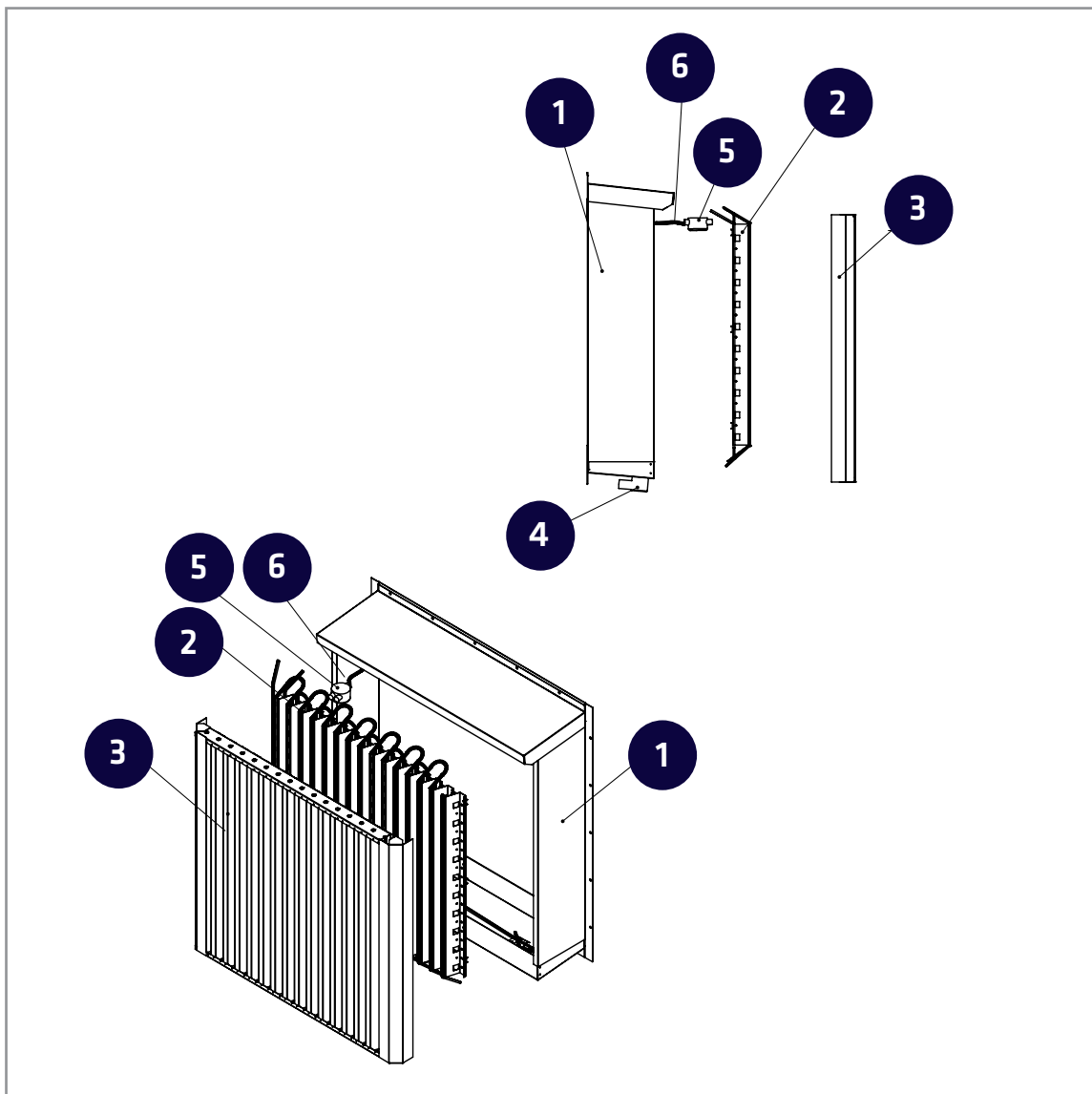




TUISKU-AF connection and operation instructions

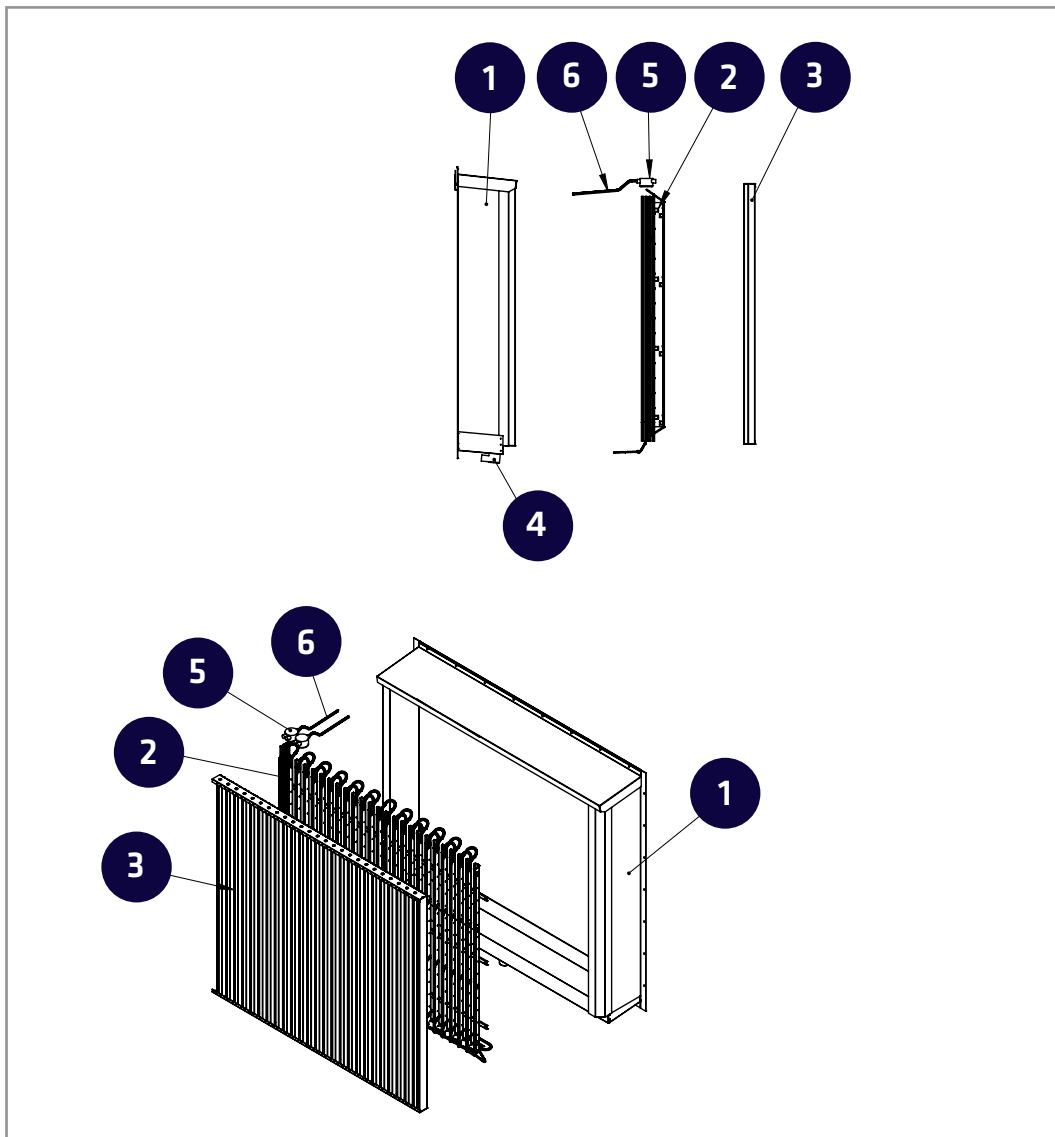
Surface mounted TUISKU parts with one self-regulating heating unit



- 1 TUISKU-P frame
- 2 Self-regulating heating unit
- 3 Louvre
- 4 Water drainage, D50 for a plastic waste pipe
- 5 Cable distribution box IP67
- 6 Rubber cable 3x2,5 mm²

