ELEKTRA®

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ELEKTRA
SelfTec®16

- Self-regulating heating cables

Installation manual UK

Application

UK

ELEKTRA SelfTec®16 heating cables are intended for the antifrost protection of:

- pipeline systems,
- sprinkler systems,
- drain pipes for condensate outlets in domestic air conditioning and ventilation systems,
- actuators,

as well as for the protection against snow and ice of:

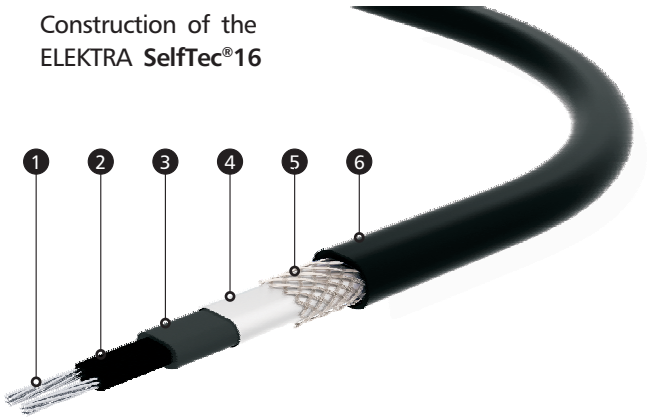
- gutters,
- downpipes,
- roof drains.

Characteristics

ELEKTRA SelfTec®16 self-regulating heating cables increase their heating power when the temperature of the heated system drops and adequately decrease it when the temperature increases.

Change of power only occurs in these places where ambient temperature changes. Self-regulating heating cables with no danger of spot overheating.

Construction of the
ELEKTRA **SelfTec®16**



1. tin-coated multi-wire copper conductor
2. self-regulating conductive core
3. modified polyolefin insulation
4. PET covered aluminum foil shield
5. tinned copper braiding
6. UV resistant halogene-free outer sheath

Technical parameters:

• power output (+10°C)	16 W/m
• power supply voltage	230V ~ 50/60 Hz
• external dimensions of the cable	~6x9 mm
• min. installation temperature	-25°C
• max. working temperature:	+65°C
• max. exposure temperature	+65°C
• min. cable bending radius	3.5D
• IP rating	IPX7
• max. protection type C	16A

ELEKTRA SelfTec®16 heating cables are available on spools, terminated with a heat shrink cap to protect the cable against moisture.

After a cable segment has been cut off, the cable remaining on the spool also needs to be secured with a heat-shrink cap. The cables need to be terminated and connected to the power supply conductor. For this purpose, the EC-PRO and ECM25-PRO joint sets have to be applied (installation manuals included in the sets).

Due to their properties, ELEKTRA SelfTec®16 can touch or cross and they are not prone to local overheating. A significant advantage is the possibility to cut the cables into segments of required length. However, it is recommended not to exceed the max. permissible heating circuit length, as shown in Table 1.

Table 1

min. switch-on temperature	SelfTec®16	
	type C circuit breaker	
	10A	16A
	max. circuit length [m]	
-20°C -15°C 0°C +10°C	55 60 70 80	75 80 90 100
+10°C in water	55	60
0°C in ice water	40	55

SelfTec®16 heating cable

Selection

Pipeline systems, sprinkler systems, etc.

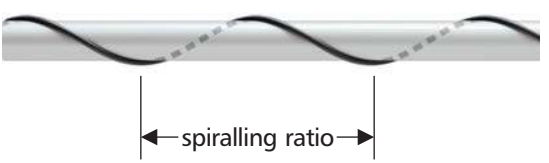
Length of the heating cables depends from:

- pipe's diameter,
- min. ambient temperature on the installation site.

Table 2 Length of the heating cable per 1 m of the heated pipe

Ambient temperature [°C]			Pipe's diameter [inches]					
			½	¾	1	1¼	1½	2
	-10	length [m]	1	1	1	1	1	1
		spiralling ratio [cm]	0	0	0	0	0	0
	-15	length [m]	1	1	1	1	1	1
		spiralling ratio [cm]	0	0	0	0	0	0
	-20	length [m]	1	1	1	1.1	1.2	1.5
		spiralling ratio [cm]	0	0	0	29	23	17
	-25	length [m]	1	1	1	1.3	1.4	1.7
		spiralling ratio [cm]	0	0	0	16	15	14
	-30	length [m]	1	1.1	1.3	1.6	1.8	2.2
		spiralling ratio [cm]	0	18.5	12.5	10.5	10	9.5

Value 1 in the length indicator signifies parallel positioning of the cable along the pipe. Values higher than 1 signify the length of the heating cable per 1 m of heated pipe. In this case, the cable should be spiralled along the pipe.



