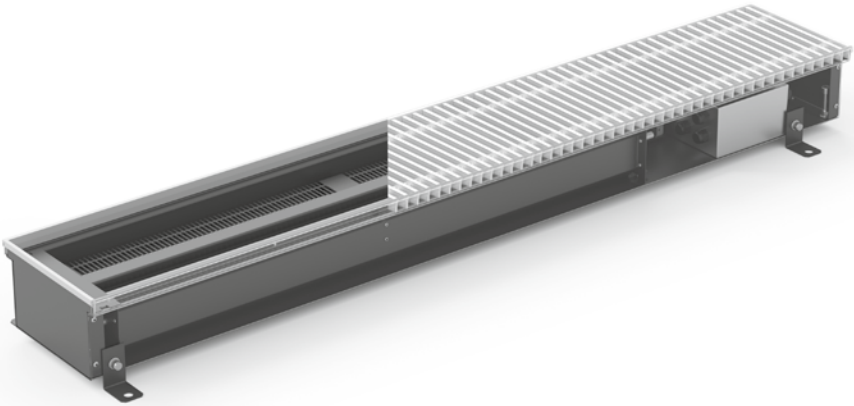
KORAFLEX

Amper FVA

230 V AC

EN **INSTALLATION MANUAL** KORAFLEX Amper (FVA) – Instructions for installation, Control, Service and maintenance



member of KORADO Group

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Contents

Introduction

KORAFLEX Amper FVA (230 V AC) is a fully electric floor-mounted convector which, in order to achieve high heating output and rapid heat transfer to the space, contains a powerful electric heat exchanger and an EC tangential fan. Reliable regulation ensures simple and safe operation, while guaranteeing that the walkable cover grille does not reach too high a temperature. The convector operation is independent of the central heating system and does not contain a heat exchanger for hot water heating. The floor convector which as compact dimensions, is suitable for use wherever connection to the heating system is not possible. We recommend placing it near large glazed surfaces, and it is also suitable for fully electric or modern low-energy houses. Given the possibility of additional installation, it is also suitable for renovations where it is no longer possible to connect to hot water heating distribution. It is a fast, quiet and economical heating with high thermal output allowing installation as a primary or secondary (backup) heat source, or as a supplement to other heating methods.

Safety

This manual provides instructions for safe and efficient handling of the convector. These instructions are an integral part of the device and must be stored in its immediate vicinity and always accessible to operators. Before commencing installation of the device, all personnel must carefully read these instructions. The fundamental prerequisite for safe installation and operation is compliance with all specified safety instructions and other guidelines contained in this manual. In addition, all local occupational health and safety regulations shall apply, as well as general safety regulations governing the use of the equipment. The descriptions and other documentation provided and illustrated in this manual serve for basic understanding. Technical changes are reserved.

Explanation of symbols

Risk of Electric Shock
This symbol appears before activities where there is a risk of electric shock.

Warning
This symbol appears where dangerous situations may arise.

Important Notice
This symbol appears where damage to the product or surrounding property may occur.

Safety instructions

Always follow the safety regulations stated in this manual. Failure to comply with these regulations, as well as ignoring warnings and instructions, may result in injury, life-threatening situations or damage to property and equipment. The convector heater may be used by children aged 8 years and above, as well as persons with reduced physical, sensory or mental capabilities or lack of experience, provided they are supervised or have been instructed in its safe use and understand the potential risks. Children must not play with the convector heater. Children under 3 years of age should be kept away from the appliance unless continuously supervised. Children under 8 years of age may only switch the appliance on and off when it is in its normal operating position and under adult supervision or after appropriate instruction. However, they must not plug the appliance into the socket, adjust it, clean it or perform maintenance.

DO NOT COVER! Covering the convector heater may cause it to overheat.

Some parts of this product can become very hot and cause burns.

Personnel qualification

- The electrical installation design must be carried out by a person with appropriate professional competence and must comply with the relevant standards.
- The convector may only be installed, connected, repaired and commissioned by a trained specialist.
- **All work on electrical equipment within the meaning of ČSN EN 50110-1 (34 3100) or standards of the given country may only be carried out by workers with appropriate electrotechnical qualifications pursuant to ČÚBP and ČBÚ No. 50/1978 Coll. or according to the regulations of the given country and familiarisation with the equipment to the necessary extent.**
- The assembly and installation of the convector must be carried out in accordance with the general construction, safety and installation regulations and standards valid at the given location.
- Any interventions in the convector and repairs may only be carried out by a specialist with appropriate electrotechnical qualifications who has been additionally trained for these purposes by the convector manufacturer.

Incorrect connection may lead to product damage! In such case, the warranty does not apply to the product. Use personal protective equipment according to the regulations in the given country. During installation, maintenance and troubleshooting of the convector, always wear appropriate protective equipment.

Risk of electric shock!

Danger of fatal electric shock!

- Contact with live parts (i.e. electrically conductive parts under voltage) may cause fatal injury by electric shock. Damaged insulation or electrical components pose a serious risk.
- If insulation becomes damaged, immediately disconnect the device from the power supply and ensure repairs are carried out.
- Replace damaged parts only with original manufacturer parts.
- Avoid moisture on live parts as it may cause a short circuit.
- Ensure proper earthing of the convector.
- Carry out installation, maintenance and servicing with the convector disconnected from the mains.
- Ensure that it cannot be accidentally activated.

