

Operating and installation instructions

REMKO EM series

Electric heaters

EM 2000, EM 3000



This product is suitable only for well-insulated rooms or for occasional use.

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Carefully read this operating manual prior to commissioning/using the units!

This manual is an integral part of the unit and must always be kept in the vicinity of the installation location or on the unit itself. This operating manual is a translation of the German original.

Subject to modifications. No liability accepted for errors or misprints!

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Safety notes

Always observe the respective local building code and fire prevention guidelines as well as the guidelines of the accident prevention and insurance associations when using the units.

The units have been subjected to extensive material, functional and quality inspections prior to delivery. However, dangers can arise from the units if they are used improperly or not as intended by untrained personnel!

Please observe the following notes

- The personnel tasked with operating the units must check the units for visible defects on the operating and safety devices as well as the presence and function of the protective devices prior to starting work
Inform the supervisor if defects are discovered!
- In the event of defects that endanger the operational safety of the unit, operation must be discontinued immediately
- Observe the respective local regulations and the relevant electrical safety measures when using the units
- Maintain safety distances to combustible materials
- An unobstructed air inlet and air outlet must be guaranteed at all times
- The air outlet must not be constricted or equipped with pipe or hose lines
- Never insert foreign objects into the units
- The units must not be covered during operation
- Safety devices must not be bypassed or disabled
- The units must not be operated in the vicinity of bathtubs, showers, swimming pools etc.
- The units must not be operated directly below a wall socket
- The units must not be exposed to direct jets of water e.g. **pressure washers etc.**
- Never allow water to enter the units
- The units must not be installed or operated in potentially flammable or explosive environments
- The units must not be installed or operated in atmospheres containing oil, sulphur or salt
- All electrical cables for the units must be protected against damage, even damage caused by animals



CAUTION

Safety devices must not be bypassed or disabled.

Unit description

The units are portable electric heating units for industrial applications.

The units are operated exclusively with electric power and have been designed in such a way that they can be used fully automatically, universally and in a straightforward manner.

The units are equipped with specially enclosed electric heating resistors, low noise and low-maintenance axial fans, a safety and aftercooler thermostat, an integrated room thermostat and a power cable with protective contact plug.

The units conform to the fundamental health and safety requirements of the appropriate EU regulations.

The units are dependable and offer ease of operation.

The units may be used among other things for the following:

- Drying newly completed buildings
- Spot heating outdoor workspaces or fire-proof manufacturing facilities and halls
- Continuous or temporary room heating
- De-icing machines, vehicles and non-combustible warehoused goods while adhering to the relevant safety distances

Operating sequence

The units can be used in the respective operating modes for air heating and air circulation purposes (only EM 2000).

The units have a 3-stage operating switch with the functions:

EM 2000: Heating (I) / OFF (0) / Ventilation (II)

EM 3000: Heating 2.2 kW (I) / OFF (0) / Heating 3.2 kW (II)

In the heating settings, the heating resistor or heating resistors of the EM 3000 and the fan are switched on. Warm air is blown out.

The unit is equipped with an integrated thermostat to ensure that the room temperature is constant.

Once the selected temperature has been reached, the thermostat stops the heating operation. If the room temperature falls below the selected temperature, the thermostat starts up the heating operation again.

The integrated thermal cut-out switches off the unit if the temperature is excessively high and switches it on again automatically after it has cooled down.

EM 2000: In setting II (Fan), only the air circulating fan is switched on and the unit can only be used for air circulation.

⚠ CAUTION

After switching off the units via the operating switch or the room thermostats, the supply air fan runs to cool the heating resistors for a certain time and then switches off automatically.

Commissioning

One person, who has been adequately trained in the handling of the units, should be tasked with the operation and monitoring of the units.

1. Check that the mains power supply matches the operating voltage of the unit 230V/1~/50 Hz.

2. Move the operating switch to the "0" position.

3. Connect the unit's power plug to a properly installed mains socket.



NOTE

The electrical connection for the units must be made at a separate feed point with a residual current device in accordance with VDE 0100, Section 55.



CAUTION

Extensions to the connection cable must only be conducted by authorised specialist electricians, taking into consideration the unit capacity, cable length and local use.