Note:

Heated pipeline systems, sprinkler systems, etc., must be insulated.

The thickness of thermal insulation layer must be minimum 10 mm for pipes up to 1 in. diameter, and at least 15 mm for pipes up to 2 in. diameter.

Gutters, downpipes

Selection of the adequate length of the heating cables depends from:

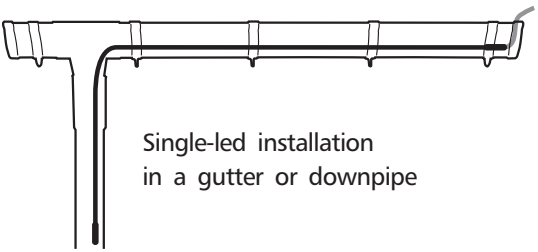
- min. ambient temperature in the area of the installation site.

Min. ambient temperature [°C]	Number of segments of the heating cable	
	Above -5°C	Below -5°C
gutters	1	2
downpipes	1	1 or 2*

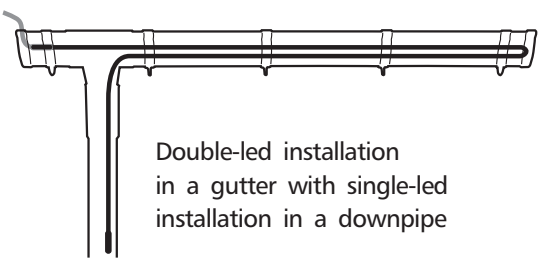
* if the building is located in the regions of intense snowfall

The values are given for gutters of diameters Ø100-125 mm.

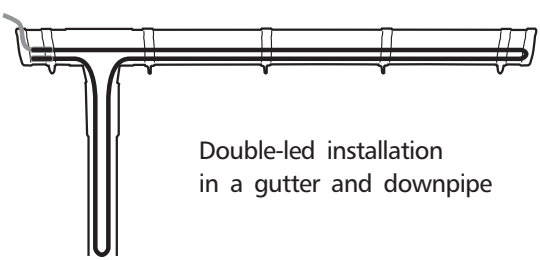
Examples of installation in gutters and downpipes



Single-led installation
in a gutter or downpipe



Double-led installation
in a gutter with single-led
installation in a downpipe



Double-led installation
in a gutter and downpipe

Materials

required for the installation of heating cables **on pipes and pipelines:**

- ELEKTRA SelfTec®16 heating cable,
- ELEKTRA EC-PRO cold lead connection and end seal kit or
- ELEKTRA ECM25-PRO termination and joint set with M25 gland for installation in the power supply junction box,
- ELEKTRA KF 0404-PRO power supply junction box,
- self-adhesive installation tape (available as an accessory),
- self-adhesive aluminum foil min. 0.06 mm thick, approx. 50 mm wide (available as an accessory),
- thermal insulation for pipes.

required for the installation of heating cables **in gutters and downpipes:**

- ELEKTRA SelfTec®16 heating cable,
- ELEKTRA EC-PRO cold lead connection and end seal kit or
- ELEKTRA ECM25-PRO termination and joint set with M25 gland for installation in the power supply junction box,
- ELEKTRA KF 0404-PRO power supply junction box,

- gutter and downpipe holders (available as an accessory),
- support bar (available as an accessory).

Installation on the pipe

- The relevant ELEKTRA SelfTec®16 heating cable should be selected depending on spiralling ratio (the cable should be longer and the surplus is for the cold tail connection).
- Mount the heating cable alongside the pipeline in its bottom part with self-adhesive installation tape fixed with the spacing of 30 cm. If, the selected cable is longer than the heated pipe, the cable should be installed spirally.

- For plastic pipelines, fix additionally self-adhesive aluminum foil along the heating cable to improve the temperature distribution on

the surface of the pipeline. Additionally, the aluminum foil will secure the cable from being pulled into the thermal insulation.

