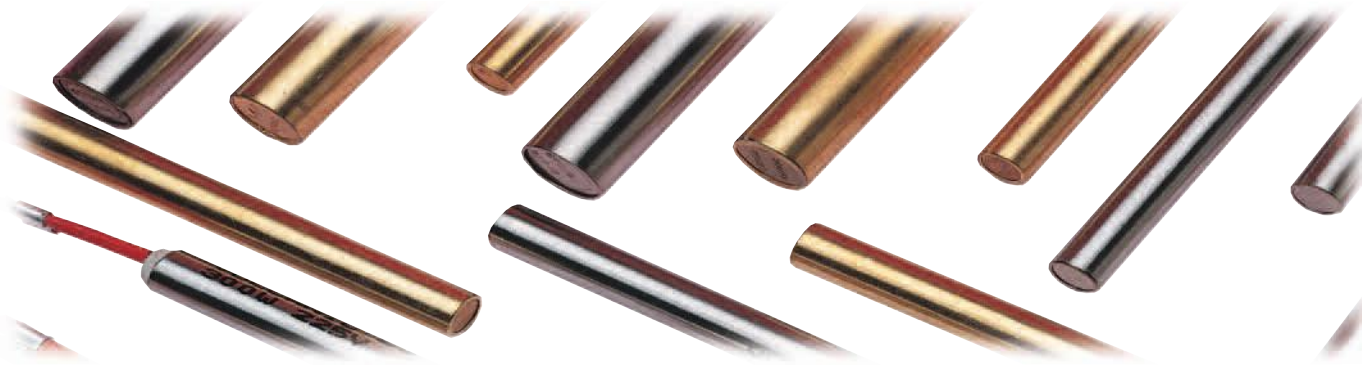


Model with Thermocouple (TC K/J)



Ø (mm)	P/N.		Power +5% -10%	Load (W/cm ²)	L (mm)	Weight (kg)	
	WITHOUT TC	WITH TC/K					
12,5	10166-78	20166-78	20266-78	800 W	14	160	0,085
	10166-96	20166-96	20266-96	600 W	8	200	0,095
	10166-90	20166-90	20266-90	1250 W	17	200	0,095
	10167-11	20167-11	20267-11	150 W	6	60	0,065
	10167-13	20167-13	20267-13	400 W	16	60	0,06
	10167-22	20167-22	20267-22	300 W	9	80	0,080
	10167-33	20167-33	20267-33	400 W	9	100	0,105
	10167-36	20167-36	20267-36	800 W	18	100	0,105
	10167-44	20167-44	20267-44	600 W	10	130	0,125
	10167-46	20167-46	20267-46	800 W	13	130	0,125
16	10167-57	20167-57	20267-57	1000 W	13	160	0,145
	10167-69	20167-69	20267-69	1500 W	18	180	0,160
	10167-76	20167-76	20267-76	800 W	8	200	0,175
	10167-78	20167-78	20267-78	1250 W	13	200	0,175
	10167-88	20167-88	20267-88	1250 W	10	250	0,220
	10167-80	20167-80	20267-80	2000 W	17	250	0,220
	10167-99	20167-99	20267-99	1500 W	10	300	0,260
	10168-23	20168-23	20268-23	800 W	11	130	0,180
	10168-38	20168-38	20268-38	2500 W	27	160	0,210
	10168-47	20168-47	20268-47	2000 W	17	200	0,260
10168-59	20168-59	20268-59	3150 W	21	250	0,320	





Ø (mm)	P/N.			Power +5% -10% (W/cm ²)	Load (W/cm ²)	L (mm)	Weight (kg)
	WITHOUT TC	WITH TC/J	WITH TC/K				
1/4" 6,35	10183-12	20183-12	20283-12	125 W	22	38,1	0,005
	10183-14	20183-14	20283-14	200 W	36	38,1	0,005
	10183-21	20183-21	20283-21	100 W	12	50,8	0,010
	10183-23	20183-23	20283-23	150 W	18	50,8	0,010
	10183-25	20183-25	20283-25	250 W	31	50,8	0,010
	10183-32	20183-32	20283-32	125 W	12	63,5	0,010
	10183-34	20183-34	20283-34	200 W	19	63,5	0,010
	10183-36	20183-36	20283-36	300 W	28	63,5	0,010
	10183-47	20183-47	20283-47	400 W	30	76,2	0,015
	10183-56	20183-56	20283-56	300 W	16	101,6	0,015
3/8" 9,52	10185-13	20185-13	20285-13	200 W	24	38,1	0,020
	10185-15	20185-15	20285-15	300 W	36	38,1	0,020
	10185-24	20185-24	20285-24	250 W	21	50,8	0,025
	10185-42	20185-42	20285-42	150 W	8	76,2	0,035
	10185-44	20185-44	20285-44	250 W	13	76,2	0,035
	10185-46	20185-46	20285-46	400 W	20	76,2	0,035
	10185-47	20185-47	20285-47	600 W	30	76,2	0,035
	10185-54	20185-54	20285-54	250 W	9	101,6	0,040
	10185-56	20185-56	20285-56	400 W	15	101,6	0,040
	10185-57	20185-57	20285-57	600 W	22	101,6	0,040
10185-66	20185-66	20285-66	400 W	11	127	0,050	
10185-67	20185-67	20285-67	600 W	17	127	0,050	
10185-76	20185-76	20285-76	450 W	11	152,4	0,060	

Ø (mm)	P/N.			Power +5% -10% (W/cm ²)	Load (W/cm ²)	L (mm)	Weight (kg)
	WITHOUT TC	WITH TC/J	WITH TC/K				
1/2" 12,7	10186-21	20186-21	20286-21	125 W	7	50,8	0,035
	10186-23	20186-23	20286-23	300 W	18	50,8	0,035
	10186-25	20186-25	20286-25	450 W	28	50,8	0,035
	10186-42	20186-42	20286-42	250 W	9	76,2	0,050
	10186-44	20186-44	20286-44	400 W	15	76,2	0,050
	10186-46	20186-46	20286-46	600 W	23	76,2	0,050
	10186-48	20186-48	20286-48	800 W	30	76,2	0,050
	10186-53	20186-53	20286-53	300 W	8	101,6	0,060
	10186-55	20186-55	20286-55	450 W	12	101,6	0,060
	10186-57	20186-57	20286-57	700 W	19	101,6	0,060
5/8" 15,87	10186-65	20186-65	20286-65	450 W	10	127	0,075
	10186-67	20186-67	20286-67	700 W	15	127	0,075
	10186-78	20186-78	20286-78	800 W	14	152,4	0,090
	10186-87	20186-87	20286-87	700 W	10	177,8	0,100
	10186-89	20186-89	20286-89	1000 W	15	177,8	0,100
	10186-98	20186-99	20286-99	800 W	10	203,2	0,110
	10187-02	20187-02	20287-02	250 W	12	50,8	0,060
	10187-03	20187-03	20287-03	400 W	20	50,8	0,060
	10187-23	20187-23	20287-23	450 W	14	76,2	0,080
	10187-36	20187-36	20287-36	800 W	18	101,6	0,095

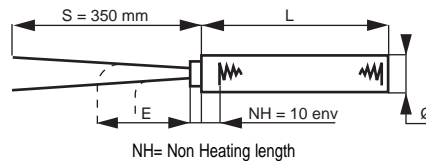
LOW LOAD VULSTAR® CARTRIDGES

These AISI 321/ Din 1.4541 stainless steel or brass heaters, with loads between 2 and 3,7 W/cm², offer a good solution for heating metal blocks and small containers to a temperature not exceeding 300°C (350°C for stainless steel models)

Sealing = HT

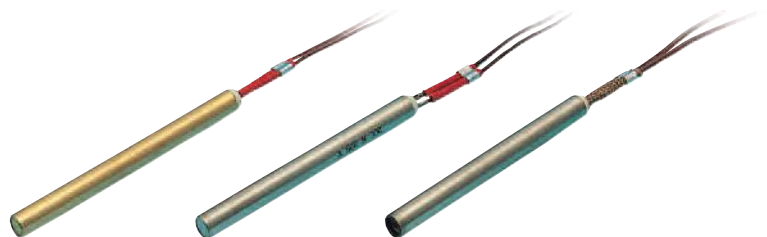
Supply voltage 230 V 1 P.

Flexible nickel braid leads with glass fiber isolation (bending possible; min. E = 15 mm).



Tolerance on length : 0/ -2,5 % min. of 2,5 mm.

P/N.	Power +5 -10%	Ø (mm)	L (mm)	Material	Weight (kg)
1004-01	100 W	9,5	100	Stainless steel	0,025
1004-02	150 W	9,5	150	Stainless steel	0,035
1004-03	150 W	14,7	100	Brass	0,060
1004-04	150 W	14,7	150	Brass	0,075
1004-05	175 W	14,7	150	Brass	0,075
1004-06	200 W	14,7	200	Brass	0,100



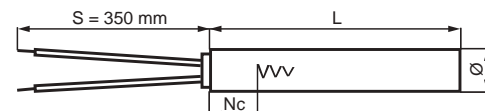
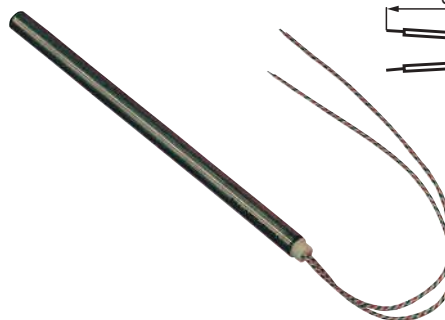
VULSTAR® MEDIUM LOAD CARTRIDGES

These cartridges have a very wide range of applications. Their 7 W/cm² load and their high temperature resistance (700°C on the sheath surface) allow a fast heating of metal blocks and small containers. The connection temperature must not exceed 300°C. Sealing = HT
Supply voltage 230 V 1 P.
Nickel braid leads with glass fiber isolation, length 350mm
Bending possible : min. 40mm

P/N.	Power(W) +5 -10%	Ø (mm)	Length L (mm)	Weight (kg)	P/N.	Power(W) +5 -10%	Ø (mm)	Length L (mm)	Weight (kg)
1008-90	50 W	6,35	50	0,010	1007-23	180 W	12,7	70	0,032
1008-93	70 W	6,35	70	0,012	1007-24	220 W	12,7	80	0,036
1008-94	80 W	6,35	80	0,013	1007-25	320 W	12,7	120	0,050
1008-91	110 W	6,35	100	0,015	1007-06	380 W	12,7	150	0,060
1007-01	80 W	9,52	50	0,015	1007-26	550 W	12,7	200	0,075
1007-18	100 W	9,52	60	0,018	1007-08	320 W	15,87	100	0,065
1007-02	180 W	9,52	100	0,025	1007-28	400 W	15,87	120	0,075
1007-21	250 W	9,52	120	0,030	1007-29	650 W	15,87	200	0,120
1007-03	300 W	9,52	150	0,040	1007-11	1000 W	25,4	200	0,290
					1007-12	1500 W	25,4	300	0,420

EXTRA-LONG VULSTAR® CARTRIDGES

To heat liquids or solids over great lengths. They are made of AISI 321 /Din 1.4544 or AISI 316L / Din 1.4406 stainless steel tube and loads up to 16 W/cm². Fixing devices available on request.



