

# **E** **ELEKTRA VCDR** **heating cables**

**Protection of gutters, downpipes  
and roofs against snow and ice**



# **C** **Characteristics**

The ELEKTRA VCDR heating cables meet the requirements of EN-60335-1 and EN 60335-2-83 standards. They are manufactured as 2 core cables (single-sided power supply), with a power rating of 20 W/m, finished with a 4m cold cable. The heating cables and power supply cables are coated with a UV-resistant material.

# A **Advantages**

ELEKTRA VCDR heating cables prevent:

- Water freezing in gutters and downpipes and also prevent damage to these systems
- Accumulation of snow and ice on roofs
- Development of seepage on facades of buildings
- Development of icicles

# S **Selection**

To insure effective operation of a heating system, the installed power must be design.

Also most important thing is to take under consideration the location of the facility in the climate zone, the diameter of downpipes and influence of the wind.

# T

## Technical data

TABLE I Technical data of VCDR20 cables

TYPE	LENGTH	POWER
-	m	W
VCDR 20/190	9.5	190
VCDR 20/235	12.0	235
VCDR 20/330	16.5	330
VCDR 20/380	19.0	380
VCDR 20/520	26.0	520
VCDR 20/600	29.0	600
VCDR 20/800	40.0	800
VCDR 20/1000	50.0	1000
VCDR 20/1140	57.0	1140
VCDR 20/1300	65.0	1300
VCDR 20/1560	78.0	1560
VCDR 20/1720	86.0	1720
VCDR 20/2050	102.0	2050
VCDR 20/2360	118.0	2360
VCDR 20/2710	135.0	2710
VCDR 20/3000	150.0	3000
VCDR 20/3450	175.0	3450

Other types available on special order.

The rated supply voltage of the cables is 230V; 50/60 Hz.

# Installation in gutters and downpipes

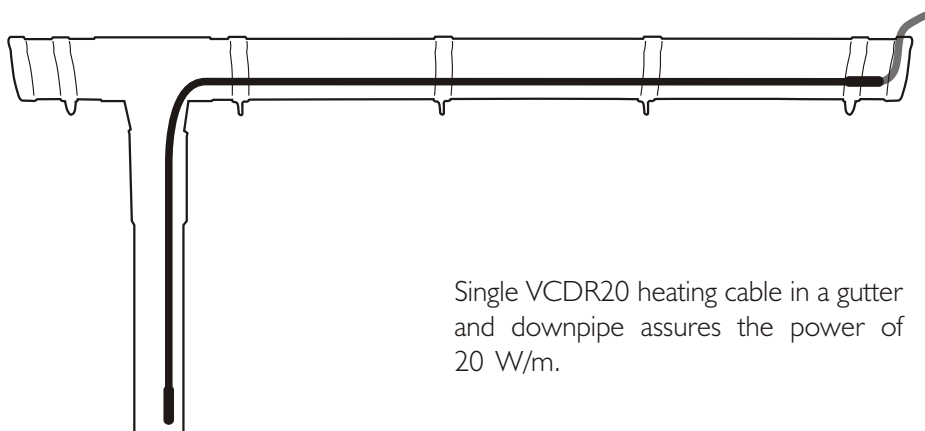
## **First Steps:**

- Measure the lengths of gutters and downpipes
- Determine the unit heating power
- Select appropriate cable length according to Table I

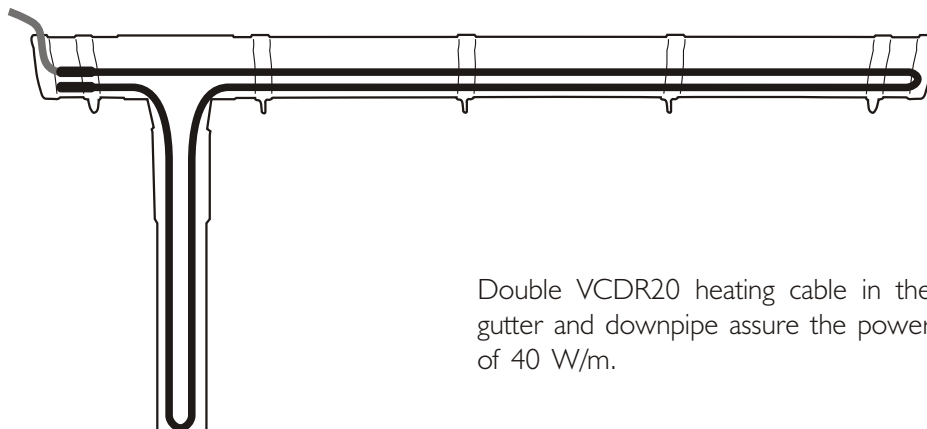
## **When calculating the heating cable lengths take the following into consideration:**

