



# Freeze Protection on and inside Potable Water, Water and Rainwater Pipes in Non-Hazardous Locations (Overview)

innovations in heat tracing



## eltherm GmbH – Solutions with Electrical Heat Tracing Systems

eltherm GmbH is an international operating company specializing in the field of electrical heat tracing systems.

With more than 40 years of technology know-how, continuous demand for the highest quality and flexibility, this company has grown significantly since its humble beginning. A clear commitment to the production site in Germany strongly emphasizes the philosophy of eltherm, which is to supply its customers with electrical heat tracing system solutions individually customized to their requirements and of the highest quality.

With its own comprehensive production facilities for all types of heating cable and accessories, eltherm has built up its engineering expertise to become one of the leading manufacturers of electrical heat tracing systems in the world.

Besides freeze protection and temperature maintenance applications up to 1,000 °C, eltherm is your competent partner for complete system solutions, like heating whole chemical or other industrial plants.

eltherm has proved its potential and expertise in different applications for industries such as oil and gas, power plant, construction, automotive and food industries.

### Our product range encompasses (e. g.):

- Heating cables and heating tapes
- Self-regulating heating cables
- Flexible heated hoses
- Heating mats and jackets
- Special heating systems, e. g. drum and gas bottle heaters, rail and point heating, vessel and container heating systems
- Electrical heat tracing systems for hazardous areas
- Control and monitoring systems
- Suitable accessories

Learn more at [www.eltherm.com](http://www.eltherm.com)

## Freeze Protection in and on Potable Water, Water and Rainwater Pipes

Mobile potable and domestic water supply as well as the reliable drainage of rain and waste water at low temperatures is susceptible to freeze damage. Frozen and burst pipes cause serious problems and additional costs, especially at building sites. Freeze protection for mobile water supply is essential, both internal heating of potable and domestic water pipes and on-pipe installation, e. g. for waste water applications.

We offer suitable heating cables for various freeze protection applications which are easy to install. Being experts in freeze protection of different applications for 25 years, we have developed useful systems to fight frost damage professionally.

**The solution:** Our food-safe and potable water approved self-regulating heating cable ELSR-M-AF/BF for potable water applications or our reliable heating cable ELSR-N for domestic and waste water applications. Both can be installed **inside** a pipe. They keep the pipes ice-free without insulation, down to -30 °C. These heating cables are highly flexible and perfect for short heating circuits, whereby ELSR-M-AF/BF allows the smallest dimension. eltherm also offers the appropriate system for the external heating of potable water, wastewater and rainwater pipes - including control and monitoring and suitable accessories.

A higher level of safety and considerable cost savings in the long term and are the key benefits.



## Self-regulating Parallel Heating Cables

### Application:

The ELSR (eltherm-self-regulating) heating cable can be used for freeze protection and maintaining constant temperatures on vessels, pipes, valves, etc.. Except for the connections, the heating cable may be immersed in fluids. If used in an aggressive environment (the chemical or petrochemical industry), we lag the heating cable with a special chemically resistant outer jacket (fluoropolymer), option "BOT".

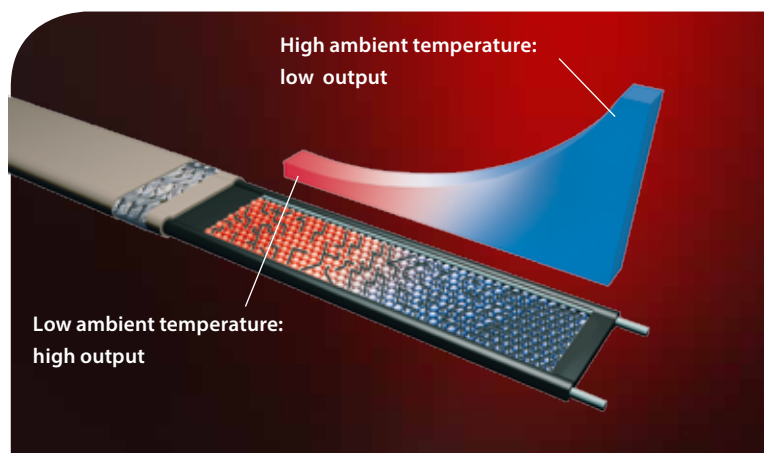
### Function:

Self-regulating heating cables consist of two parallel bus wires embedded in a networked plastic heating element, doped with surrounding carbon particles. If the temperature increases during operation, the plastic expands due to molecular expansion and the distance between the carbon particles increases. Resistance increases and output drops. When it cools down, this process is reversed and output increases.