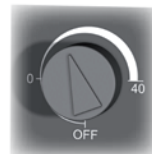
CAUTION

All cable extensions must only be used in fully un-reeled or reeled off condition.

Heating

The units operate in a fully automatic manner subject to the temperature that is set on the thermostat.

1. Set the desired room temperature on the thermostat.



2. EM 2000: Move the operating switch to the heating position "I". EM 3000: Move the operating switch to the desired position



Heating 1st stage; 2.2 kW

Off

Heating 2nd stage; 3.2 kW



NOTE

For optimum operation the units should not be operated above an ambient temperature of 25 °C.

Ventilation (only EM 2000)

Only the supply air fan operates in this setting. Thermostatic regulation and heating operation are not possible in this operating mode.

1. Move the operating switch to the "II" (Fan) position.



CAUTION

The units of type EM 3000 do not have a separate ventilation function

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Shutdown

1. Move the operating switch to the "0" (Off) position.



The supply air fan runs on to cool the units and only switches off after the cooling down phase is complete.

The fan can switch on and run several times before the final shutdown.

2. If the units are inactive for long periods, disconnect them from the mains power supply.



CAUTION

Never interrupt the power supply prior to the completion of the follow-up cooling phase. There is no guarantee entitlement in case of damage to the units due to overheating.

Care and maintenance

Regular care and observation of some basic requirements will ensure trouble-free operation and a long service life of the units.

CAUTION

Before undertaking any work on the units, the power plug must be removed from the mains socket.

- Observe the regular care and maintenance intervals
- In accordance with the operating conditions, the units must, if necessary, be checked at least yearly by a specialist to ensure that they are in a condition that is safe to use
- Keep the units free of dust and other debris
- Only clean the units with a dry or moistened cloth
- Never subject to direct jets of water.
e.g. pressure washers etc.
- Never use abrasive or solvent-based cleaners
- Check the inlet and outlet grille for contamination on a regular basis
- Check the safety equipment and protective devices on a regular basis
- Be careful not to damage the thermostat's probe or capillary tube when removing or mounting the rear panel of the unit

CAUTION

After completing any work on the unit, an electrical inspection must be carried out according to VDE 0701.

Troubleshooting

The unit (fan) does not start.

1. Check the mains fuses on site.
2. Check the power plug.
3. Check the operating switch.
4. Check that the fan can move freely.

The unit does not heat up

1. Set the thermostat to a value that is higher than the room temperature.
2. Check that the thermostat is functioning correctly.
3. Check the operating switch.
4. Check that the contactor is functioning correctly.
5. Check that the thermal cut-out is functioning correctly and check it for damage.

If all of the functional checks have been carried out without any findings, please contact an authorised service station.

NOTE

Repair work may only be carried out by authorised qualified electricians.

Intended use

The units are designed exclusively for heating and ventilation purposes in industrial or commercial use (not for living space heating in private use) on the basis of their structural design and equipment.

The units must only be operated by appropriately instructed personnel.

With non-observance of the manufacturer's specifications, the respective local legal requirements or after arbitrary alterations to the units, the manufacturer shall not be liable for resulting damages.

Customer service and guarantee

As a prerequisite for any guarantee claims to be considered, it is essential that the ordering party or its representative completes and returns the **"Certificate of guarantee"** to REMKO GmbH & Co. KG at the time when the units are purchased and commissioned.

The units have been tested several times in the factory to verify their correct function.

However, if malfunctions should arise that cannot be remedied by the operator with the assistance of the troubleshooting section, please contact your specialist dealer or contractual partner.



Environmental protection and recycling

Disposal of packaging

When disposing of packaging material, please consider our environment.

Our units are carefully packed and delivered in sturdy transport packaging made from cardboard and polystyrene.

The packaging materials are environmentally-friendly and can be recycled.

By recycling packaging materials, you make a valuable contribution to the reduction of waste and conservation of raw materials.

Therefore, only dispose of packaging material at appropriate collection points.

Disposal of the old unit

The manufacturing process for the units is subject to continuous quality control.

Only high-grade materials are processed, the majority of which are recyclable.