Correct operating environment

Warning! Incorrect use as specified below may lead to limitation or failure of the convertor's function.

KORAFLEX Amper FVA convectors are designed exclusively for indoor use in dry environments without increased air humidity. Use in humid environments could lead to electric shock. They are particularly suitable for residential and non-residential premises, administrative buildings, halls and manufacturing facilities.

- Never operate the convector in humid areas such as swimming pools, winter gardens, botanical gardens, greenhouses, bathrooms, wellness centers, thermal spas, outdoor storage areas.
- Never use the convector in rooms with explosive atmospheres.
- Never operate in chemically aggressive or corrosive atmospheres (e.g. sea air).
- Never operate the convector in areas with high dust levels.
- Ensure that the airflow can circulate freely.
- Do not place furniture, flowers, chairs or other objects directly on the convector or in its immediate vicinity.
- Do not place easily flammable and explosive objects in the vicinity of or above the convector.
- Do not place the convector under an electrical socket.

In case of doubt, consult the manufacturer regarding the suitability of using convectors in the given working environment.

Important

- **Do not cover the floor grille of the convector.** Overheating and device blockage may occur (see chapter **Device malfunctions**).
- Do not sit on the convector grille or place any objects on it.
- Prevent objects from falling into the convector. If this occurs, immediately disconnect the convector from the mains and remove the fallen object.
- **Prevent liquids from entering the convector. If this occurs, immediately disconnect the convector from the mains, wipe it and allow it to dry. If liquids penetrate the electronics, a short circuit may occur and the device may be damaged.**
- Exercise increased caution when handling liquids, for example when mopping, watering plants, or near open windows and balconies during rain.
- **Do not make any modifications to the convector that would alter its function.**
- **CAUTION:** The convector grille may become extremely hot and may cause burns! Do not touch the convector grille when the convector is hot. Special attention must be paid to the presence of children and persons with disabilities.
- Never operate the convector at incorrect operating voltage.
- Never operate the convector in a covered state.
- Never use the convector without the supplied protective grille.
- If convectors are not used for an extended period (e.g. in summer), disconnect them from the power supply.

Commissioning

- Prior to commissioning, an initial inspection of the electrical equipment must be carried out in accordance with ČSN 33 1500 standard or in accordance with the relevant standards of the given country. During operation, the user is obliged to ensure regular inspections of electrical equipment at specified intervals in accordance with ČSN 331500 or in accordance with the relevant standards of the given country.
- Before commissioning, check as per chapter **Control before first start-up** on page 10.

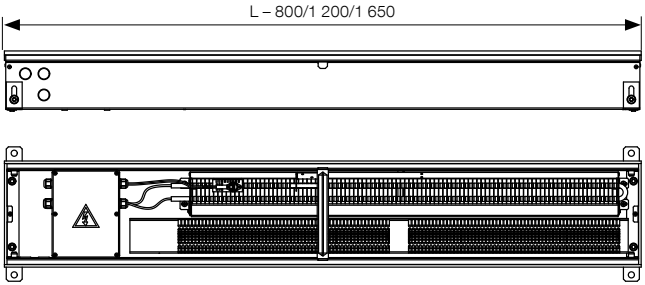
Technical parameters

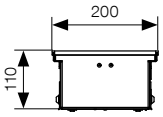
KORAFLEX Amper FVA xxx/11/20			
Length [mm]	800	1 200	1 650
Width [mm]	110		
Height [mm]	200		
Heat output [W]	320 ~ 800	640 ~ 1 600	960 ~ 2 400
Sound pressure level [dB(A)]	19.1–28.9	20.1–31	21.2–32.4
Weight [kg]	10	12	19

Operating conditions	
Max. and min. operating temperature [°C]	-10 ~ +40
Max. and min. air humidity [%]	20 – 60

Electrical parameters			
Rated Voltage [V]	**230 V AC**		
Mains frequency [Hz]	50		
Protection class	I		
Fan protection rating	IP 20		
Electronics protection rating	IP 65		
Nominal max. power input [W]	1 000	1 800	2 600
Nominal max. current [A]	4.5	7.9	11.3
Fan voltage [V]	24 V DC		
Number of fans	1	1	1