This physical property not to exceed the specified temperatures also facilitates the cross-routing of self-regulating cables and managing without a temperature cut-out device.

### Attributes:

- Self-regulating with adaptable output
- Various temperature range applications
- Demand-orientated output grading
- Easy to lay and to install
- Can be cut to length off the roll
- Connection with plug-in connectors



### Important information

The temperatures allocated to the products are the maximum permissible exposure temperatures. All products listed in the catalogue are available ex stock (subject to prior sale).

#### Furthermore, please note:

- All products listed in this catalogue shall only be connected and commissioned by a qualified electrician.
- All applicable local electrical and safety regulations must be observed during installation and operation.
- We recommend to use a temperature control system for economical reasons
- As a general rule, the following specifications of the standards EN 60519-1-2-10 and EN 62395-1 shall be respected for the operation of electrical heatings.

Specifications and advertising messages in this products and services catalogue, irrespective of their nature, in particular descriptions, illustrations, drawings, samples, information pertaining to quality, condition, composition, performance, consumption and usability as well as dimensions and weights of the product range remain subject to change in as far as they are not expressly declared as binding. They do not denote any assurance or guarantee whatsoever. Minor deviations from the product specifications shall be deemed approved in as far as they are not unreasonable for the buyer.

We explicitly reserve the right to amend errors and alter technical data.

# Freeze Protection inside Potable and Domestic Water Pipes

**ELSR-M-AF/BF** is the light construction of our self-regulating heating cable featuring an outer jacket which is food-safe and approved for use in potable water. A typical application area is freeze protection of potable water lines. Likewise it is suited to maintain temperatures, for instance in the food processing industry. The heating cable ELSR-M-AF/BF provides smallest dimensions and is highly flexible with special applications. It perfectly suits short heating circuits. Unlike other self-regulating heating cables, the ELSR-M-AF/BF can be installed **inside** a pipeline.

## Advantages:

- KTW-approved, DVGW-approved
- Can be cut to length off the roll
- Moisture proof
- Small dimensions

## Application:

- Internal trace heating for pipes and hoses



## Technical Information

### Data

Outer jacket	Polyethylene
Bus wire	Nickel plated copper
Maximum exposure temperature (power off)	65 °C
Maximum exposure temperature (power on)	65 °C
Nominal voltage	230 V
Bending radius, min.	25 mm
Installation temperature, min.	- 45 °C
Certificate KTW	K-229437-13-Bs/st
Dimensions	7.0 x 4.6 mm





Picture	Type	Description	Art. No.
	ELSR-M-10-2-AF/BF	Self-regulating heating cable, 10 W/m at 10 °C, food-safe, max. heating circuit length 89.5 m (16 A/C protection)	B0225104
	ELVB-SRAM-25	Connection kit for ELSR-M-AF/BF, for direct connection heating cable - junction box or thermostat (bonding method)	091A015
	EL-ECMF	Termination kit for ELSR-M-AF/BF, silicone end cap (bonding method)	09112MF
	ELVB-SRV-M	Connection kit for ELSR-M-AF/BF, connection heating cable - connection cable (heatshrink method)	0911122
	Connection cable	Length 2.0 m, with Schuko plug	2551000012
	ELVB-71	Y-piece 32 mm, for use with PE system pipe for ELSR-M-... heating cable <b>inside</b> potable water, domestic water and waste water pipes	0911704
	ELVB-70	3/4" cable gland, assembly in water pipe for ELSR-M-BF/AF-...	0911703
	M-20 cable gland	Suitable for Y-piece, assembly of ELSR-N in pipes (alternative application for domestic water and waste water)	2572020003

More information about ELSR-N: see following page



# Freeze Protection on and inside Potable Water, Wastewater and Rainwater Pipes

The versatile self regulating heating cable ELSR-N is suited for freeze protection and temperature maintenance in the low temperature range up to 65 °C. Assembly: On-pipe mounting. Assembly inside pipe – in connection with a special cable gland – is also possible. (On-pipe mounting: Pipe insulation is required)

## Advantages:

- Self-regulating
- Can be cut to length off the roll
- Moisture proof
- UV-resistant