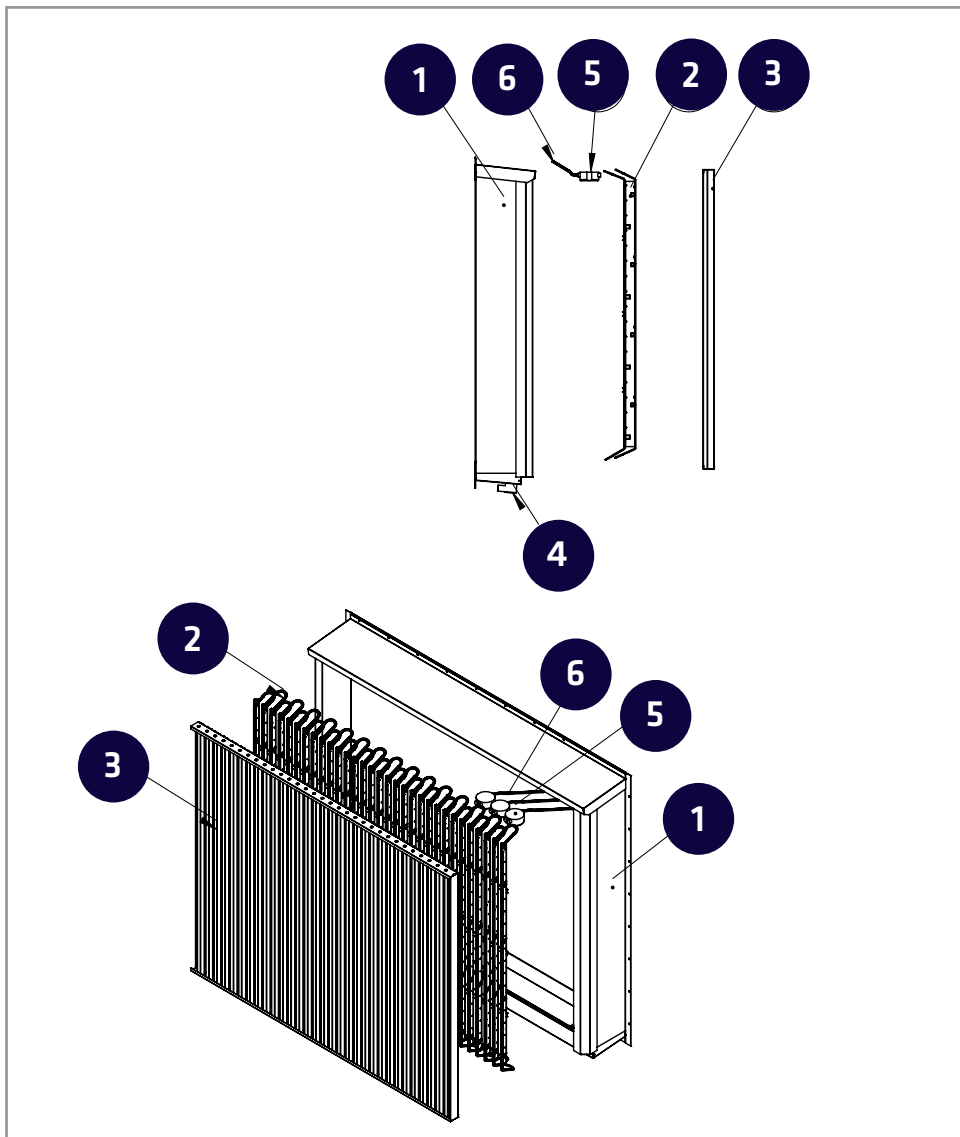
TUISKU-AF installation is in a separate TUISKU installation manual.

Surface mounted TUISKU parts with two self-regulating heating units



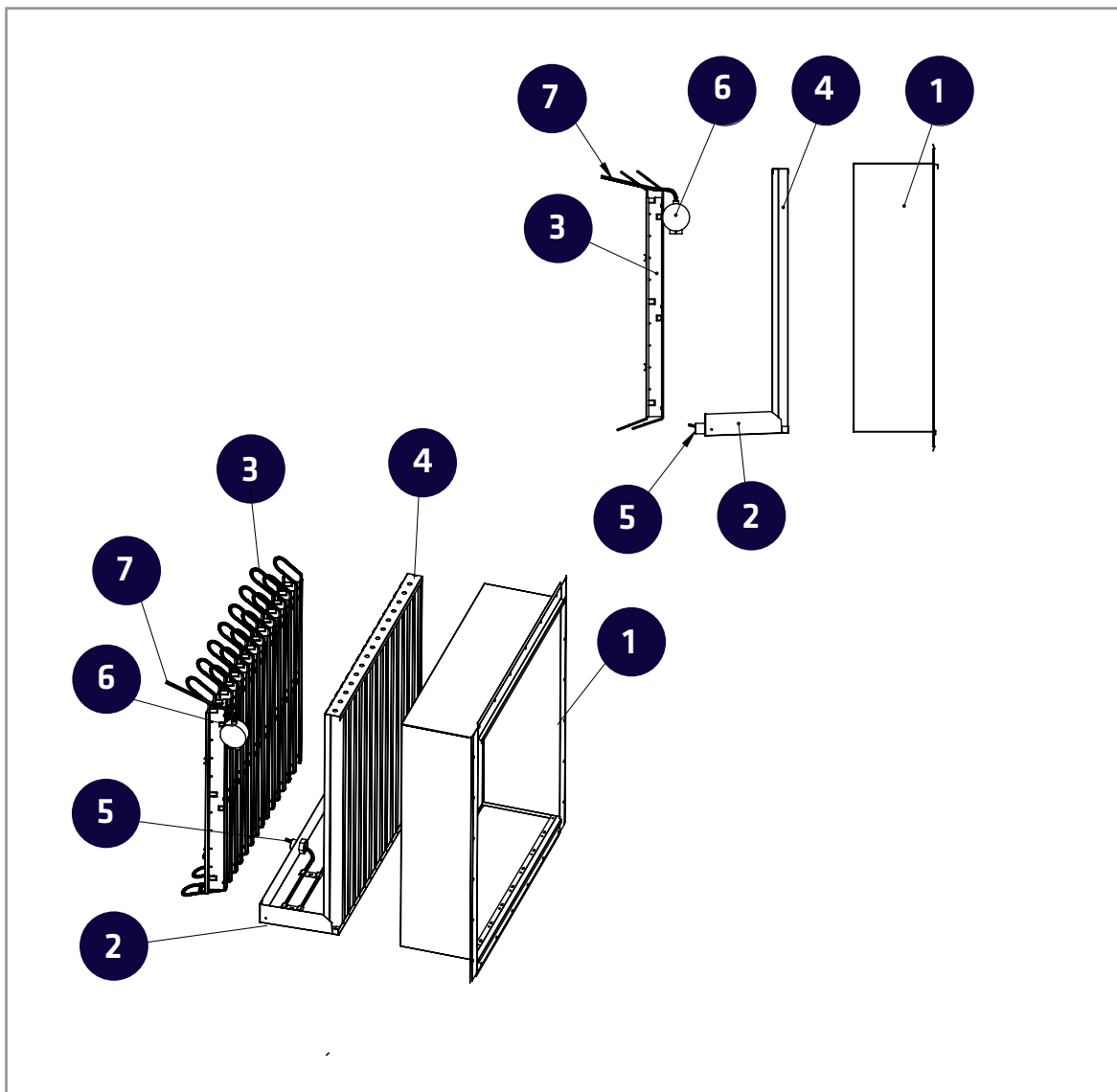
- 1 TUISKU-P frame
- 2 Self-regulating heating units, 2 pcs
- 3 Louvre
- 4 Water drainage, D50 for a plastic waste pipe
- 5 Cable distribution box IP67, 2 pcs
- 6 Rubber cable 3x2,5 mm², 2 pcs