Diameter tolerance
1021 : ± 0,1 mm
1024 : -0,02 / -0,12 mm

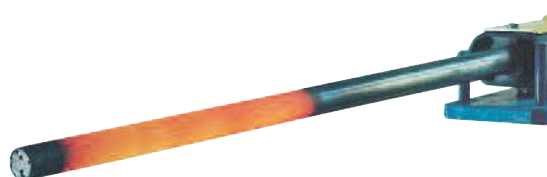
Models listed below are made of AISI 321 / Din 1.4541 tube allowing a surface temperature up to 750°C, with copper braid leads 350 mm, waterproof seals (connection temperature up to 160°C). They are fitted with J- or K-type thermocouple (diameter 1mm).

P/N.	Ø (mm)	Power (W) +5/-10%	Voltage (V)	Load (W/cm ²)	L (mm)	NH (mm)	Weight (kg)
1021-11	10	500	230 1 P	5	418	100	0,2
1021-12	10	1500	400 1 P	5	1055	100	0,4
1021-13	10	2000	400 1P	5	1374	100	0,5
1024-11	10	350	230 1P	5	323	100	0,1
1024-12	10	700	230 1 P	5	546	100	0,2
1021-21	10,2	500	230 1 P	5	412	100	0,1
1021-22	10,2	1500	400 1 P	5	1037	100	0,4
1021-23	10,2	2000	400 1 P	5	1349	100	0,5
1021-70	12,7	500	230 1 P	5	400	100	0,1
1021-71	12,7	1000	230 1 P	5	600	100	0,3
1021-72	12,7	1500	230 1 P	5	1000	100	0,5
1021-31	15,87	1000	230 1 P	5	501	100	0,4
1021-32	15,87	2000	230 1 P	5	903	100	0,8
1021-33	15,87	3000	230 1 P	5	1304	100	1,1
1021-34	15,87	4000	400 1 P	5	1705	100	1,4
1021-35	15,87	5000	400 1 P	5	2107	100	1,8
1024-31	15,87	750	230 1 P	5	401	100	0,3
1024-32	15,87	1500	230 1 P	5	702	100	0,6

P/N.	Ø (mm)	Power (W) +5/-10%	Voltage (V)	Load (W/cm ²)	L (mm)	NH (mm)	Weight (kg)
1021-35	15,87	5000	400 1 P	5	2107	100	1,8
1024-31	15,87	750	230 1 P	5	401	100	0,3
1024-32	15,87	1500	230 1 P	5	702	100	0,6
1021-41	16	1000	230 1 P	5	498	100	0,4
1021-42	16	2000	230 1 P	5	896	100	0,8
1021-43	16	3000	230 1 P	5	1294	100	1,1
1021-44	16	4500	400 1 P	5	1891	100	1,6
1021-45	16	6000	400 1 P	5	2489	100	2,1
1021-51	20	1000	230 1 P	5	418	100	0,5
1021-52	20	2000	230 1 P	5	737	100	0,9
1021-53	20	4000	230 1 P	5	1374	100	1,7
1021-54	20	4000	230 3 P	13	547	67	0,8
1021-55	20	4000	400 3 P	13	547	67	0,8
1021-56	20	6000	230 3 P	20	547	67	0,8
1021-57	20	6000	400 3 P	20	547	67	0,8
1021-58	20	7000	230 3 P	23	547	67	0,8
1021-59	20	7000	400 3 P	23	547	67	0,8
1024-51	20	1250	230 1 P	5	498	100	0,6
1024-52	20	2500	230 1 P	5	896	100	1,1

HIGH POWER HEATING RODS

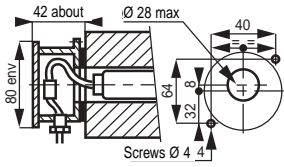
For heating liquids by forced convection from -200°C to 800°C with loads up to 100 W/cm². These heating rods are generally equipped with a thermowell inside the internal tube. AISI 316 L / Din1.4404 or AISI 321 / Din 1;4541 stainless steel tube. The tube surface is either smooth or corrugated to optimise exchange. Outside diameter 19 mm +0,15 /+0.mm.



ON REQUEST

ELECTRICAL BOXES FOR CARTRIDGE HEATERS

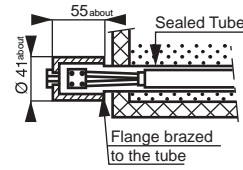
Electrical box for VULSTAR® cartridge in a drilling, P/N. 1092-01



Allows sealed connections.
includes : Ø 80mm cast iron cover
- ISO 16 bis gland n°
- 10A ceramic connection block,
- 59 x 46 gasket,



Electrical box for VULSTAR® cartridge in a thermowell, P/N. 9625-01



Allows sealed connections.
Includes : Ø 41 mm cover,
-1 flange to be brazed on the tube
(max. Ø 30mm)

HIGH TEMPERATURE LUBRICANT PASTE AND SPRAY CANS



P/N.	Operating temperature	Weight (kg)
1026-01	solid above 200°C	0,180/ 400ml



P/N.	Operating temperature	Weight (kg)
1050-01	-30/+1200°C	0,06

Dry lubrication from 200°C upwards, resists up to 1200°C

ADVANTAGES / APPLICATIONS

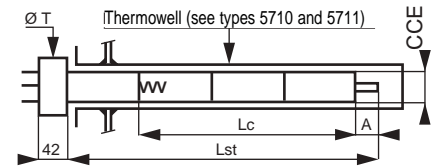
- Good lubrication of parts subjected to sliding or rolling friction.
- Simplifies installation of pressed or screwed assemblies.

- Good protection against static friction.
- Allows dismantling of screwed or jointed assemblies without binding.

CERAMIC CORE ELEMENTS

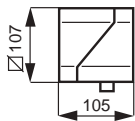
For heating liquids (when mounted in a pocket) or solids up to 450°C (load : 2,5 W/cm²) when fitted into a drilling.

Comprises coils of resistive wire inside a cylindrical ceramic core. Connection by threaded terminals on a shouldered spigot.

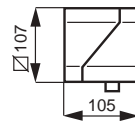


A=25 for CCE Ø47
A=35 for CCE Ø58

Lc= Heating length



IP 555 polyamide 6/6 cover for CCE Ø 47
P/N. 1199-00 (weight 0,4 kg) with gasket and gland ISO 25 Bis



IP 555 polyamide 6/6 cover for CCE Ø 58
P/N. 2081-99 (weight 0,5 kg) with gasket and gland ISO 25 Bis

P/N.	Power +5 -10%	Lst (mm)	Lc (mm)	Ø CCE (mm)	TW inside Ø.	Ø T (mm)	Load (W/cm ²)	Voltage	Weight (kg)
1103-11	1000 W	440	300	47	48	57	2,5	230 V 1P	1
1103-12	2000 W	690	550	47	48	57	2,5	230 V 1P	1,6
1103-13	3000 W	890	700	47	48	57	2,5	230 V 1P	1,8
1103-14	2000 W	440	300	47	48	57	4	230 V 1P	1,2
1103-15	3000 W	690	500	47	48	57	4	230 V 1P	1,6
1103-16	4000 W	890	650	47	48	57	4	230 V 3P	2
1103-17	4000 W	890	650	47	48	57	4	400 V 3 P	2
1101-01	2000 W	451	280	58	60	67	4	230 V 1P	1,6
1101-02	3000 W	691	400	58	60	67	4	230 V 1P	2,4
1101-03	4000 W	891	520	58	60	67	4,5	230 V 3 P	3,2
1101-05	4000 W	891	520	58	60	67	4,5	400 V 3 P	3,2
1101-04	6000 W	971	800	58	60	67	4	400 V 3P	3,5

SHEATHED RING HEATERS

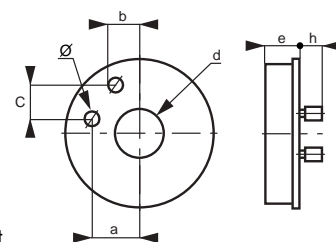
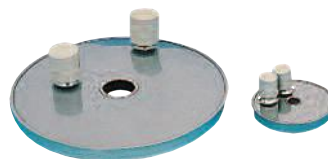
To heat circular tank bottoms up to 300°C.

A coil of resistive wire supported by ceramic insulators inside a stainless steel casing.

Loads : 4 to 6 W/cm².

They can equally be used to heat large surfaces by grouping several heaters side by side.

Supply voltage : 230V 1P.



P/N.	Power +5 -10%	Ø (mm)	d (mm)	e (mm)	a (mm)	b (mm)	c (mm)	h (mm)	Weight (kg)
8033-01	250 W	72	10	12	21	12	18	23	0,155
8033-02	300 W	88	25	12	25,5	23	20	23	0,145
8033-03	400 W	100	45	10	38	32,5	20	23	0,150
8033-04	500 W	112	21	14	28	38	17	23	0,315
8033-05	1000 W	187	28	17	76	0	48	34	0,390
8033-06	2000 W	252	40	18	106	0	41,5	34	1,990

Supply voltage : 230 V 1 P
Connection by Threaded Terminals, Ø 4 (T T 4 for 250 to 500 W) or Ø 7 (T T 7 for 1000 and 2000 W) with protective steatite cap.
T T = Threaded Terminals

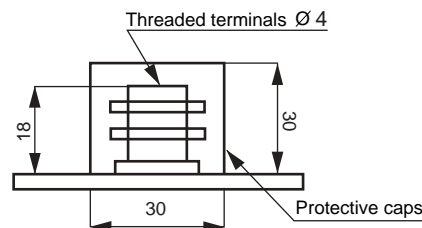
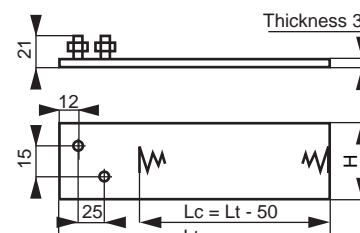
SHEATHED MICA STRIP HEATERS

To heat flat surfaces up to 300°C (hotplates, tanks, moulds, tools). Load 4 W/cm².

Must be firmly clamped to the heated surface (along the entire heated length, Lc).

With protective steatite caps.

Supply voltage : 230V 1P.



P/N.	Power +5 -10%	Lt (mm)	H (mm)	Weight (kg)
4027-05	200 W	200	40	0,090
4027-01	300 W	400	40	0,170
4027-02	400 W	500	40	0,220
4027-03	700 W	600	60	0,350
4027-04	800 W	700	60	0,390

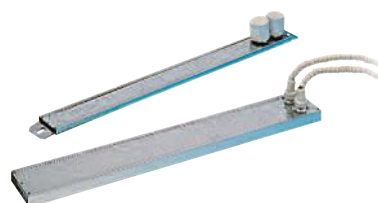
Supply voltage : 230 V 1 P
Connection by Ø 4 threaded terminals

SHEATHED STEATITE-INSULATED STRIP HEATERS

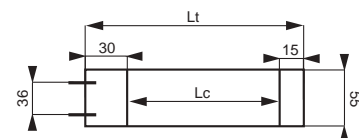
To heat flat surfaces up to 600°C (300°C for models with threaded terminals).

