

ELEKTRA

SelfTec® DW / DWF



- Self-regulating heating cables

Application



ELEKTRA SelfTec®DW / DW F heating cables have been designed to protect water pipes and pipelines from freezing.

The cable can be installed:

- inside pipes,
- outside pipes, under the layer of thermal insulation.

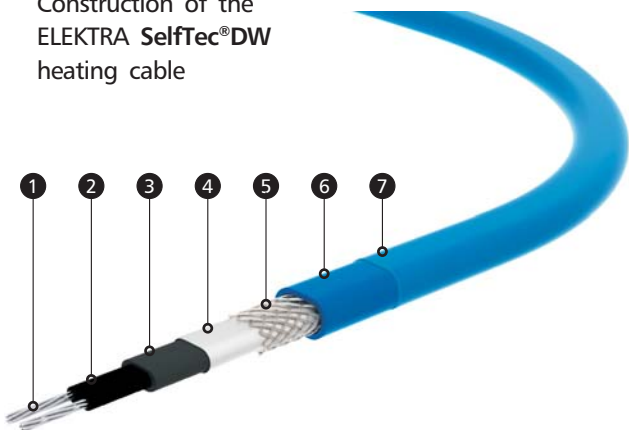
Placing the heating cables inside pipes can be performed in pipelines already in operation. Such installation method does not require demounting of insulation and consequent increase holes through the fabric of the building. Heating cables can be installed inside pipes in underground pipelines. The cable has been approved for contact with drinking water.

Positioning the heating cable outside pipelines is recommended for construction of new systems, or for systems where thermal insulation hasn't been laid yet.

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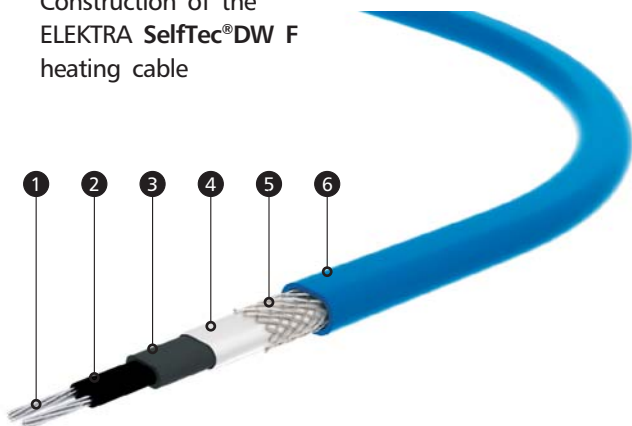
SelfTec®DW / DWF

Construction of the
ELEKTRA SelfTec®DW
heating cable



- 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 modified polyolefin first outer sheath
- ⑦ LDPE second outer sheath certified for drinking water applications

Construction of the ELEKTRA SelfTec®DW F heating cable



- 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 fluoropolymer outer sheath
suitable for drinking water applications

Characteristics

Power output of self-regulating heating cables is the function of temperature, the values 10 and 16 W/m enable to assess the power output at the temperature +10°C. The cables are available on spools. They are terminated with heat-shrink caps to protect 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 with a joint 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®DW / DW F 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.**

Product features:

- ELEKTRA SelfTec®DW has a double-layer sheath of halogen-free polyolefin and LDPE certified for drinking water applications
- ELEKTRA SelfTec®DW F has a single-layer fluoropolymer sheath suitable for drinking water applications

Technical parameters:

- ELEKTRA SelfTec®DW / DW F 10
 - in 10°C on the pipe – 10 W/m
 - in the ice water – 16 W/m
- ELEKTRA SelfTec®DW F 16
 - in 10°C on the pipe – 16 W/m
 - in the ice water – 22 W/m

- power supply: 230V 50/60 Hz
- external dimensions:
 - ≈ 7 x 10 mm (ELEKTRA SelfTec®DW)
 - ≈ 6 x 9 mm (ELEKTRA SelfTec®DW F)
- min. installation temperature: -25°C
- max. operating temperature: +65°C
- max. exposure temperature: +65°C
- min. cable bending radius: 3.5 D
- IP rating: IPX8
- max. protection: 16 A type C circuit breaker
- Product certificates: EAC, FBUZ, PZH Hygienic Certificate (ELEKTRA SelfTec®DW), NSF 61 (ELEKTRA SelfTec®DW F)
- ISO 9001 quality system certification: IQNET, PCBC
- CE marking

Table 1

min. switch-on tempera- ture	SelfTec® DW / DW F 10		SelfTec® DW F 16	
	type C circuit breaker			
	10 A	16 A	10 A	16 A
	max. circuit length [m]			
-20°C	75	110	55	75
-15°C	80	115	60	80
0°C	95	120	70	90
+10°C	100	125	80	100
+10°C in water	65	70	55	60
0°C in ice water	55	65	40	55



SelfTec®DW / DW F

Materials and tools

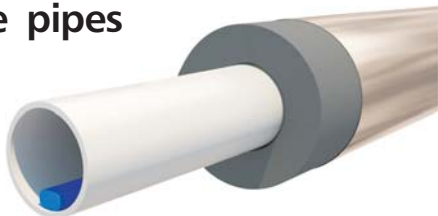
required for the installation of heating cables
inside pipes