Surface mounted TUISKU parts with three self-regulating heating units



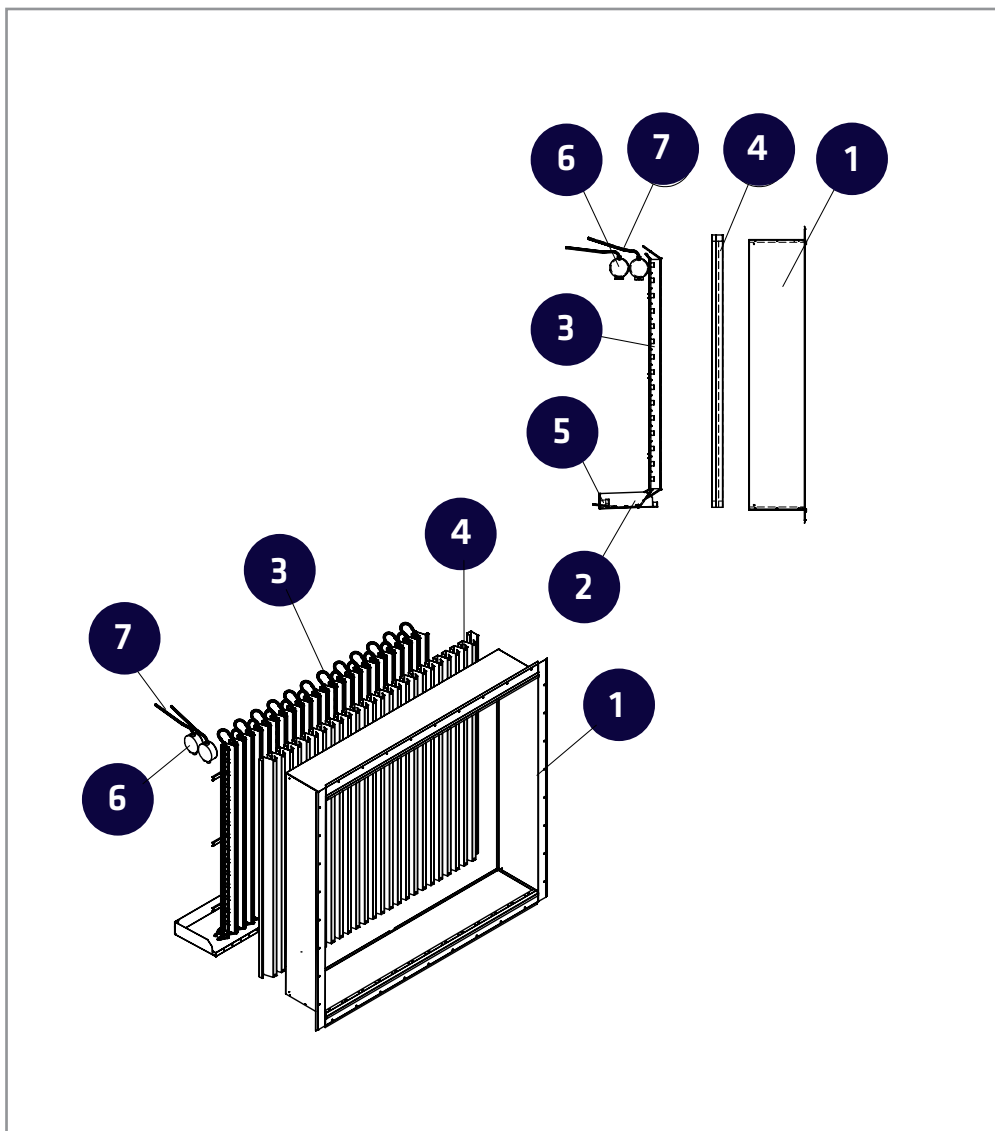
- 1 TUISKU-P frame
- 2 Self-regulating heating units, 3 pcs
- 3 Louvre
- 4 Water drainage, D50 for a plastic waste pipe
- 5 Cable distribution box IP67, 3 pcs
- 6 Rubber cable 3x2,5 mm², 3 pcs

Flush mounted TUISKU parts with one self-regulating heating units



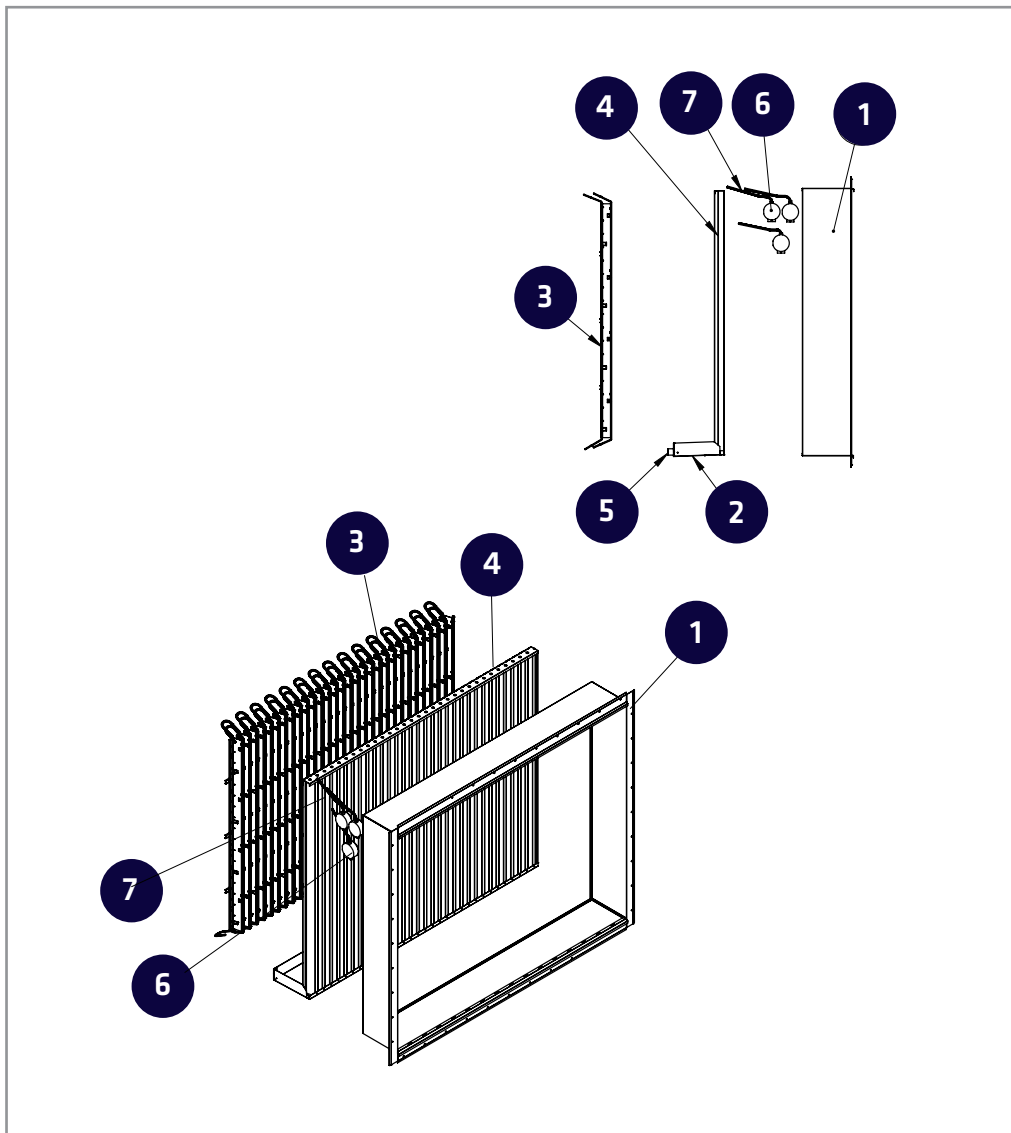
- 1 TUISKU-PU frame
- 2 Water drainage base
- 3 Self-regulating heating unit
- 4 Louvre
- 5 Water drainage, D50 for a plastic waste pipe
- 6 Cable distribution box IP67
- 7 Rubber cable 3x2,5 mm²

Flush mounted TUISKU parts with two self-regulating heating units



- 1 TUISKU-PU frame
- 2 Water drainage base
- 3 Self-regulating heating units, 2 pcs
- 4 Louvre
- 5 Water drainage, D50 for a plastic waste pipe
- 6 Cable distribution box IP67, 2 pcs
- 7 Rubber cable 3x2,5 mm², 2 pcs

Flush mounted TUISKU parts with three self-regulating heating units



- 1 TUISKU-PU frame
- 2 Water drainage base
- 3 Self-regulating heating units, 3 pcs
- 4 Louvre
- 5 Water separation module
- 6 Cable distribution box IP67, 3 pcs
- 7 Rubber cable 3x2,5 mm², 3 pcs