You also contribute to environmental protection by ensuring that your old equipment is only disposed of in an environment friendly manner.

Therefore, only bring the old unit to an authorised recycling business or to an appropriate collection point.



NOTE

*Operation other than the types listed in this operating manual is prohibited.
Failing to observe this renders any manufacturer liability or guarantee claims void.*



NOTE

Adjustment and maintenance work may only be carried out by authorised and qualified technicians.



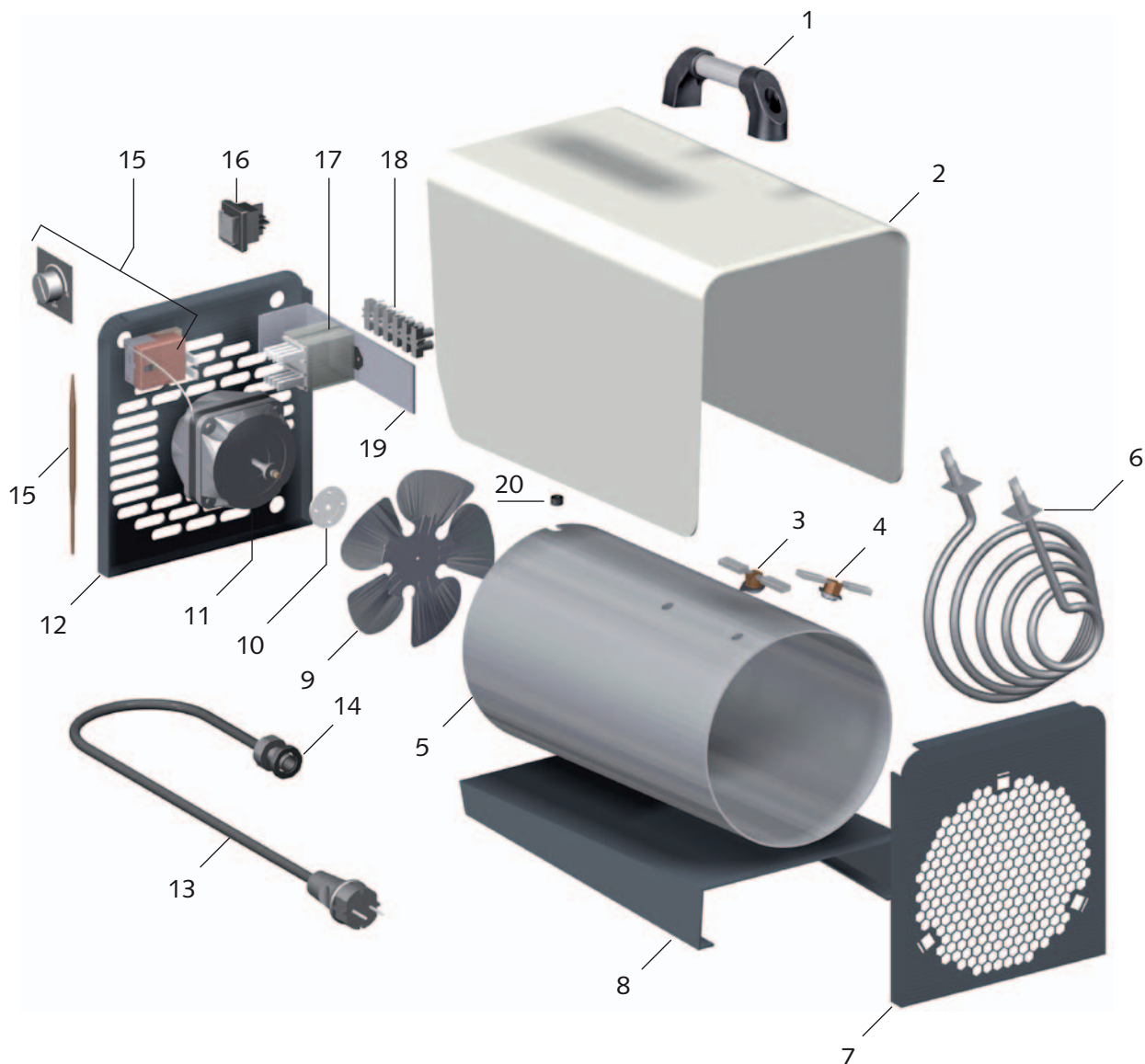
CAUTION

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Exploded view of the EM 2000 unit



