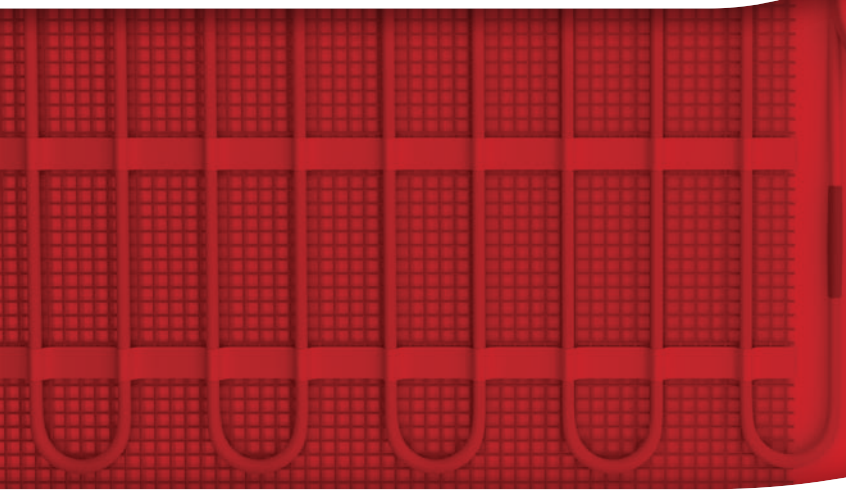
HEATING CABLES

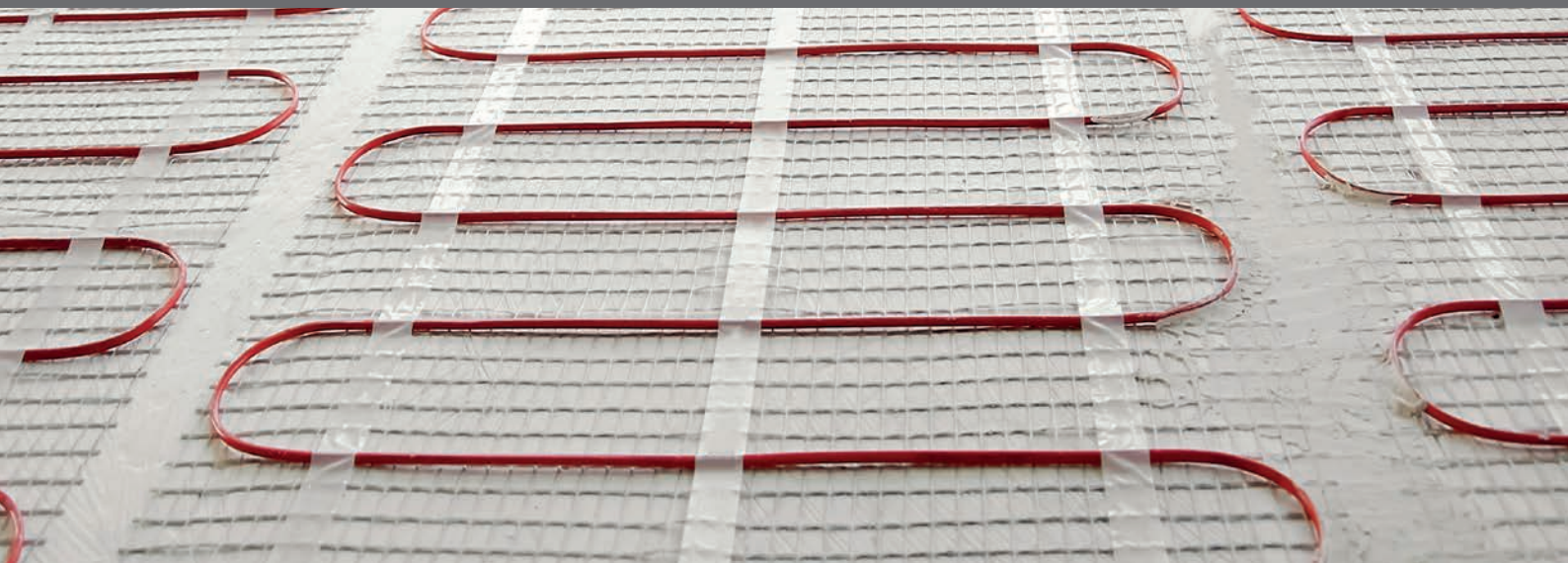
INDUSTRIAL USE.
DOMESTIC USE.
COMFORT HOUSE.



Heating Cables

Heating cables are used for frost protection of pipes, tanks, ramps and walkways, gutters, etc., or for maintaining process temperatures, especially in industrial environments.

- **CONSTANT POWER CABLES**
- **SELF-REGULATING CABLES**



CONSTANT POWER CABLES

Raytech cables are composed of 2 conductors that are shielded and in the case of Stop Ice are supplied with a suitable thermostat for anti-freeze maintenance.

Stop Ice

Easy Ramp

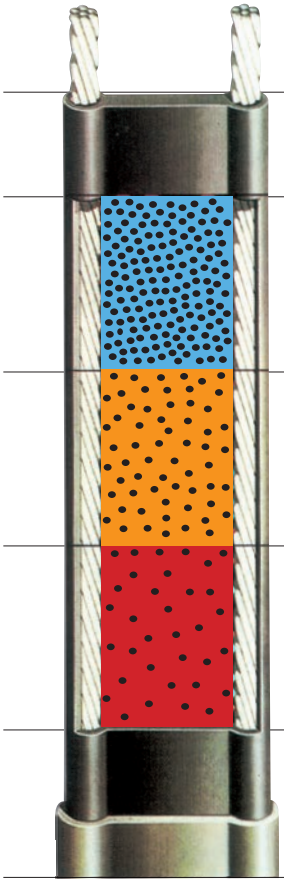
★ ADVANTAGES
CONSTANT POWER CABLES

- **Ready for use,** without requiring the installation of accessories.
- **Already equipped with a thermostat,** in the case of Stop Ice.
- **Completely reliable.**

SELF-REGULATING CABLES

The self-regulation technology and the parallel circuit present the following advantages:

- The heating cables can be cut at the desired length, jointed and terminated on site.
- They can be supplied at 230 V without transformers.
- They can be overlapped without over heating risks.
- They reduce automatically their power output as the required temperature is reached.
- They are easy designed and can be easily handled on site.



The graphite particles form Numberus parallel joints between the two copper conductors.

The core contracts microscopically when the heating cable is cold and the graphite forms Numberus joints between the conductors. The passage of the current generates heat.

The core dilates microscopically in the hotter parts, breaking some of the electrical contacts. As the electrical resistance increases energy output is reduced until a thermal balance is reached between heat loss in the pipes and the heat produced by the cable.

Almost all the contacts are interrupted by microscopic dilatation of the core at very high temperatures. The electrical resistance becomes very high and energy output is virtually nil.

The cable will never become overheated and burn, as it is self-protecting. There is also no need for a thermostat.

★ ADVANTAGES
SELF-REGULATING CABLES

- **A reduction in overall installation costs**
- **Reduction in operating cost**
- **Very easy to install**
- **Simple design**
- **Uniform temperature**
- **Complete reliability**

Raytech

HEATING CABLES

INDUSTRIAL USE

MCA / MCA-I-PF

CABLE POWERED
From -55°C to +65°C

CABLE NOT POWERED
From -55°C to +80°C

MCA-I-GF

CABLE POWERED
From -60°C to +120°C

CABLE NOT POWERED
From -60°C to +120°C

MCA-I-FF

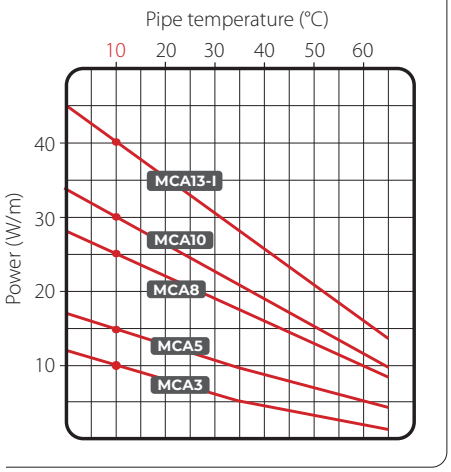
CABLE POWERED
From -60°C to +110°C

CABLE NOT POWERED
From -60°C to +130°C

MCA

Self-regulating heating cables for anti-freeze or temperature maintenance use with exposure to **mild inorganic solutions**.

Suitable for anti-freeze and process temperature maintenance use **up to 65°C** on piping and tanks. Cannot be used when washing with steam or continuous exposure to strong corrosive and organic acids.



CONSTITUTION OF THE CABLE

- Copper conductors
- Self regulating conductive core
- Modified polyolefine insulation
- Copper screen
- Modified polyolefine outer sheath

Cables certified for classified zones
Ex II 2G Ex 60079-30-1 IIC Gb
Ex II 2D Ex 60079-30-1 IIIC Db
In accordance: EN IEC 60079-0:2018
EN IEC 60079-30-1:2017

Type of surface to be tracked:
Steel - Painted - Stainless Steel - Plastic.
Chemical resistance:
Suitable for exposure to mild inorganic solutions.

Product	Power voltage (V)	Power at 10°C (W/m)	Minimum installation temperature (°C)	MAX Temperature **Continuous** with powered cable (°C)	MAX Temperature with no powered cable (°C)	Bending radius MIN (mm)	Temperature classification
MCA3	230	10	-55	65	80	25	T6
MCA5		15					
MCA8		25					
MCA10		30					
MCA13-I		40					

ELECTRICAL SIZING **Starting temperature** (°C)		MAXIMUM LENGTH OF THE CIRCUITS IN THE HEATING CABLE (m)														
		MCA3			**MCA5**			**MCA8**			**MCA10**			**MCA13-I**		
		+10°	-10°	-20°	+10°	-10°	-20°	+10°	-10°	-20°	+10°	-10°	-20°	+10°	-10°	-20°
Switchgear protection (A), with C curve and 30mA* differential protection*	10 A	-	-	-	103	71	62	64	47	37	49	38	33	-	-	-
	16 A	177	144	125	160	114	99	103	75	60	78	61	53	57	44	40
	20 A	-	149	139	-	133	124	126	94	75	97	76	66	71	55	50
	25 A	-	-	-	-	-	-	-	107	94	112	95	83	89	69	62

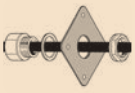
* Suggested where protection of people is requested; installations with no personnel admittance can be performed with 100 to 300 mA.

MCA connection accessories

MCA Universal IP68
- Connection kit integrated with the terminal box.
- Termination Kit.
- Joint Kit.

MCA-Y
Branch Kit.

MCA-BOX3 / 4
Connection boxes between heating cables or heating and power cables.



MCA-AL
Thermal insulation pass-through kit.

MCA-PRESS
Cable gland.

MCA-EA
Warning label.

MCA-FV
Glass fiber tape.

MCA-ALL
Aluminium self adhesive tape 25 or 75 mm.

For other accessories see page 219

MCA-I-PF

Self-regulating heating cables for anti-freeze or temperature maintenance use with exposure to **inorganic solutions**.

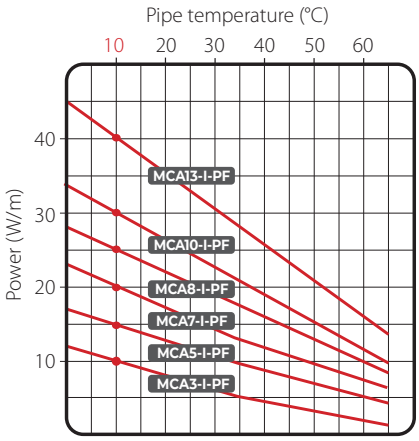
Suitable for anti-freeze and process temperature maintenance use **up to 65°C** on piping and tanks. Cannot be used when washing with steam or continuous exposure to strong corrosive and organic acids.

CONSTITUTION OF THE CABLE

- Copper conductors
- Self regulating conductive core
- Modified polyolefine insulation
- Copper screen
- Fluoropolymer outer sheath

Cables certified for classified zones
Ex II 2G Ex 60079-30-1 IIC Gb
Ex II 2D Ex 60079-30-1 IIIC Db
In accordance: EN IEC 60079-0:2018
EN IEC 60079-30-1:2017

Type of surface to be tracked:
Steel - Painted - Stainless Steel - Plastic.
Chemical resistance:
Suitable for exposure to mild inorganic solutions.