TUISKU-AF standard collection and wiring

Green area = 1 cable (230 VAC), max. 1935W

Blue area = 2 cables (2 x 230 VAC), max. 3870W

Gray area = 3 cables (3 x 230 VAC), max. 5805W



Dimensions of the surface mounted TUISKU-AF (L x H)

	1000	1200	1400	1600	1800	2000	2200
800	962x839	1148x839	1396x839	1582x839			
1000	962x1025	1148x1025	1396x1025	1582x1025	1768x1025	1954x1025	
1200	962x1211	1148x1211	1396x1211	1582x1211	1768x1211	1954x1211	2140x1211
1400	962x1459	1148x1459	1396x1459	1582x1459	1768x1459	1954x1459	2140x1459
1600	962x1645	1148x1645	1396x1645	1582x1645	1768x1645	1954x1645	2140x1645
1800	962x1831	1148x1831	1396x1831	1582x1831	1768x1831	1954x1831	
2000	962x2017	1148x2017	1396x2017	1582x2017	1768x2017		

Rated power of the surface mounted TUISKU-AF (W)

	1000	1200	1400	1600	1800	2000	2200
800	1215	1431	1719	1935			
1000	1485	1755	2250	2520	2655	2925	
1200	1755	2214	2646	2970	3159	3483	4077
1400	2160	2538	3042	3375	3663	4311	4689
1600	2430	2862	3375	3870	4437	4869	5301
1800	2700	3186	3834	4455	4941	5427	
2000	2970	3510	4365	4905	5445		

Dimensions of the flush mounted TUISKU-AF (L x H)

	1000	1200	1400	1600	1800	2000	2200
800	967x798	1153x798	1401x798	1587x798	1773x798	1959x798	2145x798
1000	967x984	1153x984	1401x984	1587x984	1773x984	1959x984	2145x984
1200	967x1170	1153x1170	1401x1170	1587x1170	1773x1170	1959x1170	2145x1170
1400	967x1418	1153x1418	1401x1418	1587x1418	1773x1418	1959x1418	2145x1418
1600	967x1604	1153x1604	1401x1604	1587x1604	1773x1604	1959x1604	2145x1604
1800	967x1790	1153x1790	1401x1790	1587x1790	1773x1790	1959x1790	
2000	967x1976	1153x1976	1401x1976	1587x1976	1773x1976		

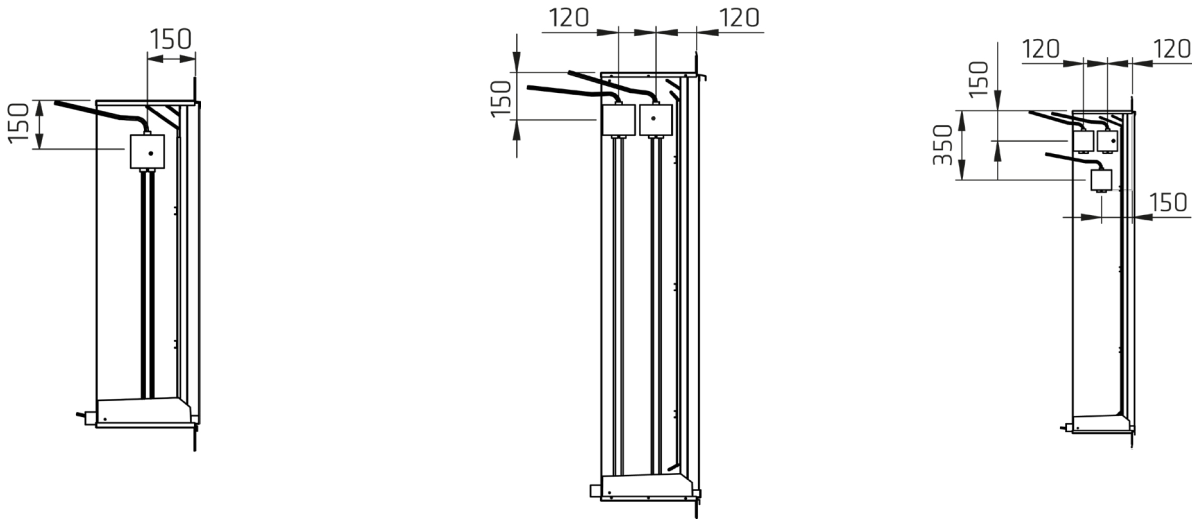
Rated power of the flush mounted TUISKU-AF (W)

	1000	1200	1400	1600	1800	2000	2200
800	1215	1431	1719	1935	2151	2367	2583
1000	1485	1755	2250	2520	2655	2925	3195
1200	1755	2214	2646	2970	3159	3483	4077
1400	2160	2538	3042	3375	3663	4311	4689
1600	2430	2862	3375	3870	4437	4869	5301
1800	2700	3186	3834	4455	4941	5427	
2000	2970	3510	4365	4905	5445		

Electrical connections

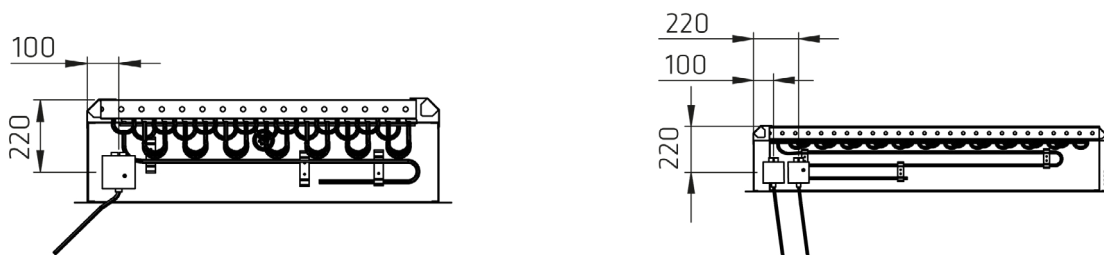
Cable distribution boxes can be attached to the top or to the side of the louvre.

Attachment to the side of the louvre

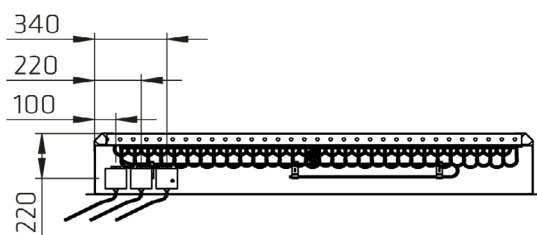


- 1 Selecast cable distribution box · 2 Selecast cable distribution boxes · 3 Selecast cable distribution boxes
- 2 m rubber cable · 2 x 2 m rubber cables · 3 x 2 m rubber cables

Attachment to the top of the louvre



- 1 Selecast cable distribution box · 2 Selecast cable distribution boxes
- 2 m rubber cable · 2 x 2 m rubber cables



- 3 Selecast cable distribution boxes
- 3 x 2 m rubber cables

TUISKU-AF connection



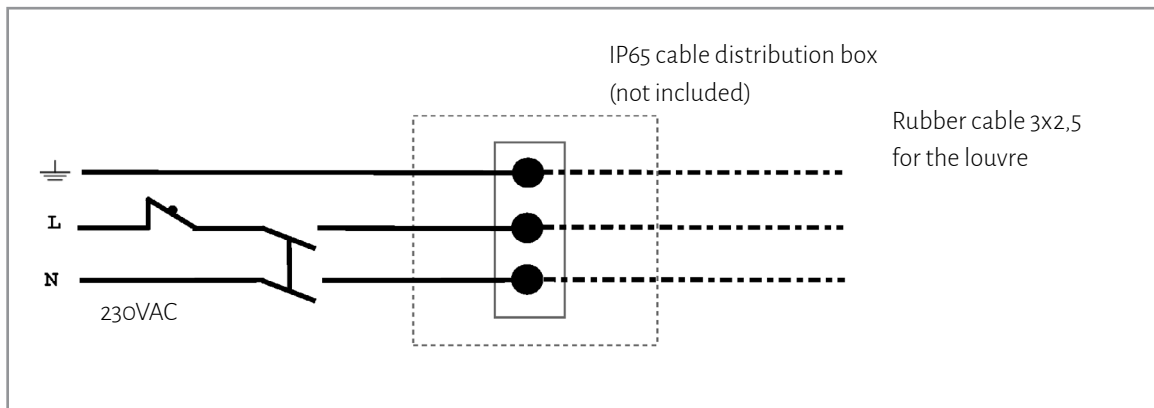
NOTE! Electrical connections must be carried out only by a qualified electrician.
 WARNING! 230V voltage inside the outdoor air unit.