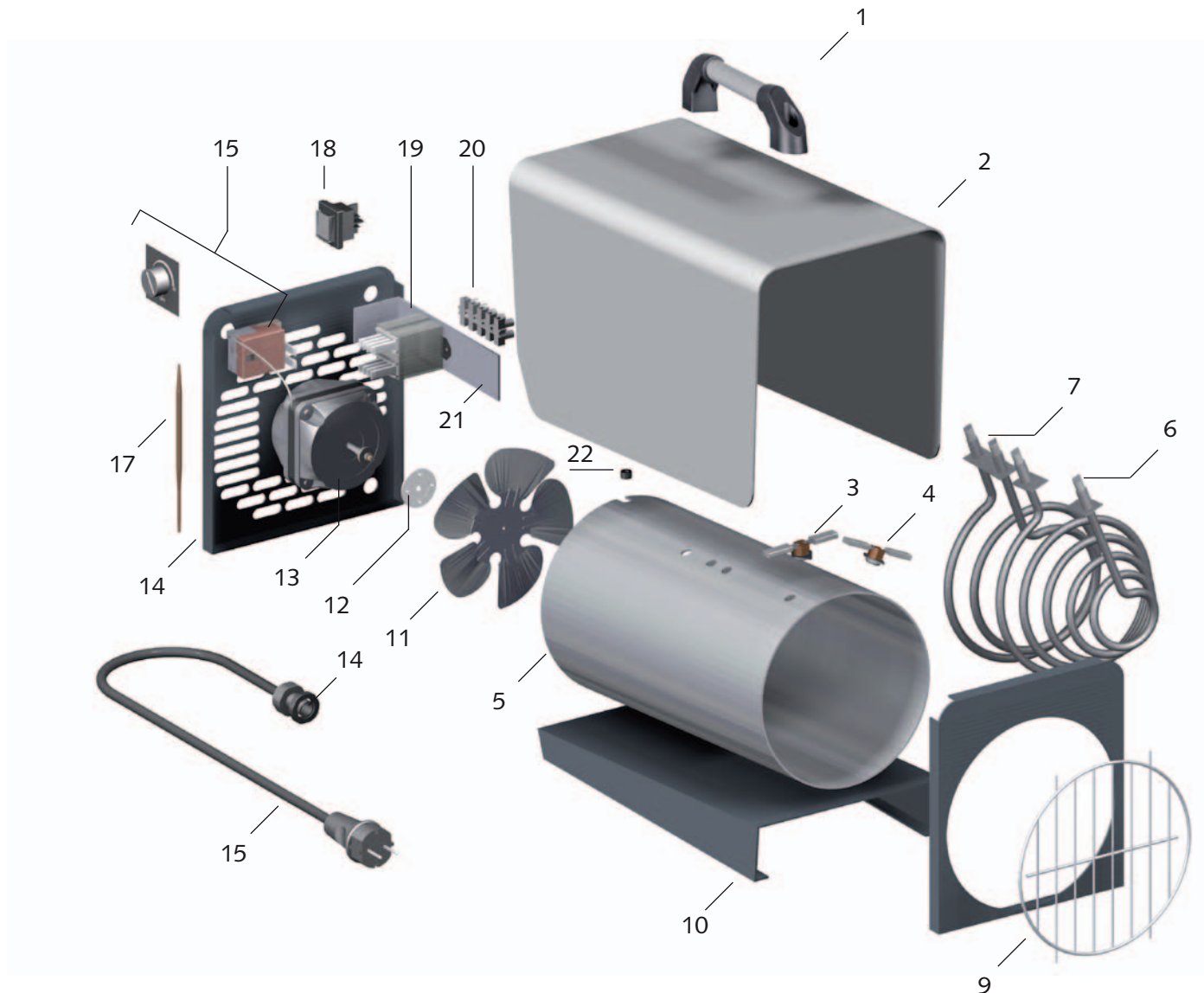
We reserve the right to modify the dimensions and design as part of the ongoing technical development process.

