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**REMARKS**

- During installation it is required to follow instructions included in the self-regulating heating cable Manual Instruction.
- Temperature controller's installation must be done according to Manual Instruction of a controller.
- It is forbidden to mount the cable on pins, bolts, screws or other fixing elements that can damage the outer coating of cables.
- The cable installation surface must be smooth with no sharp edges.
- Heating unit cannot be mounted on non-uniform bases.
- Installation of the heating cable in the ambient temperature below + 5°C is not advisable.
- The heating cable should not undergo excessive strain and should be protected against sharp device damage.
- Heating unit must be supplied by means of a device from TN-S electric circuit with RCD (residual current device) of nominal power supply lower than 30 mA. The installation should have surge protection.
- The heating cables must not come into contact, cross with each other or other cables - this could damage the insulation. The minimum distance between the heating cables must not be less than 10 mm.
- It is required to make a draft or add pictures of the arrangement of the heating cable, power supply cable and the connection place of the heating cable with power cable ("cold wire"). The draft or pictures are an integral part of the as-built documentation.
- The device is not intended to be used by people (children) with limited physical, feeling or psychic ability or people without experience or without the device knowledge unless it is under supervision of a person responsible for safety or according to installation manual.
- Pay attention to children - they must not play with the device.
- The radius of heating cable bending shall not be less than 35 mm for the height of the heating cable ~6 mm).
- The heating cable cannot be permanently immersed in any liquid.
- The heating cable must be used in accordance with manufacturer's specifications.

If we decide to use a temperature controller, it should be chosen in accordance with the heating cable power and its location with a sensor. It is important to follow the manual instruction of the temperature controller.

The connection of the heating cable with a temperature controller should be done in accordance with a diagram described in the temperature controller manual instruction.

**OPERATION**

Before starting the seasonal heating system, visual inspection of the heating and power cable should be done in order to eliminate the risk of faulty wiring operation.

**DESCRIPTION**

Self-regulating heating cables type GP-SR/17 are used to protect gutters, drain pipes, roofs against icing and in de-icing systems on pipes. These cables are resistant to UV radiation. The cables are laid inside gutters or drain pipes individually or in parallel. They can also be laid on roofs or pipes with liquid. These cables do not require installation with temperature controllers. Due to the fact that even at high temperatures a small current can appear, it is recommended to connect self-regulating and supply cables to the temperature controller, which in turn, disconnects power consumption. These cables can be installed with a temperature controller equipped with a temperature sensor, humidity sensor as well as ice and snow sensors.

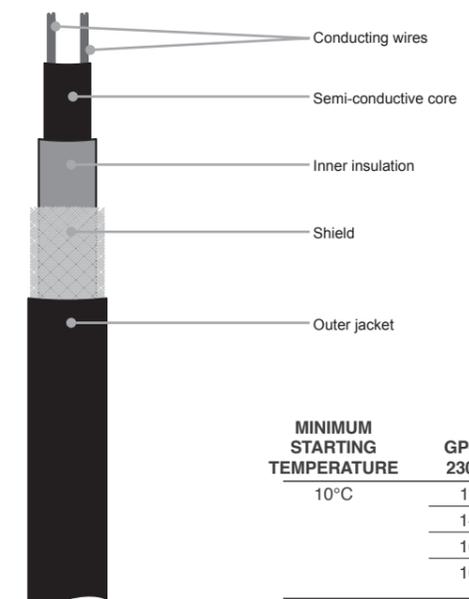
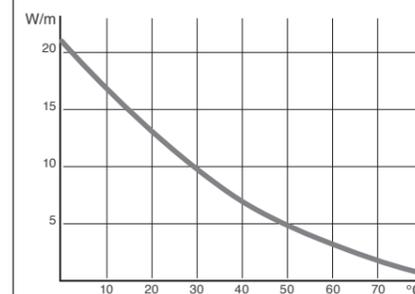


Fig. Self-regulating cable – general construction



MINIMUM STARTING TEMPERATURE	GP-SR/17 230 V AC	CURRENT
10°C	110 m	10 A
	143 m	16 A
	167 m	20 A
	167 m	30 A
0°C	101 m	10 A
	140 m	16 A
	158 m	20 A
	159 m	30 A
-20°C	80 m	10 A
	125 m	16 A
	139 m	20 A
	140 m	30 A
-40°C	69 m	10 A
	108 m	16 A
	110 m	20 A
	118 m	30 A

Maximum length of the self-regulating cable vs. the minimum starting temperature

**TECHNICAL DATA**

Heating cable TYPE	Self-regulating GP-SR/17 VAC
Power supply voltage:	230 V AC / 50 Hz
Unit power:	17 W/m for 10 °C
Operating temperature:	65 °C
Dimensions:	6,0 x 10,6 mm
Supply type:	one-sided

**CAUTION** The device is designed for single-phase installation and must be installed in accordance with standards valid in a particular country. The device should be connected according to the details included in this operating manual. Installation, connection and control should be carried out by a qualified electrician staff, who act in accordance with the service manual and the device functions. Before installation make sure the connection cables are not under voltage. Improper transport, storage, and use of the device influence its wrong functioning. It is not advisable to install the device in the following cases: if any device part is missing or the device is damaged or deformed. In case of improper functioning of the device contact the producer.