- If the calculated heating cable length does not have an exact equivalent specified in Table I, you can select a longer heating cable and place the additional section in the gutter
- You can select two heating sets, one set for the gutter and a separate set for the downpipe
- If the water from downpipes is drained directly into the sewage system, then the section of the drainage pipe from ground level to the frost penetration depth must be heated

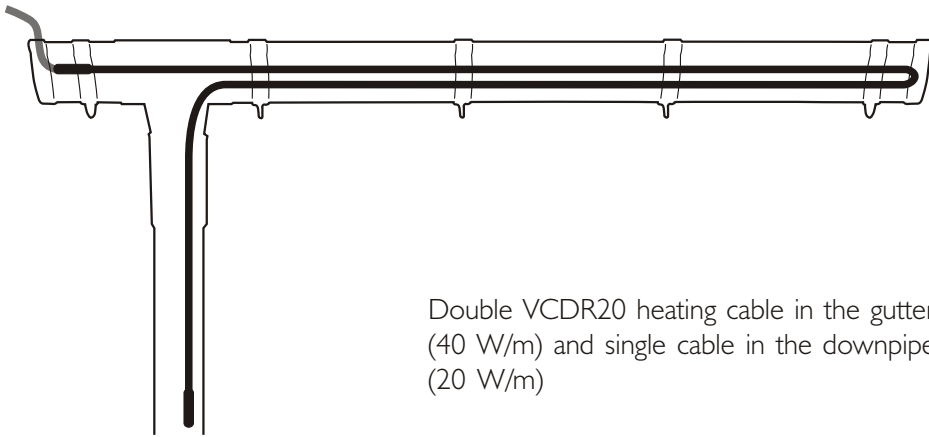
## Examples of installation of the VCDR20 heating cable in a gutter and downpipe



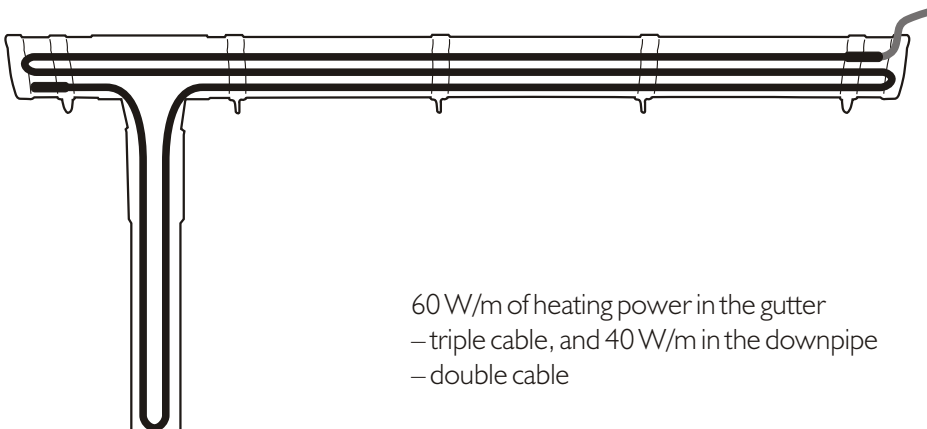
Single VCDR20 heating cable in a gutter and downpipe assures the power of 20 W/m.



Double VCDR20 heating cable in the gutter and downpipe assure the power of 40 W/m.



Double VCDR20 heating cable in the gutter (40 W/m) and single cable in the downpipe (20 W/m)



60 W/m of heating power in the gutter  
– triple cable, and 40 W/m in the downpipe  
– double cable

## Installation of heating cables in gutters

The following elements are used for installing heating cables in gutters:

- Clips
- ELEKTRA TMS installation tape
- Gutter and downpipe spacing steel cord with clips

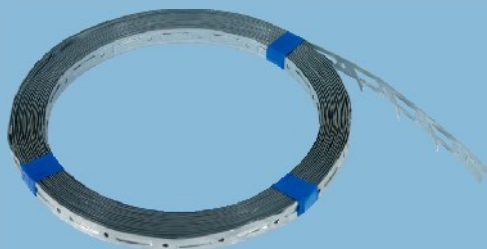
The mounting elements enable durable installation and maintaining uniform distances between the heating cables. The distance between the clips or ELEKTRA TMS tape sections must not exceed 40 cm.