Product	Power voltage (V)	Power at 10°C (W/m)	Minimum installation temperature (°C)	MAX Temperature **Continuous** with powered cable (°C)	MAX Temperature with no powered cable (°C)	Bending radius MIN (mm)	Temperature classification
MCA3-I-PF	230	10	-55	65	80	25	T6
MCA5-I-PF		15					T6
MCA7-I-PF		20					T6
MCA8-I-PF		25					T5
MCA10-I-PF		30					T5
MCA13-I-PF		40					T6

ELECTRICAL SIZING **Starting temperature** (°C)		MAXIMUM LENGTH OF THE CIRCUITS IN THE HEATING CABLE (m)																	
		MCA3-I-PF			**MCA5-I-PF**			**MCA7-I-PF**			**MCA8-I-PF**			**MCA10-I-PF**			**MCA13-I-PF**		
		+10°	-10°	-20°	+10°	-10°	-20°	+10°	-10°	-20°	+10°	-10°	-20°	+10°	-10°	-20°	+10°	-10°	-20°
Switchgear protection (A), with C curve and 30mA* differential protection*	10 A	202	202	163	153	144	115	109	79	70	91	86	70	57	54	44	57	44	40
	16 A	202	202	202	165	165	144	129	99	87	120	107	87	76	67	55	71	55	50
	20 A	202	202	202	165	165	165	-	111	104	128	128	109	95	84	69	89	69	62
	25 A	202	202	202	165	165	165	-	-	-	128	128	128	97	97	88	-	-	-

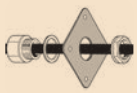
* Suggested where protection of people is requested; installations with no personnel admittance can be performed with 100 to 300 mA.

MCA-I-PF connection accessories

MCA Universal IP68
- Connection kit integrated with the terminal box.
- Termination Kit.
- Joint Kit.

MCA-Y
Branch Kit.

MCA-BOX3 / 4
Connection boxes between heating cables or heating and power cables.



MCA-AL
Thermal insulation pass-through kit.

MCA-PRESS
Cable gland.

MCA-EA
Warning label.

MCA-FV
Glass fiber tape.

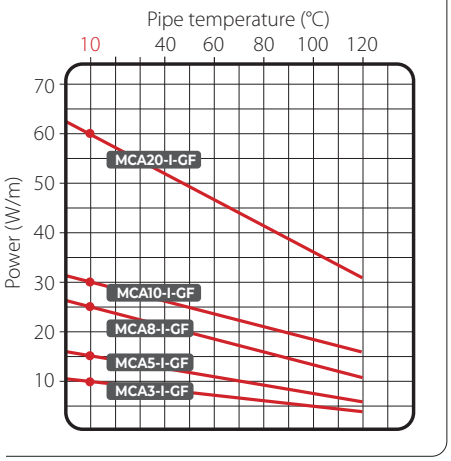
MCA-ALL
Aluminium self adhesive tape 25 or 75 mm.

For other accessories see page 219

MCA-I-GF

Self-regulating heating cables for anti-freeze or temperature maintenance use with exposure to **corrosives and acids**.

Suitable for maintaining process temperatures **up to 120°C** on piping and tanks, even in the presence of acids and corrosives, or for anti-freeze use where acids and corrosives are present, in safe areas. Not suitable for use in the presence of steam washing.



CONSTITUTION OF THE CABLE

- Copper conductors
- Self regulating conductive core
- Fluoropolymer insulation
- Copper screen
- Modified polyolefine outer sheath

Type of surface to be tracked:
Steel - Painted - Stainless Steel.

Chemical resistance:
Suitable for exposure to corrosive and organic acids.

Product	Power voltage (V)	Power at 10°C (W/m)	Minimum installation temperature (°C)	MAX Temperature **Continuous** with powered cable (°C)	MAX Temperature with no powered cable (°C)	Bending radius MIN (mm)
MCA3-I-GF	230	10	-60	120	120	25
MCA5-I-GF		15				
MCA8-I-GF		25				
MCA10-I-GF		30				
MCA20-I-GF		60				

ELECTRICAL SIZING **Starting temperature** (°C)		MAXIMUM LENGTH OF THE CIRCUITS IN THE HEATING CABLE (m)														
		MCA3-I-GF			**MCA5-I-GF**			**MCA8-I-GF**			**MCA10-I-GF**			**MCA20-I-GF**		
		+10°	-15°	-25°	+10°	-15°	-25°	+10°	-15°	-25°	+10°	-15°	-25°	+10°	-15°	-25°
Switchgear protection (A), with C curve and 30mA* differential protection*	16 A	200	180	175	165	130	117	120	97	88	85	73	69	50	41	38
	20 A	235	235	235	189	162	152	140	125	120	114	98	92	64	55	52
	30 A	-	-	-	-	-	189	-	-	140	-	-	114	-	-	64

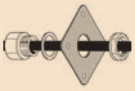
* Suggested where protection of people is requested; installations with no personnel admittance can be performed with 100 to 300 mA.

MCA-I-GF connection accessories

MCA Universal IP68
- Connection kit integrated with the terminal box.
- Termination Kit.
- Joint Kit.

MCA-Y
Branch Kit.

MCA-BOX3 / 4
Connection boxes between heating cables or heating and power cables.



MCA-AL
Thermal insulation pass-through kit.

MCA-PRESS
Cable gland.

MCA-EA
Warning label.

MCA-FV
Glass fiber tape.

MCA-ALL
Aluminium self adhesive tape 25 or 75 mm.

For other accessories see page 219

MCA-I-FF

Self-regulating heating cables for anti-freeze or temperature maintenance use with exposure to **corrosives and acids and high temperatures**.

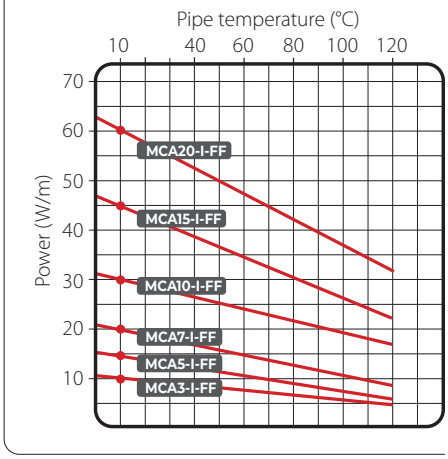
Suitable for maintaining process temperatures **up to 110°C** on piping and tanks, even in the presence of acids and corrosives, or for anti-freeze use even in the presence of acids and corrosives and where high temperature thermal treatment is foreseen, like steam washing.

CONSTITUTION OF THE CABLE

- Copper conductors
- Self regulating conductive core
- Fluoropolymer insulation
- Copper screen
- Fluoropolymer outer sheath

Cables certified for classified zones
Ex II 2G Ex 60079-30-1 IIC Gb
Ex II 2D Ex 60079-30-1 IIIC Db
In accordance: EN IEC 60079-0:2018
EN IEC 60079-30-1:2017

Type of surface to be tracked:
Steel - Painted - Stainless Steel - Plastic.
Chemical resistance:
Suitable for exposure to corrosives and acids and high temperatures.



Product	Power voltage (V)	Power at 10°C (W/m)	Minimum installation temperature (°C)	MAX Temperature **Continuous** with powered cable (°C)	MAX Temperature with no powered cable (°C)	Bending radius MIN (mm)	Temperature classification
MCA3-I-FF	230	10	-60	110	130	25	T4
MCA5 -I-FF		15					T4
MCA7-I-FF		20					T3
MCA10-I-FF		30					T3
MCA15-I-FF		45					T3
MCA20-I-FF		60					T3

MAXIMUM LENGTH OF THE CIRCUITS IN THE HEATING CABle (m)

ELECTRICAL SIZING **Starting temperature** (°C)		MCA3-I-PF			MCA5-I-PF			MCA7-I-FF			MCA10-I-FF			MCA15-I-FF			MCA20-I-FF		
		+10°	0°	-20°	+10°	0°	-20°	+10°	-15°	-25°	+10°	0°	-20°	+10°	-15°	-25°	+10°	-0°	-20°
Switchgear protection (A), with C curve and 30mA* differential protection*	16 A	230	217	195	164	155	141	122	107	102	92	87	79	55	48	36	52	49	45
	20 A	231	231	231	188	188	177	136	127	124	115	109	98	68	60	57	65	61	56
	25 A	231	231	231	188	188	188	-	-	-	133	133	123	-	-	-	75	75	70
	32 A	231	231	231	188	188	188	-	-	-	133	133	133	91	83	82	75	75	75

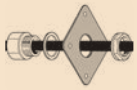
* Suggested where protection of people is requested; installations with no personnel admittance can be performed with 100 to 300 mA.

MCA-I-FF connection accessories

MCA Universal IP68
- Connection kit integrated with the terminal box.
- Termination Kit.
- Joint Kit.

MCA-Y
Branch Kit.

MCA-BOX3 / 4
Connection boxes between heating cables or heating and power cables.



MCA-AL
Thermal insulation pass-through kit.

MCA-PRESS
Cable gland.

MCA-EA
Warning label.

MCA-FV
Glass fiber tape.

MCA-ALL
Aluminium self adhesive tape 25 or 75 mm.

For other accessories see page 219

HEATING CABLES
DOMESTIC USE

PIPING

CONSTANT POWER	SELF-REGULATING
	
STOP ICE	ICE KILLER MCA

RAMPS

CONSTANT POWER	SELF-REGULATING
	
EASY CABLE EASY RAMP	MCA RAMP

GUTTERS

CONSTANT POWER	SELF-REGULATING
	
EASY FROST	MCA 8

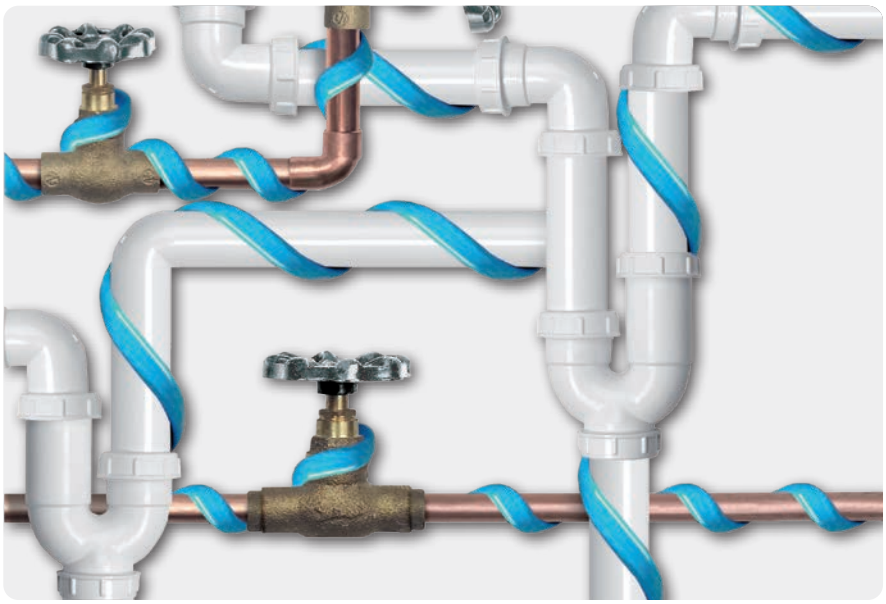
STOP ICE

Constant power anti-freeze kit complete with thermostat and plug.

Raytech Stop Ice is a pre-assembled kit consisting of a constant wattage heating cable of 12 W/m, complete with contact thermostat (installed on the end of the heating cable) and power cable with plug. Stop-Ice is particularly suitable for frost protection, and prevention of possible damages caused by low temperatures on pipes, valves, faucets, water meters, troughs, bowls and small tanks.

- Easy and quick to install
- No need for any external temperature control system, thanks to its built-in thermostat
- Low energy consumption

Product	Power (W/kit)	Specific power (W/m)	Length (m)
Stop Ice 2/12	24	12	2
Stop Ice 5/12	60	12	5
Stop Ice 10/12	120	12	10
Stop Ice 18/12	216	12	18



CHARACTERISTICS

Power: 12 W/m
Power supply: 230 V – 50 Hz
Cable dimensions: ~ 5x7 mm
Min. installation temperature: +5°C
Max. working temperature: +70°C
Heating cable type:
2 conductors, screened cable
Insulation: XLPE
External sheath: PVC
Min. bending radius: 3,5 D
Protection degree: IP X7
Marking: CE

Integrated Bimetal Thermostat
(ON + 3°C - OFF +10°C)

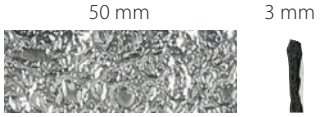
Complete Connections and power cord
(1,5 m - 3 x 0,75 mm²)

CONSTANT POWER

LINUS

Self-adhesive thermal insulating tape.