A 2 meter rubber cable is included with the louvre for connection.

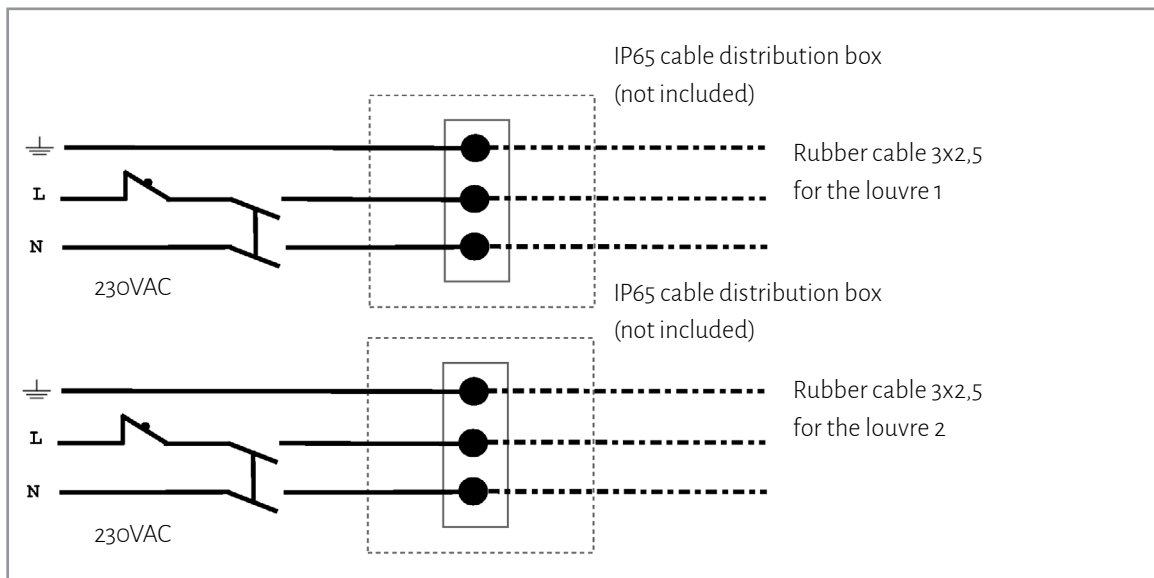
1. The supply cable is connected to the property's electrical control panel 16A behind a circuit breaker (Type C).
2. Insert the supply cable into the cable distribution box (IP65) via a two-pole switch.
3. The rubber cable from the TUISKU-AF louvre is connected to the supply cable in an IP65 class cable distribution box as shown in the pictures.

NOTE! If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.

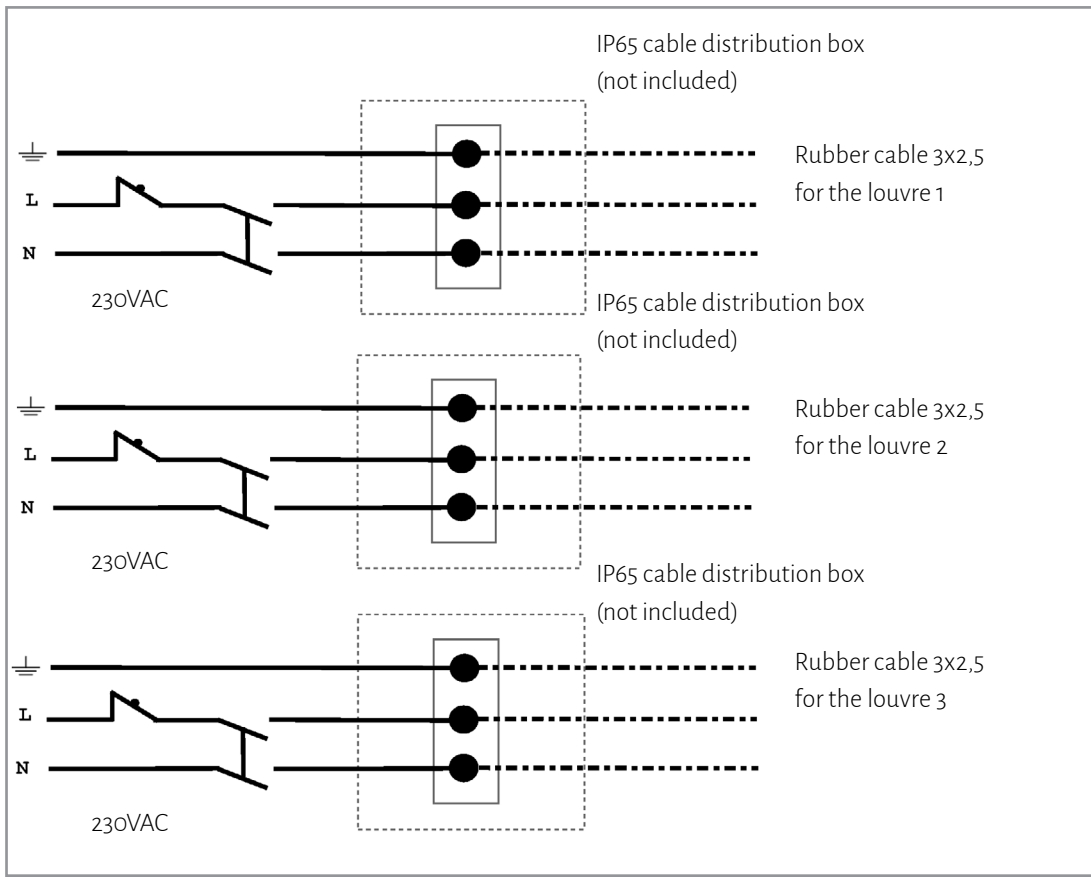
1. Connection to one heating unit (230 VAC)



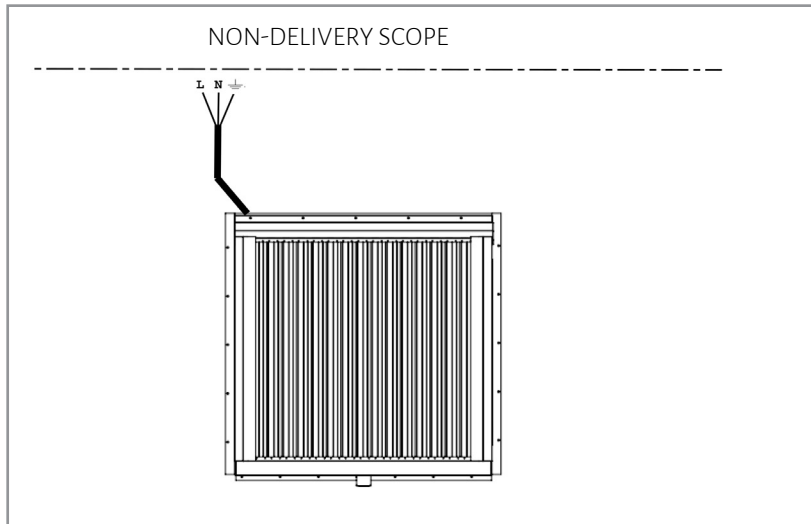
2. Connection to two heating units (2x230 VAC)