Gutter spacing clip



Heating cables installed in a gutter using the clips



ELEKTRA TMS installation tape  
(standard tape length – 10 m)

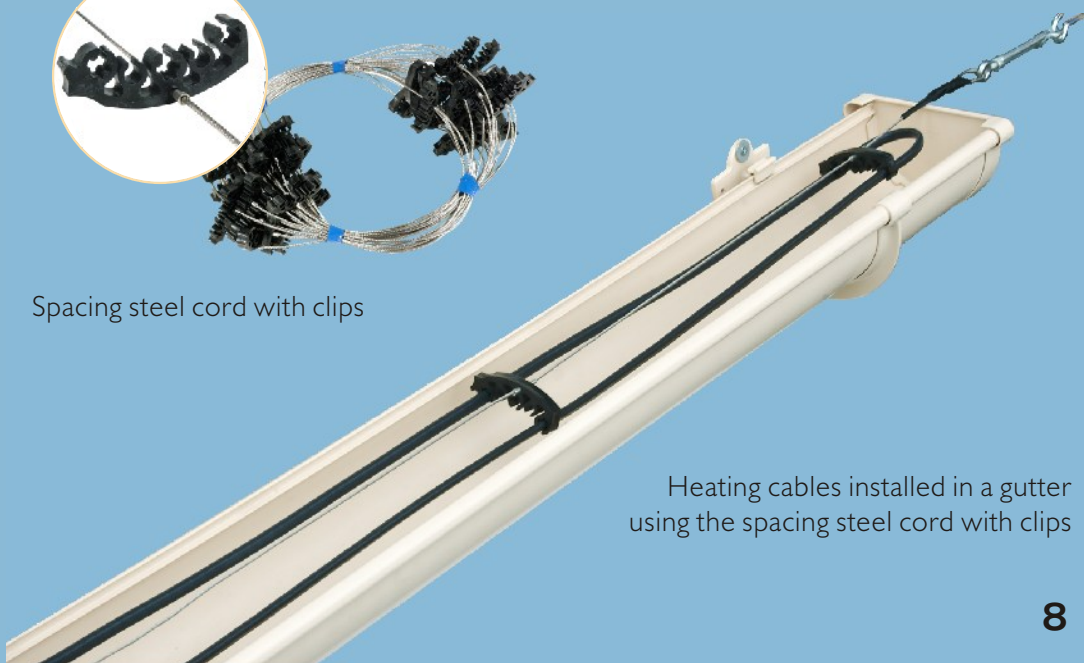
In climate zones and in areas with heavy snowfalls the heating cables in the gutter must be installed using spacing steel cord with clips.



Heating cables installed in a gutter using the ELEKTRA TMS tape



Spacing steel cord with clips



Heating cables installed in a gutter using the spacing steel cord with clips



## Installing the heating cables in downpipes

The following heating cable installation methods can be used for downpipes:

1. When installing a single heating cable, the cable can be placed freely in the downpipe without any mounting elements. However, the length of the downpipe must not exceed 6m. Otherwise, heating cable sections must be fixed to a steel cord or chain of similar strength. The supporting wire can be fixed to the building structure or any steel element (rod, flat bar) installed directly over the downpipe inlet.

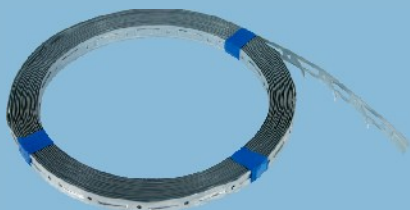
2. When installing a double cable, use clips or ELEKTRA TMS installation tape to install the cables. These mounting elements will assure maintaining a uniform distance between adjacent sections of the cable. The distance between clips or sections of installation tape must not exceed 40cm.



Downpipe spacing clip



Heating cables installed inside a downpipe using spacing clips

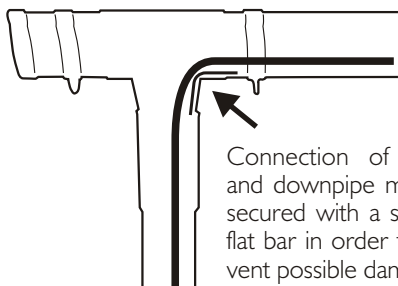


ELEKTRA TMS installation tape  
(standard tape length – 10m)

If the downpipe length exceeds 12m,  
use spacing steel cord with clips to  
install a double heating cable.