To offer a complete solution in the field of electrical tracking, Raytech has developed, LINUS, an insulation tape to maintain temperature. The product is a closed-cell expanded synthetic rubber, low thermal conductivity and extremely flexible tape. The rubber tape is coupled with an aluminium sheet to protect against tearing, for greater resistance to perforation and higher tensile resistance. It also protects very well against UV radiation. The tape is self-adhesive for easy application on traced pipes. The closed cells and the special material type give the tape very high insulating properties and optimal behaviour in the presence of condensation.



Product	Width (mm)	Thickness (mm)	Length (m)
LINUS	50	3	10

	pipe Ø ¾" (DN 20)	pipe Ø 1" (DN 25)	pipe Ø 1 ¼" (DN 32)
LENGTH PIPE I can insulate with 1 LINUS tape 50% overlapped	2,2 m	1,9 m	1,6 m

CHARACTERISTICS

Density: 0,7
Temperature range: -50°C -105°C
Coefficient of thermal conductivity (λ): 0,039 W/mK a 50°C
Flame resistance: Bs3-dO (DIN EN 13501-1)

STOP ICE PLUS

Constant power anti-freeze kit complete with thermostat, connection plug and insulation tape.

STOP ICE + LINUS

- Stop Ice 12 W/m constant power cable, complete with connection plug and thermostat
- 3 mm LINUS insulation tape, for application on already traced pipe with a cable, to apply with 50% overlap

As an example, with a 10 m long LINUS tape, about 2.2 m of ¾", traced with the Stop Ice cable, can be insulated.

HEATING CABLE
BUILT-IN THERMOSTAT
BUILT-IN PLUG

+

TAPE INSULATION
TO MAINTAIN T
EMPERATURE

Product	Power (W/kit)	Length cable (m)
Stop Ice Plus 2	24	2
Stop Ice Plus 5	60	5

CABLE

Specific power: 12 W/m
Power supply: 230 V- 50Hz
Cold cable: 3 x 0,75 mm^2 - L = 1,5 m
Temperature control: integrated bimetallic thermostat
ON / OFF: +3°C / +10°C

INSULATION TAPE

Temperature range: -50 / +105°C
Coefficient of thermal conductivity (λ): 0,039 W/mK a 50°C
Dimensions: 50 mm x 3 mm x L10 m

Supply voltage: 230 V
Min installation temperature: -30°C
Cable dimensions: 7,7 x 5,3 mm
Max temperature with powered cable: 65°C
Max exposure temperature with non-powered cable: 65°C

ICE KILLER

Cut and install **self-regulating** cable kit, complete with connection side and termination kit.

The Ice Killer kit is composed of a 30 m self-regulating cable coil, complete with connection side and termination accessories. The cable can be cut to the desired length, installed on the pipe or tank, connected to the mains and terminated at the opposite end. The economic and compact Ice Killer kit is sold in an attractive, easy to carry, easy to handle on-site package, is small in size, very flexible and can be easily adapted to bends in the pipe.

The Ice Killer cable is laid linearly or wound around the pipe, depending on the specific necessary power. It is then fastened to the same by means of inextensible tape (Raytech MCA-FV or MCA-ALL75 type tapes), terminated with accessories contained in the kit and then clad with the insulation. Operating temperature is reached very quickly and is maintained almost constant even with room temperature variations.

Product	Specific power a 10°C (W/m)	Kit composition
Ice Killer 2	10	30 m cable Connection accessory Termination accessory
Ice Killer 6	18	30 m cable Connection accessory Termination accessory

	Maximum circuit length (m)			
	Ice Killer 2		Ice Killer 6	
Starting temperature	0°C	-20°C	0°C	-20°C
10 A electrical protection, characteristic C switch with differential 30 mA protection	95	77	58	41

MCA

Self-regulating cable for anti-freeze use or for maintaining temperatures for general use.

For anti-freeze use on pipes or tanks or for maintaining process temperatures under 65°C, even in hazardous areas. Maintenance-free, reliable, easy to install. Suitable even in the presence of mild inorganic solutions.

Product	Power voltage (V)	Minimum installation temperature (°C)	Power at 10°C (W/m)	TEMPERATURE MAX **Continuous** cable powered (°C)	TEMPERATURE MAX **Intermittent** cable not powered (°C)
MCA3	220-240	-30	10	65	80
MCA5	220-240	-30	15	65	80
MCA8	220-240	-30	25	65	80

ELECTRICAL SIZING		MAXIMUM LENGTH OF THE CIRCUITS IN THE HEATING CABLE (m)								
		MCA3			MCA5			MCA8		
Starting temperature (°C)		+10°	-10°	-20°	+10°	-10°	-20°	+10°	-10°	-20°
Switchgear protection (A), with C curve and 30mA* differential protection*	10 A	-	-	-	103	71	62	64	47	37
	16 A	177	144	125	160	114	99	103	75	60
	20 A	-	149	139	-	133	124	126	94	75
	25 A	-	-	-	-	-	-	-	107	94

* Suggested where protection of people is requested; installations with no personnel admittance can be performed with 100 to 300 mA.

Pipe Ø		Thermal insulation thickness									
		10 mm		20 mm		30 mm		40 mm		50 mm	
		Outer temperature (°C)									
inch	mm	-10	-20	-10	-20	-10	-20	-10	-20	-10	-20
1/2"	15	1-**3**	1-**3**	1-**3**	1-**3**	1-**3**	1-**3**	1-**3**	1-**3**	1-**3**	1-**3**
3/4"	20	1-**3**	1-**3**	1-**3**	1-**3**	1-**3**	1-**3**	1-**3**	1-**3**	1-**3**	1-**3**
1"	25	1-**3**	1-**8**	1-**3**	1-**3**	1-**3**	1-**3**	1-**3**	1-**3**	1-**3**	1-**3**
1¼"	32	1-**3**	1-**8**	1-**3**	1-**3**	1-**3**	1-**3**	1-**3**	1-**3**	1-**3**	1-**3**
1½"	40	1-**3**	1-**8**	1-**3**	1-**3**	1-**3**	1-**3**	1-**3**	1-**3**	1-**3**	1-**3**
2"	50	1-**8**	1-**8**	1-**3**	1-**8**	1-**3**	1-**3**	1-**3**	1-**3**	1-**3**	1-**3**
2½"	65	1-**8**	1-**8**	1-**3**	1-**8**	1-**3**	1-**3**	1-**3**	1-**3**	1-**3**	1-**3**
3"	80	1-**8**	2-**8**	1-**3**	1-**8**	1-**3**	1-**5**	1-**3**	1-**3**	1-**3**	1-**3**
4"	100	1-**8**	2-**8**	1-**5**	1-**8**	1-**3**	1-**5**	1-**3**	1-**5**	1-**3**	1-**3**
6"	150	2-**8**	2-**8**	1-**8**	2-**8**	1-**8**	1-**8**	1-**3**	1-**8**	1-**3**	1-**8**
8"	200	2-**8**	-	1-**8**	2-**8**	1-**8**	1-**8**	1-**8**	1-**8**	1-**3**	1-**8**
10"	250	2-**8**	-	2-**8**	-	1-**8**	2-**8**	1-**8**	1-**8**	1-**8**	1-**8**

HOW TO CHOOSE MCA CABLE FOR ANTIFREEZE PROTECTION

The table gives the cable quantity for tube lenght unit (1st number) and the MCA cable code number (2nd number) versus tube diameter, thermal insulation thickness (for rockwod) and min outer temperature.

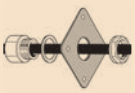
For uses other than anti-freeze, request design from Raytech technical direction.

MCA connection accessories

MCA Universal IP68
- Connection kit integrated with the terminal box.
- Termination Kit.
- Joint Kit.

MCA-Y
Branch Kit.

MCA-BOX3 / 4
Connection boxes between heating cables or heating and power cables.



MCA-AL
Thermal insulation pass-through kit.

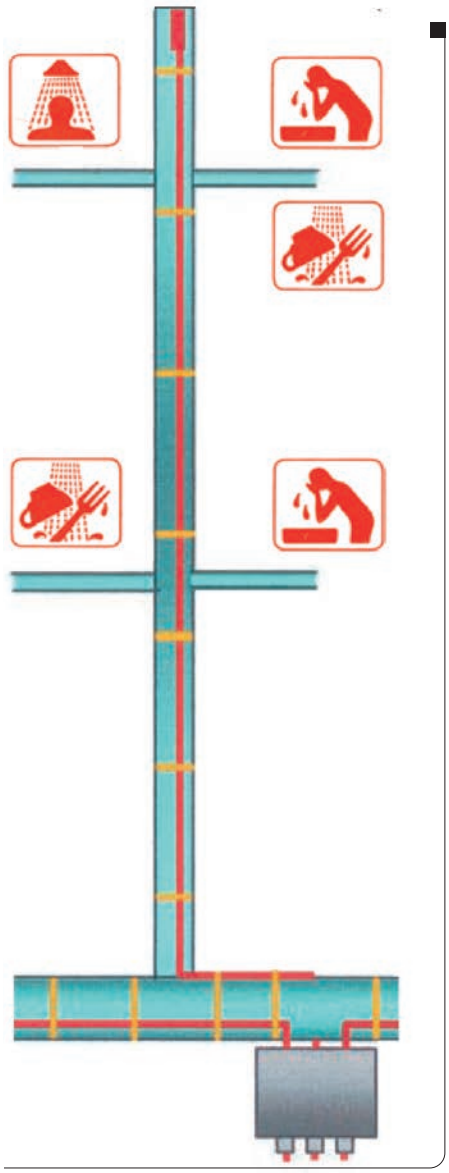
MCA-PRESS
Cable gland.

MCA-EA
Warning label.

MCA-FV
Glass fiber tape.

MCA-ALL
Aluminium self adhesive tape 25 or 75 mm.

For other accessories see page 219



MCA

Self-regulating cable for pipe tracing for domestic hot water.

The tracing of domestic hot water systems allows you to always have the water at the ideal temperature available at each pick up point: this allows an energy saving (approximately up to 70%) also for the elimination of thermal losses in recirculation pipes. The pipes must always be insulated with suitable thermal insulation; for the choice and the project, please contact Raytech.

		MCA3	MCA5	MCA8	MCA10-I GF
TEMPERATURE (°C)	max operating	65°	65°	65°	120°
	max exposure*	80°	80°	80°	120°
	maintenance**	45°	55°	60°	80°
Available power	a 40°C (W/m)	6	8	14	25
Max length to be supplied with starting at 10°C through a switchgear	16 A	177	160	103	85
	20 A	-	-	126	114
	30 A	-	-	126	-
RECOMMENDED FOR		Small villas	Blocks of flats Buildings	Blocks of flats Buildings	Hotels Hospitals

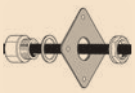
*Circuit breakers with "C" curve, with a 30 mA differential.
**The indicated data is the limit maintenance temperature for which the cable can be used; for insulation sizing, please contact Raytech.

MCA connection accessories

MCA Universal IP68
- Connection kit integrated with the terminal box.
- Termination Kit.
- Joint Kit.

MCA-Y
Branch Kit.

MCA-BOX3 / 4
Connection boxes between heating cables or heating and power cables.



MCA-AL
Thermal insulation pass-through kit.

MCA-PRESS
Cable gland.

MCA-EA
Warning label.

MCA-FV
Glass fiber tape.

MCA-ALL
Aluminium self adhesive tape 25 or 75 mm.

For other accessories see page 219

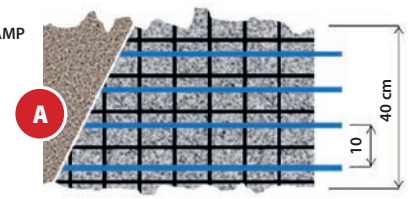
EASY CABLE

Constant, versatile power heating cable complete with termination accessory and power cable.

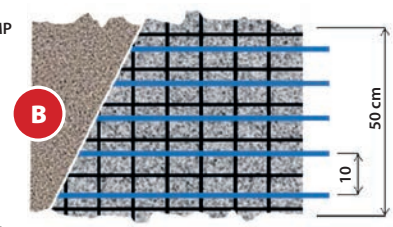
Especially suitable for solving anti-freeze problems: snow or ice accumulation on access ramps, walkways and stairs, or for frost protection of pipes or tanks, under adequate insulation. 3 standard lengths are available, with a specific power of 25 W/m, covering all possible tracking types. Complete with termination accessory and power cable, Easy cable is a shielded heating cable under a protective sheath with two conductors, with extremely simple and quick installation and connection. Please note that the cable should never be cut, spliced or overlapped.