- After the heating cable has been installed on the pipeline, place the thermal insulation on it.

Installation in gutters and downpipes

Preliminary proceedings:

- measure the length of gutters and downpipes,
- assess the required heat output resulting from the climate conditions in which the installation is to be made,
- cut the proper length of the heating cable taking into account the number of the cables' segments in the gutter and downpipe.

Note:

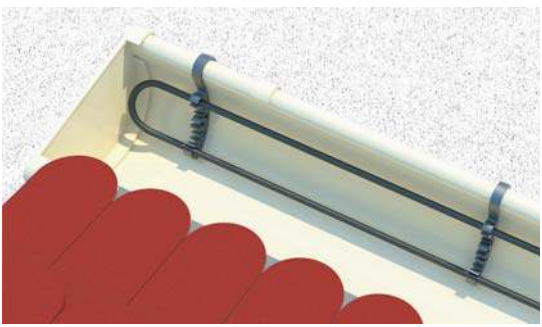
If the water from downpipes is discharged directly to the rain channel, the segment of the downpipe from the surface level to the soil freezing depth als should be heated.

Heating cable fixing in gutters and downpipes

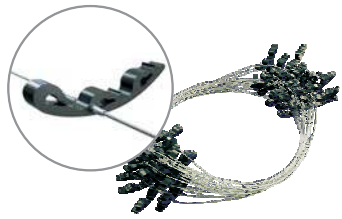
Heating cables should be fixed in order to maintain steady spacing between neighbouring cable's segments.

Gutters

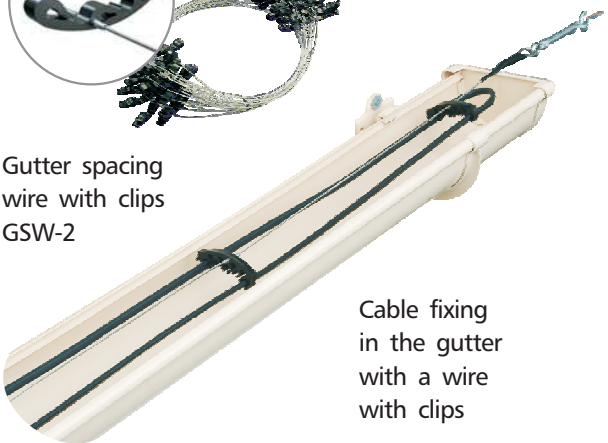
Heating cables can be fixed with holders (holder spacing should not exceed 30 cm) or a wire with clips.



Gutter holder
GH-2



Gutter spacing wire with clips GSW-2



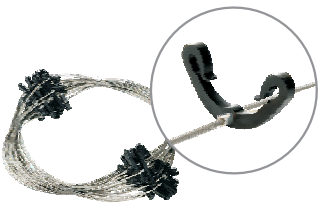
Cable fixing in the gutter with a wire with clips

Downpipes

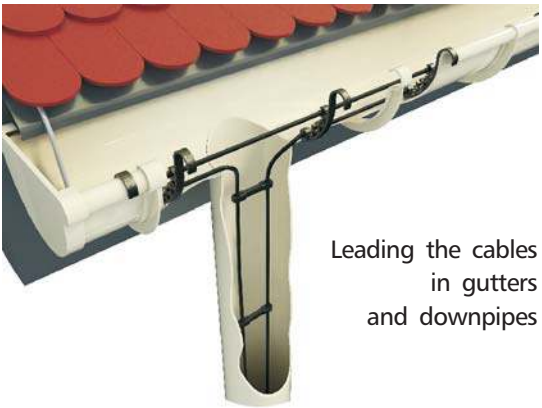
Single-led heating cables – do not require fixing if the length of the heated downpipe does not exceed 6 m.

Double-led heating cables – to be fixed with holders (holder spacing should not exceed 40 cm) or a wire with clips. Wire with clips are applied when the length of the heated downpipe exceeds 6 m.

Downpipe spacing clip DSC-2



Downpipe spacing wire with clips DSW-2



Leading the cables in gutters and downpipes

Protect the joining spot of the gutter and downpipe with a flexible cable support to prevent possible damage to the cable.

When using the wire with clips in the downpipe, suspend it on the support bar.