These ceramic-insulated elements have in a stainless steel sheath

Supply voltage : 230V 1P

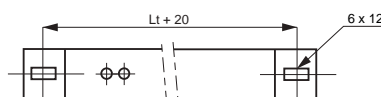
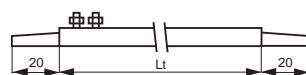
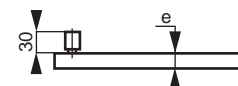
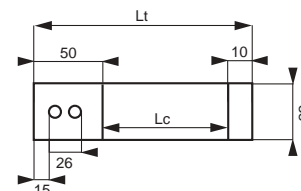


Nickel Braids with Bead insulation (N B B) depending on power length 500mm.



P/N.	Power +5 -10%	Lt (mm)	Lc (mm)	H (mm)	e (mm)	Connection TT	Weight (kg)
4033-01	250 W	225	165	38	7	T T 7	0,220
4033-02	500 W	390	330	38	7	T T 7	0,320
4033-03	750 W	390	340	55	15	N B B	0,870
4033-04	1000 W	500	450	55	15	N B B	1,070
4033-05	1500 W	730	680	55	15	N B B	1,600
4033-06	2000 W	950	900	55	15	N B B	2,000
4033-51	400 W	160	100	38	7	T T 7	0,2
4033-52	500 W	260	200	38	7	T T 7	0,3
4033-53	750 W	450	390	38	7	T T 7	1,0
4033-54	1000 W	560	500	38	7	T T 7	1,3
4033-55	1250 W	725	665	38	7	T T 7	2,3
4033-56	1500 W	930	870	38	7	T T 7	3,9

Connection by Ø 7 Threaded Terminals (T T 7) with protective steatite cap



Hole of fitting for 4033-01 and 4033-02 up to 300°C
Fixing only with 1 hole

PTC RESISTORS

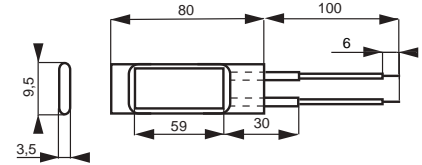
PTC resistors combine two technologies: electric heating and temperature limitation. These resistors have a high conductivity at low temperatures, but at a particular value known as the 'Curie bend', their resistance increases considerably. This technology allows automatic temperature limitation independently of the supply voltage.



Economical use, compact, and protected against overheating. According to VDE, CEE, UL, and CSA standards. Their maximum surface temperature is lower than the 'Curie point', which is set according to the size of the device and the prevalent heat-transfer conditions. Connecting several PTC elements in parallel allows warm-up time to be reduced without influencing the total power dissipated at the regulation point.

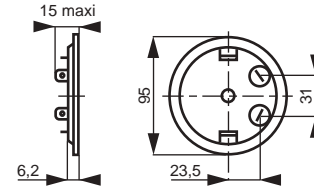
Resistor bare, for fitting in a 'sandwich' of two metal plates. Supply voltage 120 up to 240V. Connection by leads, reinforced along the first 30mm.

P/N.	Nominal Curie point.	Max. power at 230 V	Starting power	Weight (kg)
3941-21	50°C	60 W	240 W	0,01
3941-24	110°C	110 W	460 W	0,01
3941-27	180°C	170 W	520 W	0,01
3941-28	220°C	200 W	660 W	0,01



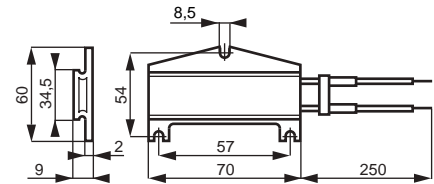
Flat circular resistor in aluminium sheath with central fixing point. Supply voltage 100 up to 240V. Connection by Two 6,35mm FASTON terminals.

P/N.	Nominal Curie point.	Max. power at 230 V	Starting power	Weight (kg)
3942-41	60°C	150 W	448 W	0,065
3942-43	120°C	270 W	820 W	0,065
3942-44	180°C	170 W	505 W	0,065
3942-45	230°C	200 W	550 W	0,065



Flat rectangular resistor in aluminium sheath, with three fixing holes. Supply voltage 120 up to 240V. Connection by leads, reinforced along the first 50mm.

P/N.	Nominal Curie point.	Max. power at 230 V	Starting power	Weight (kg)
3943-41	60°C	110 W	448 W	0,065
3943-43	120°C	210 W	820 W	0,065
3943-44	180°C	150 W	505 W	0,065
3943-45	230°C	180 W	550 W	0,065
3943-46	270°C	275 W	700 W	0,065



PTC DUCT HEATER FOR AIR

To heat a circulating air flow of up to 165 m³/h approx. in a duct of 100x100 cross-section, with automatic surface temperature limitation.

This modern technology ensures completely safe automatic control of the dissipated power.

Models comply with VDE, UL, and IEC standards.

Dimensions : 120,5 x 107 x 17,5 mm



$\Delta p = 8\text{mm WC}$ for 165m³/h

P/N.	Max. surface temp.	Max. power	Starting power	Weight (kg)
3944-01	230°C	1750 W	2400 W	0,22

Connection by FASTON terminals. PTC operating principle described above. Supply voltage : 230 V 1 P.

Air flow in m ³ /h	20	40	60	80	100
Δt input/outlet	120°C	80°C	60°C	50°C	40°C

CAST-IRON PLATES

These rugged cast-iron plates comprise two circuits of sheathed metal tubes encased in cast iron. The outer 1300W circuit and the inner 1100W circuit ensure an even temperature distribution. Several plates can be fitted side by side to make a heating table for foodstuffs or materials, up to 450°C.



P/N.	Power +5 -10%	Weight (kg)
8560-02	2400 W	11

Dimensions (mm) : width 400, height 120, thickness 45. Supply current : 230 V 1 P. Connection by spade terminals.

SHEATHED BAND HEATERS

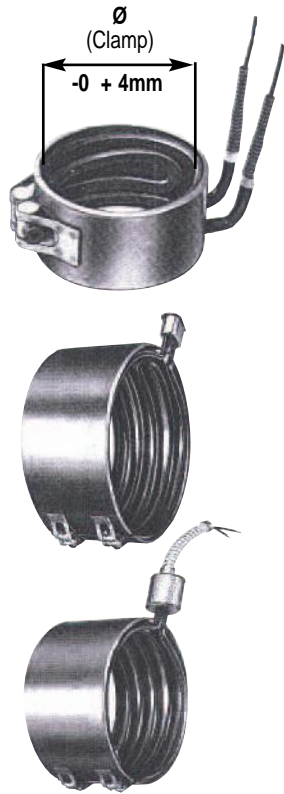
For heating cylindrical shapes up to 450°C in harsh conditions (vibration, humidity, dripping water, etc.) They consist in stainless steel tubular heating element in a flat cylindrical shape, held in place by an external clamping band which acts as a reflector. They have a higher efficiency than mica band heaters.

Supply voltage: 230 V - single phase.

Diameters available (Ø Clamp):

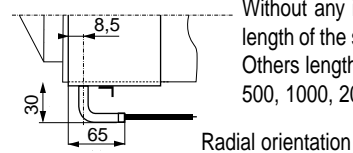
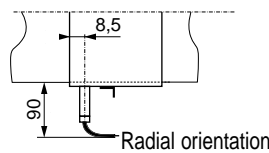
Ø60 to Ø200 mm with sheathed band heaters or symmetrical half-bands depending of your piping (side access only).

Ø > 200 mm solution available on request with symmetrical half-bands. **Bands height : 20 à 120 mm**



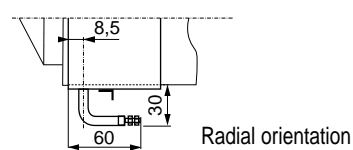
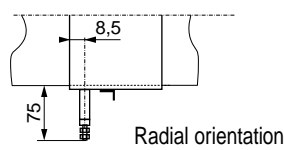
Electrical connections available on request

• **Glass fibre sheathing**

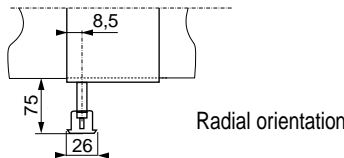


Without any information, the standard length of the sheath gains is 1500 mm. Others length available on request: 500, 1000, 2000 mm.

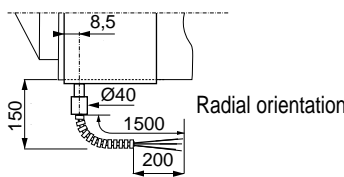
• **Threaded terminals**



• **Electric spit**

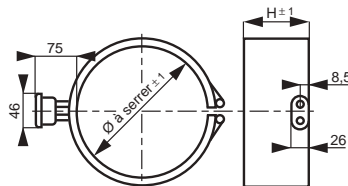


• **Flexible metal cover**



Without any information, the standard length of the sheath gains is 1500 mm. Others length available on request: 500, 1000, 2000 mm.

SEALED SHEATHED BAND HEATERS



Female extension plug P/N. 9565-01

REF.	Power +5 -10%	Ø Noml (mm)	Ø Clamp (mm)	H (mm)	Weight (kg)
4750-10	620 W	100	96 to 105	40	0,38
4750-11	620 W	110	106 to 115	40	0,42
4750-12	620 W	120	116 to 125	40	0,45

REF.	Puiss. +5 -10%	Ø Nom. (mm)	Ø Clamp (mm)	H (mm)	Weight (kg)
4750-13	800 W	130	126 to 135	40	0,49
4750-14	800 W	140	136 to 145	40	0,53
4750-15	1000 W	150	146 to 155	40	0,57
4750-16	1000 W	160	156 to 165	40	0,60

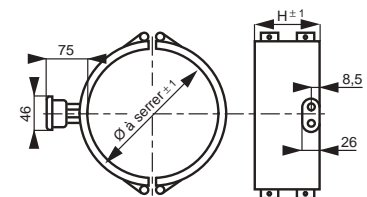
REF.	Power +5 -10%	Ø Nom. (mm)	Ø Clamp (mm)	H (mm)	Masse (kg)
4750-17	1000 W	170	166 to 175	40	0,65
4750-18	1250 W	180	176 to 185	50	0,69
4750-19	1250 W	190	186 to 195	50	0,73
4750-20	1250 W	200	196 to 205	50	0,77

SEALED SHEATHED BAND HEATERS IN TWO HALVES

Built in the same way as the preceding heaters, they are made of two symmetrical half-bands, allowing them to be fitted to cylinders where access is only possible from one side.

Supply voltage: 230 V 1 P.