FOR RAMPS Product	Specific power (W/m)	Rated power (W)	Maximum length for each individual wheel passage 40 cm (**A**) 4 passages	 50 cm (**B**) 5 passages
Easy Cable 26/25 Length 26,5 m	25	655	6 m	5 m
Easy Cable 44/25 Length 44 m	25	1120	10,5 m	8,5 m
Easy Cable 92/25 Length 92 m	25	2270	22,5 m	18 m

RAMP



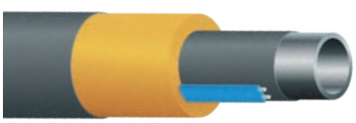
RAMP

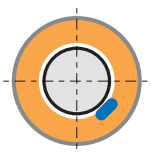


Depth of installation about 50 mm with respect to the surface.

PER PIPING Product	Specific power (W/m)	Rated power (W)	Anti-freeze for pipes up to 2 ½" (Dn 65 mm), for minimum temperatures up to -15°C, with rock wool thickness	Anti-freeze for pipes from 3" (Dn 80) up to 6" (Dn 200 mm), for minimum temperatures up to -15°C, with rock wool thickness
Easy Cable 26/25 Length 26,5 m	25	655	10 mm	20 mm
Easy Cable 44/25 Length 44 m	25	1120	10 mm	20 mm
Easy Cable 92/25 Length 92 m	25	2270	10 mm	20 mm

Anti-freeze tracking for piping, longitudinal linear installation 1 m cable/m pipe.





CHARACTERISTICS

Power supply: 230 V, 50/60 Hz
Cable dimensions: ~ 5x7 mm
Min. installation temperature: +5°C
Max. working temperature: +80°C
Heating cable type:
2 conductors, screened cable
Specific power: 25 W/m
Insulation: XLPE
External sheath: PVC
Marking: CE

Control unit for Easy Cable for ramps.

C2000
he C 2000 control unit, to be completed with the C2000-SR temperature, snow and humidity sensor (sensor to be placed flush with the ramp and to be ordered separately from the control unit), activating the power contactor, gives consent to start the system only when low temperature and snow or ice are present simultaneously, optimising energy consumption.

C2000-SR
Temperature, snow and humidity sensor

ATTENTION: since it is a constant power cable, the *EASY CABLE* can not be cut, jointed or overlapped.

EASY RAMP

Constant wattage heating mat.

Raytech Easy Ramp consists of a constant wattage heating cable assembled with tape to form a heating mat, which is easily and quickly spread on the surfaces to be protected. Easy Ramp is ideal for solving the problems caused by ice formation and the accumulation of snow on the access ramps to garages, pathways, outdoor parking areas, footpaths, etc. It can be installed in concrete, asphalt, and interlocking bricks or under porphyry paving or other paving materials blocked with cement and sand. The standard width of Easy Ramp pads is 60 cm; a sufficient width to free the track of vehicle wheels from ice and snow or to create an extremely safe pedestrian pathway.

The power density developed by Easy Ramp is 300 W/m². The mat is available in various lengths which are easily adaptable to the size of the area to track and where the size of the mat is larger than that of the ramp, the excess part of mat can be easily folded 90 degrees. The mat is supplied completely finished and ready for installation, complete with 4 meters of cold cable (3x1.5 mm² or 3x2.5 mm²) for connection to the power supply. The constant wattage heating cable, which constitutes the mat, is a 2 conductor heating cable, which is shielded; this allows one end only to be powered, making installation even faster and easier.

CHARACTERISTICS

Mat specific power: 300 W/m²
Power supply: 230 V ~ 50/60 Hz
Mat thickness: 7,5 mm
Min. installation temperature: + 5°C
Max. working temperature: + 80°C
Cold cable (supply):
length 4 meters - 3 x 1,5 mm² or 3x2,5 mm²
Heating cable type:
2 conductors, screened cable
Heating cable dimensions: ~ 5 x 7 mm
Heating cable power: 25 W/m
Insulation: XLPE
External sheath: PVC
Marking: CE

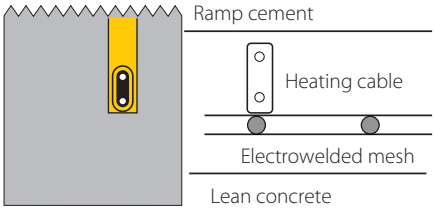
Product	Power (W)	Specific power (W/m²)	Width (m)	Length (m)
Easy Ramp 4/300	670	300	0,6	4
Easy Ramp 7/300	1140	300	0,6	7
Easy Ramp 13/300	2560	300	0,6	13
Easy Ramp 21/300	3730	300	0,6	21

ATTENTION: since it is a constant power cable, the *EASY RAMP* can not be cut, jointed or overlapped.

MCA RAMP

Self-regulating heating cable.

The cable is used, buried in concrete, to prevent the accumulation of ice and its formation on access ramps, stairs, sidewalks, parking lots, walkways, etc. Suitable for ramps covered in concrete, interlocking brick or asphalt, both for light and heavy traffic. The cable can be installed on ramps under construction, securing the electrowelded mesh prior to pouring of the concrete, or else on already completed ramps by cutting the concrete surfaces to then fill with plastic cement after installation of the cable, or simply by laying the cable on the surface of the ramp and throwing another layer of cement. Contact Raytech for tracing designs and estimates.



Cable roofing cement or interlocking, asphalt, gneiss, and any other material

Product	Power at 0°C in concrete (W/m)	Max working temperature (°C)	Cable length Switgear*	Cable length Maximum length (m)
MCA 20-I-GF	90	120	40 A	64
MCA 10**	50	65	40 A	90

* Differential protection 30 mA
**For ramps, stairs etc. with ambient temperature not lower than -15°C; for lower temperatures use only MCA 20-I-GF cable. For draining trenches tracing MCA8 cable shall be used. For other information contact Raytech.

Notes: to trace drain outlets, use the MCA8 cable installed on the bottom of the outlets under the grate.

Control unit for Easy Ramp and MCA Ramp

C2000
The C 2000 control unit, to be completed with the C2000-SR temperature, snow and humidity sensor (sensor to be placed flush with the ramp and to be ordered separately from the control unit), activating the power contactor, gives consent to start the system only when low temperature and snow or ice are present simultaneously, optimising energy consumption.

C2000-SR
Temperature, snow and humidity sensor.

MCA Ramp connection accessories

MCA Universal IP68
- Connection kit integrated with the terminal box.
- Kit terminale lato non alimentato.
- Joint Kit.

MCA-BOX3 / 4
Connection boxes between heating cables or heating and power cables.

MCA-PRESS
Cable gland.

For other accessories see page 219

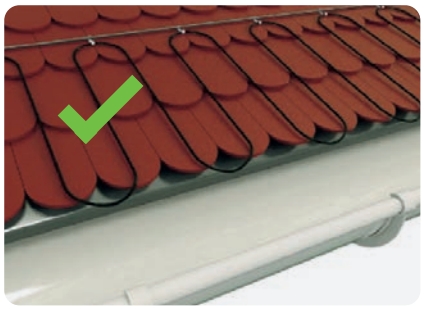
EASY FROST

Constant power heating cable for roofs, gutters and downpipes.

Power: 20 W/m
Power supply: 230 V ~ 50/60 Hz
Heating cable dimensions: ~ 5 x 7 mm
Min. installation temperature: + 5°C
Max. working temperature: + 80°C
Cold cable (power supply):
length 4 meters - 3 x 1,0 mm² or 3 x 1,5 mm²
Heating cable type:
2 conductors, screened cable
Insulation: XLPE
External sheath: PVC
Min. bending radius: 3,5 D
Marking: CE

Raytech Easy Frost is a 20 W/m constant power cable especially designed for roofs, gutters and downpipe protection from damage due to snow accumulation and ice formation. Easy Frost is supplied terminated and ready for installation, with 4 metres of cold cable (3 x 1,0 mm² o 3 x 1,5 mm²) for supply connection.

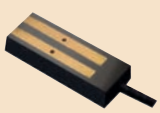
Product	Power (W)	Specific power (W/m)	Resistance (Ω)	Length (m)
Easy Frost 50/20	1000	20	52,9	50
Easy Frost 102/20	2040	20	29,9	102



ATTENTION: since it is a constant power cable, the *EASY FROST* can not be cut, jointed or overlapped.

Control unit for MCA 8

C2000
The C 2000 control unit, to be completed with the C2000-SR temperature, snow and humidity sensor (sensor to be placed flush with the ramp and to be ordered separately from the control unit), activating the power contactor, gives consent to start the system only when low temperature and snow or ice are present simultaneously, optimising energy consumption.



C2000-SUG
Ice and snow sensor

C2000-STG
Temperature sensor

Notes: control unit C2000 works only when connected to both the C2000-SUG and C2000-STG sensors.

MCA 8

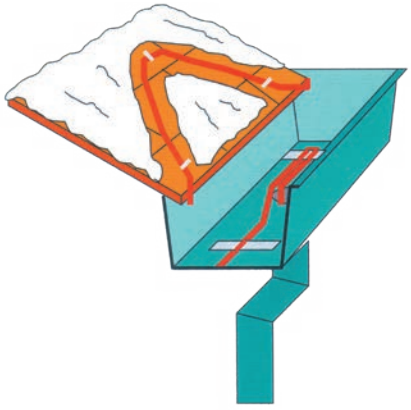
Self-regulating cable for tracing roofs, gutters and/or downpipes.

Prevents

The formation of ice inside gutters and downspouts, snow accumulation and ice on roofs, the development of infiltrations along façades, the development of ice sticks along gutters and roof ends.

Avoiding

Gutter breaking under the weight of snow, bursting and fracturing of drainpipes due to water freezing, damaged caused by a lack of draining caused by drain clogging, damage to persons or property caused by falling ice sticks, damage to persons or property caused by possible snow slides off rooves from roof edges.



The image shows gutter installation, the input of cable in a downpipe and tracking of a roof pitch.

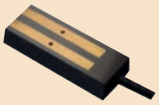
Product	In air 0°C Power (W/m)	In chilly water Power (W/m)	Maximum cable lenght with starting temperature of -10°C through a switchgear (*) of 16 A	20 A	30 A
MCA8	24	40	40 m	50 m	90 m

*Switchgear with "C" characteristic, having a diffferential protection of 30 mA

Notes: the gutter cable is suspended along the down side of the drain pipes with accessory MCA-SUP. The cable is self-supporting up to 25 m vertical sections; in addition, an extra MCA-SUP accessory is provided for every 25 m, to which the cable is secured.

MCA 8 connection accessories

C2000
The C 2000 con**trol** unit, to be completed with the C2000-SR temperature, snow and **humidity** sensor (sensor to be placed flush with the ramp and to be ordered separately from the control unit), activating the power contactor, gives consent to start the system only when low temperature and snow or ice are present simultaneously, optimising energy consumption.



C2000-SUG
Ice and snow sensor

C2000-STG
Temperature sensor

Notes: control unit C2000 works only when connected to both the C2000-SUG and C2000-STG sensors.

MCA Universal IP68
- Connection kit integrated with the terminal box.
- Kit terminale lato non alimentato.
- Joint Kit.

MCA-Y
Branch Kit.

MCA-BOX3 / 4
Connection boxes between heating cables or heating and power cables.

MCA-SUP
Support device.

For other accessories see page 219

Raytech

HEATING CABLES
COMFORT HOUSE

FLOORING

EASY FLOOR

MIRROR

EASY MIRROR

CEILING

WARM-UP

COMFORT HOUSE

PRIMARY, SECONDARY OR FLOORING COMFORT HEATING SYSTEMS.

Heating mats and intelligent timed thermostat: Raytech intelligent systems for primary, secondary and flooring heating comfort for homes, offices, kindergartens, schools and hospitals.

Combining the total reliability of the Raytech mat system with the RID microprocessor intelligent thermostat, it is possible to autonomously control all space heating parameters, as a primary means in less cold months and as a secondary means together with a more traditional system, and for comfort heating in bathrooms, kitchens, living rooms and children's bedrooms. After the first programming of the RID timed thermostat, you are free to forget about the system, which will run itself, ensuring optimal conditions.

EASY FLOOR

The kit is composed of:
- Heating mat complete with cold tail
- RID microprocessor intelligent room timed thermostat complete with sensor
- Corrugated pipe for positioning

Notes: –ST type kits are supplied without a RID room timed thermostat

ATTENTION: since it is a constant power cable, the *EASY FLOOR* can not be cut, jointed or overlapped.

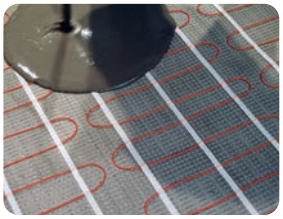
EASY FLOOR

Heating mat for the intelligent tracing of tile, marble, floors, etc.

The Easy Floor mat is laid directly on a layer of thermal insulation that coats the floor finished with concrete, and then buried in self-levelling concrete and covered with tiles. The flooring tracing mats are supplied in standard widths of 50 cm, power 150 W/m^2.