1. support bar DSW-SB-1
2. flexible cable support FCS-1-SS

Controls

Properly selected controls will ensure efficient and at the same time economical operation of the heating system. Self-regulating heating cables always consume some amount of electric power, even in temperatures above 0°C, therefore application of a controller will ensure switch off of the heating circuit, when required. Controllers maintain the heating system on stand-by, switching it on only when necessary.

Note:

Due to a high value of inrush current of self-regulating heating cables, it is recommended to provide power supply to heating circuits through a contactor.

Controls of pipeline heating systems

When heating pipelines with heating cables, it is recommended to apply temperature controllers equipped with temperature sensors mounted on the pipeline surfaces. The controllers below will optimally serve this purpose:

ELEKTRA UTR60-PRO controller
for on support bracket mounting, load 16 A, the maximum total power of directly connected self-regulating heating cables is 1200 W.

The controller is equipped with a temperature sensor for on-pipeline mounting, operating within the range of -40°C up to +120°C. Adjustable hysteresis allows to define precision of temperature measurements.

ELEKTRA ETV-1991 controller
for DIN bus mounting, load 16 A, recommended total power of directly connected self-regulating heating cables is 1200 W.
The controller is equipped with a temperature sensor for on-pipeline mounting.

Installation of temperature sensors

Heating cable with sensor mounted on the pipeline

Controls of gutter and downpipe heating systems

Heating system will be the most efficient and economical when will be controlled with a device equipped with a temperature and moisture sensor. The system will be then switched on only when both sensors indicate snowfall, freezing rain or icing.

ELEKTRA ETR2 controller for DIN bus mounting, load 16 A, recommended total power of directly connected self-regulating heating cables is 1200 W. Designed for smaller heating systems, will service one heated zone. Factory-equipped with one temperature and moisture sensor.

Final check

After the heating cable has been installed in the gutter or in case of pipe installation, after thermal insulation has been laid, perform the measurements of the heating cable insulation's resistance, and test-run the heating circuits to assess the correctness and safety of the system's operation.

The heating cable insulation's resistance, as measured with an appliance of the rated voltage 1000 V (megaohmmeter), should not drop below 50 MΩ. Enter the results into the Warranty Card.

For heating systems executed on:

- pipelines or steel tanks,
- as well as those equipped with insulation made of processed metal

perform the measurements of resistance of the layer (layer tightness) between:

- pipeline, tank or insulation layer of processed metal and
- PE conductor/heating cable's shield to eliminate damage during installation works on the system, or associated metal processing.

Warranty

ELEKTRA grants a 3 year-long warranty (from the date of purchase) for ELEKTRA SelfTec®16 heating cables.

Warranty conditions

1. Warranty claims require:
   a. that the heating system has been executed in full accordance with the Installation Instructions herein,
   b. presentation of the proof of purchase of the heating cable under complaint.
2. The Warranty loses validity if any attempt at repair has been undertaken by an unauthorised installer.
3. The Warranty does not cover the damages inflicted as a result of:
   a. mechanical fault,
   b. incompatible power supply or temperature control,
   c. lack of adequate overload and differential protection measures in electric systems supplying heating cables,
   d. discord of the domestic heating circuit with the current regulations in force.
4. Within the Warranty herein, ELEKTRA undertakes to bear exclusively the costs required to cover the necessary repairs to the heating cable itself, or to exchange the cable.

Warranty Card

The Warranty Card must be retained by the Client for the entire warranty period of 3 years. The Warranty period starts on the date of purchase.

PLACE OF INSTALLATION			
Address			
Zip code		City/Town	

The Warranty claims must be registered with the Warranty Card and proof of purchase, in the place of purchase

TO BE COMPLETED BY AN INSTALLER					
Name and Surname				Electrical authorisation certificate No:	
Address				E-mail	
Zip code		City/Town		Phone No:	Fax

Heating cable's core and insulation's resistance	
after laying the heating cable, before the insulation is laid (for pipes and pipelines)	MΩ
after the insulation is laid (for pipes and pipelines)	MΩ
after laying the heating cable (other applications)	MΩ

Date	
Installer's signature	
Company's stamp	

Note: The heating cable's insulation resistance, as measured with a megaohmmeter of the rated voltage 1000 V, should not drop below 50 MΩ.