Installation dimensions

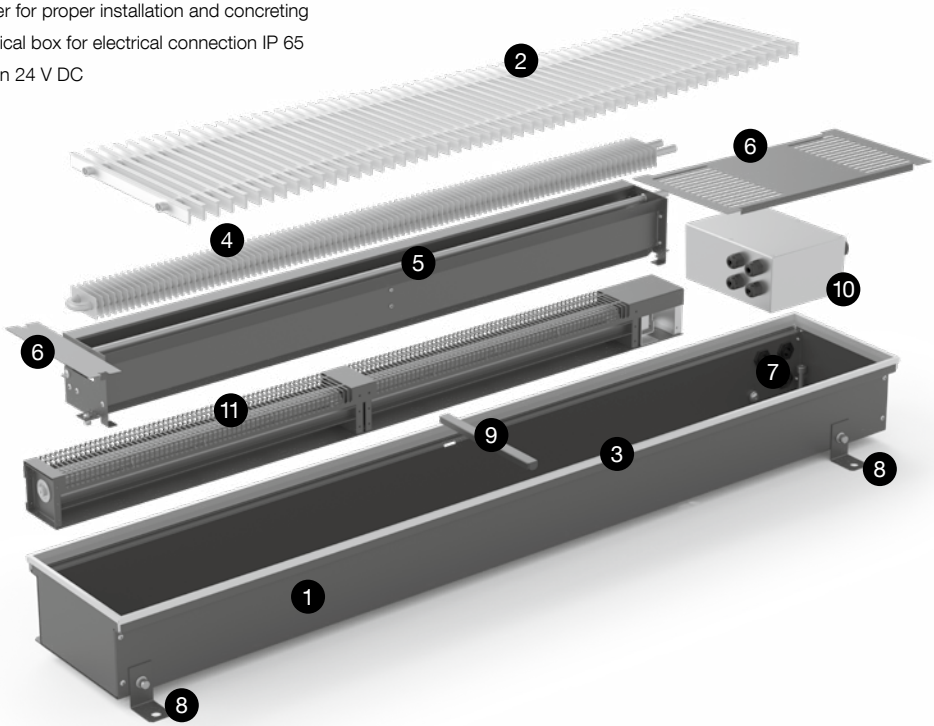




Type	L [mm]
FVA-080/11/20	800
FVA-120/11/20	1 200
FVA-165/11/20	1 650

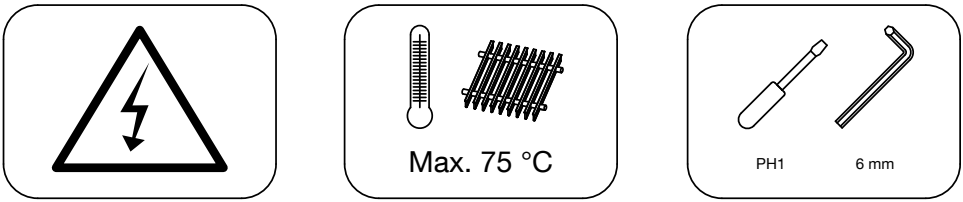
Description of KORAFLEX Amper FVA floor convector

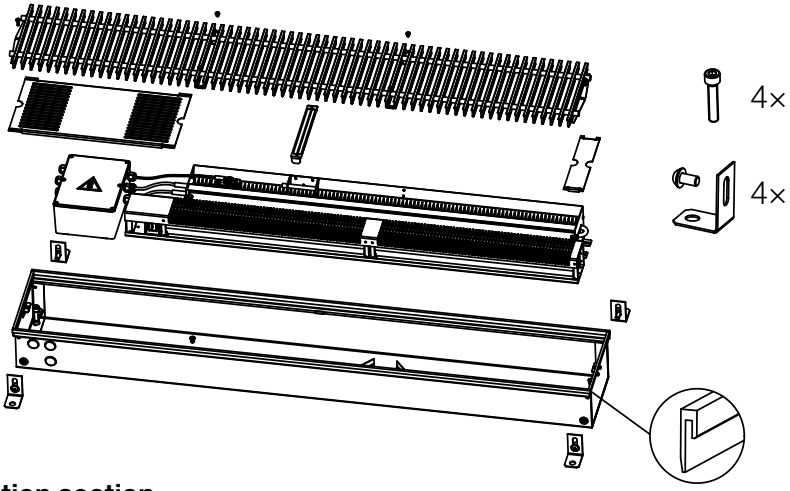
1. steel galvanised trough, black painted RAL 9005
2. roll-up covering grille (T-profile on spring) – silver anodised
3. aluminium covering frame – silver anodised (U or F)
4. electric heat exchanger 230 V AC/50 Hz
5. supporting structure of electric heat exchanger for airflow direction
6. covering plates for electrical connection
7. set screws
8. fixing anchors
9. spacer for proper installation and concreting
10. electrical box for electrical connection IP 65
11. EC fan 24 V DC