Product	Width (m)	Length (m)	Power (W)
Easy Floor 2	0,5	2	150
Easy Floor 3	0,5	3	225
Easy Floor 4	0,5	4	300
Easy Floor 2-ST	0,5	2	150
Easy Floor 3-ST	0,5	3	225
Easy Floor 4-ST	0,5	4	300

Other sizes available upon request.



RID RAYTECH INTELLIGENT DISPLAY

Intelligent room timed thermostat.

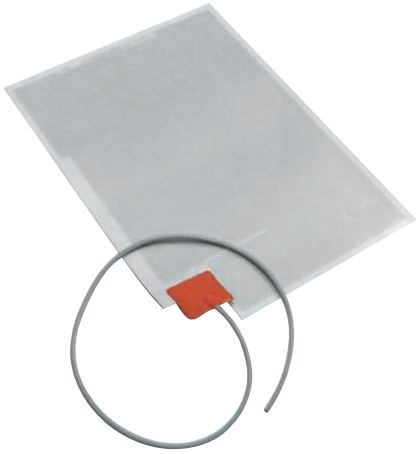
The RID (Raytech Intelligent Display) microprocessor room timed thermostat is simple to use, thanks to its step-by-step programming guide. The easy to read display supplies a complete explanation of set parameters after 10 seconds.

The RID autonomously controls all room functions, with no need for extra operations. Weekly programming makes it possible to to take into account the set temperature to be maintained, the type and thickness of the flooring, temperature limits not to be exceeded, modes for increasing temperature, etc.

This device is equipped with an anti-freeze function when the house is not inhabited, a block for untimely interventions (for example children) and communicates any operating failures to the appropriate alarms.

Sensor	Included with the kit
Temperature range	+5 / +50°C
Temperature limit	+5 / +55°C
Start Up Programme	Automatic, self learning
Manual	0,1-10°C
Room temperature	0 / +40°C
Differential On/Off	Standard 0,4°C Adjustable 0,1-1°C
Power supply	230 V / 50-60 Hz
Self-consumption	5 W
Max output current	16 A (3400 W/220 V)

Product	(mm)
RID room thermostat	85 x 85 x 45



EASY MIRROR

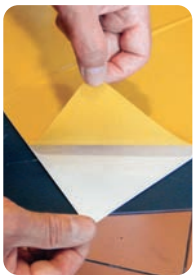
Self-adhesive heating sheet.

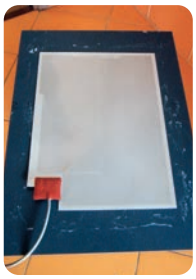
No more fogged mirrors after a shower or bath! Easy Mirror, the self-adhering heating sheet to be applied on the back of the mirror and connected to the mains, eliminates this problem! Powered 230V, double insulated in accordance with safety regulations. Brings the surface of the mirror to 30°C in about 3-5 minutes, removing the film of moisture. Easy Mirror sheets are packaged with a sheet of laminated aluminium on polyester, with double insulation made with 4 more sheets of vulcanised polyester, completely sealed against water.

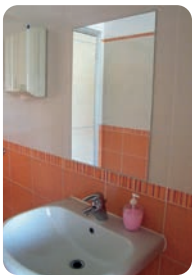
- Ideal for bathrooms, saunas, kitchens, private homes, Hotels, gyms and sports facilities

Product	Sheet dimensions (cm)	Power (W)
Easy Mirror 35	Ø 35	50
Easy Mirror 36/50	36 x 50	50

Installation Sequence





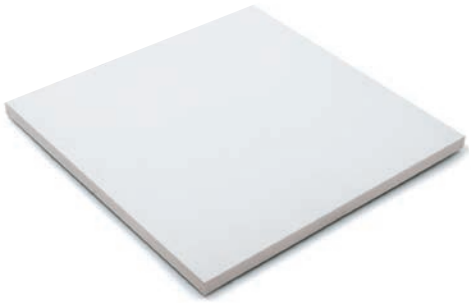


warm up

Ceiling heating panels

Heat where you want it, when you want it

The ideal solution for all low thermal comfort environments.



WARM UP

Ceiling heating panels.

WARM-UP ceiling heating panels by Raytech can be installed invisibly and built into the ceiling of any home, office, showroom, workshop, greenhouse, camper vans etc., maximising space and freeing up wall space. Their positioning does not require any invasive procedures on the walls of the room, and their electrical connection is extremely simple.They can be installed, possibly placing them at the points where maximum thermal efficiency is required, with any mounting system: hung with chains, flush mounted, or recessed in false ceilings, always easily and quickly. The type of heating, based on infrared radiation, which makes it similar to solar radiation, is safe and unharmful, quick, efficient and extremely comfortable.

Why choose the Warm-Up System?

- It is installed without requiring any invasive procedures to be carried out on the structures of the house.
- It is easily unistalled for re-use in another context.
- Its radiated heat is safe, with no air movement, and does not dirty the walls and room.
- It is used for primary heating and for secondary heating as an integrative system, and optimises and reduces heating costs thanks to the RID-WL thermostat.

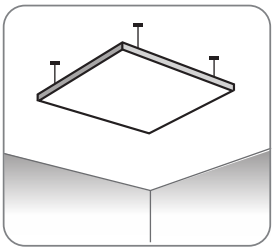
An ideally integrated invisible system that can also be decorative!

VERANDAS

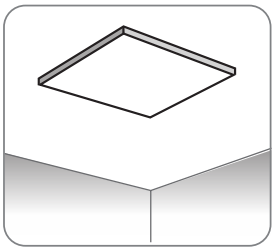
PREFABRICATED BUILDINGS

EXHIBITION SPACES

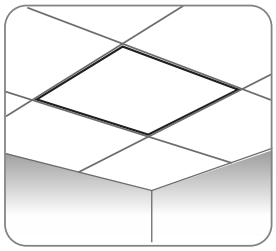
GAZEBOS



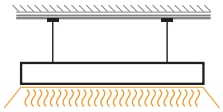
SUSPENDED

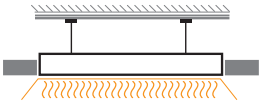


FIXED



ENCASED



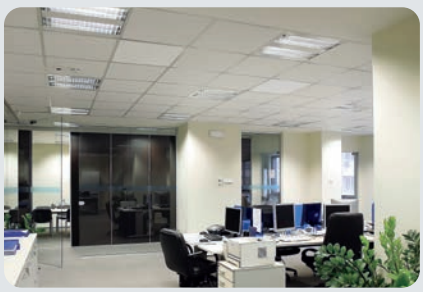


Product	Colour	Power	Dimensions (mm)
Warm Up 1	White, Paintable	300 W	590 x 590 x 40
Warm Up 2		600 W	1190 x 590 x 40

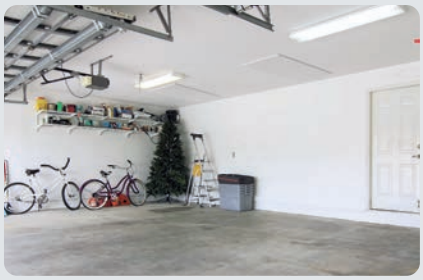
What Are the Benefits to the System compared to others?

- Heating is immediate, in just a few minutes.
- It leaves room walls free because it is installed on the ceiling, flush mounted or recessed in false ceilings.
- It does not pollute, as it does not use gas or hydrocarbons.
- It optimises heating and reduces costs.
- Unlike other types of heating systems, it does not require maintenance!
- It uses the energy produced by photovoltaic systems, reducing heating costs.
- It can be coloured, and is therefore easily camouflaged or used as a decorative element.

STORES

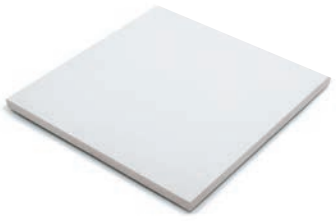


OFFICES



WAREHOUSES - GARAGES

HOMES



Controlled by a timed thermostat or a power regulator, they reduce consumption to a minimum.

Class 2
degree of protection IP44

Power required for comfort heating:
about 60W/m²
(one Warm Up 1 panel every 5m²)
For primary heating with well-insulated walls:
about 150W/m²

WARM UP ACCESSORIES

RID-WL

Digital wireless timed thermostat.

Raytech has established the innovative WIRELESS RID-WL TIMED ROOM THERMOSTAT for maximum efficiency and speed and ease of installation. This system combines well-known reliability and control of environmental parameters of the system RID with a wireless connection.

The RID-WL, which operates in radio frequency, allows non-invasive installation in any environment, both for new installations and those related to renovations, or to reinforce an existing primary system.

The RID-WL is coupled with its own receiver, tuned to the frequency of its own thermostat (exclusive signal), which is able to control an ampacity of 8 A.

RID-WL, since it is not wired, it can be moved within the range of use and positioned where controlling the parameters is important.

It is equipped with an easy to read backlit LCD screen and is programmable and provided with a built-in internal sensor, but can be connected to a separate sensor,for example on the floor.

Temperature accuracy: 0,1°C
Field of operation: from 0°C to +40°C
Field of temperature: from 5°C to +35°C
Power supply: 2 AAA 1.5 V batteries
Degree of protection: IP30
Frequency: 868 MHz
Powered receiver: 230 V, 50 Hz
Relay range: 8 A
Range in distance:
100 m outdoors, 30 m indoors

Programmable in 30 minute blocks
9 pre-installed programmes and
4 user-set programmes
"Self-learning" temperature control
Child lock
Low battery alarm
Unlimited programme memory
in the case of discharged batteries

Product	Description
RID-WL	Timed thermostat including receiver

ADDITIONAL RELAY DEVICE

Additional relay device, with a maximum of 6 devices which can be controlled by the same RID-WL timed thermostat.

Product	Description
RID-WL-R	Additional receiver for loads greater than 8 A

Degree of protection: IP30
Frequency: 868 MHz
Powered receiver: 230 V, 50 Hz
Relay range: 8 A
Range in distance:
100 m outdoors, 30 m indoors

Raytech

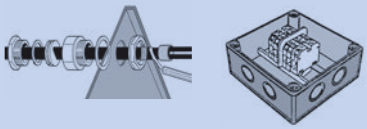
HEATING CABLES SELF-REGULATING ACCESSORIES

ACCESSORIES FOR SELF-REGULATING HEATING CABLES
(MCA, MCA-I-PF, MCA-I-GF, MCA-I-FF)

CONNECTION ACCESSORY

MCA UNIVERSAL IP68
Pre-filled gel joint

MCA BOX
Pre-filled gel boxes



MCA-PC + MCA-SG
Connection kit + Box
with terminal strip

DERIVATION ACCESSORY

MCA Y
Branch joint

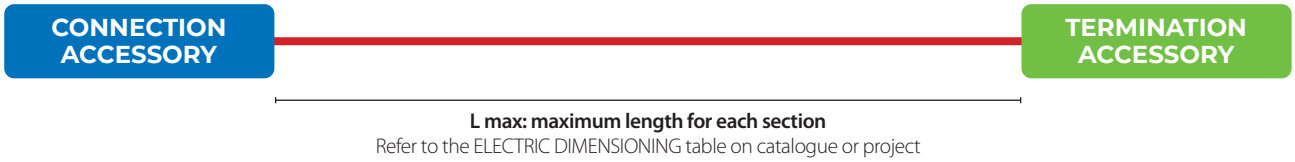
MCA BOX
Pre-filled gel boxes

TERMINATION ACCESSORY

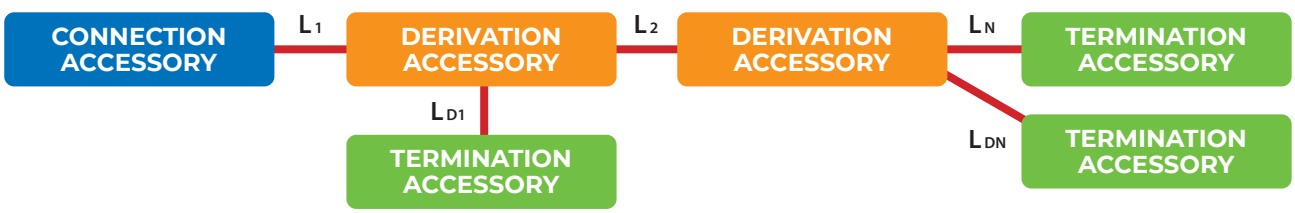
MCA UNIVERSAL IP68
Pre-filled gel joint

MCA PM
Termination kit.

AT LEAST ONE CONNECTION ACCESSORY AND ONE TERMINATION ACCESSORY ARE REQUIRED FOR EACH SECTION OF HEATING CABLE



IN CASE OF NEED TO MAKE DERIVATIONS, IT IS POSSIBLE TO USE THE RELEVANT ACCESSORIES; A TERMINATION ACCESSORY IS THEN NEEDED FOR EACH BRANCH.