Downpipe spacing steel cord with clips



Connection of gutter and downpipe must be  
secured with a stainless  
flat bar in order to pre-  
vent possible damage to  
the heating cable.



Heating cables installed in a gutter using  
the ELEKTRA TMS tape

If the water from downpipes is drained  
directly into the sewage system,  
then the section of the drainage pipe  
from ground level to the frost  
penetration depth (approximately 1.0m)  
must be heated.



Installation of heating cable below the  
ground level

### Installing heating cables in roof runners and on the edges of roofs

In areas with heavy snowfalls, heating the gutters and downpipes does not only assure complete removal of ice and snow. It is also necessary to heat the edge of the roof adjacent to the gutter on the width of approximately 50 cm and roof channels.

Use clips/holders to install cables on the roof edges.



Example of heated roof edge



Copper installation holder or Zinc-titanium installation clips/holdres

Use plastic installation tape to install cables in roof channels. Installation mesh made of stainless wires or ELEKTRA TMS tape can also be used.

These clips/holdres can be:

- Fixed to the roof using adhesive tape
- Riveted to the roof
- Suspended on insulated carrying cable (shown in the figure above)



Installation tape for roof channels



Example of installation of heating cables in roof runner

# C Control

Small, single zone applications may be controlled by **ELEKTRA ETR2R** (max load 16A).



ELEKTRA ETR2R controller with temperature and humidity sensor



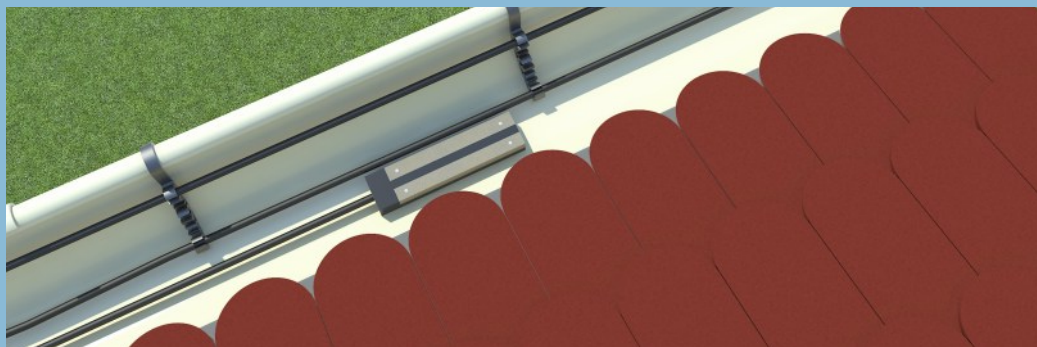
ELEKTRA ETOR2 controller with temperature and humidity sensor

The humidity sensor must be installed on the bottom of the gutter. The temperature sensor must be installed outside the building and must not be exposed to sunlight (for example on the north side of the building).

The **ELEKTRA ETOR2** has been developed to control larger applications (max load 3 x 16A). It can control up to 2 zones or a single zone utilising 2 sensors. **ETOR2** may also be used to control 2 separate areas, e.g. a driveway and gutters.

Those temperature controllers switches the heating system on only when two conditions are fulfilled:

- The ambient temperature is within the programmed range
- Humidity sensor signals snowfall