Convector installation and electrical

Connection standard delivery contents





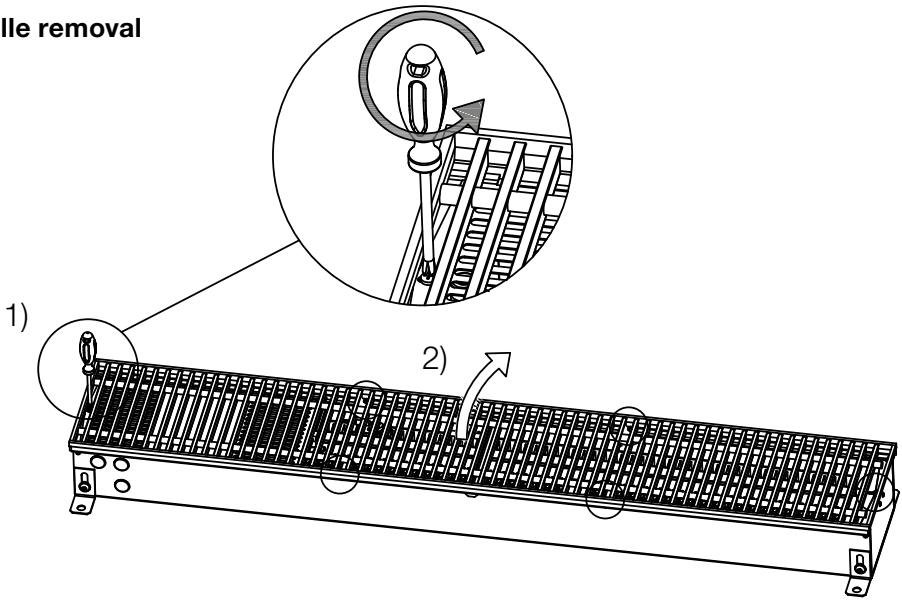
Construction section

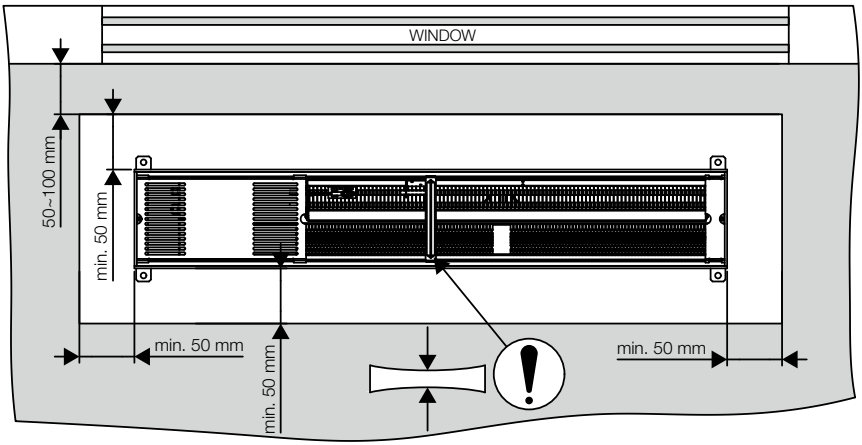
The assembly and installation of the convector must be carried out in accordance with the general construction, safety and installation regulations and standards valid at the given location. Install the convector according to the enclosed installation manual.

- A correctly installed convector is positioned horizontally, with the heating element closer to the window.
- During concreting, the convector must be horizontally levelle using adjusting screws and fixed to the floor using fixing anchors to prevent its displacement during subsequent concrete pouring.
- Prior to concreting, it is crucial to brace the convector to prevent longitudinal deflection.
- For this purpose, spacers are installed in the floor convector. Remove these spacers after concreting.
- Before pouring concrete or anhydrite, all passages into the convector must be thoroughly sealed to prevent construction material from entering.
- Before concreting, ensure that the electrical system connection has been made.
- To prevent contamination of the convector interior, we recommend keeping the cover plate in place throughout the construction work. The standard supplied plate is not walkable; a plate with increased load capacity can be ordered.
- Use expansion material between the convector frame and concrete.
- The fans are attached to the convector by means of magnets. This allows the fans to be removed from the convector during installation to prevent damage and contamination.
- For the fan-assisted convector, we recommend securing and sound-insulating it by pouring liquid concrete along the sides and underneath the bottom.
- The floor-mounted convector must be firmly embedded in concrete. The adjusting screws are solely intended for horizontal levelling of the convector trough.
- Two persons are required for the unit installation.
- The convector may contain sharp edges. Use protective equipment.