The sum of the lengths of the sections under a single power supply must be less than Lmax (please refer to the ELECTRIC DIMENSIONING table on catalogue or project)

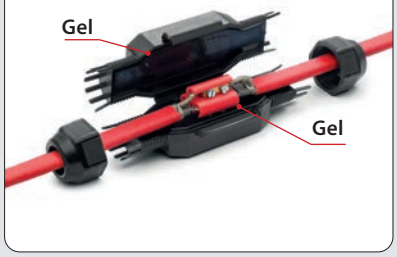
$L_1 + L_2 + L_{D1} + \ldots + L_{DN} + L_N = < L\ max$

MCA UNIVERSAL IP68
MCA-Y

Universal accessory for heating cable.

A revolutionary accessory is now available that is suitable for any type of self regulating heating cable either with or without screening. Its versatility provides a reliable unique solution unavailable elsewhere in the market. It has no shelf life and no tools are required during installation (including blow torches).

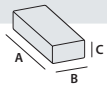
MCA UNIVERSAL IP68
Straight joint between Heating cables



Connection termination to the power cable

Pot end

MCA Y
Branch joint



Product	Kit Composition	A x B x C (mm)
MCA Universal IP68	3 screw connectors to connect to the power cable or another heating cable	125 x 43 x 35
MCA-Y	3 screw connectors for branch connections between heating cables	160 x 75 x 37

Electrical:
CEI EN 50393 e CEI 20-33
(Notes: with testing under water head and water between the cable cores),
in Class 2

Flame non propagation:
CEI 20-35, IEC 60332-1 and HD 405-1
(as applicable)

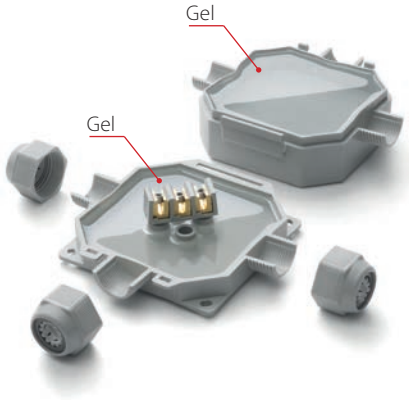
- Versatile and ready to use
- No need for tools
- Without heating
- Can be installed at any temperature
- Can be used directly underground
- Very compact
- Re-enterable
- Flame retardant
- The connections are automatically blocked when the joint is closed
- Screw connectors available with the kit
- Can be used underwater
- Pre-filled with a gel that is not-classified as hazardous under the CLP Directive and with no shelf life.

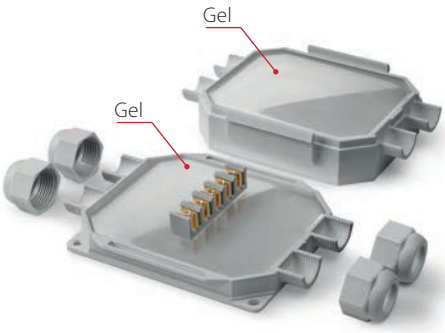
MCA-BOX

PRE-FILLED GEL CONNECTION BOXES FOR HEATING CABLES.

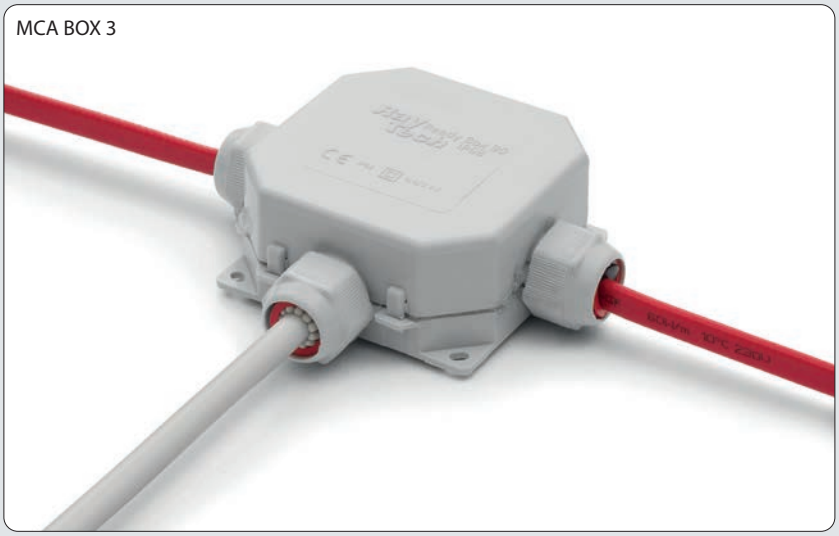
Boxes for single or multiple connections either between heating cables or heating and power cables. Ready to use, pre-filled with gel, complete with terminal block and screws, they allow the connection between heating cables and between heating cables and power cables, ensuring IP68 and IP69K degree of protection. They are suitable for power cables from 8 to 18 mm diameter and/or for power supplies with insulated wires in conduits of 16, 20, 25 and 32 mm diameter. MCA BOX is essential in damp environments and in areas subject to condensation or flooding. Available as either 3 or 4 entry in order to satisfy any installation requirement.

Product	Kit composition	A x B x C (mm)
MCA BOX 3	Gel-prefilled box Terminal block 3 x 6 mm² + adaptors	90 x 90 x 45
MCA BOX 4	Gel-prefilled box Terminal block 4 x 6 mm² + adaptors	120 x 100 x 45

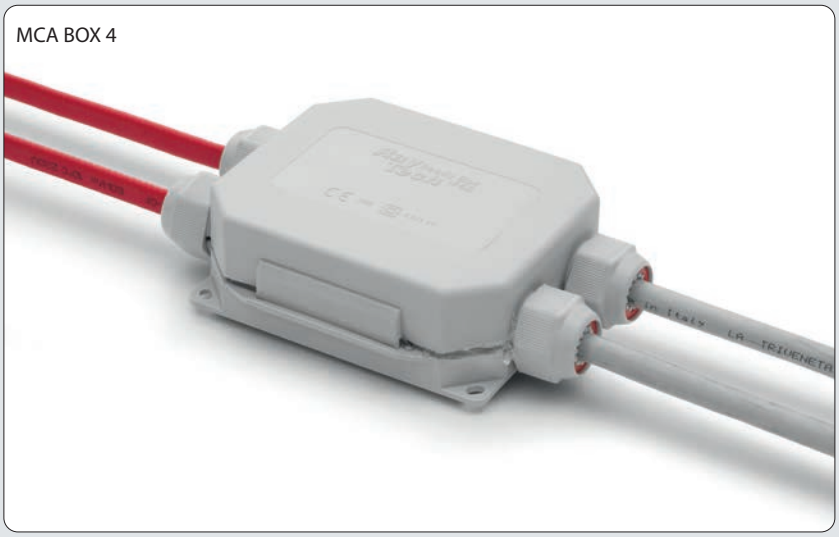




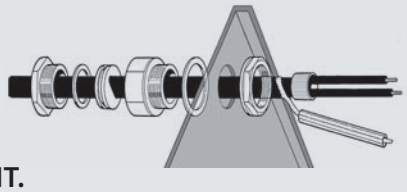
MCA BOX 3



MCA BOX 4



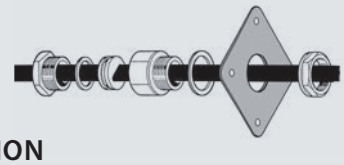
MCA-PC



CONNECTION KIT.

Supply side termination allowing connections to a terminal box. Made of cold-shrink components and also a dedicated cable gland. One for each cable.

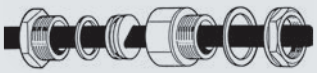
MCA-AL



THERMAL INSULATION PASS-THROUGH.

It allows the cable to pass through the metallic covering of the thermal insulation, avoiding abrasions and the moisture or water entry under the covering. It contains cable gland and fixing plate. One kit for each cable.

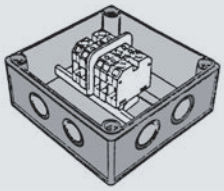
MCA-PRESS



CABLE GLAND.

To allow the cable to enter in boxes, to pass through walls etc. One kit per cable.

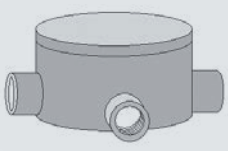
MCA-SG



BOX.

Box with IP55 degree of protection, complete of terminals. It alllows the entry of 1 or more heating cables, or to branch a cable from a main tracing, or to joint cable lengths. Cables inside the box shall be MCA-PC terminated.

GUAT 26



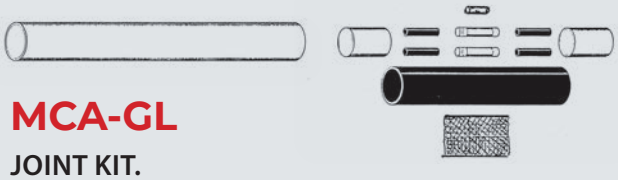
CONNECTION KIT FOR CLASSIFIED AREA.

MCA-PM

TERMINATION KIT.

For insulating and matching the cable ends. Made from cold-shrink components. One kit for each termination.

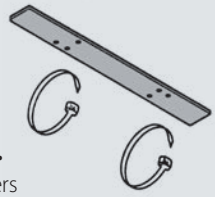
MCA-GL



JOINT KIT.

To joint cable ends or to repair damaged cables. It containes all the components required, including connectors. One kit for each cable.

MCA-SUP



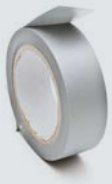
SUPPORT DEVICE FOR GUTTERS AND DOWN PIPES.

It supports and fixes the cable in gutters and downpipes. In large gutters, requiring 2 cables laid longitudinally, it maintains the cable at the right distance.

MCA-FV

GLASS FIBER TAPE.

To fix the cable to the pipe, 3 turns every 0,3 m of pipe. Self adhesive, in 50 m rolls.



MCA-ALL75

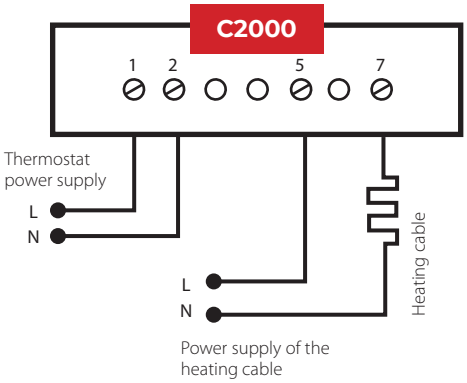
ALUMINIUM SELF ADHESIVE TAPE 75 MM WIDTH.

For cable fixing, in 50 m rolls.

MCA-EA

WARNING LABEL.

To be applied for warning over traced items.



CONTROL UNIT C2000

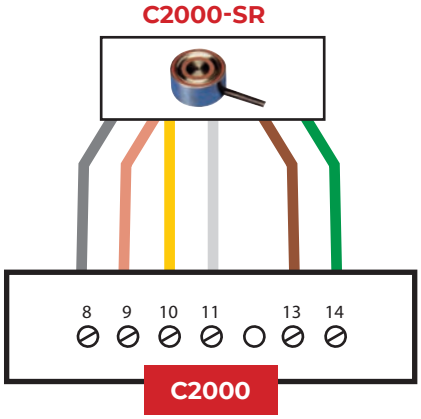
C 2000 CONTROL UNIT FOR TEMPERATURE AND HUMIDITY.

The C2000 control unit and relative sensors are suitable for the tracing with both self-regulating cables and constant power cables. The unit allows you to power the system only when low temperatures and humid surfaces (snow - ice, etc.) are present simultaneously.

Segnalling lamps

- **ON** voltage
- **RELAY** cable on power
- **MOIST** humidity presence
- **TEMP** the temperature is lower than the fixed

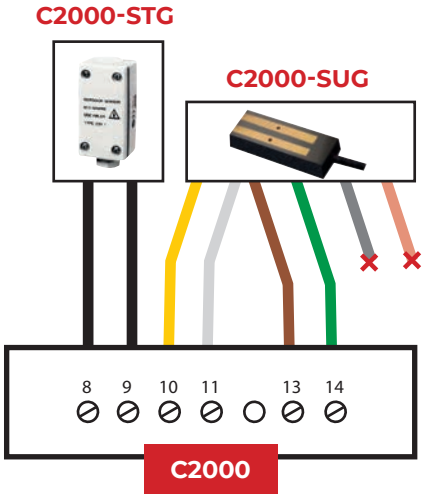
Voltage: 230V c.a. +/- 10% 50/60Hz
Output: N° 1 relays
Switching capacity: 16A (3600 W)
Differential ON/OFF: 0,4°C
Temperature Range: 0-10°C
After run time: 1-6 hours
Protection degree: IP20
Dimensions: 85 x 42 x 48,8 mm
Weight: 252 gr
Room temperature: 0/50°C



C2000-SR

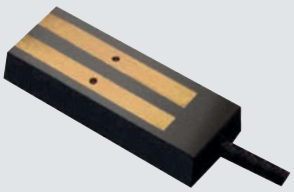
HUMIDITY AND TEMPERATURE SENSOR FOR RAMPS AND STAIRS.