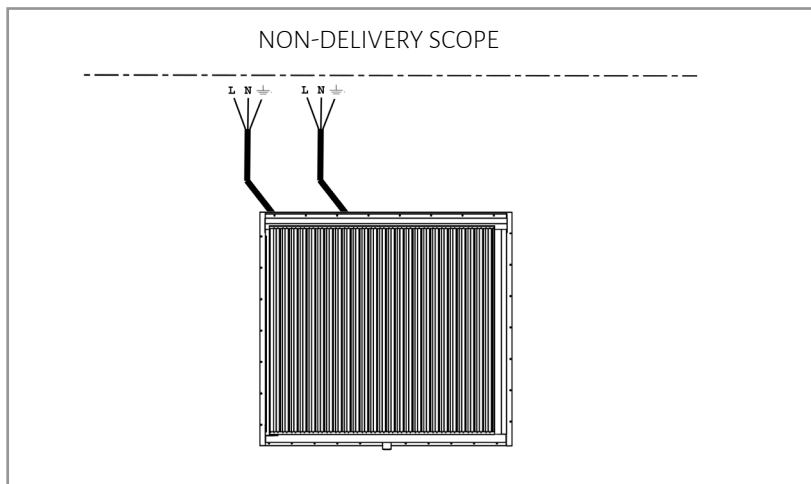
3. Connection to three heating units (3x230 VAC)



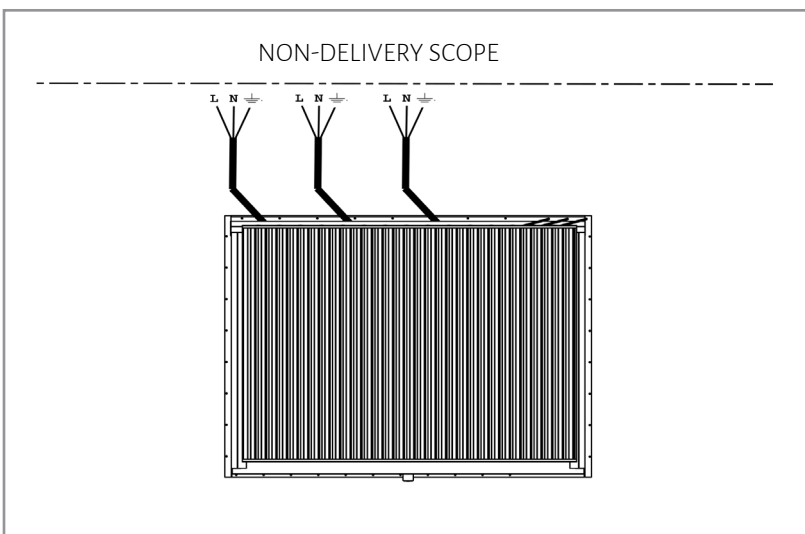
TUISKU-AF Delivery scope



Example of TUISKU louvre with one heating unit.

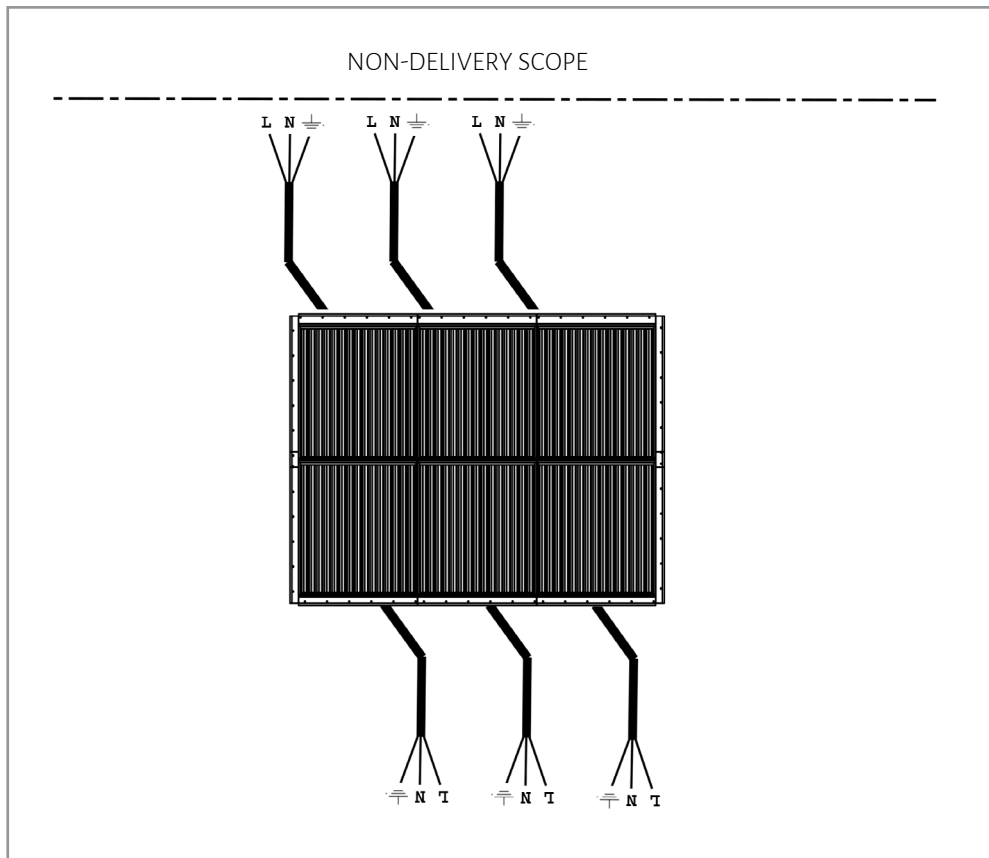


Example of TUISKU louvre size 1600x1400 mm with two heating units.



Example of TUISKU louvre size 2000x1600 mm with three heating units.

The size of the self-regulating heating units is determined by the size of the louvre modules used. Below is an example of a 3000x2000 multi-part TUISKU louvre, which comes from six 1000x1000 mm louvre modules with their own self-regulating heating unit.



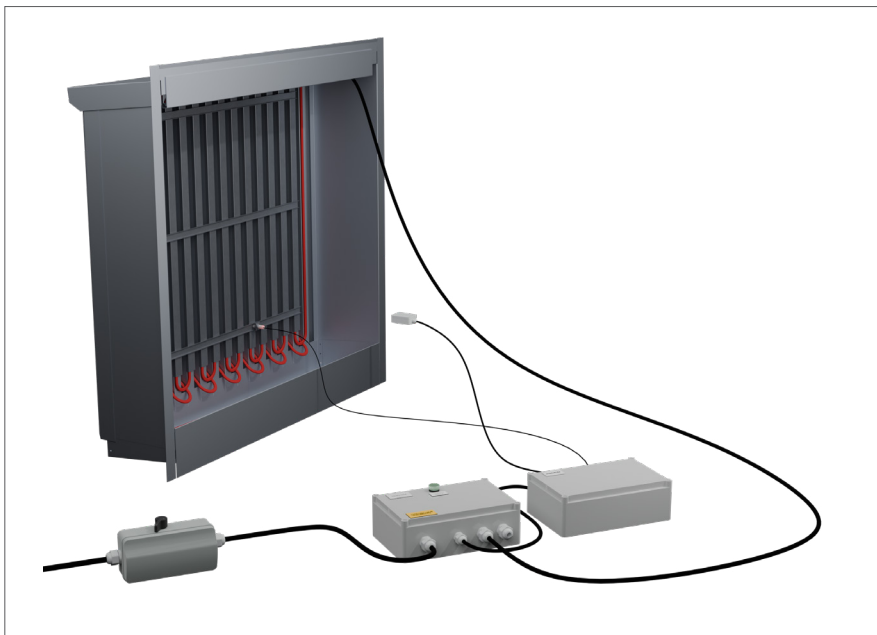
TUISKU-AF Control Wiring Connection

Note! Installation must only be carried out by a qualified electrical professional. The control unit contains 230 VAC / 400 VAC external voltage.

System

The system consists of a control unit and a power unit. The system measures temperature, with the operating range set via the control unit (see Temperature Sensor Adjustment), and it detects snow accumulation on the grille. The sensitivity of the snow detection function is preset at the factory, but it can, and often should be adjusted on the sensor to match the conditions at the installation site.

The control system is available in three power versions: 5.5 kW, 11 kW, and 18 kW. A single TUISKU-AF power unit can supply power to multiple modules simultaneously. This reduces the number of required components and lowers installation costs, provided that the total system power remains within the capacity limits of the power unit.