Installation manual

Grille removal

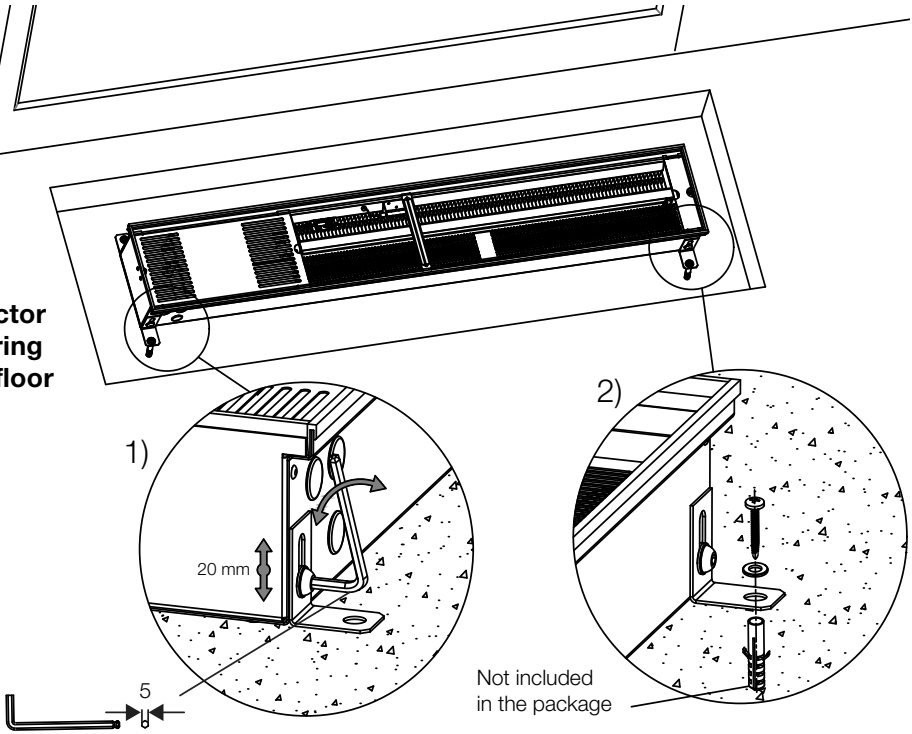


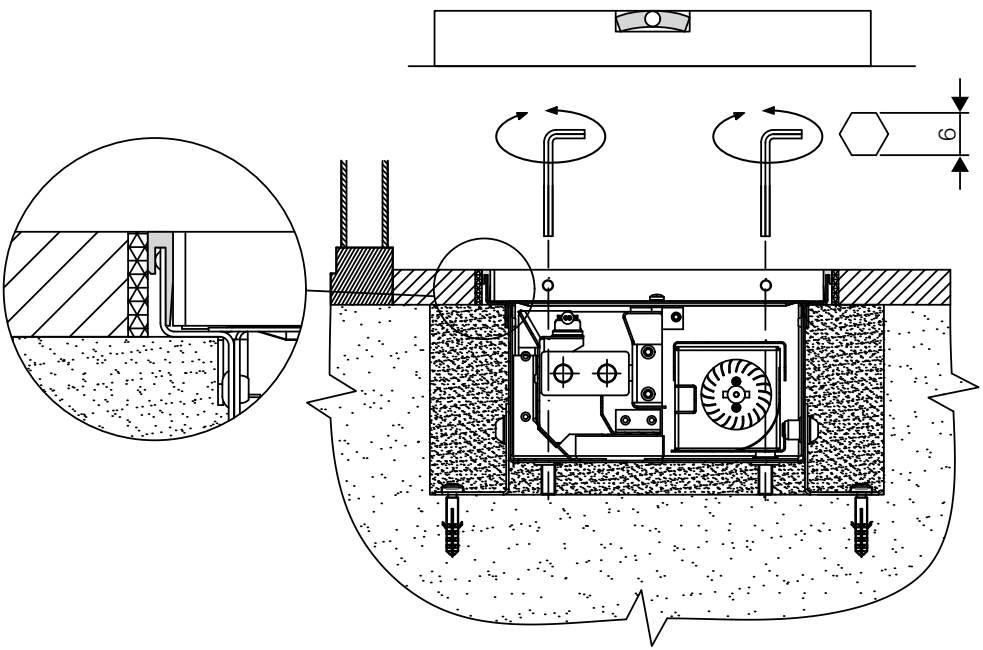


Inspection before concreting

- Check the correctness of electrical connection
- The convector is properly positioned and levelled
- All punched holes in the convector are carefully insulated against concrete screed ingress

Convector anchoring to the floor





Connection to electrical system

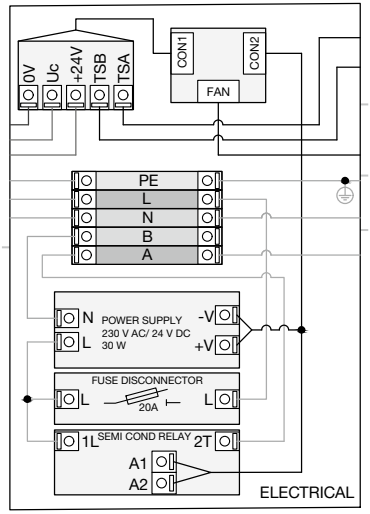
- According to the wiring diagram, connect the 230 V AC power supply to terminals L, N and PE
- Equip the electrical network with a circuit breaker required according to the values specified in *Technical parameters of KORAFLEX Amper FVA convector* (page 5) and according to the standards of the given country. We recommend connecting each convector separately to an individual circuit breaker.
- Ensure proper earthing of the convector!
- Check that the cables are correctly and firmly connected.
- Check that the electrical part of the device is properly covered and the cover plate is correctly positioned.

Electrical box description

Inputs (to be connected by customer)

Convector Control
+24V thermostat power supply 24 V DC
Uc and **0V** – fan control 0–10 V DC
0V – thermostat power supply 0 V DC

Convector power supply
PE – protective conductor
L – phase 230 V AC
N – neutral conductor 230 V AC



Outputs (factory-wired)

TSA; TSB – protective temperature sensor – 24 V DC

FAN – fan connection

⏚ Earthing of convector and electrical box

A; B – heating element power supply – 230 V AC

Cable connection

To ensure the protection rating of the aluminium electronics enclosure, cables of the correct diameter must be used through the cable gland. Cable glands are included in the electrical box.