The symbol means selective collecting of electrical and electronic equipment. It is forbidden to put the used equipment together with other waste.

## INSTALLATION

- Before purchase, measure the surface the heating, self-regulating cable will be applied to.
- Choose a cable of an appropriate length and expected heating power.  
It is important to choose an appropriate heating cable for the drain pipe, so it is placed 1 m below the ground. It will enable a safe water flow, e.g., to a drain.
- Inspect visually the cable if its external insulation is not damaged.
- Make a draft with dimensions on the basis of an arranged heating cable. Mark the installation place of the heating cable, the connection of the heating cable with a supply cable ("cold") and, if applied, the installation place of a temperature controller and a sensor. A draft or pictures are an integral part of the as-built documentation.
- Measure the resistance of the cable insulation between wires and the shield. The insulation resistance measurement should be carried out in accordance with current reference standard PN-HD-60364. The insulation resistance of the GP-SR/17 heating cable cannot be lower than 50 MΩ at minimum voltage of 500 V. This value should be written in the Warranty Card.
- Prepare the connection place of the heating cable to the electric installation.
- Prepare the protective corrugated pipes for the insertion of: a supply cable of a heating cable.
- Connect the heating self-regulating cable with a supply cable („cold"). Choose an appropriate supply cable according to the length and power of the heating self-regulating cable. Connect the conducting wires of the self-regulating cable with the supply conducting wires „cold" L, N and the shield of the heating cable with the PE conducting wire. The KZ crimp joint can be used to connect the wires endings and the heat shrink tubes can be used to insulate the wires. After application it is important to heat shrink tube as long as they adhere tightly to the wire. A bigger heat shrink tube with glue must be applied to all wires and the shield. It should protrude about 3 cm over the outer insulation of the heating and supply cable. Heat it as long as the glue drains and the insulation is airtight. Pay a particular attention that there is no air under the insulation. It is to ensure the airtight insulation and protection against electrical shock. It is recommended to use the ZM-01 kit elements for installation.
- Protect the conducting wires at the end of the heating self-regulating cable against shock:
  - The end of the heating cable should be cut in such a way the conducting wires do not protrude beyond the cable insulation.
  - Remove 2 cm of the outer insulation of the heating cable. Unwind the shield on the outer insulation.
  - Apply on the whole inner (red) insulation a heat shrink tube with 6/2 glue. It must be 1 cm longer than the red insulation with ends of conducting wires. This tube must insulate the conducting wires of the heating cable. Next, heat the shrink tube as long as it adheres to the insulation and to the ends of the conducting wires tightly. Pay a particular attention that there is no air under the insulation. Make the end of the heat shrink tube that protrudes beyond the heating self-regulating cable flat by means of pliers.
  - Expand the previously unwind shield of the heating cable on the heat shrink tube. Expand it in such a way it covers the whole applied sleeve evenly.
  - Apply the heat shrink tube with 12/2,41 glue on the shield. It must cover at least 1 cm of the outer insulation, the whole shield, the previously applied heat shrink tube and protrude 1,5 cm beyond it. Heat the shrink tube as long as it adheres airtight to the shield and the cable insulation – until the glue drains. Make the end of the sleeve that protrudes beyond the heating self-regulating cable flat by means of pliers. It will ensure the insulation air tightness. It is recommended to use the ZM-01 kit elements for installation.
- Before arranging the heating cable, clean the surface of sharp and dangerous elements.
- Installation in gutters and drain pipes:**
  - In order to prevent the heating cables from contact in a gutter, mount clips (type: KRU-01) inside gutters every 25 cm.
  - Then insert the heating cable into the clips. During installation the cable outer insulation must not be damaged.
  - In case of mounting a heating cable in a drain pipe before inserting the cable the following should be done:
    - Put a suspension ZW-01 on a drain. The suspension can be shortened depending on the dimensions of the drainage system.
    - Attach a chain LS-01 to the suspension, which together with a cable should run along the drain pipe till its end (bottom).
    - Attach a KRS-01 clip used for drain pipes to the LS-01 chain.
    - Attach the heating cable to the KRS-01 clips. It is important that the cable is laid at the whole length of the gutter – to the bottom.
- Installation on a roof:**
  - While installing the heating cable on a roof, it must be remembered to lay the cable in a parallel way as much as possible to the slope. It must be also remembered to provide water drainage.
- Installation on a pipe:**
  - Place the heating cable on the pipe and attach it by means of a reinforced tape at intervals of 25 cm. The advisable arrangement of a cable on the pipe is longitudinal (along the pipe's axis).