P/N.	Power +5 -10%	Ø Nom. (mm)	Ø Clamp (mm)	H (mm)	Weight (kg)
4755-13	800 W	130	126 to 135	50	0,51
4755-14	800 W	140	136 to 145	50	0,55
4755-15	1000 W	150	146 to 155	50	0,59
4755-16	1000 W	160	156 to 165	50	0,63
4755-17	1000 W	170	166 to 175	50	0,66
4755-18	1240 W	180	176 to 185	50	0,70



Female extension plug P/N. 9565-01

P/N.	Power +5 -10%	Ø Clamp (mm)	H (mm)	Weight (kg)
4755-19	1240 W	190	186 to 195	0,74
4755-20	1240 W	200	196 to 205	0,78

← Power available for 2 half-bands →



APPLICATIONS FOR HEAT TRACING

FROST PROTECTION, TEMPERATURE MAINTENANCE, HEATING of fluids in pipework, vessels and ANTICONDENSATION of enclosures (electrical cabinets...)

Use	FROST PROTECTION				TEMPERATURE MAINTENANCE or HEATING					
	Material pipework, tank : Metal									
Maxi Temperature	Material pipework, tank : PVC									
	35°C	45°C	65°C	85°C	120°C	150°C	200°C	250°C	450°C	900°C
Technologies										
Self regulating	Pipework									
Constant wattage	Pipework - Vessel									
Insulated mineral cables					Pipework - Vessel					
Fibre glass braided insulation					Pipework - Vessel					
Insulated mineral panels					Vessel					

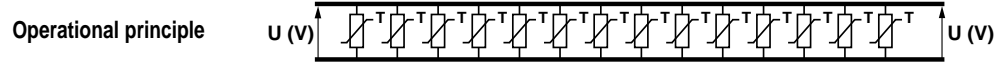
- HVAC** Frost protection and condensate discharge pipes. Glass demisting of refrigerating cabinets.
- Buildings - roads** Frost protection of domestic waters pipe, garages, gardens, roofspaces, and parking areas, loading bays, sprinkler systems, Temperature retention of bitumen for road construction, sanitary water, water protection against legionella.
- Industry - Petrochemical** Temperature maintenance of petrochemical processes, oil and gas pipework, corrosive liquids including in hazardous areas, heating of pharmaceutical and cosmetics products sensitive to cold temperatures.
- Medical care - Food and beverage** Anti-condensation of electrical cabinets, engine start-up, including in hazardous areas temperature retention for gluing processes, polymers mouldings, and food preparations (Chocolates, ...).

TECHNOLOGY

Self regulating (120°C max)

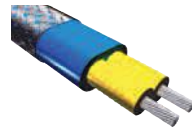


The heating cable core is made with conductive plastic. Two parallel conductive wires distribute the current to a sheath of semi-conductive polymers insulated by an external insulation. The self regulating technology enables you to cross the cables or overlap without any danger. The self regulating cable in combination with an ambient thermostat will be more energy efficient during the winter periods (500 hours / year maxi vs 8700 hours / year without thermostat). **CAUTION:** a C curve circuit breaker must be used.



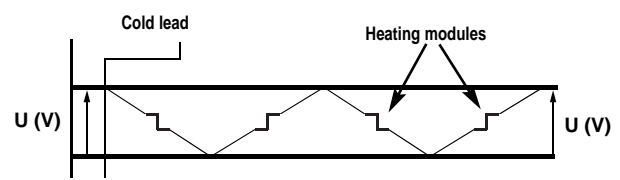
Self regulating cables performances	Cable Temperature																					
	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110 °C
P/N.	→																					
26157-00	15																					
26153-10	15	14	13	12	11	10	9															
26155-20 26183-10	26	24	22	20	19	17	15															
26170-30	30	28	27	26	25	24	23	22	21	20	17											
26165-10 26170-00	30	29	29	28	27	26	26	25	24	23	21	20	20	19	18							
26165-00	40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	20
26174-50	50	49	48	46	45	44	43	41	40	39	35	34	33	32	30	29	28	27	26	24	23	22

Constant wattage (120°C max)



Constant wattage, no variation of the efficiency, 2 conductive wires are insulated and connected at regular intervals to a coiled resistive element. The constant current is provided between 2 fixed points on the conductive wires (W/m). **Caution:** these cables must be controlled by a thermostat, and their technology doesn't allow any contact by crossing or overlap.

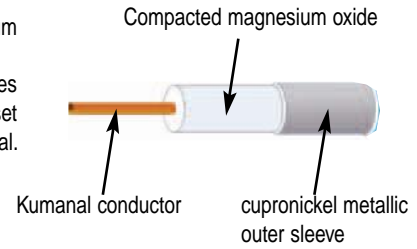
Operational principle



Insulated mineral heating cables (450°C max)



The cable consists of Kumanal conductor insulated by a compacted magnesium oxide and by stainless steel outer sleeve. Through their high power (15 up to 65W/m) and metallic sleeves, these cables with mineral insulation offer optimum heat transfer. They are supplied at set length with a cold section at each end parts and two power supplies terminal. They must be controlled by a thermostat device (see on pages 97-98)



Heating cables with fibre glass braided insulation (900°C max)



The heating cables maintaining a constant power are used to apply a strong concentration of heat within a reduced time and in a dry atmosphere. They are isolated by a fibre glass twine (not waterproof). Powerful, ready for use. Very flexible, these heating cables are only available in defined lengths and must be controlled by a temperature control device.

Why use a thermostat or humidistat with heating cables ?

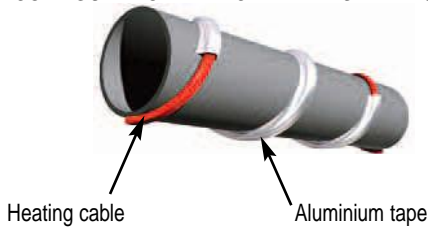


Heating cables are automatically controlled by a thermostat or humidistat with a set temperature or relative humidity. This will enable their electrical consumption to be reduced and their life extended. (see thermostat and humidistat range for heating cables on pages 97 and 98).

Installation of heating cables on pipes

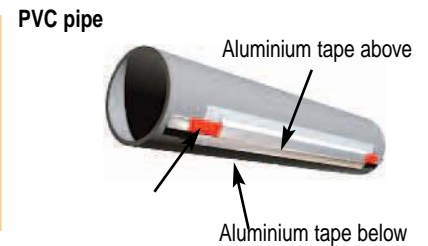
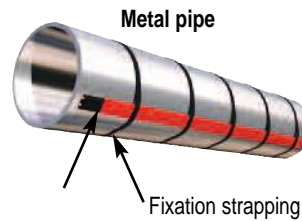
Power requirements per meter > Heating cable power output:

CONFIGURATION WITH CABLE TWISTED IN SPIRAL



Power requirements per meter ≤ Heating cable power output:

CONFIGURATION WITH CABLE IN LINE



It is best to apply two heating cables in line for a better warm exchange and easy of installation

FROST PROTECTION OF PIPES

(Make sure that the trace piping installation is protected by a 30 mA circuit breaker (C curve))

Technology heating cable	Piping material	NON ATEX and ATEX 	Power at 5°C	Lg Mini	LG Maxi (W/m)	Temp. Maxi voltage (m)	Temp. Maxi voltage (m)	Braid on	Outer jacket off	P/N.		
Self regulating (Power output according temperature. See performance table on page 94)	Metal or Plastic	NON ATEX CSTB	15	5	70	45°C	65°C	x	x	26157-00		
		NON ATEX CSTB	15	5	110	65°C	75°C	✓	x	26153-10	Without outer jacket FEP With stainless steel braid	
	Metal	 II 2 GD Ex e IIC T6 Gb	26	5	110	65°C	75°C	✓	✓	26155-20	With outer Fluoro-polymere (High resistance to chemicals.)	
Constant wattage	Metal	NON ATEX	20	5	110	45°C	125°C	x	x	26281-00	Transparent sheath to locate easily the heating modules and cable cutting.	
Constant wattage (thermostat set at 3°C) Ready to use	Metal or Plastic Ø1" mini	NON ATEX	15	1							26178-01	 Equipped with an earth wire conductor
			15	2							26178-02	
			15	4							26178-04	
			15	8				65°C	x	x	26178-08	
			15	10							26178-10	
			15	18							26178-18	
			15	24							26178-24	
15	37							26178-37				

CAUTION : PVC piping must be equipped with an earth wire conductor.



TEMPERATURE MAINTENANCE OF PIPES

Temperature maintenance Maxi	Technology Heating cable	Piping material	NON ATEX and ATEX	Power at 5°C (W/m)	Lg Mini (m)	LG Maxi (m)	Temp. Maxi (volatge on)	Temp. Maxi (Voltage off)	Braid	Outer jacket	P/N.			
35°C	Self regulating (Power output according temperature. See performance table on page 94)	Metal	II 2 GD Ex e IIC T6 Gb	26	5	110	65°C	75°C	✓	✓	26155-20	without outer jacket FEP		
			NON ATEX CSTB	26	5	110	65°C	75°C	✓	x	26183-10			
65°C			NON ATEX CSTB	30	5	110	85°C	125°C	✓	x	26170-30	With outer jacket FEP		
85°C			NON ATEX	30	5	110	120°C	200°C	✓	x	26170-00			
			II 2 GD Ex e IIC T6 Gb	30	5	110	120°C	200°C	✓	✓	26165-10			
			NON ATEX	50	5	110	120°C	200°C	✓	✓	26174-50			
120°C			II 2 GD Ex e IIC T3 Gb	40	5	65	120°C	205°C	✓	✓	26165-00	Fluoropolymer High resistance to chemicals.		
120°C			Constant wattage Extra flat (400V on request)	Metal	NON ATEX	30	5	110	120°C	260°C	✓	x	26182-00	Transparent sheath to locate easily the heating modules and cable cutting.
105°C			Constant wattage	Metal	NON ATEX	30	1		105°C	200°C	Without braid Silicon sheath Section 9,75 x 5,25 mm		26175-03	Silicone heating tapes
						30	2	26175-06						
	30	3				26175-09								
	30	4				26175-12								
	30	5				26175-15								
	30	6				26175-18								

TEMPERATURE MAINTENANCE AND HEATING OF TANK AND PIPES

Temperature maintenance Maxi	Technology Heating cable	Raw material piping	NON ATEX and ATEX	Power in at 5°C (W)	Lc Mini (m)	Outer sheath	P/N.	
250°C	Insulated mineral cable (constant wattage)	Metal	NON ATEX	880	60	Cupronickel sheathed	26107-02	Fitted with a 1m long cold lead at both ends, with a sealed grommet to connect to an IP55 box. Ref 9650-02 (see accessories on page 97)
				1150	45		26107-05	
				1500	55		26108-05	
				1650	60		26106-25	
				1800	55		26106-26	
				2000	50		26106-27	
				2200	45		26106-28	
				2500	40		26106-29	
				2850	35		26106-30	
				450°C	Insulated fiber glass braided Non waterproof IP20		Metal	
250	1	26158-02						
375	1,5	26158-03						
500	2	26158-05						
750	3	26158-07						
450°C	900°C (without voltage)			180	0,5	26159-01		
540				1,5	26159-05			
760				2	26159-07			
930				2,5	26159-08			