- For connecting the 230 V AC power supply, a PG 11 cable gland is used for cables with a diameter of 6–10 mm.
- For connecting the 0–10 V DC control voltage, PG 9 cable glands are used for cables with a diameter of 4–8 mm.

First start-up inspection

When putting the convector into operation for the first time, ensure that all necessary requirements are met so that the convector can operate safely and in accordance with its intended purpose.

Installation Section

- Check whether the convector is firmly embedded in concrete.
- Check whether the convector is installed horizontally.
- Check whether all components are properly assembled and secured.
- Check whether all debris has been removed, e.g. from packaging or construction site.
- Check whether the convector grille is firmly fixed with screws.

Electrical Section

- Check the correct wiring according to the electrical diagram.
- Check whether the wires have the correct cross-section.
- Check the convector earthing.
- Check whether all external devices are connected and firmly plugged in.
- Check whether the electrical box is properly covered.

Airflow Rate

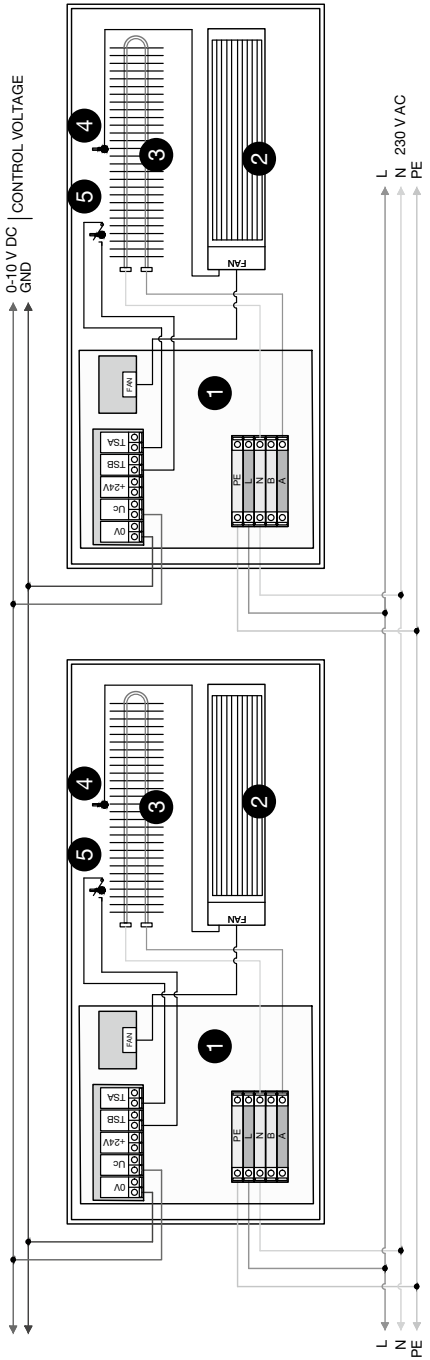
- Check whether all packaging materials have been removed.
- Check whether the airflow is unobstructed and remove any obstacles if necessary.

Electric wiring diagrams of the convector

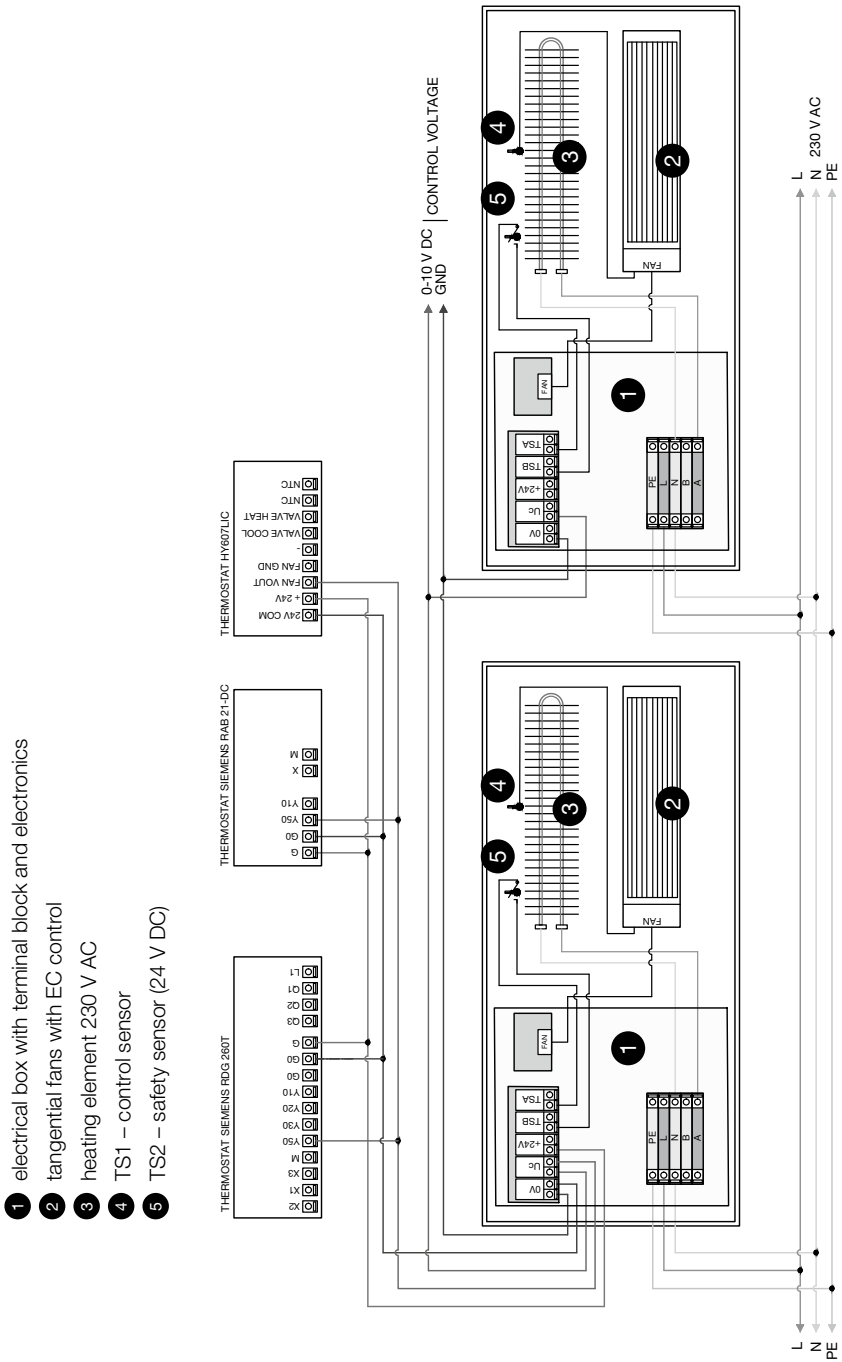
KORAFLEX Amper FVA electric floor convector basic