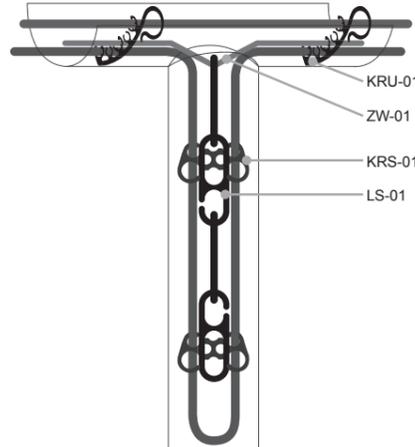


Fig. A diagram of arranging and application of accessories in a gutter / drain pipe

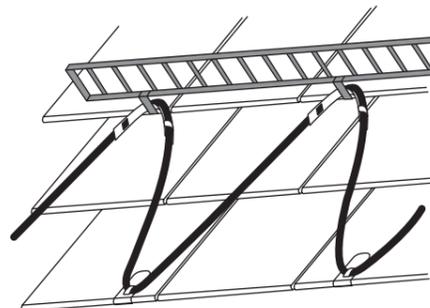


Fig. Laying the heating cable on a roof

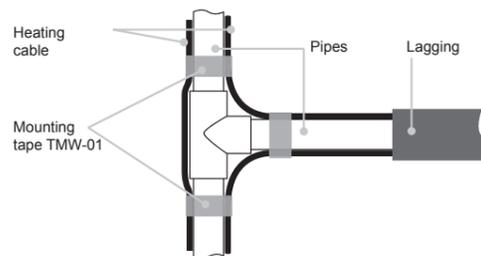
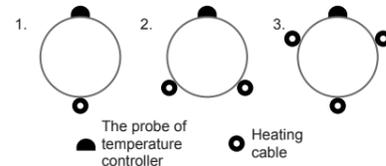


Fig. Longitudinal mounting of a temperature controller and a heating cable



- After the heating cable was installed in the arranged place and before it is connected to the mains, the cable insulation resistance should be measured again between the conducting wires and the shield. The insulation resistance measurement should be carried out in accordance with current reference standard PN-HD-60364. The insulation resistance of the GP-SR/17 heating cable cannot be lower than 50MΩ at minimum voltage of 500V. This value should be written in the Warranty Card. Additionally, before covering the cable with surface layer, first check the GP-SR/17 heating cable by connecting it to the mains and heat (for about 30 minutes). Confirmation of the heating time should be written into the Warranty Card.

Connection of the heating cable to the electrical installation should be carried out by a qualified electrician staff with suitable authorisations. The installation should be in accordance with standards valid in a particular country. The electrical installation, the GP-SR/17 self-regulating heating cable is connected to with a supply cable, should be made in accordance with applicable national regulations.

## WARRANTY

ZAMEL Sp. z o.o. declares and assures that the electric heating systems MATEC (heating cables) manufactured and supplied by ZAMEL Sp. z o.o. are compliant with current standards in the Company and binding norms in Poland. The warranty includes all MATEC products under the condition of proper storage, transport, installation and operation according to binding norms. There is 2 year warranty for MATEC products and the warranty refers to defects made by the manufacturer itself.

### GENERAL WARRANTY CONDITIONS AND CLAIM CONSIDERATION BY ZAMEL Sp. z o.o.

- ZAMEL Sp. z o.o. assures warranty for MATEC products. There is 2 year warranty for the heating cables. Warranty time starts at the moment of product sell by ZAMEL Sp. z o.o. to the Purchaser. Be able to provide as a proof of purchase of the product an invoice by ZAMEL Sp. z o.o.
- ZAMEL Sp. z o.o. shall process the claim at its own discretion.
- The purchaser must inform about the claim which will be considered within 14 workdays only after proper claim notification. The PURCHASER shall lay any claims in writing to the Authorised Point or ZAMEL Sp. z o.o. only on presentation of an invoice (or its number and date of issue)
- The properly filled Warranty Card should include a draft or a photo:
  - of an installed heating, self-regulating cable with a supply cable (with distances between the heating cable runs) and of muff arrangement place (a connecting part of the heating cable with a supply cable),
  - installation place of the temperature controller, connection of the supply cable "cold" to the temperature controller,
  - location of control sensors and thermoregulator control and their connection to the electrical installation.
- In case it appears that ZAMEL Sp. z o.o. is not the manufacturer of the claimed product or in case the claim is deemed void by ZAMEL Sp. z o.o., the Purchaser will bear all the costs connected with claim consideration.
- When your Warranty is invoked, your damaged product will be replaced free of charge to yourself by ZAMEL Sp. z o.o.
- The manufacturer warranty is not valid in below cases:
  - damage caused by unauthorised modifications made by the PURCHASER or any third parties to the product
  - mechanical damage of the device
  - wrong power supply
  - electric installation which is not compliant with current IEE wiring regulations and installations
  - damage caused by incorrect product mounting - not according with MATEC Installation Manual.
- In case of product claim by an indirect Purchaser of ZAMEL products, the Purchaser is obliged to present the claim to the Supplier (where the product was purchased).

## WARRANTY CARD

ZAMEL sp. z o.o.

### Installation place

Post code, city / town

Street, Home / Flat No

Telephone number

### Details of Installation (filled by the electrician)

Electrician Name / Surname

Telephone number

Nr of a Certified Electrician / Expire date of a Certified Electrician

Installation date

Insulation resistance measurement

Before installation [MΩ]:

After installation[MΩ]:

Signature / Stamp

Place for the self-regulating heating cable label