

PROVISIONS AND REFERENCE NOMINATIONS

- DESIGN, MANUFACTURE AND TESTING IN COMPLIANCE WITH HARMONIZED STANDARDS EN 60335-1
- IN COMPLIANCE WITH 2006/95/EC DIRECTIVE
- CE DECLARATION OF CONFORMITY ON ALL ITEMS

Article no.	VOLT	WATT ±10%	W/m	A mm ±1%	B mm ±1%	C mm ±1%
9C011893	230	30	10	3000	2000	5000

## 5. Cleaning, repair and disposal

- Do not use any lubricants, mordants or detergents.
- Remove the mains plug before carrying out any cleaning.
- Clean the housing with a damp cloth only (not a wet one).
- Never immerse the device in water.
- Take devices to be disposed of to a suitable reception facility.
- Repairs to the device may only be carried out by authorised specialists.  
Therefore please contact the manufacturer or dealer.
- **N.B.!** If repairs are not carried out correctly the warranty becomes void.
- Repairs incorrectly carried out may present a risk to the user and other people.

# FROST-PROTECTION-CABLE

## 1. Technical data

Voltage supply:	230 V/ 50-60 Hz
Switch-on temperature:	ca. + 5 °C
Switch-off temperature:	ca. + 15 °C
Protective system:	IP65
Protection class:	I

DIN-EN tested  
CE licensed  
Made in EU

### IMPORTANT:

Read thoroughly and follow these instructions and the notes on safety and risks before installation and keep this leaflet in a safe place for future reference. If you have any doubts about the safety of the device please consult a specialist. If you use the device in a greenhouse make sure that the electrical connections are made by qualified personnel.

## 2. General

After unpacking and before commissioning make sure that the heating cable and all the accessories concerned are in perfect working order. If damage in transit is observed, immediately contact the dealer or manufacturer. The packaging materials (polythene bag, polystyrol, nails, etc.) must not be left within reach of children as they represent potential sources of danger.

The frost protection cables have many different applications. They can be used for additional heating in agriculture, animal rearing, gardens, camping, weekend cottages, garages, etc. on metal and plastic pipes and on valves and fittings. Because of the integrated thermostat it switches on and off automatically, thereby providing reliable, economic protection against frost damage.

The heating cable is only permitted for connection to 230 V ~/ I 50-60 Hz a.c. voltage. It must be protected from high degrees of contamination. If it is used for any purpose other than described above it may result in damage to the heating cable, and this may also be associated with risks such as short circuiting, fire, electric shock, etc. The safety and installation instructions must necessarily be followed.

### 3. Notes on safety and risks

- Only a 230 V ~, 50/60 Hz mains socket may be used as the power source. Never try to operate the device with any other voltage.
- Consult a specialist if you are in any doubt about how to operate and connect the device or about any safety issues.
- The system must not be placed in water (not even in occasional backed-up water) or in soil.
- Never connect the heating cable to the mains voltage when coiled. This may result in damage to the cable or to a fire due to overheating.
- The length of the heating cable must not be changed.
- The minimum bending radius of heating cables of 2.5 cm must not be exceeded.
- When work is being done on the heating cable or in its vicinity, the device must be disconnected from the mains.
- The mains plug must never be inserted or removed with wet hands.
- Never pull on the mains cable itself, always remove the mains plug from the socket by the gripping surfaces.
- The plug connection must not be subjected to tension, pressure or torque.
- For safety reasons all metal pipes must be earthed. This may (but need not) be provided as standard.
- When assembling make sure that the connecting cable is not squeezed or damaged by sharp edges. If any open sections are created as a result of such damage the device must under no circumstances remain connected to the mains. **Highly dangerous!**
- Always remove the mains plug from the socket before cleaning the device. Clean with a damp (not wet) cloth only.
- If the device has not been operated for some time, always remove the mains plug. During this period keep your heating cable in a protected, dry place.
- If it may be assumed that safe operation is no longer possible, the device must be switched off and prevented from being operated accidentally. This is the case when:
  - the device or mains cable shows visible damage
  - the device no longer works
  - after prolonged storage under unfavourable conditions
  - after undergoing severe transport loads
- Children should not be allowed near devices that operate on mains voltage.
- These operating instructions form part of the device and should be kept in a safe place. If the device is passed on to third parties it should be accompanied by these operating instructions.
- In industrial installations the accident prevention regulations of the Industrial Trading Association for Electrical Installations and Equipment.
- Never pour fluids out of the device, otherwise there is a risk of fire or critical electric shock. However, should such a case occur, pull the mains plug out of the socket and consult a specialist.
- If you are not clear about how to connect the device, or if questions arise which are not explained in the operating instructions, contact the manufacturer or a specialist.
- This device is not intended to be used by people (including children) with limited physical, sensory or mental capacities, or by people who do not have enough experience or knowledge of handling the product, unless they are supervised or instructed by a person responsible for their safety in using the device.

### 4. Installation and operation

In principle electrical devices may only be connected to FI protected sockets in wet rooms and outdoors! Before commissioning the device make sure that this is the case at the site of installation provided. If a multiple socket or an extension cable is used, make sure that the maximum current carrying capacity is not exceeded.

Make sure that the frost protection cable is disconnected from the mains before and during the installation. Lay the connecting cable so that you cannot trip over it and so that it cannot be squeezed or come into contact with hot objects. Only use extension cables which conform to the power rating of the device and comply with the applicable safety regulations.

#### a) Preparing the pipe:

Before you fit the heating cable make sure that the area around the pipe is freely accessible and that there are no sharp edges.

#### b) Positioning thermostat:

The thermostat is located at the end of the heating cable (the bead is welded to the shrink-on hose). It is important for the thermostat to lie with the flat side tightly on the pipe. Fix it with adhesive tape (aluminium adhesive tape is recommended). It should be fitted on the pipe at the position most at risk. The thermostat does not switch on the heating cable until an ambient temperature of approx. +5° (measured in the location of the thermostat!) is exceeded.

#### c) Fitting the heating cable:

The heating cable can be laid underneath the pipe, but it can also be wound round the pipe, according to the heating power required - minimum distance between the loops approx. 10 cm (**Important:** Different parts of the cable must not touch or cross, otherwise overheating may occur!).

Secure the heating cable to the pipe at regular intervals with adhesive tape or cable ties (aluminium adhesive tape is recommended) to guarantee continuous contact between the heating cable and the pipe.

#### Attention with plastic pipes!

The pipes must be wrapped with aluminium foil before the heating cable is fitted. In principle heating cables must not be secured directly to plastic pipes or plastic parts! For better heat transmission with plastic pipes, the entire pipe must be wrapped once again with aluminium adhesive tape after the heating cable is fitted.

#### d) Fitting pipe insulation:

Fitting additional insulation around the pipe is recommended. For this purpose commercially available, heat resistant foam pipe insulation materials or mineral wool may be used (k value at least 0.035 W/mK). The insulation is an absolute requirement, particularly in very cold windows and reduces the power consumption. The thickness of the insulation must not exceed 20 mm.

#### e) Commissioning:

After installation and when the first cold spell arrives insert the mains plug in the socket.



Fig. 1: Laying underneath the pipe



Fig. 2: Wrapping round the pipe

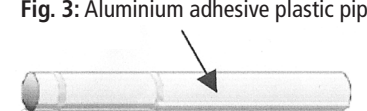


Fig. 3: Aluminium adhesive plastic pipe