Wiring diagram

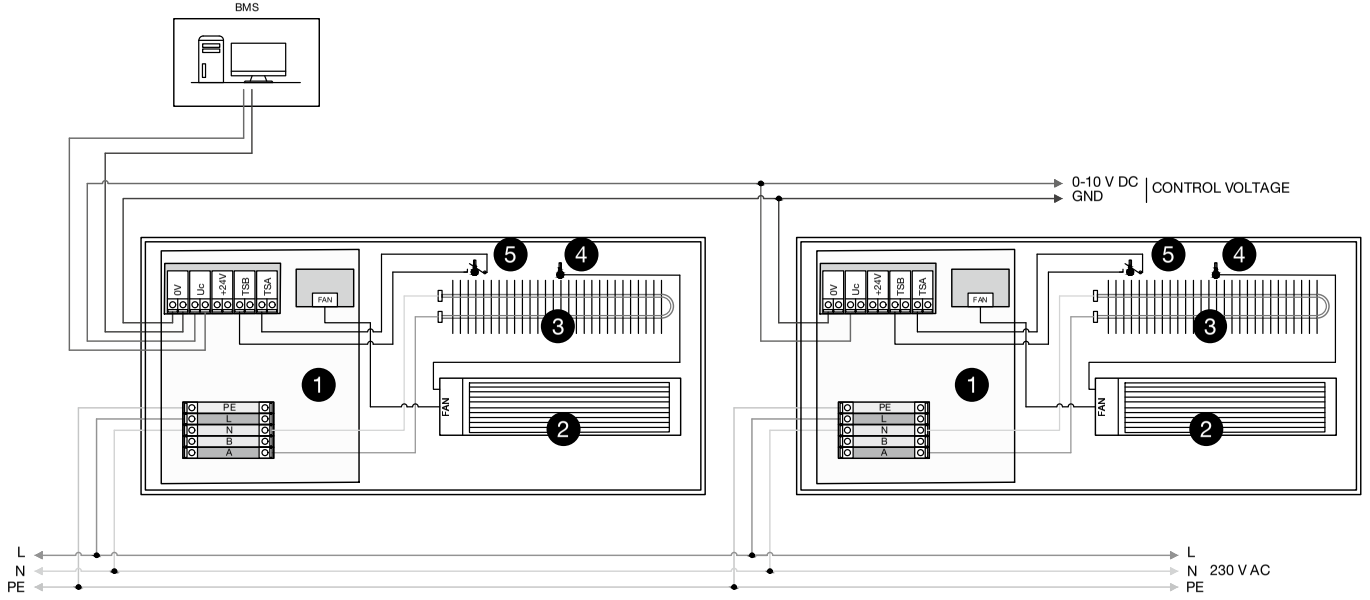
1. electrical box with terminal block and electronics
2. tangential fans with EC control
3. heating element 230 V AC
4. TS1 – control sensor
5. TS2 – protective sensor (24 V DC)



KORAFLEX Amper FVA electric floor convector
Controlled by SIEMENS RDG 260T, RAB 21-DC or HY607LIC thermostat



1. electrical box with terminal block and electronics
2. tangential fans with EC control
3. heating element 230 V AC
4. TS1 – control sensor
5. TS2 – safety sensor (24 V DC)



Control

Functional description

The device operates on the principle of an electric resistance element fitted with fins, from which heat is forced upwards into the room by an air current generated by a fan. The heating element and fan output is continuously regulated by a control voltage of 0–10 V DC from a thermostat, BMS or other control device.