Spare parts list for the EM 2000

No.	Designation	EDP no.
1	Transport handle	1111970
2	Exterior cladding	1111971
3	Aftercooler thermostat	1104065
4	Thermal cut-out	1101161
5	Inner casing	1103931
6	Heating resistor	1111972
7	Front wall	1101063
8	Floor panel	1103932
9	Fan blade	1103819
10	Drive clutch	1103912
11	Fan motor	1103820
12	Back wall	1103915
13	Power cable with plug	1101320
14	Strain relief	1103904
15	Room thermostat cpl.	1101066
16	Operating switch cpl.	1101188
17	Auxiliary relay	1108038
18	Terminal block 6er	1101366
19	Mounting plate	1101067
20	Grommet	1101304

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Exploded view of the EM 3000 unit



We reserve the right to modify the dimensions and design as part of the ongoing technical development process.

Spare parts list for the EM 3000

No.	Designation	EDP no.
1	Transport handle	1111970
2	Exterior cladding	1103941
3	Aftercooler thermostat	1104065
4	Thermal cut-out	1101161
5	Inner casing	1103907
6	Heating resistor 1.0 kW	1103908
7	Heating resistor 2.2 kW	1103908
8	Front wall	1103910
9	Protective outlet grille	1103803
10	Floor panel	1103911
11	Fan blade	1103902
12	Drive clutch	1108455
13	Fan motor	1103820
14	Back wall	1103913
15	Power cable with plug	1103901
16	Strain relief	1101267
17	Room thermostat cpl.	1101066
18	Operating switch cpl.	1101188
19	Auxiliary relay	1108038
20	Terminal block 6er	1101366
21	Mounting plate	1101067
22	Grommet	1101304

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Maintenance protocol

Unit type: Unit number:

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Unit cleaned - outside -																				
Unit cleaned - inside -																				
Fan blade cleaned																				
Protection grid cleaned																				
Safety equipment checked																				
Safety devices checked																				
Unit checked for damage																				
All fastening screws checked																				
Electrical safety check																				
Test run																				

Comments:

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1. Date: Signature	2. Date: Signature	3. Date: Signature	4. Date: Signature	5. Date: Signature
6. Date: Signature	7. Date: Signature	8. Date: Signature	9. Date: Signature	10. Date: Signature
11. Date: Signature	12. Date: Signature	13. Date: Signature	14. Date: Signature	15. Date: Signature
16. Date: Signature	17. Date: Signature	18. Date: Signature	19. Date: Signature	20. Date: Signature

Unit to be maintained only by authorised specialists in accordance with the statutory regulations.