- ELEKTRA SelfTec®DW / DW F self-regulating heating cable
- HL-T plumbing lead-through set for 1/2", 3/4", 1" pipes
- EC-PRO and ECM25-PRO joint sets (with KF 0404 PRO junction box)
- tee joint for the pipe where the heating cable will be entered
- sealing tape for pipes
- plumbing wrenches

required for the installation of heating cables
outside pipes

- ELEKTRA SelfTec®DW / DW F self-regulating heating cable
- EC-PRO and ECM25-PRO joint sets (with KF 0404 PRO junction box)
- self-adhesive installation tape
- self-adhesive aluminium foil, min. 0.06 mm thick, approx. 50 mm wide
- thermal insulation for pipes

Installation of heating cables inside pipes

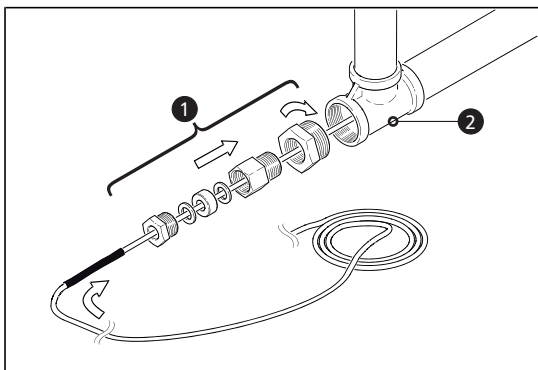


Mount the plumbing tee joint on the pipeline in order to position the heating cable inside the pipe with the HL-T plumbing lead-through. The set of plumbing lead-throughs for $\frac{1}{2}$ ", $\frac{3}{4}$ ", 1" pipes is available as an accessory. If the pipe's diameter is larger than 1", use a reducing tee joint with a proper branch (with internal thread 1"), on which the lead-through will be mounted. The relevant self-regulating ELEKTRA SelfTec®DW / DW F heating cable should be cut to match the pipeline's length (the cable of the same length or shorter).

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).

1. Entering the cable into a right angle -shaped pipeline:

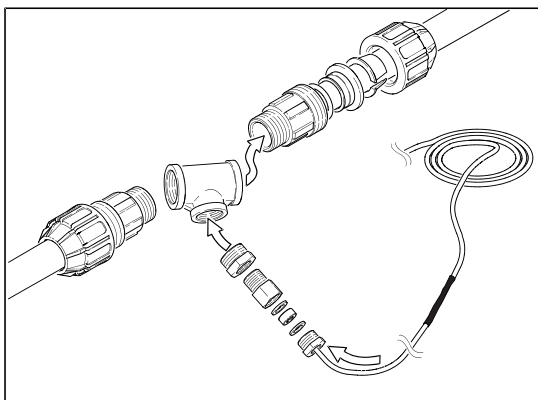
- Lead the cable through the elements of the H-LT lead-through and enter through the tee joint into the pipeline.
- When the cable has been entered, carefully mount the H-LT lead-through to ensure that the installation is tight.



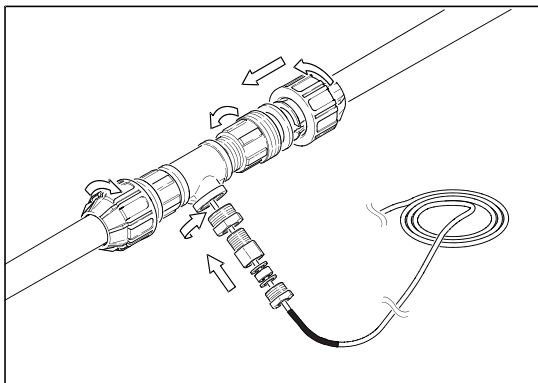
- ❶ plumbing HL-T lead-through
- ❷ plumbing tee joint

2. Entering the cable into a line-shaped pipeline (the so called "tapping"):

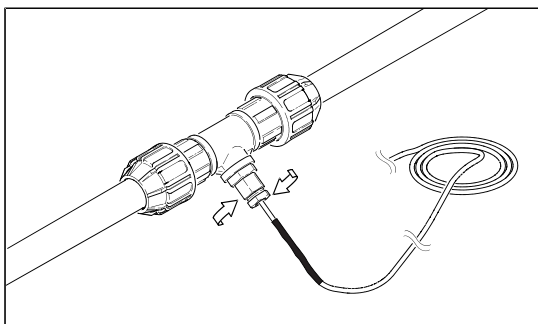
- Lead the cable through the elements of the H-LT lead-through and then enter into the pipeline through the tee joint.



- When the cable has been entered, mount the tee joint on the pipeline.



- Then mount the HL-T lead-through.

**Note:**

When leading the cable is through the H-LT lead-through, moisten it with water to make it easier for the cable to slide through.

Note:



When leading the cable through the HL-T lead-through, the heating cable must not become dirty.

Installation of heating cables on the pipe

- The relevant self-regulating ELEKTRA SelfTec®DW / DW F heating cable should be cut to match the pipeline's length (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.



- 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.



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

ELEKTRA **SelfTec® DW / DWF**

the range of -40°C up to $+120^{\circ}\text{C}$.
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:



Sensor and heating cable mounted in the pipeline



Sensor and heating cable mounted on the pipeline

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), for at least 30 seconds and its value should not drop below 50 M Ω . 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 the ELEKTRA SelfTec®DW / DW F 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.

Note:



The Warranty claims must be registered with the proof of purchase, in the place of purchase or the offices of ELEKTRA company.

Warranty Card

The Warranty Card must be retained by the Client for the entire warranty period of 2 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 installation of 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 megohmmeter of the rated voltage 1000 V, should not drop below 50 MΩ.