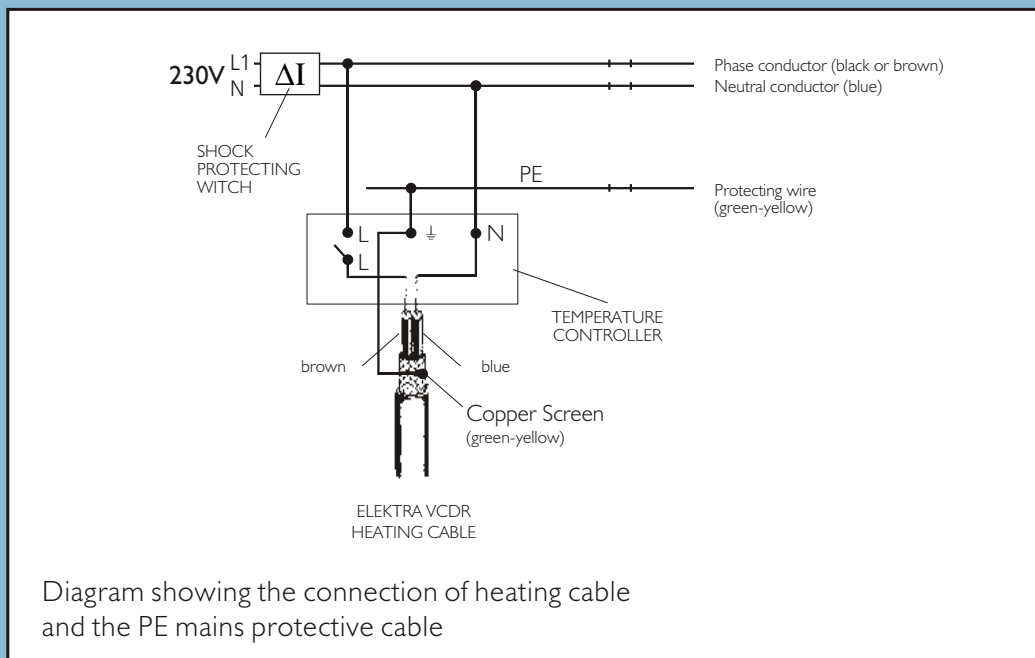
Method of installing the humidity sensor inside the gutter

# S Shock protection

Complete fire safety of the ELEKTRA VCDR heating cable can be assured by:

- Connecting the heating cable shield to the electrical system protective wire (PE)
- Installing a  $\Delta \leq 30$  mA residual current circuit breaker in the heating system to protect against electric shock
- Measuring the resistance of insulation and wires of the heating cables – the value of insulation resistance of each heating cable measured with a 1000 V device must not be less than  $10M\Omega$

**ATTENTION:** The residual current circuit breaker can be common for the heating system and other loads providing this will not cause the flow of residual current the value of which will exceed its permissible sensitivity. Assessment of the level of protection against electric shock for the heating system must be carried out by an authorized ELEKTRA technician or an electrician with valid licenses.



# Operation

Prior to every heating season the user should clean the gutters and downpipes from leaves and debris – otherwise the heating quality will deteriorate, this can also lead to overheating of the cables.

# Warranty Card

**ELEKTRA provides a 10-year warranty (from the date of purchase) for the VCDR heating cables.**

Warranty terms:

- 1) The complaint can only be recognized if:
  - a) The heating system is fitted according to this installation manual by a licensed technician
  - b) A correctly filled out Warranty Card is produced
  - c) Heating cable proof of purchase is produced
- 2) Any repairs carried out by a person other than an authorized ELEKTRA technician shall render the warranty null and void
- 3) The warranty does not cover damage caused by:
  - a) Mechanical damage
  - b) Incorrect power supply
  - c) Lack of overload protection and residual current protection
  - d) Electrical system installed contrary to applicable regulations
- 4) Under the warranty ELEKTRA shall only cover any costs related to repairing or replacing the defective heating cable.

**ATTENTION! Claims must be submitted together with the Warranty Card and proof of purchase at the point of sale where the product was purchased or at an ELEKTRA office.**



The Customer must keep the Warranty Card for the entire warranty period, i.e. 10 years. Warranty period runs from the date of purchase.

### INSTALLATION LOCATION

Address			
Post Code		Town	

### DETAILS OF INSTALLER / ELEKTRICIAN

Name & Surname			
Address			
Post Code		Town	
Professional body enrolment number		<b>Measurement results</b> Insulation resistance before installation  Insulation resistance after installation	
E-mail			
Tel.			Fax
Date		Installer signature	

**NOTE!**  
 Place the self-adhesive rating plate  
 attached to the product here  
 (must be carried out prior to installing  
 the heating system)

Company Stamp /  
Seal







SILVER ACE '93



BRONZE HELMET '97



SILVER HELMET '98



GOLD HELMET '97



GOLD MEDAL  
MTB Poznań 2001



BUSINESS GAZELLES  
2006



BUSINESS GAZELLES  
2007



BUSINESS GAZELLES  
2008



BUCOWLANA  
FIRMA  
ROKU 2008



ul. Marynarska 14  
02-674 Warszawa, Poland  
tel.: (+48 22) 843 32 82  
fax: (+48 22) 843 47 52  
e-mail: office@elektra.eu  
www.elektra.eu