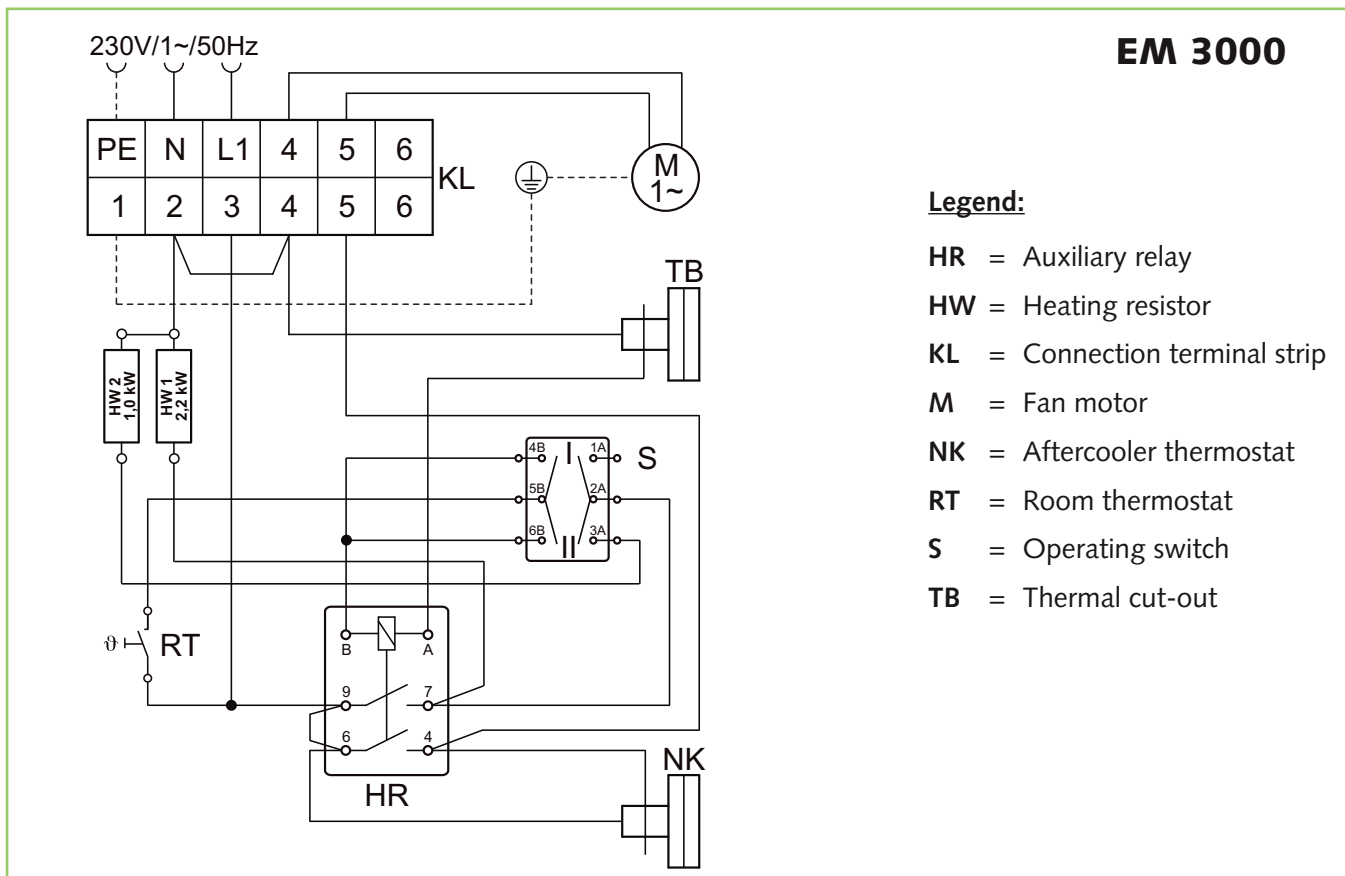
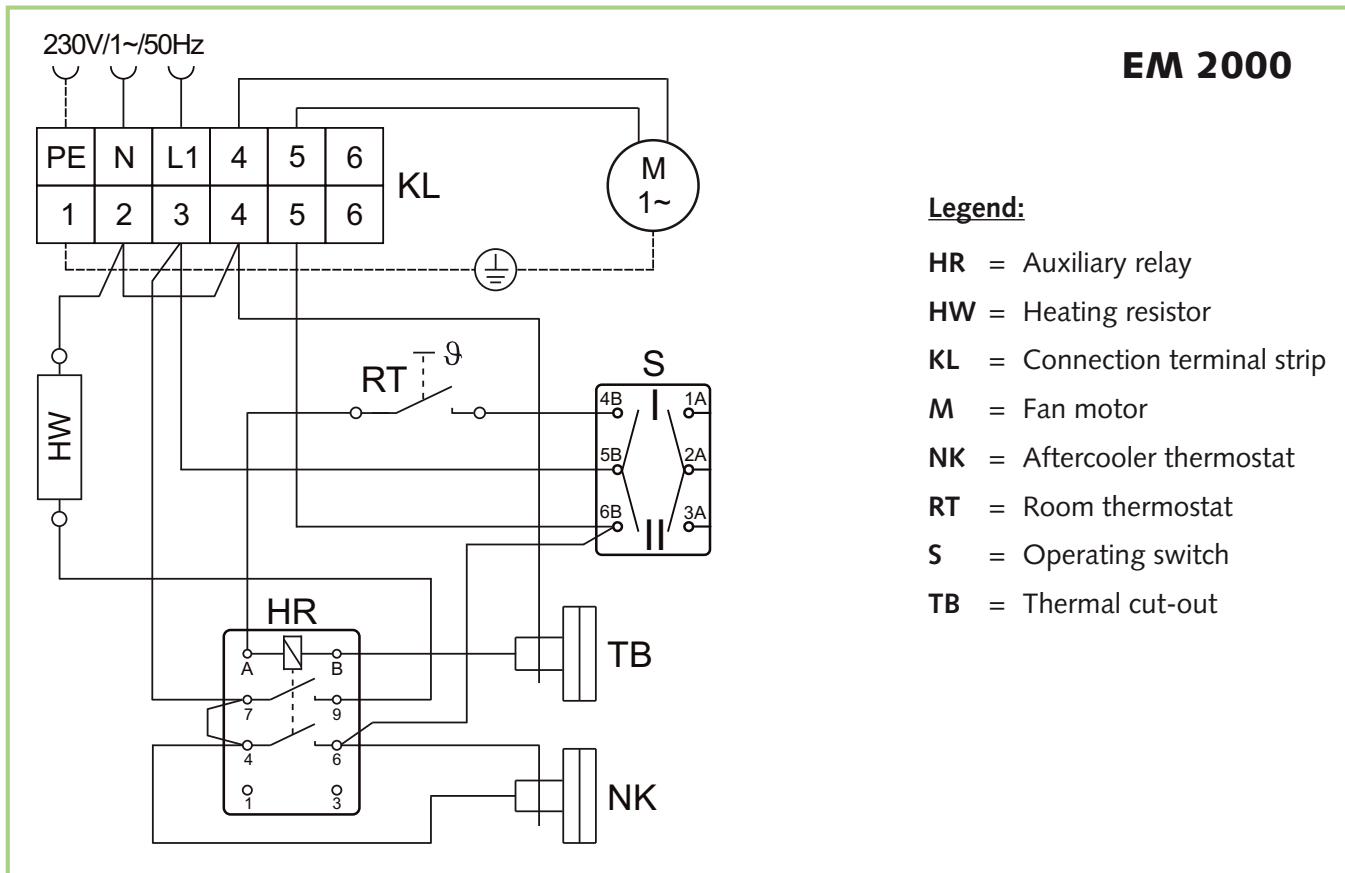
Technical data