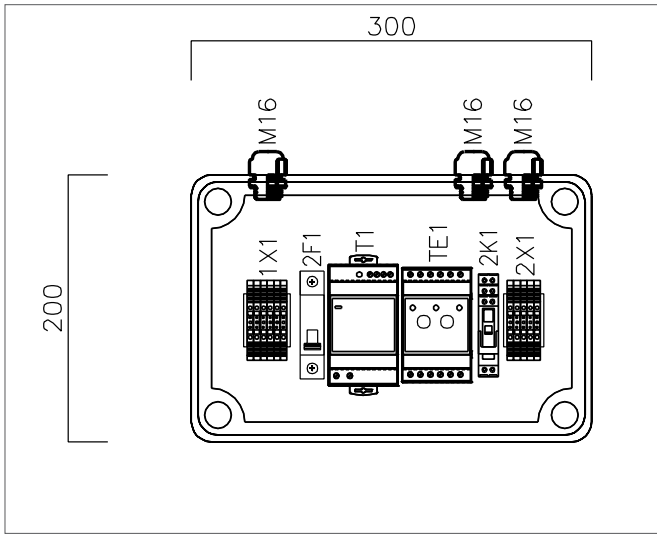
Note: The snow detection sensor is factory-installed on the rearmost blade of the grille, where it is best protected against mechanical damage.

Operation

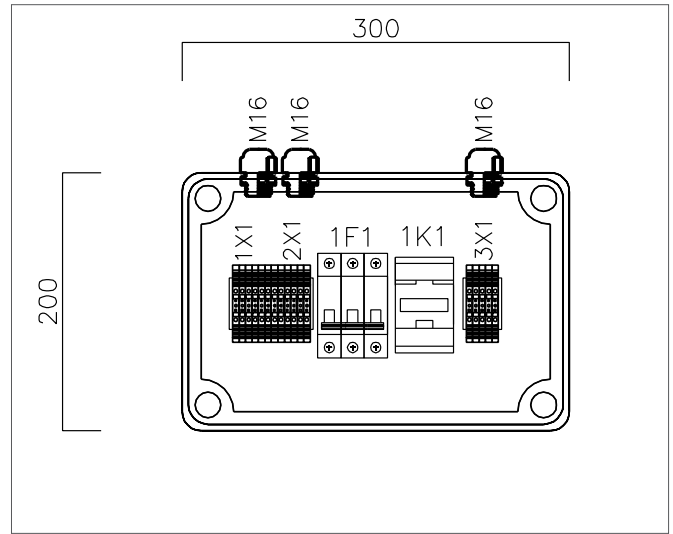
The heating system is activated when the temperature is within the configured range and the snow detection sensor detects the presence of snow or ice on the grille. The heating system is deactivated when these conditions are no longer met. An external control can be connected to the power unit. The external control overrides the system's internal control and operates as a forced control function. It is connected to terminals 3 and 4 of the 2X1 connector on the power unit.

It is recommended that the switch for the external forced control be installed in a clearly visible location and that the forced-control mode be indicated, for example with an indicator light, to prevent the heating system from being left on unnecessarily. A switch with a timer function is also recommended, ensuring that the heating system cannot accidentally remain switched on for an extended period.

Control unit



Power unit

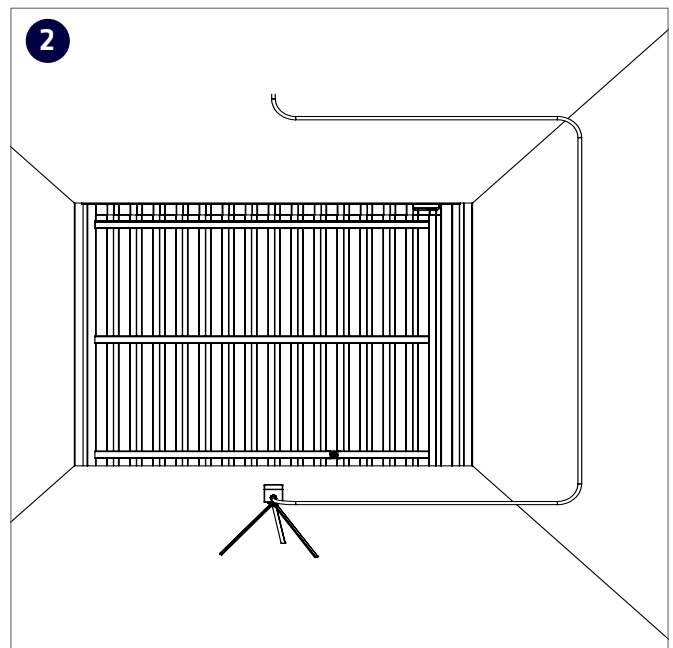
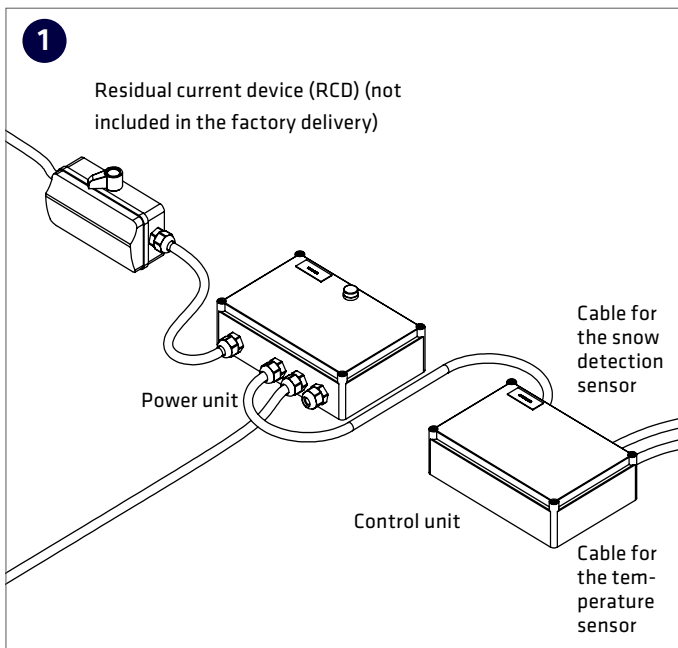


Connection

The insulation resistance of the heating cable must be measured after the grille has been installed, but before the heating cable is connected.