INSULATED MINERAL PANELS: TEMPERATURE MAINTENANCE OR HEATING OF TANKS

Temperature maintenance Maxi	Technology Heating cable	Tank material	Power in at 5°C (W)	Dimensions (mm)	Outer sheath	P/N.	
200°C	Insulated mineral cable Fixed to a perforated zinc-coated steel sheet	Metal	600	500 x 1000	Cupronickel Sheathed	26160-01	Insulated mineral panels for tank heating.
			600	750 x 1000		26160-02	
			960	750 x 1000		26160-03	
			600	1000 x 1000		26160-04	
			960	1000 x 1000		26160-05	
			960	1500 x 1000		26160-06	
			1750	1500 x 1000		26160-07	
			1100	2000 x 1000		26160-08	
			1750	2000 x 1000		26160-09	
			2200	2000 x 1000		26170-01	
			3800	2000 x 1000		26170-02	

ACCESSORIES FOR HEATING CABLES

REF.	Description		REF.	Description	
26181-99	Universal set for lead and junction (replace Ref. 26179-90) • Supply voltage connection: 2 thermoshrinkable sleeve Ø3mm, lg 40 mm • Wires insulation: 1 thermoshrinkable sleeve 60x12 mm to fix the outer jacket on the junction side, 1 thermoshrinkable sleeve 60x12 mm to insulate the leads end, 2 thermoshrinkable sleeve 40x12 mm and 1 silicone sleeve with a silicone tube also usable for leads on the jobsite (Atex zone).		9671-05	Standard polyamide cable gland ISO 25 for supply voltage (gasket, nuts and oblong silicone gasket).	
26179-92	Quick connector to plug 1 heating cable to the supply voltage 230V or to interlink 2 heating cables. <i>Gaskets supplied suitable heating cables with or without outer jacket.</i>		26179-75	Ex e cable gland ISO 25 suitable to Ex e junction box ref 9649.20, and connection to ATEX heating cable with outer jacket and braid.	
26179-93	Quick connector to plug 2 heating cable to the supply voltage 230V or to interlink 3 heating cables. <i>Gaskets supplied suitable heating cables with or without outer jacket.</i>		26179-13	Kit with an insulation bulkhead fitting + 1 cable gland ISO 20 + oblong silicone gasket suitable to heating cables with or without outer jacket and junction boxes.	
26179-50	Standard polyamide cable gland ISO 20 + oblong silicone gasket suitable cables with or without outer jacket.		26179-95	Aluminium adhesive tape for cable installation in piping (Temp. maxi -50/+150°C).	
26181.95	Universal silicone sleeve 100 x 15 mm. Mandatory for ATEX zone.		26180-05	Pack of 10 aluminium standard labels.	
			26179-20	Silicone tube for filling the sleeve on the lead opposite to the supply voltage, 3 fillings max (respect the polymerization time). Mandatory with ATEX zone.	

NON ATEX AND ATEX JUNCTION BOXES - Ex e

P/N.	Connection	Description		P/N.	Connection	Description	
9649-00	1 inlet for supply voltage + 2 outlets max for heating cables	Polyamide junction box IP55 107x107x105 mm with mounting brackets + 2 cable glands ISO 20 + 1 cable gland ISO 25 for supply voltage. One ceramic terminal block + 2 gaskets for cable with outer jacket + 2 gaskets for cable without outer jacket.		9649-20	1 inlet for supply voltage + 3 outlets max for heating cables	ATEX junction box, polyester-fiberglass, protection Ex e IP55 121x121x75 mm with mounting brackets + 4 cable glands ISO 25 with suitable gaskets + 3 polyamide lids in case of only 2 heating cables connected. Ceramic terminal block (Ex d junction box available on request).	
9650-02	1 inlet for supply voltage + 2 outlets max for heating cables	Aluminium junction box IP55 95 x 95 x 70 mm with mounting brackets + 2 cable glands ISO 16 BIS + 2 outlets for insulated mineral cables connection or PAMI equipped with ceramic block with threaded terminal.					

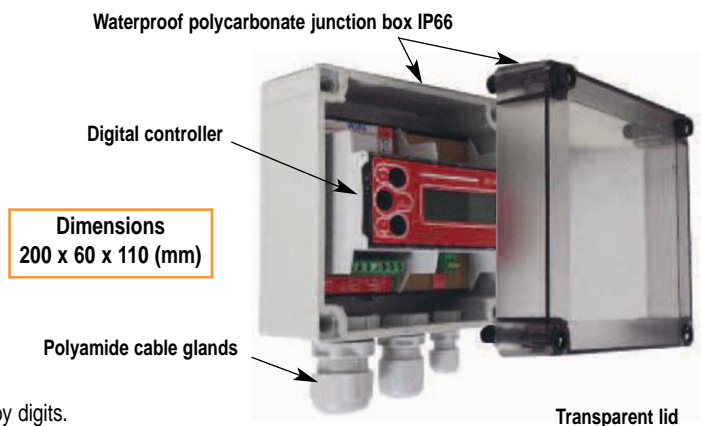
DIGITAL CONTROL UNIT WITH WATERPROOF JUNCTION BOX IP 66

Description	P/N.
Digital temperature controller under waterproof junction box	9028-01
Sensor PT100 Ohms Ø 4 mm lg= 50 mm Cable lg = 5 m	9028-02

Temperature controller « On/Off », compact, easy to use, suitable to control immersions heaters, heating cables, or silicone heating panels **up to 3,5 kW**.
 Controlling a heating power over 3,5 kW requires an installation with an electromechanical relay.

Main specifications:

- Temperature measured, setting point, relay output position are indicated by digits.
- Input temperature PT100 2 wires (-50°C.....+250°C), with long length compensation integrated.
- Message « Err LO/Hi » in case of temperature sensor broken or in short circuit.
- Very easy to configurate with push button **temp +/temp-**; setting of hysteresis and short cycle protection.
- Relay output with close contact when temperature measured is lower the set temperature. Breaking capacity 16A/230V single phase.
- Waterproof and transparent casing IP 66. Resistant against shock and vibration.
- Cable glands suitable to supply voltage cables from Ø6 up to 13 mm.



NON ATEX AND ATEX CONTROL THERMOSTATS

AMBIENT AIR CONTROL THERMOSTAT - IP 55

This outdoor control thermostat IP55 allows to reduce energy consumption with the power off or power on of heating cables used for frost protection (self regulating cables) during the winter time (500 hours/year vs 8700 hours/year).



P/N.	Applications	Description
9014-50	<ul style="list-style-type: none"> Outdoor installation. Frost protection of water tanks, pipework, mechanical processes, vessels, and pools.... 	Thermostat range: - 5 up to 30°C Sealable IP 55 cover Change over contact, breaking capacity 10A/250VAC. Normally closed contact Hysteresis 3°C Dimensions: 122x 120x55 mm

CONTROL THERMO-HUMIDISTATS ANTI-CONDENSATION - IP 30

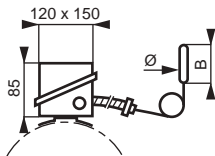


P/N.	Applications	Description
9014-98	Control of a self regulating heating cable by a humidistat (relative humidity HR %) avoids condensation in electrical cabinets, enclosures and rooms.	Humidistat range 35% up to 100% . (HR %) Change over contact, breaking capacity 5A/230VAC . Dimensions: 75x 75x27 mm



P/N.	Applications	Description
9014-99	Control of a self regulating heating cable by a thermo-humidistat (ambient temperature + relative humidity HR %) avoids condensation in electrical cabinets and enclosures and rooms.	Thermo-humidistat range 10 °C up to 35°C – 35% up to 100% . (HR %). Change over contact, breaking capacity 5A/230V (humidistat) Change over contact, breaking capacity 10A/230V (thermostat). Dimensions: 127,5x 75x27 mm

CONTROL THERMOSTATS FOR HEATING CABLES - IP 55



P/N.	P/N spare part thermostat	Range (°C)	Ø bulb (mm)	B (mm)	Capillary length (mm)	Weight (kg)
9014-11	9014-31	+30 / +110	8	90	1000	2
9014-12	9014-32	-20 / +30	8	143	1000	2

Liquid expansion type thermostat for heating cables, in an IP 55 box fitted with fixing lugs on the insulating cover, with copper capillary.

Single-pole double-throw open contact, breaking capacity 16 A /400 VAC.
 Cable glands: ISO 16 bis and ISO 20 bis.

ATEX CONTROL THERMOSTATS CERTIFIED FOR DUST AND GAS - Ex de - IP 65



Ambiance



Contact/surface

P/N.	Range (°C)	Capillary length (mm)	Type	Weight (kg)
6023-02	-20 / +40 (T6)	70	Ambient	0,6
6023-03	0 / +50 (T6)	1000	Contact/surface	0,6
6023-04	0 / +120 (T4)	1000	Contact/surface	0,6

These ATEX thermostats are certified for zone 1 with an ambient temperature from -40°C up to 40°C (T6) or -40°C à +50°C (T4).

Protection: Ex de IIC T6 (T3 on request)

Junction box: IP 65

Dimensions: 122x120x90 mm

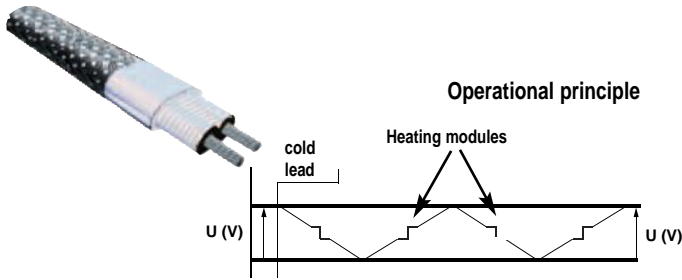
Breaking capacity: 10A/230VAC

Atex marking: II 2 G Ex de IIC T6 Gb or II 2 G Ex de IIC T4 Gb for hazardous atmospheres and II 2 D Ex tb IIC T85° Db et II 2 D Ex IIC T130 Db for explosive ambient with conductive dust.

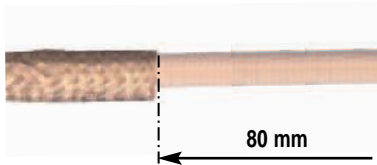
Certificate: EPS 11 ATEX 1 354

HEATING CABLE PREPARATION

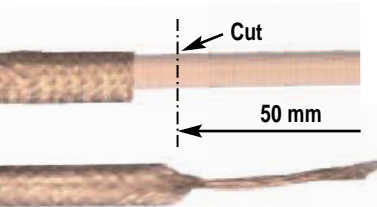
Constant wattage



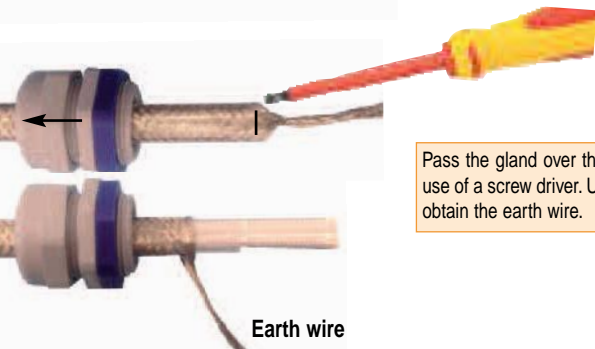
Side joint connection



Locate through the transparent silicone sleeve, the beginning of the heating modules, depending of the desired cold length required. cut the heating cable and push back on the twine 80mm approximately.