Series	Symbol	Unit	EM 2000	EM 3000
Nominal heat capacity	P _{nom}	kW	2.0	3.2
Minimum heat capacity	P _{min}	kW	N/A	2.2
Maximum continuous heating power	P _{max,c}	kW	2.0	3.2
Switchable heating capacity		kW	2.0	2.2/3.2
Max. air flow rate		m ³ /h	220	350
Power supply		V/Hz	230/1~/50	230/1~/50
Max. rated current		A	9.5	13.9
Max. power consumption		kW	2.03	3.20
Auxiliary current consumption at nominal heating power	el _{max}	kW	2.050	3.250
Auxiliary current consumption at minimum heating power	el _{min}	kW	N/A	2.250
Auxiliary current consumption in standby condition	el _{SB}	kW	0.000	0.000
Electrical protection (provided by the customer)		A (slow)	16	16
Sound pressure level, LpA 1m ¹⁾		dB (A)	46	46
Dimensions: L/W/H		mm	300/200/315	400/200/335
Type of room temperature control			Room temperature control with mechanical thermostat	
Weight		kg	5.8	8.6
EDP no.:			1614500	1614505

¹⁾ Noise level measurement DIN 45635 - 01 - KL3

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Electrical wiring diagram



We reserve the right to modify the dimensions and design as part of the ongoing technical development process.

REMKO QUALITY WITH SYSTEMS

Air-Conditioning | Heating | New Energies

REMKO GmbH & Co. KG
Klima- und Wärmetechnik

Im Seelenkamp 12
32791 Lage

Telephone +49 (0) 5232 606-0
Telefax +49 (0) 5232 606-260

E-mail info@remko.de
URL www.remko.de

Hotline within Germany
+49 (0) 5232 606-0

Hotline International
+49 (0) 5232 606-130