## Applications:

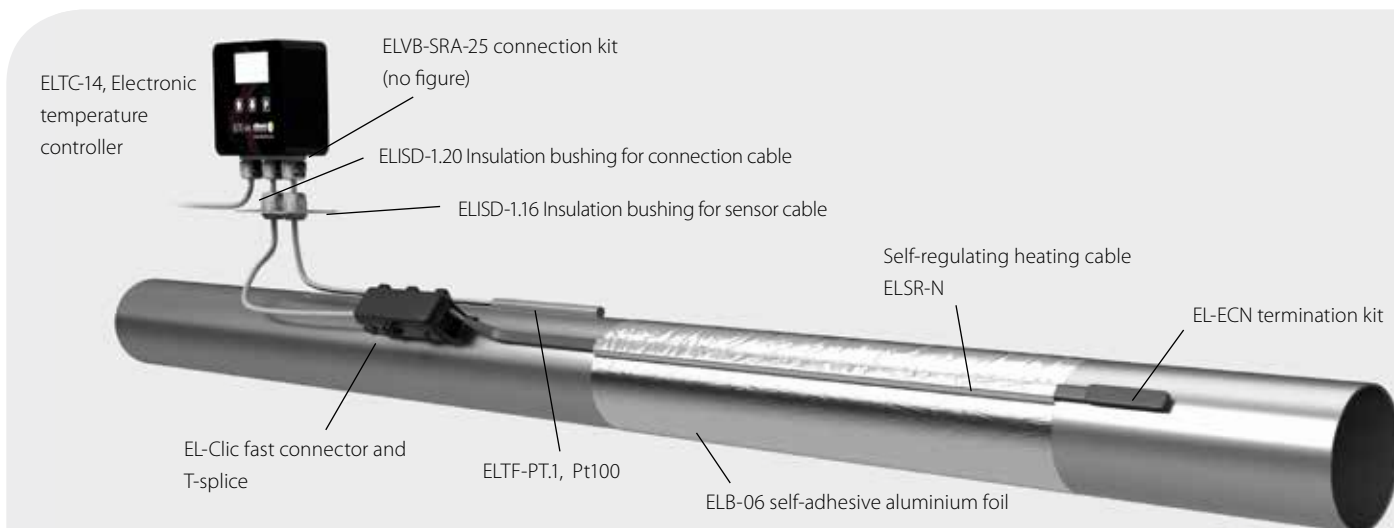
- Freeze Protection
- Pipe heating
- Vessel and container heating