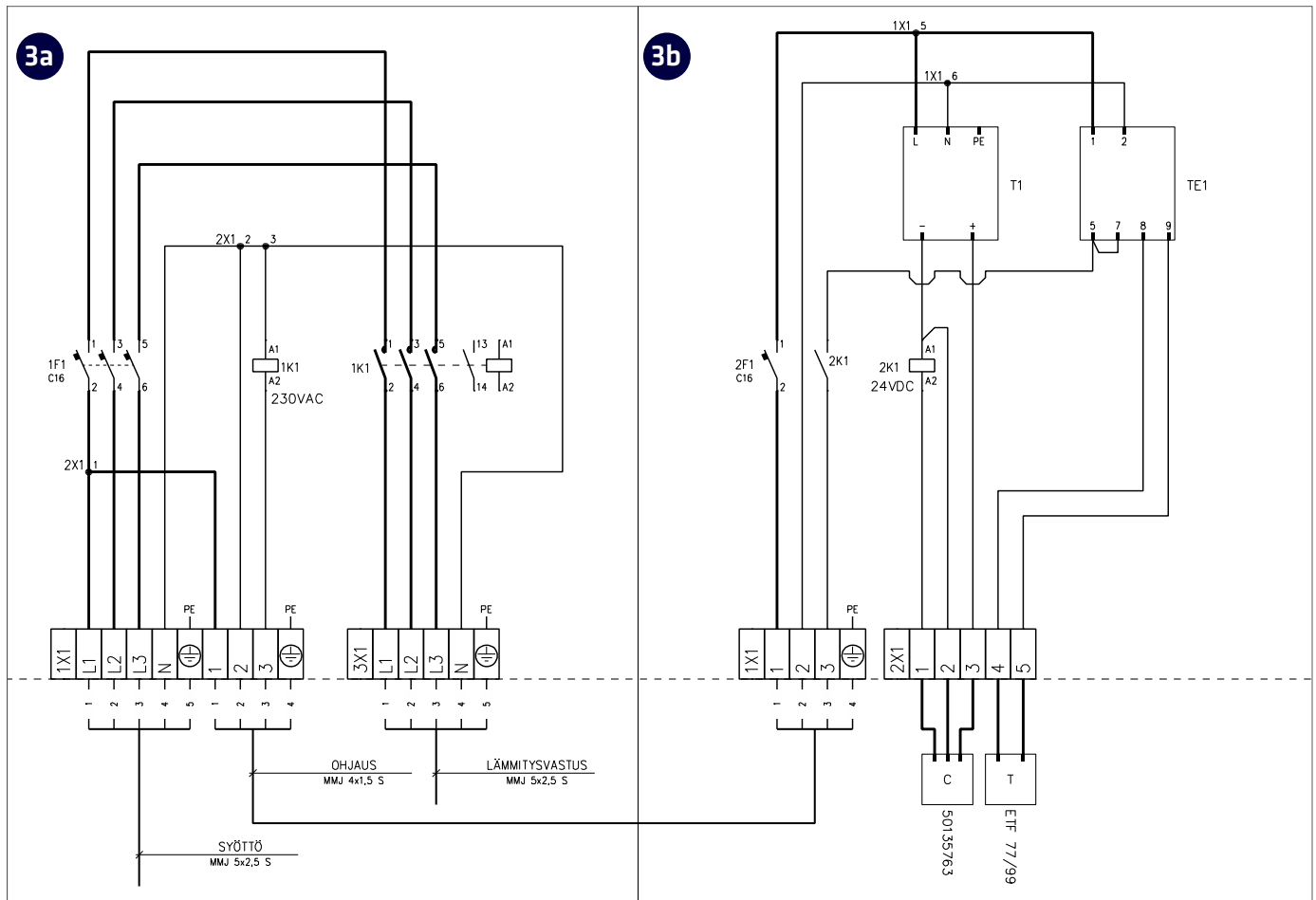
- 1** Install the control unit and the power unit in a dry location that is easily accessible for maintenance. The maximum distance from the grille is 50 meters. The supply cable for the de-icing system must be sized by the electrical designer.
- 2** Install the temperature sensor inside the intake chamber, in the airflow and close to the grille. The temperature sensor cable is connected directly from the sensor terminals to the terminals of the control unit. For the temperature sensor, a $2 \times 1.5 \text{ mm}^2$ HO7RN-F rubber cable is recommended. The maximum cable length is 50 meters.

Route the snow and ice detection sensor cable outside the intake chamber and connect it to the control unit. If the sensor's own cable is not long enough to reach the control unit directly, it may be extended using a junction box up to a maximum total length of 50 meters, for example with a $4 \times 0.34 \text{ mm}^2$ cable with a PUR sheath.



Power unit

Control unit



3 Connect the cables according to the diagrams.

3a Power Unit:

Supply connection to terminal 1X1: L1, L2, L3, N and PE

Interconnecting cable between the control unit and power unit to terminal 1X1: 1, 2, 3, 4 and PE

An external control can be connected to terminal 2X1; normally no connection is made.

Heating element connection to terminal 3X1: L1, L2, L3, N and PE

3b Control Unit:

Interconnecting cable to terminal 1X1: 1, 2, 3, 4 and PE

Snow detection sensor to terminal 2X1:

1 – Black

2 – Blue

3 – Brown

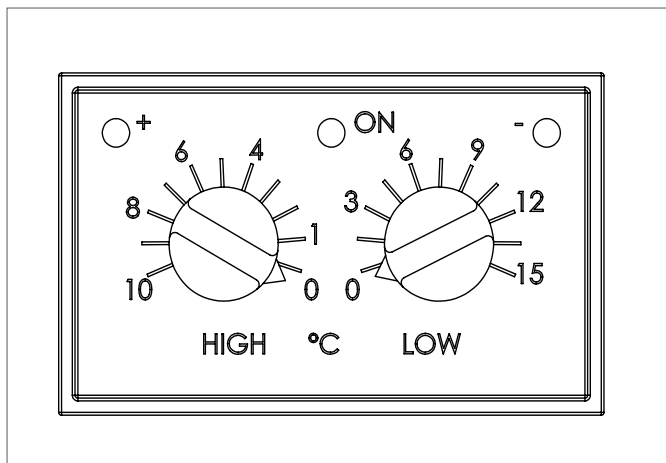
Temperature sensor: 4 and 5

Check all connections and then apply power to the system.

Temperature adjustment

The factory settings for heating are **LOW** at -2 °C and **HIGH** at +2 °C.

A long sensor cable may affect the accuracy of temperature measurement. If temperature adjustment is needed for example, due to snow accumulation on the grille, it can be done using the thermostat located in the control unit and/or by adjusting the sensitivity of the snow detection sensor.



If ice or snow forms on the grille:

- AND the green indicator light is on, lower the “LOW” setting until the red indicator light turns on.

- AND the yellow indicator light is on, raise the “HIGH” setting until the red indicator light turns on.

This adjustment may need to be repeated several times.

“LOW” temperature values are sub-zero temperatures in the range of 0 to -15 °C.

“HIGH” temperature values are above-freezing temperatures in the range of 0 to +10 °C.

Note: If, due to special conditions, it is necessary to force the de-icing system on at temperatures below -15 °C, an external control can be connected to the power unit.

Indicator Lights

Control unit thermostat:

- Yellow LED on: Temperature is above the setpoint
- Red LED on: Heating is active
- Green LED on: Temperature is below the setpoint

Power unit:

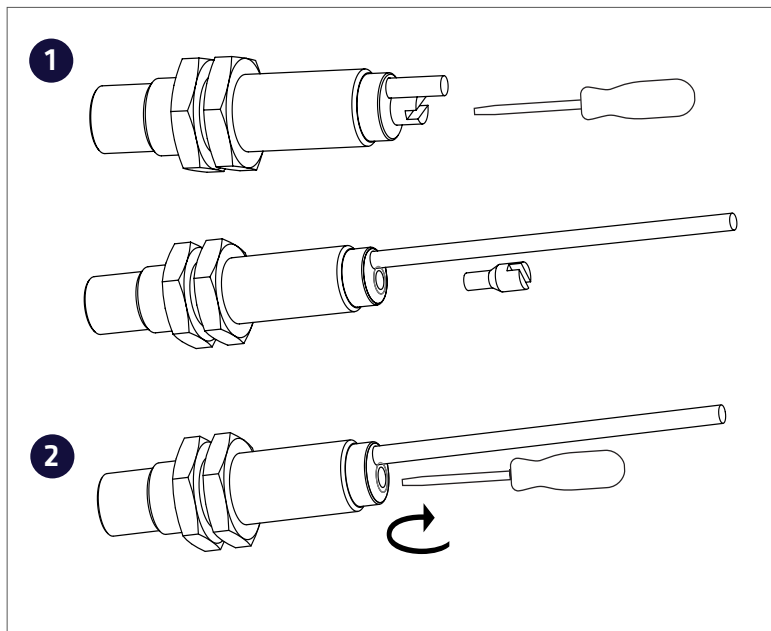
- The green LED on the power unit turns on when the heating is active.

External Indication

A potential-free signal is available from the auxiliary contact of the power unit contactor when the heating is on. This can be used, for example, to connect an external indicator light to indicate operation of the frost de-icing heater.

Sensor Sensitivity Adjustment

The sensor is ready for operation with the factory settings. The sensor indicator light is on when it detects snow or ice. If the sensitivity needs to be adjusted, proceed as follows:



- 1** Note: The adjustment screw is located beneath a screw-on protective cap.
- 2** Use a small flat-blade screwdriver to turn the adjustment screw. Adjustment should be carried out carefully. When adjusting the sensor sensitivity, the sensor surface must be wet, or it must be moistened, so that the sensor can detect moisture.
 - Sensitivity increases when the screw is turned clockwise.
 - Sensitivity decreases when the screw is turned counterclockwise.

TUISKU-AF usage

Melting snow and ice

- Is switched ON / OFF switch when there is a risk of the louvre freezing*
- Automatically when an ice and snow sensor is connected to the system*

*Not included in delivery.

Thank you for choosing Climecon products!

If you have any questions regarding the connection or use of TUISKUs, you can contact Climecon's customer service.

Call: 020 198 6600

Email: info@climecon.fi

Climecon Oy

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