Cut the heating cable 50mm approximately and peel back the twine in order to splice it on 15mm long.



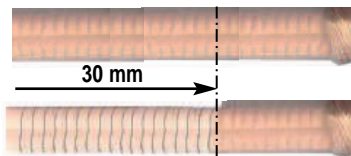
Pass the gland over the cable with the use of a screw driver. Undo the twine to obtain the earth wire.

Earth wire



Separate the two wires in the direction of the length with the use of scissors and strip back 15mm approximately.

Cable end



Strip the outer sleeve back 30mm with the help a wire cutter/ stripper, taking care not to damage the insulation of the two conductors located underneath.



Strip the sleeving from the two conductors and cut flat against the isolating sleeve. do not attempt to reconnect them again



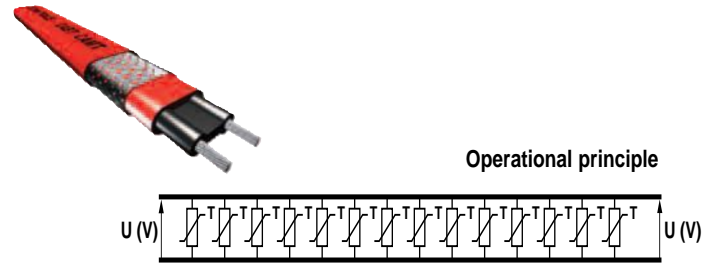
Cut one of the two conductors shorter than the other one, to avoid any contact



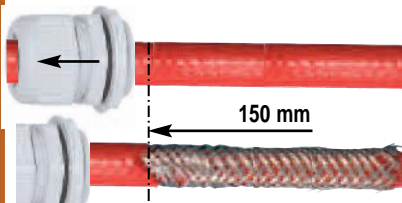
Fill the sleeve with silicone and slip it over the cable end. Leave to dry before use.



Self regulating



Side joint connection



Pass the gland over the cable. Then cut the sleeve back 150mm approx.



Splice the stainless steel braid.



Earth conductor

Strip the outer sleeving taking care not to damage the insulation of the two conductors underneath.



Strip the conductors with a thermal stripper for a few seconds in the black area (zone) semi conductor. This helps to easily strip the conductors with the use of wire stripper/pliers.



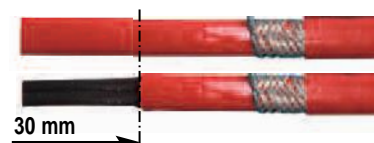
Separate the two conductors with insulation tape, then maintain the braiding on the sheath with the use of another piece of insulation tape.



Two thermo retractable sleeves make it possible to insulate the conductors right up to the power connector if necessary.



Cable end



Strip the outer sleeve back 30mm with the use of a cutter/blade. taking care not to damage the insulation of the 2 conductors underneath.



With the use of wire cutters. Cut the end diagonally.



Fill the sleeve with silicone and slip over the cable end. Leave to dry before use.



APPLICATIONS

Heating and maintaining temperature of flat, cylindrical or conical components. For use especially when even temperature distribution is required (no hot spot) or when the heating system has to be very compact (thickness: about 4 mm).

Hot vulcanisation of the 2 surfaces = permanently bonded

Heating wires

Cylinder formed during vulcanisation

Connection mould also available with connections within the thickness of the panel.

200°C max.

Load up to 0,7 W/cm²
(moreover depending on heat exchange)

Protection code: IP21 - IP55 on request

Ex-stock silicone heating panels have a load of 0,7 W/cm² max

For cable leads within the panel thickness instead of on a mould, consult us.

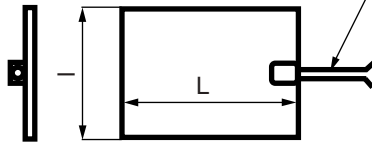
An excellent way to heat flat surfaces up to 180°C. Rugged, flexible, and compact, silicone heating panels solve many problems of heating or maintaining temperature.

Listed models are available with a self-adhesive surface for permanent fixing, and with Pt100 probes.

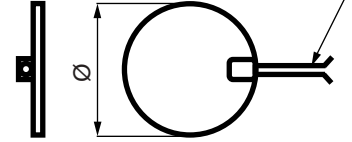
Voltage: 230V 1 P.
Length of leads = 500 mm.

Ensure secure fixing with self-adhesive aluminium tape, P/N. 4550-00

Connection cable on the panel, thickness 9 mm approximately



Connection cable on the panel, thickness 9 mm approximately



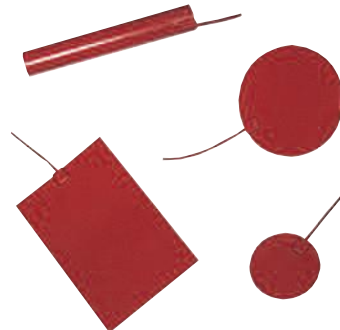
RECTANGULAR SILICONE HEATING PANELS

P/N.	Shape	Self-adhesive	Power. (W) +5-10%	Voltage (V)	Dim (mm) L x l	Temperature sensor
26156-03	Rectangular	Yes	1,25	12V 1 P	25 x 49	Non
26156-04	Rectangular	Yes	2,5	12V 1 P	50 x 49	Non
26156-05	Rectangular	Yes	3,75	12V 1 P	50 x 74	Non
26156-06	Rectangular	Yes	5,0	12V 1 P	50 x 99	Non
26156-07	Rectangular	Yes	7,5	12V 1 P	75 x 99	Non
26156-08	Rectangular	Yes	80,0	12V 1 P	200 x 399	Non
26156-13	Rectangular	Yes	50	230V 1 P	100 x 149	Non
26156-14	Rectangular	Yes	100	230V 1 P	100 x 149	Non
26156-15	Rectangular	Yes	100	230V 1 P	200 x 149	Non
26156-16	Rectangular	Yes	200	230V 1 P	200 x 249	Non
26156-17	Rectangular	Yes	400	230V 1 P	200 x 299	Non
26156-01	Rectangular	No	440	230V 1 P	200 x 280	Non
26156-18	Rectangular	Yes	533	230V 1 P	200 x 399	Non
26156-02	Rectangular	No	1000	230V 1 P	304 x 497	Non
26156-11	Rectangular	Yes	440	230V 1 P	200 x 280	Non
26156-12	Rectangular	Yes	1000	230V 1 P	304 x 497	Non
26156-42	Rectangular	Yes	1000	230V 1 P	304 x 497	PT 100

Models are bored in the centre to install a temperature limiter.

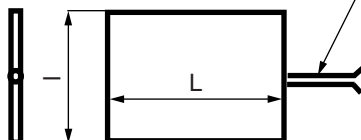
CIRCULAR SILICONE HEATING PANELS

P/N.	Shape	Self-adhesive	Power. (W) +5-10%	Voltage (V)	Dim (mm) Ø	Temperature sensor
26156-51	Circular	No	60	230V 1 P	Ø 100	Non
26156-52	Circular	No	310	230V 1 P	Ø 200	Non
26156-61	Circular	Yes	60	230V 1 P	Ø 100	Non
26156-62	Circular	Yes	310	230V 1 P	Ø 200	Non
26156-81	Circular	No	60	230V 1 P	Ø 100	PT 100
26156-82	Circular	No	310	230V 1 P	Ø 200	PT 100
26156-91	Circular	Yes	60	230V 1 P	Ø 100	PT 100
26156-92	Circular	Yes	310	230V 1 P	Ø 200	PT 100

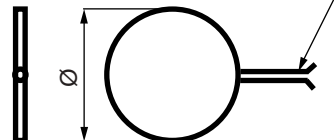


SILICONE HEATING PANELS WITH LEADS IN THE PANEL THICKNESS

Connection cables in panel thickness, max. thickness 4 mm



Connection cable in panel thickness, max. thickness 4 mm



MADE-TO-MEASURE SILICONE HEATING PANELS

In addition to rectangular shapes, silicone heating panels can quickly be made into all kinds of irregular shapes with holes and cuts-outs.

It is therefore possible to heat flat, cylindrical and conical surfaces, as well as pipework, up to 180°C.

Maximum peak temperature 200°C.

Rugged, flexible, and compact, silicone heating panels solve many problems of heating or maintaining temperature.

A self-adhesive surface can be added to one or two sides of the panel for permanent fixing.

The panels can optionally be fitted with a temperature limiter (I max. = 10 A / 230 VAC), a Pt100 probe, or a J- or K-type thermocouple.

Voltage 230V 1 P.

For other voltage or other phases consult us.

I max. = 17 A / phase.

Connection lead length = 1 m on standard model.

Max. dimensions = 2000 x 900 mm

To describe a panel made to measure, use the boxes below.



Consult us with your plans

To order a made-to-measure silicone heating panel, state:

Silicone heating panel, rectangular type 26156 or circular type 26166

Shape and dimensions: Rectangular mm x mm or circular Ø mm, or provide a drawing

Power: (not to exceed 0,7 W/cm² on metals and 0,3 W/cm² on polypropylene and PVC)

Voltage: (max. 400V 1 P or 400V 3 P)

With temperature limiter: Yes / No (cut-out temperature, °C) or with a Pt100 probe or a J- or K-type thermocouple

With a self-adhesive surface: Yes / No

To order a made-to-measure cylindrical silicone heating panel, state :

Cylindrical silicone heating panel type 26176

Minimum size : Inside diameter : 12 mm ; Length : 150 mm

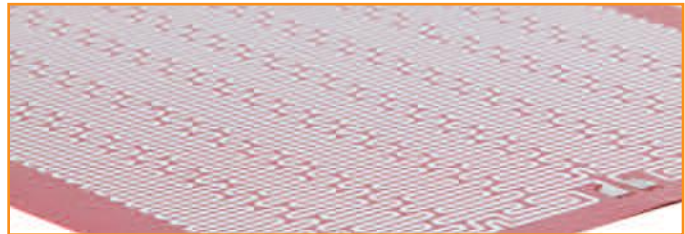
Maximum size : Inside diameter : 150 mm ; Length : 900 mm

Power: (not to exceed 0,7 W/cm²)

Voltage: (max. 400V 1 P or 400V 3 P)

With temperature limiter : Yes / No pre-set to °C or with a Pt100 probe or a J- or K-type thermocouple

etched foil possibility



ACCESSORIES FOR SILICONE HEATING PANELS

- Special **silicone glue** to fix these panels to metal or plastic. Suitable for most materials. Available in two versions, to be used according to the prevalent temperature constraints: 200°C max. or 250°C max. Note: using primer **P/N. 26156-95** improves adhesion to metals and protects them from corrosion by the acetic acid released by the glue as it hardens.