## Technical Information

### Data

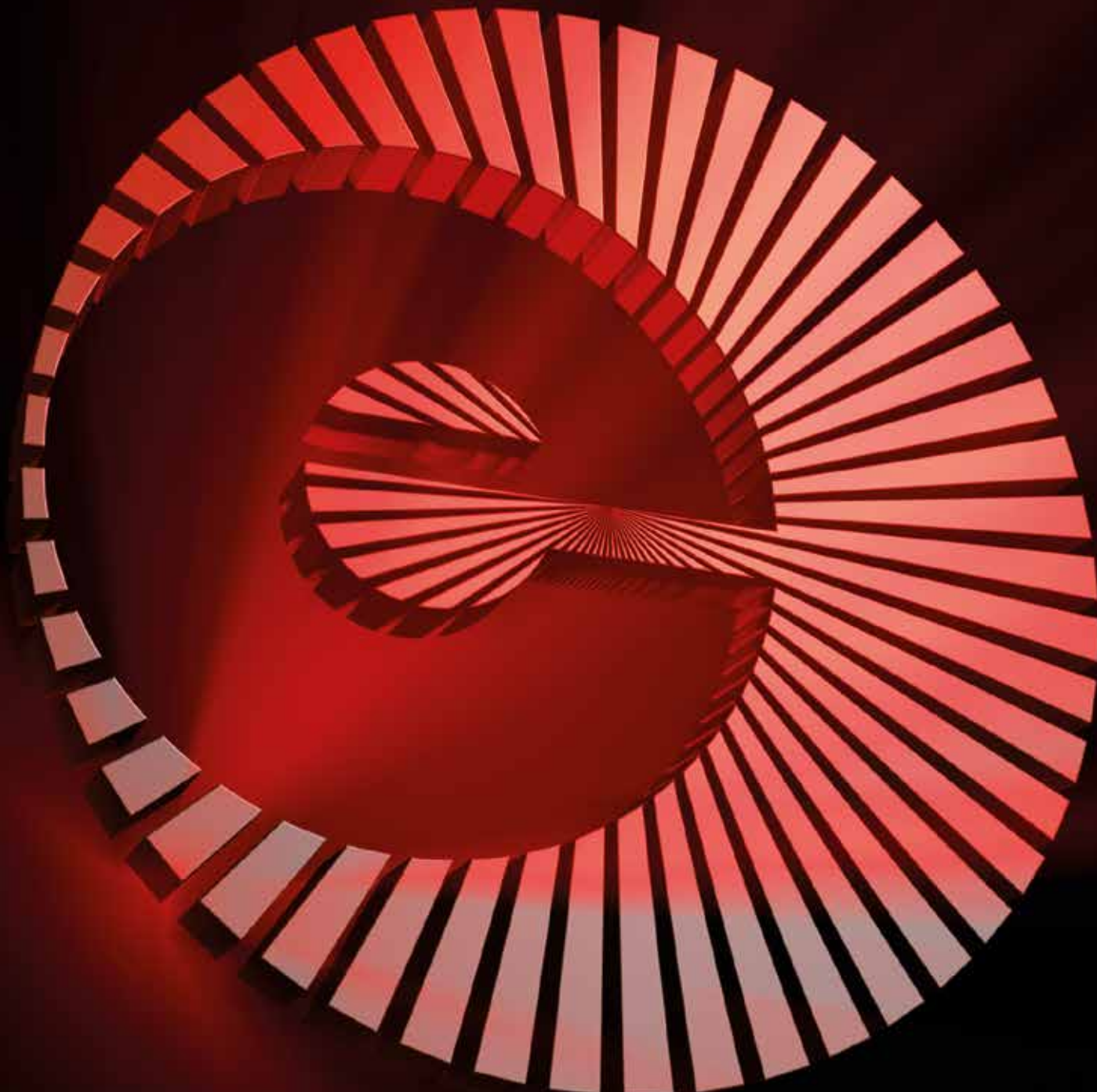
Outer jacket	TPE-O
Bus wire	Nickel plated copper
Maximum exposure temperature (power off)	80 °C
Maximum exposure temperature (power on)	65 °C
Nominal voltage	230 V
Bending radius, min.	25 mm
Installation temperature, min.	- 45 °C
Dimensions	14.1 x 5.8 mm







Picture	Type	Description	Art. No.
	ELSR-N-10-2-AO	Self-regulating heating cable, 10 W/m at 10 °C, max. heating circuit length 177 m (16 A/C protection)	B0200130
	ELSR-N-20-2-AO	Self-regulating heating cable, 20 W/m at 10 °C, max. heating circuit length 109 m (16 A/C protection)	B0200230
	ELVB-SRA-25	Connection kit for ELSR-N... for direct connection of heating cable - junction box or thermostat (bonding method)	091A010
	EL-ECN	Termination kit for ELSR-N..., silicone end cap (bonding method)	09112N1
	ELVB-SRV-N	Connection kit for ELSR-N..., connection of heating cable - connection cable (heatshrink method)	0911116
	EL-Clic P	Fast connector for 1 - 3 self-regulating heating cables, incl. 2.5 m connection cable (without termination kit)	09ClicP
	EL-Clic S	Fast connector and T-splice for 2 - 3 self-regulating heating cables, without connection cable (without termination kit)	09ClicS
	ELTC-14	Electronic temperature controller; 0 - 60 °C, set with glands, reducer and blind cover (without sensor), switching capacity 20 A, changeover contact (alarm) 8 A, IP 65, 130 x 130 x 75 mm	0620000
	ELTF-PT.1	Pt100 2-wire, connection cable PVC, 5.0 m, sensor suitable for ELTC-14, max. ambient temperature +80 °C	0650001
	ELTC-05	Electronic frost protection thermostat, incl. Pt 100-sensor, set point 3° C, switching capacity 16 A, IP 65, 130 x 130 x 75mm	0610002
	ELB-06	Self-adhesive aluminium foil, 75 mm, 50 m roll Tmax= +140°C	0942200
	ELB-03	Adhesive glass fibre tape 12 mm, 50 m roll Tmax= 90 °C	2481800120
	ELISD-R1	Insulation bushing for ELSR-N...	0921035
	ELISD-1.16	Insulation bushing for sensor cable 3.5-7 mm	0921015
	ELISD-1.20	Insulation bushing for connection cable	0921019
	EL-WS01D	Warning signs „Electrical Heat Tracing“	2986900012



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