Dimensions: h 32 mm - Ø 60 mm
Protection degree: IP68
Ambient temperature: -20°C / +70°C
Connecting cable: 6x1,5 mm², lenght. 10 m
(possible increase up to 200 m)



C2000-SUG

ICE AND SNOW SENSOR FOR GUTTERS.



Dimensions: 105 x 30 x 10mm
Protection degree: IP68
Ambient temperature: -20°C / +70°C
Connecting cable: 4x1,5 mm², lenght 10 m
(possible increase up to 200 m)

C2000-STG

TEMPERATURE SENSOR FOR GUTTERS.

Dimensions: 86 x 45 x 35 mm
Protection degree: IP55
Ambient temperature: -20°C / 70°C
Connecting cable: not included

T2000 THERMOSTAT

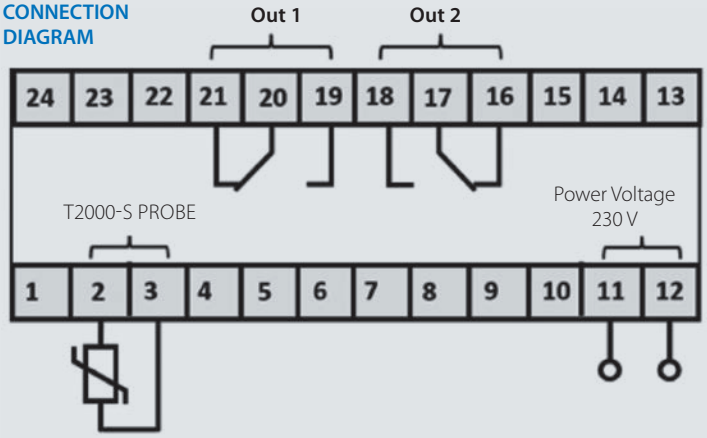
ON/OFF THERMOSTAT – P.I.D. 2 OUTPUTS WITH TEMPERATURE ALARM MANAGEMENT.

T2000 digital thermostats, complete with probe included in the kit, are suitable for control both in heating, maintenance and refrigeration.
Suitable for rear panel installation, on DIN guide, they are compact and they have controls and displays arranged frontally.

Characteristics T2000 thermostat

- **Measuring Range:** -40 a +105°C
- **Degree of protection:** IP40 (front)
- **2 outputs** with unipolar relay in deviation
- **Power supply:** 230 V a.c. ± 10 %
- **Contact capacity:** 240 Vac , 16 A (resistive); 4 A (inductive),
- **Self-consumption:** 3 W
- **Control: ON/OFF** or **PID** - Output ON or OFF depending on the incoming temperature, set point and hysteresis values set. The hysteresis is the value of the deviation from the set point that determines the reactivation of the output.
- **Alarm management:** output 2
- **Proportional control and integrative proportional**
- **Minimum or maximum set point limits**
- **Operating temperature:** -10 a +50°C
- **Dimensions:** L 71 x H 98 x W 61

CONNECTION DIAGRAM



T2000-S PROBE

(in thermostat kit included)

T2000 probe features

- **Type:** NTC10k
- **Measuring Range:** -40 a +105 °C
- **Precision** ± 1,5 K a 25 °C
- **Probe length:** 2 m
- **Connection cable:** bipolar (2 x 0.4 mm²)
- **Tip Dimensions:** Ø 6 x 34 mm
- **Degree of protection:** IP67

REQUEST FORMS TO BE SENT TO *info@raytech.it*
OR FILL IN ON-LINE USING THE QRcode ▶

Data request form for the **heating tracing design** of

STEPS AND WALKWAYS

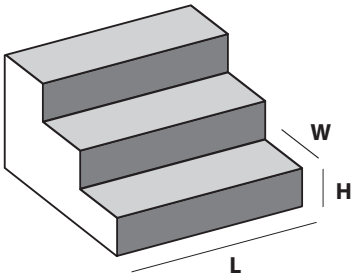
Company/Customer data: _____

Address: _____

E-mail: _____

Contact person: _____ Tel.: _____

STEPS



Number Steps _____

L step (cm) _____

H step (cm) _____

W step (cm) _____

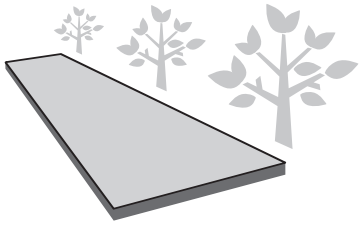
Minimum environmetal temperature ☐ **-10°C** ☐ **-15°C** ☐ **-20°C**

Availability of 3 phase supply ☐ **Yes** ☐ **No**

Available power (kW) _____ (Supply voltage 230V)

Notes: _____

WALKWAYS



Width Walkways (m) _____

Length Walkways (m) _____

Type of covering ☐ **Concrete/Asphalt** ☐ **Self Locking/Porphyry**

Total thickness ☐ **Up to 6 cm** ☐ **Over 6 cm** (max 10 cm)

Tracing type ☐ **Complete** ☐ **Partial**

Minimum environmental temp. ☐ **-10°C** ☐ **-15°C** ☐ **-20°C** ☐ **Other** _____ **°C**

Availability of 3 phase supply ☐ **Yes** ☐ **No**

Available power (kW) _____ (Supply voltage 230V)

Notes: _____

The applicant is reminded to enter in this form all data in his/her possession. The evaluation is carried out by Raytech on a free basis, to provide the customer with a rough list of Raytech Material suitable for the execution of the required tracement.

Data request form for the **heating tracing design** of

GUTTERS AND DOWNSPOUTS

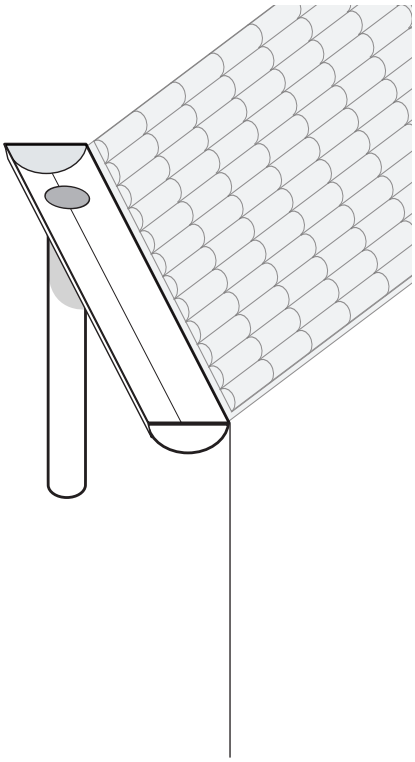
Company/Customer data: _____

Address: _____

E-mail: _____

Contact person: _____ Tel.: _____

GUTTERS AND DOWNSPOUTS



Total number of gutters _____

Gutter width (cm) _____

Length of gutter n° 1 (m) _____

Length of gutter n° 2 (m) _____

Length of gutter n° 3 (m) _____

Length of gutter n° 4 (m) _____

Total number of downpipes _____

Downpipes average high (m) _____

Downpipes diameter (cm) _____

Is the gutter bitumen coated ☐ **Yes** ☐ **No**

Minimum environmental temp. ☐ **-10°C** ☐ **-15°C** ☐ **-20°C** ☐ **Other** _____ **°C**

Availability of 3 phase supply ☐ **Yes** ☐ **No**

Available power (kW) _____ (Supply voltage 230V)

Notes:

The applicant is reminded to enter in this form all data in his/her possession. The evaluation is carried out by Raytech on a free basis, to provide the customer with a rough list of Raytech Material suitable for the execution of the required tracement.

REQUEST FORMS TO BE SENT TO *info@raytech.it*
OR FILL IN ON-LINE USING THE QRcode ▶

Data request form for the **heating tracing design** of

RAMPS

Company/Customer data: _____

Address: _____

E-mail: _____

Contact person: _____ Tel.: _____

TYPE OF TRACING

MCA SELF-REGULATING

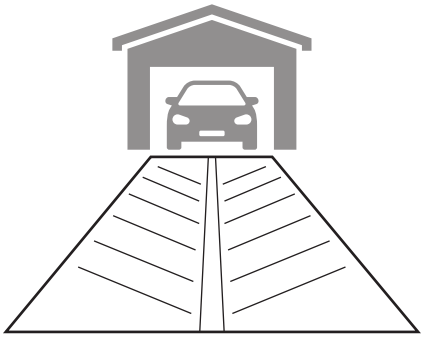
☐ Complete

☐ Only wheel paths

EASY RAMP CONSTANT POWER

☐ Complete

☐ Only wheel paths



RAMP

Ramp width (m) _____ Ramp lenght (m) _____

Presence of:	Width (mm)	Length (m)	Grids distance from the upper end (m)
☐ Water collection grids			
☐ Grids			
☐ Expansion joints			
☐ Traps			

Type of covering ☐ **Concrete/Asphalt** ☐ **Self Locking/Porphyry**

Total thickness ☐ **Up to 6 cm** ☐ **Over 6 cm** (max 10 cm)

Type of traffic ☐ **One way** ☐ **Two ways simoultaneously**

Minimum environmental temp. ☐ **Up to -15°C** ☐ **Severe < -15°C**

Availability of 3 phase supply ☐ **Yes** ☐ **No**

Available power (kW) _____ (Supply voltage 230V)

Notes: _____

The applicant is reminded to enter in this form all data in his/her possession. The evaluation is carried out by Raytech on a free basis, to provide the customer with a rough list of Raytech Material suitable for the execution of the required tracement.

Data request form for the **heating tracing design** of

TERRACE/BALCONY AND ROOFS

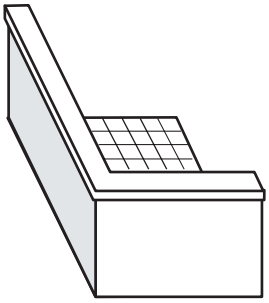
Company/Customer data: _____

Address: _____

E-mail: _____

Contact person: _____ Tel.: _____

TERRACE/BALCONY



Width (m) _____

Length (m) _____

Type of covering ☐ **Concrete** ☐ **Tarry**

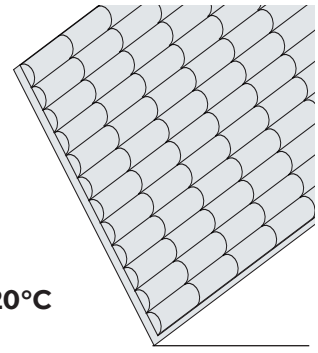
Minimum environmental temp. ☐ **-10°C** ☐ **-15°C** ☐ **-20°C**

Availability of 3 phase supply ☐ **Si** ☐ **No**

Available power (kW) _____ (Supply voltage 230V)

Notes:

ROOFS



Width (m) _____

Length (m) _____

Covering Tar/bitumen ☐ **Yes** ☐ **No**

Minimum environmental temp. ☐ **-10°C** ☐ **-15°C** ☐ **-20°C**

Availability of 3 phase supply ☐ **Si** ☐ **No**

Available power (kW) _____ (Supply voltage 230V)

Notes:

The applicant is reminded to enter in this form all data in his/her possession. The evaluation is carried out by Raytech on a free basis, to provide the customer with a rough list of Raytech Material suitable for the execution of the required tracement.

REQUEST FORMS TO BE SENT TO *info@raytech.it*
OR FILL IN ON-LINE USING THE QRcode ▶

Data request form for the **heating tracing design** of

PIPING

Company/Customer data: _____

Address: _____

E-mail: _____

Contact person: _____ Tel.: _____

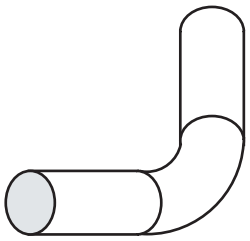
PIPE DATA

(please send us the isometric drawing, if available)

Outer pipe diameter (cm) _____

Pipe lenght (m) _____

Material ☐ **PVC/multilayer** ☐ **Steel or similar**



TEMPERATURE DATA

Minimum environmental temp. ☐ **-10°C** ☐ **-15°C** ☐ **-20°C** ☐ **Other** _____ **°C**

Maximum exposition temperature ☐ **up to 60°C** ☐ **>60°C**

Maintenance temperature ☐ **5°C Antifreeze** ☐ **Other** _____ **°C**

INSULATION

Material

- ☐ **Elastomer**
- ☐ **Glass fiber**
- ☐ **Mineral fiber**
- ☐ **Expanded Perlite**
- ☐ **Cellular polyurethane**
- ☐ **Rock wool**
- ☐ **Expanded polystyrene**
- ☐ **Calcium Silicate**
- ☐ **Other**_____

_____

Thickness (mm) _____

ACIDS OR CORROSIVES

☐ **Yes** ☐ **No**

Specify the type

_____

Notes:

The applicant is reminded to enter in this form all data in his/her possession. The evaluation is carried out by Raytech on a free basis, to provide the customer with a rough list of Raytech Material suitable for the execution of the required tracement.