Connect the control voltage 0–10 V DC from the thermostat or BMS to terminals **Uc** and **0V**. The thermostat can be powered by 24 V DC from terminals **+24V** and **0V**. Another convector can be interconnected via terminals **Uc** and **0V**.

The heating element is switched on and off based on the temperature measured by the temperature sensor located above it. The heating output starts to decrease when the grille temperature reaches 70 °C.

Overheating protection is provided by a thermal bimetallic switch with a reset button (24 V DC), which interrupts the heating element power circuit in case of malfunction or overheating. At a temperature of 80 °C, this sensor switches off the convector.

Control variants

Control with thermostat with control voltage 0–10 V DC

1.	230 V AC voltage is supplied to the convector.	Terminals L; N; PE
2.	The fan is continuously powered by 24 V DC from the switching power supply located inside the electronics.	Terminal FAN
3.	The thermostat is powered by 24 V DC from the convector.	Terminals +24V; 0V
4.	The control signal 0–10 V DC is supplied from the thermostat.	Terminals Uc
5.	The heating element output and fan speed are determined by the control voltage value and the temperature above the heating element.	
6.	The fan and heating element start simultaneously.	
7.	After switching off the control voltage, the heating element switches off and the fan continues to run for approximately 1 minute after the heating element is switched off.	
8.	Control signal output to the next convector at the moment when control voltage from the thermostat arrives.	Terminals Uc; 0V
9.	Only control signal input to the next convector; powered separately from 230 V AC mains.	Terminals Uc; 0V

BMS Regulation with Control Voltage 0–10 V DC

1.	230 V AC voltage is supplied to the convector.	Terminals L; N; PE
2.	The fan is continuously powered by 24 V DC from the switching power supply located inside the electronics.	Terminal FAN
4.	The control signal 0–10 V DC is supplied from the superior BMS system.	Terminals Uc; G0
5.	The heating element output and fan speed are determined by the control voltage value and the temperature above the heating element.	
6.	The fan and heating element start simultaneously.	
7.	After switching off the control voltage, the heating element switches off and the fan continues to run for approximately 1 minute after the heating element is switched off.	
8.	Control signal output to the next convector at the moment when control voltage from the thermostat arrives.	Terminals Uc; 0V
9.	Only control signal input to the next convector; powered separately from 230 V AC mains.	Terminals Uc; 0V

Maintenance and service

- Maintenance and servicing of convectors may only be carried out by a person familiar with their operation.
- Maintenance must be performed with the convector disconnected from the mains power supply. Prevent its restart.
- Unauthorised or uncontrolled restart of the equipment may result in serious injury or life-threatening situations.
- Allow the convector to cool down as some internal parts may be hot.
- Before restarting, ensure that all components are in their correct position and there is no danger to persons.
- Regularly remove dust from the convector as described in the following cleaning section.
- Any interventions in the control electronics, power supply unit and fans may only be carried out by a specialist with appropriate electrical engineering qualifications.

Do not make any modifications to the convector that would alter its function. Further maintenance requirements can be found at **www.licon-heat.com** or **www.korado.cz** in the current Warranty and Post-warranty Terms and Conditions.

Cleaning

The convector must be cleaned regularly, particularly before the start and at the end of the heating season, to prevent excessive contamination of the fan or heating element. Switching on the convector with excessive amounts of dust or other debris may cause improper airflow, overheating of the heating element or other issues that may lead to damage to the convector. Before commencing cleaning, ensure that you have disconnected the convector from the mains and prevent it from being reconnected. Check whether the convector is not hot. First, unscrew the screws fixing the convector grille using a screwdriver, see installation manual page 8. Use a vacuum cleaner to remove dust, particularly from the heating element and fan. When cleaning, exercise increased caution regarding the sensor tube, fan sensor cables and earthing. After cleaning, check whether everything is properly connected. Wipe other inaccessible areas with a cloth. Under no circumstances pour water into the convector or use abrasive cleaners or solvents. After cleaning, reinsert the grille and secure it carefully. Ensure everything is in its original state and reconnect the convector to the mains power supply.

Equipment malfunctions

In the event of malfunction or liquid ingress into the convector, disconnect the device from the power supply and contact a service technician or the convector manufacturer.

Emergency temperature sensor: In case of malfunction, the convector may become blocked due to exceeding the maximum temperature set by the emergency sensor. In such case, the convector will cease heating and only the fan will remain operational. It is necessary to call a qualified service technician who will identify the problem and remove the emergency sensor blockage.

Possible faults:
Fan is not rotating = check the cable connection to the fan
Heating element is poorly regulated = check the connection of the control sensor to the fan

Waste electrical and electronic equipment

Electrical or electronic equipment that is no longer fit for use (including electric convectors) must be collected separately and submitted for ecological recycling in accordance with the European Directive on Waste Electrical and Electronic Equipment. Use the return and collection systems established in your country for the disposal of such equipment.

Do not allow children to play with the packaging. Risk of suffocation!
After use, sort the packaging properly according to local waste sorting rules.



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