- **Aluminium adhesive tape.** A simple and effective solution to fix silicone heating panels, whether flat or cylindrical. It ensures the protection of the heating panel whilst improving heat transfer.

- **Fixing belts for cylindrical heaters.** If cylindrical heaters need to be easily dismantled, we suggest the use of silicone belts. They are made of the same material as the heating panels, and fitted at one end with two metal rings for fastening. Belts should be placed at 100 mm maximum intervals along the cylinder.



P/N.	Description	Amount
26156-94	Glue Max. temp. 250°C	90 cm ³
26156-95	Primer for metal surfaces	90 cm ³
4550-00	Aluminium adhesive tape	5 cm x 50 m
26156-97	Fixing belt	Length 500mm
26156-98	Fixing belt	Length 1000mm

HOW TO SELECT YOUR INFRARED GENERATOR

400°C / 4,31µm

650°C / 3,14µm

1200°C / 1,97µm

3000°C / 0,89µm

LONG WAVE

MID WAVE

SHORT WAVE

Wavelength	LONG WAVE	MID WAVE	SHORT WAVE
Operating temperature range(°C)	from 400 to 500°C	from 750 to 850°C	from 2100 to 3000°C
Wavelength range	from 4,3 to 3,8 µm	from 2,6 to 2,8 µm	from 0,9 to 1,2 µm
Emitter source	Resistive wire encapsulated in ceramic	Sheathed tubular element	Filament under halogen into quartz pipe
Thermal inertia	2-5 min	1-2 min	0,5-1 sec
Max. installed power density	20 kW/m ²	50 kW/m ²	300 kW/m ²
Applications	Homogeneous heating. Suitable for thick products (several mm).	Superficial heating. Suitable for humid product.	Superficial heating. Suitable for thin product.

LONG WAVE INFRARED SOURCES :

Different technologies are available for those sources. Nevertheless mainly the ceramics are used in industry. They are made of heating elements bedded in ceramic. The resistances raise the ceramic surface temperature from 300 to 700°C. Thermal inertia is high (>3-5 min.)

MID WAVE INFRARED SOURCES :

They are made of resistances raised at temperatures between 700 and 1 000°C; the resistances are placed within a quartz/silica or metal sheathed tubular element to protect them. They emit lighting waves (red). Inertia is more consequent than shortwave (minutes), but they do not need cooling.

SHORT WAVE INFRARED SOURCES :

Those sources are lamps or tubes under vacuum or neutral gas; heating elements (emitter) are tungsten filaments raised at temperature higher than 2 000°C. They emit light (clear yellow) and allow very intensive power densities with low inertia (second). It's often necessary to cool them.

CERAMIC LONG WAVE INFRARED ELEMENTS

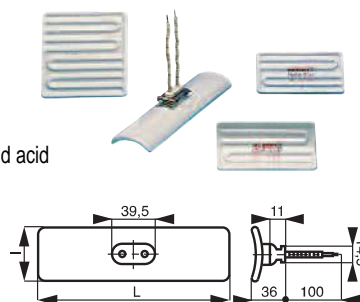
Infrared ceramic emitters provide longwave radiation ideally suitable for the preheating and thermoforming of plastics, rubber and synthetic fibers in addition to skin and blister packaging processes.

Advantages :

- No maintenance required
- No deviation of temperatures or wave lengths
- Appliance with water and acid
- Visual thermal indicator

FEATURES :

Radiation distances recommended from 100 to 200 mm. The element is encapsulated in ceramic coil and withstands high thermal shocks.

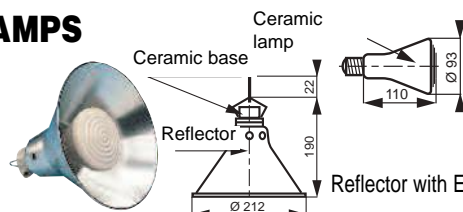


REF.	Power ± 10%	L (mm)	l (mm)	Curved or flat	Temp. (°C)	Weight (kg)
6020-00	125 W	122	60	C	370	0,13
6020-01	250 W	245	60	C	370	0,26
6020-03	500 W	245	60	C	500	0,26
6020-06	200 W	122	60	C	460	0,16
6020-09	500 W	245	60	F	500	0,25
6020-12	300 W	122	122	F	400	0,25
6020-13	500 W	122	122	F	500	0,25

Supply voltage : 230 V single phase
Interchangeable with English models FTE/HTE/SFE
and German models FSR/FSR-2/HFS.

CERAMIC LONG WAVE INFRARED LAMPS

Lamp adaptable to all applications of the long IR and, in particular, to the poultry industry. Screwed into a lamp socket ceramic suspension (E27 base) equipped with an aluminium reflector at high reflecting power.
Supply voltage : 230 V single phase



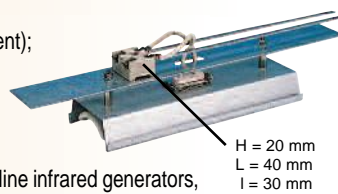
P/N.	Power ± 10%	Temp. (°C)	λ (µm)	Weight (kg)
6020-35	150 W	280	5,3	0,18
6020-36	250 W	370	4,4	0,18

Reflector with E27 socket : P/N. 6020-33 (Weight 0,28 kg)

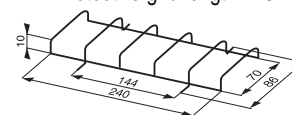
ACCESSORIES FOR CERAMIC LONG WAVE INFRARED ELEMENTS

These sets of accessories allow the achievement of infrared heating panels, using ceramic generators. Particularly suitable for high ambient temperatures, they are made of :

- Aluminium reflector (avoiding overheating behind the element);
- Stainless steel bus bars (for electrical connection);
- High-temperature ceramic terminal blocks;
- Sets of spacers (for fixing reflectors);
- Protective grid to suit the reflector ; can be used on all our in-line infrared generators, long, medium or short wave.



P/N.	Description	Weight (kg)
6020-34	Aluminium reflector (248 mm)	0,27
6020-42	10 spacers (M5 x 12 mm)	0,01
6020-40	Ceramic terminal block	0,05
6020-41	Bus bar (8x2) length 1,25 m	0,16
6014-17	Protective grid length 240 mm	0,15



MEDIUM WAVE INFRARED GENERATORS

APPLICATION :

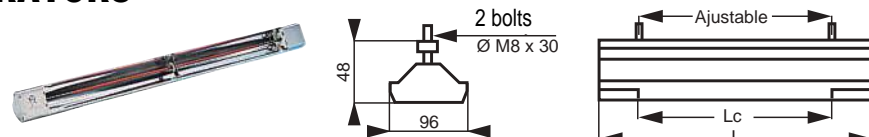
Straight medium wavelength infra-red generator able to solve all your needs of industrial drying, cooking, polymerisation...

ADVANTAGES :

Rugged and careful build. Easy to install vertically or horizontally in an environment at 200°C max. Double electrical insulation. High reflecting power of reflector and long life of heating elements allows an universal use.

FEATURES :

Incoloy 800 triangulated section sheathed element fitted at the heart of a high efficiency aluminium parabolic reflector, mounted in a rigid light alloy profile provided with an adjustable attaching bolts.

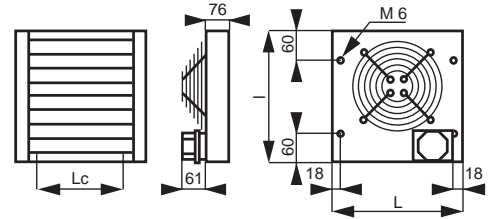


P/N. in 230 V	P/N. in 400 V	Power +5-10%	L (mm)	Lc (mm)	P/N. 230V	Spare elements 400V	Weight (kg)
6341-08	6341-09	800 W	622	412	6341-58	6341-59	2,6
6341-11	6341-12	1100 W	777	564	6341-61	6341-62	3
6341-18	6341-19	1800 W	1187	970	6341-68	6341-69	4
6341-25	6341-26	2500 W	1557	1330	6341-75	6341-76	5,2
6341-30	6341-31	3000 W	1872	1640	6341-80	6341-81	6,2
6341-36	6341-37	3600 W	2177	1944	6341-86	6341-87	7,1
6014-17	Protective grid length 240 mm						0,15

Supplied with 2 adjustable attaching bolts. See: electronic power controllers on page 82, connection wires with KAPTON insulator on page 117.

MEDIUM WAVE INFRARED UNITS

Using similar technology than the short-wave infrared units, these appliances are made of sheathed medium-wave infrared elements fixed in front of a flat highly-reflective dimpled reflector, in a metal surround with integral cooling. Robust and non-polluting these metal heating elements can be install vertically or horizontally. These panels are suited to applications, such as drying powder coatings on metal components, coil-coating, food processing, etc. Specific temperature surface are available on request. Multizone power supply available



Can be fixed in any position.

Optional accessories :

- Counter-reflectors.
- Vitroceramic kit and protective brackets.
- Units also available without cooling.

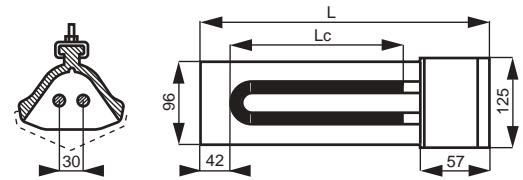
P/N.	Power +5 -10%	Voltage (V)	I (mm)	Lc (mm)	L (mm)	Cooling wiring	Spare element	Unit power
6015-01	2,4 kW	230 1P	180	412	630	separated	6341-58	800 W
6015-02	7,2 kW	230/400 3P	540	412	630	separated	6341-58	800 W
6015-03	3,3 kW	230 1P	180	564	780	separated	6341-61	1100 W
6015-04	9,9 kW	230/400 3P	540	564	780	separated	6341-61	1100 W
6015-05	16,2 kW	230/400 3P	540	970	1190	separated	6341-68	1800 W
6015-06	32,4 kW	230/400 3P	1080	970	1190	separated	6341-68	1800 W

Standard models : Emitters for step 60mm

MEDIUM WAVE INFRARED TIGHT GENERATOR "U" SHAPE

FEATURES :

6091 type is made of a tubular sheathed element pin-bended and an aluminum plated steel reflector. Electrical connections are through IP55 waterproof terminal box.



Supplied with 2 adjustable clamps, see :

- Electronic power distributors.
- KAPTON –insulated connection leads.
- Protective grilles (P/N. 6014-17).