AREA CLASSIFICATION

Zone with risk of explosion:	☐ Yes	☐ No				

IF THE AREA IS ATEX:

AREA CLASSIFICATION						
Dangerous zone GAS	☐ zone 0	☐ zone 1	☐ zone 2			
Dangerous zone DUST	☐ zone 20	☐ zone 21	☐ zone 22			
GAS GROUP CLASSIFICATION	☐ I	☐ IIA	☐ IIB	☐ IIC		
DUST GROUP CLASSIFICATION	☐ IIIA	☐ IIIB	☐ IIIC			
TEMP. CLASS CLASSIFICATION	☐ T1	☐ T2	☐ T3	☐ T4	☐ T5	☐ T6
CATEGORY (ATEX 94/9/EC) Group II:	☐ 1G	☐ 2G	☐ 3G	☐ 1D	☐ 2D	☐ 3D
EPL CLASSIFICATION	☐ Ga	☐ Gb	☐ Gc	☐ Da	☐ Db	☐ Dc

VALVES – FLANGES – SUPPORTS – PUMPS (Number)

Valves _____ Flanges _____ Supports _____ Pumps _____

FLUID TO BE HEATED (maintenance/heating)

☐ **Nitric acid**	☐ **Sulfur dioxide**	☐ **Ash (on average)**
☐ **Sulfuric Acid**	☐ **Air**	☐ **Ethane**
☐ **Water**	☐ **Nitrogen**	☐ **Hydrogen**
☐ **Water (100°)**	☐ **Liquid Nitrogen**	☐ **Methane**
☐ **Ethyl alcohol at 20°C**	☐ **Benzene and gasoline**	☐ **Olive oil (1,674 to 1,893)**
☐ **Carbon Dioxide**	☐ **Butane**	☐ **Petroleum (on average)**

☐ **Other**_____

_____ Specific weight Kg/dm³

_____ Specific heat KJ/Kg °C

_____ Speed of the fluid in the pipe m/sec

_____ % of tank filling

_____ Required time to get the final temperature (h)

_____ Min. fluid temperature at the heating start (°C)

_____ Required final temperature (°C)

REQUEST FORMS TO BE SENT TO *info@raytech.it*
OR FILL IN ON-LINE USING THE QRcode ▶

Data request form for the **heating tracing design** of

SILOS AND TANKS

Company/Customer data: _____

Address: _____

E-mail: _____

Contact person: _____ Tel.: _____

TYPES OF TANKS AND SILOS

☐ **CYLINDRICAL**

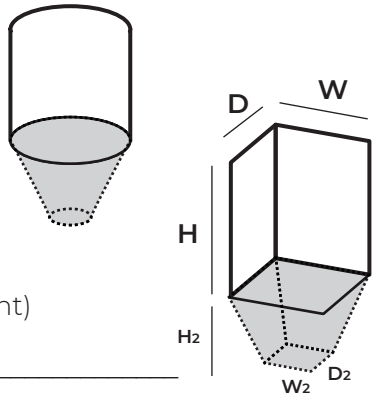
Ø cylinder (m) _____

Height (m) _____

CONICAL HOPPER (if present)

Ø coupling pipe (m) _____

Height (m) _____



☐ **PARALLELEPIPED**

W x D x H (m) _____

PYRAMIDAL HOPPER (if present)

W2 x D2 filler-neck x H2 (m) _____

Material ☐ **PVC/multilayer** ☐ **Steel or similar** Thickness (mm) _____

TEMPERATURE DATA

Minimum environmental temp. ☐ **-10°C** ☐ **-15°C** ☐ **-20°C** ☐ **Other** _____ **°C**

Maximum exposition temperature ☐ **Fino a 60°C** ☐ **>60°C**

Maintenance temperature ☐ **5°C Antifreeze** ☐ **Other** _____ **°C**

INSULATION

Material

☐ **Elastomer**
☐ **Glass fiber**
☐ **Mineral fiber**
☐ **Expanded Perlite**
☐ **Cellular polyurethane**
☐ **Rock wool**
☐ **Expanded polystyrene**
☐ **Calcium Silicate**
☐ **Other** _____

Thickness (mm) _____

ACIDS OR CORROSIVES

☐ **Yes** ☐ **No**

Specify the type _____

Notes:

The applicant is reminded to enter in this form all data in his/her possession. The evaluation is carried out by Raytech on a free basis, to provide the customer with a rough list of Raytech Material suitable for the execution of the required tracement.

AREA CLASSIFICATION

Zone with risk of explosion:	☐ Yes	☐ No				

IF THE AREA IS ATEX:

AREA CLASSIFICATION						
Dangerous zone GAS	☐ zone 0	☐ zone 1	☐ zone 2			
Dangerous zone DUST	☐ zone 20	☐ zone 21	☐ zone 22			
GAS GROUP CLASSIFICATION	☐ I	☐ IIA	☐ IIB	☐ IIC		
DUST GROUP CLASSIFICATION	☐ IIIA	☐ IIIB	☐ IIIC			
TEMP. CLASS CLASSIFICATION	☐ T1	☐ T2	☐ T3	☐ T4	☐ T5	☐ T6
CATEGORY (ATEX 94/9/EC) Group II:	☐ 1G	☐ 2G	☐ 3G	☐ 1D	☐ 2D	☐ 3D
EPL CLASSIFICATION	☐ Ga	☐ Gb	☐ Gc	☐ Da	☐ Db	☐ Dc

VALVES – FLANGES – SUPPORTS – PUMPS (Number)

Valves _____ Flanges _____ Supports _____ Pumps _____

FLUID TO BE HEATED (maintenance/heating)

☐ **Nitric acid**	☐ **Sulfur dioxide**	☐ **Ash (on average)**
☐ **Sulfuric Acid**	☐ **Air**	☐ **Ethane**
☐ **Water**	☐ **Nitrogen**	☐ **Hydrogen**
☐ **Water (100°)**	☐ **Liquid Nitrogen**	☐ **Methane**
☐ **Ethyl alcohol at 20°C**	☐ **Benzene and gasoline**	☐ **Olive oil (1,674 to 1,893)**
☐ **Carbon Dioxide**	☐ **Butane**	☐ **Petroleum (on average)**

☐ **Other**_____

_____ Specific weight Kg/dm³

_____ Specific heat KJ/Kg °C

_____ Speed of the fluid in the pipe m/sec

_____ % of tank filling

_____ Required time to get the final temperature (h)

_____ Min. fluid temperature at the heating start (°C)

_____ Required final temperature (°C)

REQUEST FORMS TO BE SENT TO *info@raytech.it*
OR FILL IN ON-LINE USING THE QRcode ▶

Data request form for the **heating tracing design** of

COMFORT - INDOOR FLOORS

Company/Customer data: _____

Address: _____

E-mail: _____

Contact person: _____ Tel.: _____

IMPORTANT:
Indoor floor tracings (ex. offices, homes) is usually considered as secondary/comfort heating system.
It can be considered as primary heating system, only in presence of well insulated environments.
For further information, please contact our technical office.

ROOM DATA

Is the floor well insulated? ☐ **No** ☐ **Yes** Thickness (mm) _____

Are walls well insulated? ☐ **No** ☐ **Yes** Thickness (mm) _____

Is the ceiling well insulated? ☐ **No** ☐ **Yes** Thickness (mm) _____

Is there a primary heating system? ☐ **No** ☐ **Yes**

Availability of 3 phase supply ☐ **No** ☐ **Yes**

Available power (kW) _____ (Supply voltage 230V)

Room 1 Length x Width (m) _____ surface (m^2) _____

Room 2 Length x Width (m) _____ surface (m^2) _____

Room 3 Length x Width (m) _____ surface (m^2) _____

Room 4 Length x Width (m) _____ surface (m^2) _____

Room 5 Length x Width (m) _____ surface (m^2) _____

PLEASE ATTACH AT THE FORM A PLANIMETRY OF THE TRACING AREA

The applicant is reminded to enter in this form all data in his/her possession. The evaluation is carried out by Raytech on a free basis, to provide the customer with a rough list of Raytech Material suitable for the execution of the required tracement.

CERTIFICATE OF CORRECT EXECUTION
OF INSULATION RESISTANCE MEASUREMENT TESTS AND VERIFICATION OF SYSTEM FUNCTIONALITY, FOR EACH SECTION OF **SELF-REGULATING HEATING CABLE.**

To be filled in by the electrician installer

Customer: _____

Place of installation: _____

Tracing number: _____

Tracing type: ☐ **Ramps** ☐ **Walkways** ☐ **Terrace** ☐ **Steps**
☐ **Gutter** ☐ **Roofs** ☐ **Piping** ☐ **Silos**

WARNING: during cable laying and accessories installation, cable free ends must be protected against moisture ingress

Heating cable INSTALLED BY

Company: _____ Operator: _____ Date: _____

Fill in the table for each heating cable section

Heating cable section n. _____ **Heating cable or mat type** (code) _____

Heating cable section length (m) _____

Power connection ACCESSORY* (e.g. MCA UNIVERSAL IP68) _____

Termination ACCESSORY* (e.g. MCA UNIVERSAL IP68) _____

Straight or branch ACCESSORY* _____

*example MCA UNIVERSAL IP68

MEASUREMENT OF INSULATION RESISTANCE (must exceed 20 MOhm)	AFTER CABLE LAYING **Measure A**	AFTER APPLICATION OF THE COVERING LAYER OR THERMAL INSULATION **Measure B**
Between conductor 1 and screen (MOhm)		
Between conductor 2 and screen (MOhm)		

VERIFICATION OF CABLE FUNCTIONALITY, feeding the cable section to the nominal voltage to verify the suitability of the connection	AFTER CABLE LAYING		AFTER APPLICATION OF THE COVERING LAYER OR THERMAL INSULATION	
	Measure A1 IN RUSH CURRENT	**Measure A2** In Regimen Conditions (after 15')	**Measure B1** IN RUSH CURRENT	**Measure B2** In Regimen Conditions (after 15')
Current absorption (A)				

CABLE INSTALLED AND TESTED BY:

Company	Operator	Date

Stamp end Signature

Keep carefully the control certificate. If necessary, repeat the measurements during the periodic maintenance checks.

CERTIFICATE OF CORRECT EXECUTION
OF INSULATION RESISTANCE MEASUREMENT TESTS AND VERIFICATION OF SYSTEM FUNCTIONALITY, FOR EACH SECTION OF **CONSTANT POWER HEATING CABLE.**

To be filled in by the electrician installer

Customer: _____

Place of installation: _____

Tracing number: _____

Tracing type: ☐ **Ramps** ☐ **Walkways** ☐ **Terrace** ☐ **Steps**
☐ **Gutter** ☐ **Roofs** ☐ **Piping** ☐ **Silos**

Heating cable INSTALLED BY

Company: _____ Operator: _____ Date: _____

Fill in the table for each heating cable section

Heating cable section n. _____

Heating cable or mat type (code) _____

Heating cable / mat length (m) _____

RESISTANCE AND INSULATION TESTS (with 500 Vcc instrument)	JUST EXTRACTED THE CABLE FROM THE PACKAGE **Measure A**	AFTER CABLE LAYING ON THE SCREED OR PIPE **Measure B**	AFTER APPLICATION OF THE COVERING LAYER OR THERMAL INSULATION **Measure C**
Between resistance wires 1 and 2 (Ohm)			
Between wire 1 and ground (must be infinite)			
Between wire 2 and ground (must be infinite)			

VERIFICATION OF CABLE FUNCTIONALITY, feeding the cable section to the nominal voltage to verify the suitability of the connection	AFTER CABLE LAYING **Measure B**	AFTER APPLICATION OF THE COVERING LAYER OR THERMAL INSULATION **Measure C**
Current absorption (A)		

CABLE INSTALLED AND TESTED BY:

Company	Operator	Date

Stamp end Signature

Keep carefully the control certificate. If necessary, repeat the measurements during the periodic maintenance checks.