P/N. in 230 V	P/N. in 400 V	Power +5 -10%	L (mm)	Lc (mm)	P/N. 230V	Spare elements 400V
6091-08	6091-09	800 W	390	255	6091-58	6091-59
6091-11	6091-12	1100 W	485	350	6091-61	6091-62
6091-18	6091-19	1800 W	710	575	6091-68	6091-69
6091-25	6091-26	2500 W	935	800	6091-75	6091-76
6091-30	6091-31	3000 W	1095	960	6091-80	6091-81
6091-36	6091-37	3600 W	1290	1155	6091-86	6091-87

SHORT WAVE INFRARED GENERATORS

APPLICATIONS :

Radiation heating for textile, paper, cardboard, plastic and film industries and all applications requiring near zero inertia.

ADVANTAGES :

Immediate turning on and off. High power density. Reflector guaranteeing maximum reflection and high resistance to corrosion. Practically no maintenance. Emitter tube easily replacable. This emitter makes it possible to focus on a line from 10 to 60 mm width, giving densities up to 300 kW/m².

FEATURES :

Coiled tungsten filament mounted under a neutral gas in a quartz pipe. Matt black extruded aluminium holder serving as heat sink with an adjustable central hook-on lug.

DON'T TOUCH THE HEATING ELEMENT :

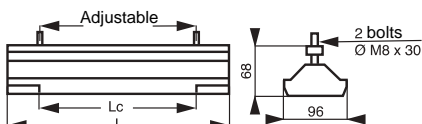
Avoid contact with the heating element; avoid also vibrations of the emitter when powered on. Place the generator horizontally at a distance from 60 to 300 mm from the part to be heated, according to the required power density. Some atmospheres require forced ventilation. It is possible to install several generators side by side.

CLEAR QUARTZ LAMP



P/N.	Power +5 -10%	L (mm)	Lc (mm)	Spare element P/N	Weight (kg)
6014-21	500 W	245	170	6014-35	2,0
6014-22	1000 W	358	270	6014-32	2,3

Elements P/N.6014-32 and 35, connection by sockets, for horizontal fitting only (+/- 15°)



2 fixing clamps.
Connection by 2 nickel leads, length 250 mm.

RUBY QUARTZ LAMP



P/N.	Power +5 -10%	L (mm)	Lc (mm)	Weight (kg)
6114-22	1000 W	358	270	2,3

Spare elements P/N. 6114-32, connection trough sockets, for fitting in any position

Optional accessories :

- Electronic power distributors.
- KAPTON – insulated connection leads, see accessories
- Protective grids P/N. 6014-17.

SHORT WAVE INFRARED UNITS

APPLICATION :

Models with separately cabled ventilation. This will allow continuous ventilation even after tubes extension. Ideally suitable when a power control is needed or for high temperature treatments.

ADVANTAGES :

- Accurate control system.
- Well designed for wide applications.
- Easy maintenance.
- Light weighted and compact.

RUBY QUARTZ LAMP



P/N.	Power +5 -10%	Voltage (V)	I (mm)	Lc (mm)	L (mm)	Spare element	power Unit	Weight (kg)
6114-67	3 kW	230 1P	120	265	360	6114-32	1000 W	3,1
6114-63	9 kW	230/400 3P	360	265	360	6114-32	1000 W	7,2

Spare elements P/N.6114-32, connection trough sockets, fitting in any position

P/N.	Power +5 -10%	Voltage (V)	I (mm)	Lc (mm)	L (mm)	Spare element	Power Unit	Weight (kg)
6014-67	3 kW	230 1P	120	265	360	6014-32	1000 W	3,1
6014-63	9 kW	230/400 3P	360	265	360	6014-32	1000 W	7,2
6014-77	6,6 kW	230 1P	120	285	400	6014-34	2200 W	3,6
6014-73	19,8 kW	230/400 3P	360	285	400	6014-34	2200 W	8
6014-87	1,5 kW	230 1P	120	170	280	6014-35	500 W	2,6
6014-83	4,5 kW	230/400 3P	360	170	280	6014-35	500 W	5,8

Elements P/N.6014-32 and 35, connection through sockets, for horizontal fitting only (+/- 15°)

Elements P/N.6014-34, connection by leads, also for vertical fitting

Units also available without cooling.
For controls, see below.

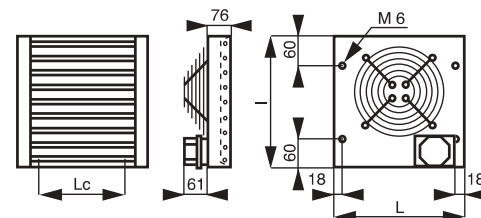
Optional accessories :

- Counter-reflectors.
- Vitroceramic kit and protective brackets.

CLEAR QUARTZ LAMP



Standard models :
elements step 40mm



TEMPERATURE CONTROLLER WITH TWO USER CALIBRATION POINTS INFRARED TEMPERATURE SENSORS

The **auto-tuned PID** controller with digital display (96x103) format includes a J-type thermocouple input, an analogue 0-20mA heating output, and an alarm relay output.

This infrared **sensor** allows you to regulate the temperature of a static or production-line product in an open space without touching it, especially in infrared heating installations. It measures the radiation emitted by the product (target) and converts it into a configurable signal controller.



Regulator P/N : 30882-01



Sensor P/N: 31200.74

CONTROLLER MAIN FEATURES :

- Supply voltage : 85 to 264 VAC - 10W.
- Two user calibration points.**

SENSOR MAIN FEATURES :

- Temperature range: 40 to 600°C (25 to 600°C with J type thermocouple)
- Optical resolution: 10:1
- Adjustable emissivity
- Configurable output signals: analogue 4-20 mA, 0-20 mA, 0-5 V, J or K type thermocouples
- Supply voltage: 11 to 26 V DC ; 100 mA
- Probe cooling envelope must be connected to compressed air supply, for ambient temperatures up to 150°C
- IP65 offset connecting box (to be placed in an area of 60°C max.) with 1 m cable for probe connection.

PULSE CONTROL OR PHASE ANGLE POWER DISTRIBUTORS

APPLICATION :

Electronic controllers provide control of the heating elements power range from 0 to 100% of their max. value.

ADVANTAGES :

These models are particularly suited to the control of the infrared generators. Flexibility and easy to use.

FEATURES :

- A scaled potentiometer indicates the setting.
- A pulse control modulated output for resistive loads with low temperature coefficient.
- Phase angle output for resistive loads with high temperature coefficient as short waves IR

Din Rail



Wall fixing



REF.	Power. maxi	Voltage 1P	Intensy maxi	Control device	Installation	Weight (kg)
30302-12	8000 W	230 V	35A	Pulse control	DIN Rail	1,7
30302-16	8000 W	400 V	35A	Pulse control	DIN Rail	1,7
30302-14	8000 W	230 V	35A	Phase angle	DIN Rail	1,7
30302-15	8000 W	400 V	35A	Phase angle	DIN Rail	1,7
30302-13	6000 W	230 V	25 A	Pulse control	On wall	1,8
30302-18	6000 W	230 V	25 A	Phase angle	On wall	1,8
30302-17	7 kW/ 12 kW	230 /400V	30 A	Pulse control	On wall	1,8

CERAMIC LONG WAVE INFRARED GENERATORS

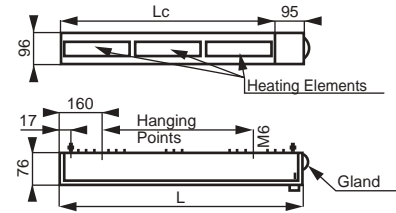
These models are suitable for the **heating of people in houses**, workshops or offices. They are fitted with ceramic long-wave infrared elements.

They do not emit any visible light and have a very high efficiency. They do not heat the air and so are ideally suited to places which are difficult to heat, such as buildings which are badly insulated, are draughty, or have high ceilings.

These appliances must be fixed to a ceiling or to a wall at a minimum height of 1.9 meters.



Supply voltage : 230 V 1P.
Supplied with swivelling fixing brackets.
Other powers to order.
Spare parts :
500 W ceramic element P/N. 6020-03.



P/N.	Power ± 10%	L (mm)	Lc. (mm)	Weight (kg)
6014-91	1000 W	600	505	2,45
6014-92	1500 W	850	755	3,45
6014-93	2000 W	1100	1005	4,4

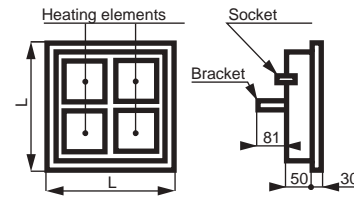
CERAMIC LONG WAVE INFRARED GENERATORS

This ceramic long-wave infrared generator, mounted on a mobile support, is particularly suited to the **localised heating of people and workplaces**.

The stable, robust, 2 m high support allows economical and instant heating of the required places only, with no emitted light.

Supply voltage : 230 V 1P.

Floor-standing appliance, working on the same principle as the preceding models. Their compact size and light weight suits them for auxiliary heating of large-volume buildings. Short warm-up time, no emitted light.



P/N.	Power ±10%	L (mm)	Spare element	Weight (kg)
6014-95	2000 W	322	6020-13	3,35
6014-96	Mobile support, 1m height			

METALLIC MEDIUM WAVE INFRARED GENERATORS

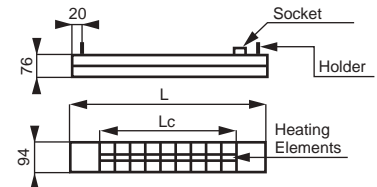
This medium-wave infrared generator is suitable for the heating of people in covered places where conditions are particularly harsh in industrial premises or warehouses. Solidly built and fitted with WP+ seals, it can tolerate long pause periods without damage to its insulation.

These appliances must be fixed to a ceiling or to a wall at a minimum height of 2,5 m up to 4 m

Limit the heating flux on the ground at 300 W/m².



Supply voltage : 230 V single phase.
Supplied with swivelling fixing brackets.



P/N.	Power ±10%	L (mm)	Lc. (mm)	Spare element	Weight (kg)
6014-04	1000 W	790	610	6014-14	2,4
6014-05	1500 W	1050	870	6014-15	3,1
6014-06	2000 W	1310	1130	6014-16	3,8

QUARTZ SHORT WAVE INFRARED GENERATORS

These appliances are the best solution for heating people in large buildings such as warehouses, sports halls, churches, loading docks, workplaces, etc.

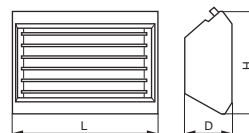
Main Advantages : fast heat, swivelling reflector giving heat to the desired area only. Neutral or ruby light reduce dazzle.

Features :

Epoxy-coated.

Supply voltage : 230 V single phase.

Spare lamp : P/N. 6117-90



Power to be installed, in W/m ²	
Workshop	135
Church	270
Warehouse	135
Shop/ exhibition hall	270
Loading dock	200
Sports hall	100

Fixed models

P/N.	Power (W)	Dimensions (L x H x D mm)	Min. fixing height	Weight (kg)
6117-21	1500 W	405 x 190 x 72	2,2 m	1,75
6117-23	3000 W	405 x 345 x 72	2,5 m	2,75
6117-24	4500 W	405 x 495 x 72	3,0 m	3,5



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FOR THE INDUSTRY**

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